Ellie Schiller Homosassa Springs Wildlife State Park Unit Management Plan

July 2019 Draft

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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Introduction

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

Ellie Schiller Homosassa Springs Wildlife State Park was initially acquired on December 30, 1988 by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. The purchase was funded under the CARL program. The land was acquired to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state. Since the 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. Currently, the park comprises 200.25 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on September 1, 1989, the Trustees leased (Lease Number 3786) the property to DRP under a 50 year lease. The current lease will expire on August 10, 2039.

Homosassa Springs Wildlife State Park is designated single-use to provide public outdoor recreation and other park-related uses. There are no legislative or executive directives that constrain the use of this property (see Addendum 1).

Purpose and Significance of the Park

The purpose of Homosassa Springs Wildlife State Park State Park is to ensure the protection and preservation of the first magnitude spring located in the park, conserve habitat for endangered species, and provide for exceptional public outdoor recreation opportunities for Florida residents and visitors.

- Homosassa Springs and spring run are considered critical habitat for the Florida manatee with more than 100 manatees visiting the park during the winter. Important rehabilitation facilities serve injured and orphan manatees at the park.

- The park contains a zoological park and well developed visitor facility. A number of animal exhibits at the park showcase mostly native Florida wildlife. Exhibits include Key deer *(Odocoileus virginianus clavium)*, Florida panther *(Puma concolor coryi)*, whooping crane *(Grus americana)*, and hippopotamus *(Hippopotamus amphibious)*. An underwater observation platform allows visitors the ability to view manatees and fish in the spring basin.

- The park serves an important role in connecting important habitat tracts to the north and south for the Florida black bear *(Ursus americanus floridanus)* and other notable species. Natural communities include hydric hammock, and mesic flatwood.

- Native Americans utilized the spring group located in the park for thousands of years before European settlement. The early 1900s saw the development of a popular tourist attraction for visitors who arrived on the “Mullet train.” The use of the springs as a tourist attraction has continued to the present day.

Purpose and Scope of the Plan

Homosassa Springs Wildlife State Park is classified as a State Special Feature Site in the DRP’s unit classification system. In the management of a State Special Feature Site, a special feature is a discrete and well-defined object or condition that attracts public interest and provides recreational enjoyment through visitation, observation, and study. A state special feature site is an area which contains such a feature, and which is set aside for controlled public enjoyment. Special feature sites for the most part are either historical or archaeological by type, but they may also have a geological, botanical, zoological, or other basis. State special

feature sites must be of unusual or exceptional character or have statewide or broad regional significance.

Management of special feature sites places primary emphasis on protection and maintenance of the special feature for long-term public enjoyment. Permitted uses are almost exclusively passive in nature and program emphasis is on interpretation of the special feature. Development at special feature sites is focused on protection and maintenance of the site, public access, safety and the convenience of the user.

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 goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 2005 approved plan.

Resource Management Component

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

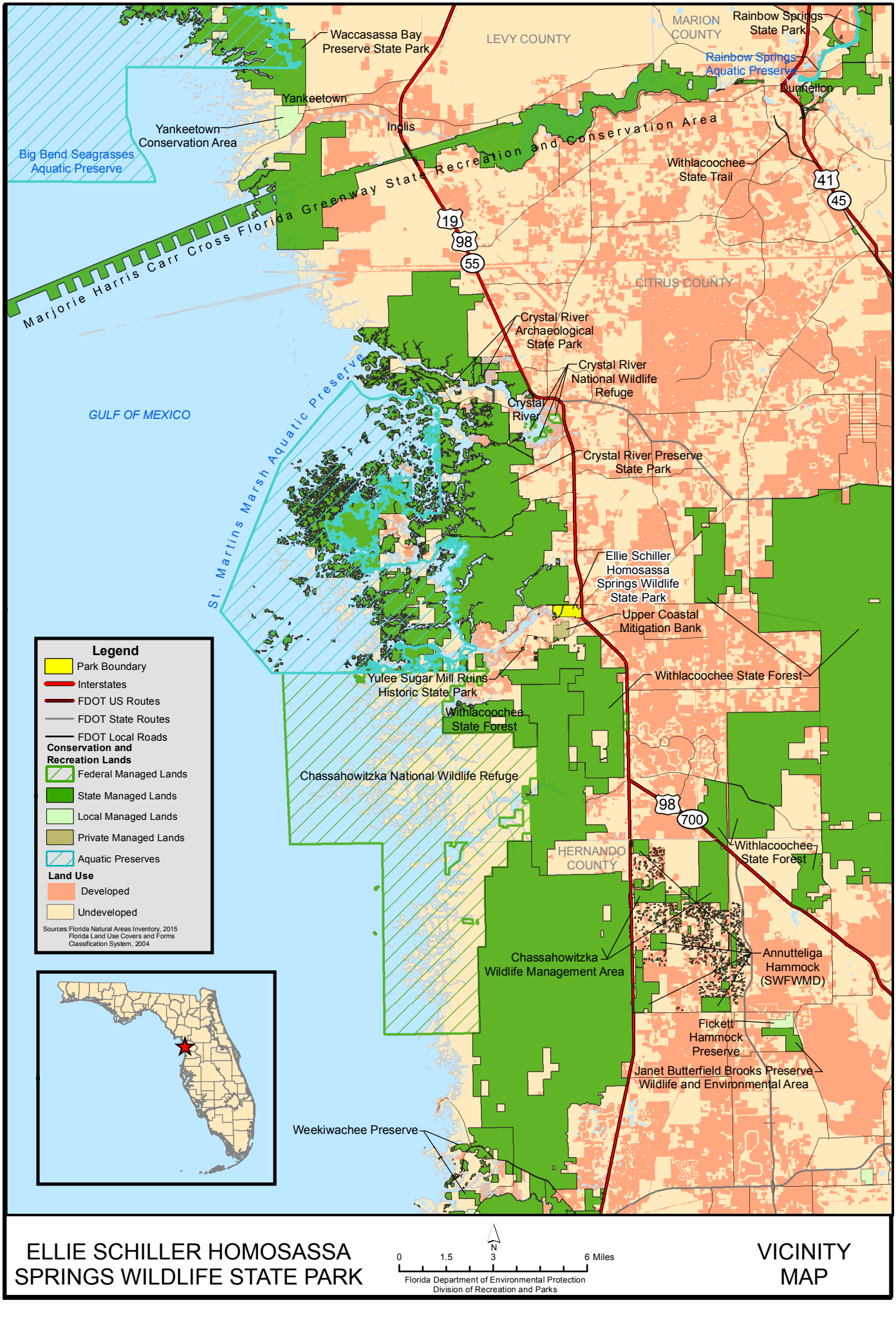
The DRP's philosophy of resource management is natural systems management. Primary emphasis is placed on restoring and maintaining, to the degree possible, the natural processes that shaped the structure, function and species composition of Florida's diverse natural communities as they occurred in the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

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

Because park units are often components of larger ecosystems, their proper management can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local comprehensive plans and development permit applications for park/ecosystem impacts.

Land Use Component

The Land Use Component is the recreational resource allocation plan for the park. Based on considerations such as access, population, adjacent land uses, the natural and cultural resources of the park, and current public uses and existing development, measurable objectives are set to achieve the desired allocation of the physical space of the park. These objectives identify use areas and propose the types of facilities and programs as well as the volume of public use to be provided.



ELLIE SCHILLER HOMOSASSA SPRINGS WILDLIFE STATE PARK

0 1.5 3 6 Miles

N

Florida Department of Environmental Protection
Division of Recreation and Parks

VICINITY MAP

Main Entrance

West Entrance

Withlacoochee State Forest

Chassahowitzka National Wildlife Refuge

Legend

- Interstates
- Major Highways
- Crystal River Preserve
- Park Boundary
- Federal
- State
- Local

ELLIE SCHILLER HOMOSASSA SPRINGS WILDLIFE STATE PARK

N

0 0.225 0.45 0.9 Miles

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

REFERENCE MAP

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

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

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified.

The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park. Any new facilities needed to support the proposed activities are expressed in general terms.

All development and resource alteration proposed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies.

Secondary Use Consideration

In the development of this plan and in accordance with 253.034(5) F.S., the potential of the park to accommodate secondary management purposes was analyzed. These secondary management 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 parks natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences.

For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as, water resource development project, 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 ad 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.

All development and resource alteration proposed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies.

Contract Services

DRP may provide the services and facilities outlined in this plan either with its own funds and staff or through an outsourcing contract. Private contractors may provide assistance with natural resource management and restoration activities or a concessionaire may provide services to park visitors in order to enhance the visitor experience. For example, a concessionaire could be authorized to sell merchandise and food and to rent recreational equipment for use in the park. A concessionaire may also be authorized to provide specialized services, such as interpretive tours, or overnight accommodations when the required capital investment exceeds that which DRP can elect to incur. Decisions regarding outsourcing, contracting with the private sector, the use of concessionaires, etc. are made on a case-by-case basis in accordance with the policies set forth in DRP's Operations Manual (OM).

Management 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 (DRP) is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

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

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

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

General Park Management Goals

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

- Provide administrative support for all park functions.
- Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.
- Restore and maintain the natural communities/habitats of the park.
- Maintain, improve or restore imperiled species populations and habitats in the park.

- Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.
- Protect, preserve and maintain the cultural resources of the park.
- Provide public access and recreational opportunities in the park.
- Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

Management Coordination

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

The Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FWC aids DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Florida Department of Environmental Protection (DEP), Florida Coastal Office (FCO) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Coastal Systems aids staff in planning and construction activities seaward of the Coastal Construction Control Line (CCCL). In addition, the Bureau of Beaches and Coastal Systems aid the staff in the development of erosion control projects.

Public Participation

DRP provided an opportunity for public input by conducting a public workshop and an Advisory Group meeting to present the draft management plan to the public. These meetings were held on [INSERT Dates], respectively. Meeting notices were published in the Florida Administrative Register, [INSERT publication date, VOL/ISSUE], included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the Advisory Group meeting is to provide the Advisory Group members an opportunity to discuss the draft management plan (see Addendum 2).

Other Designations

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

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

Past Accomplishments

The resource management and land use components of this management plan provide a thorough inventory of the park's natural, cultural and recreational resources. They outline the park's management needs and problems and recommend both short and long-term objectives and actions to meet those needs. The implementation component addresses the administrative goal for the park and reports on the Division of Recreation and Parks (DRP) progress toward achieving resource management, operational and capital improvement goals and objectives since approval of the previous management plan for this park. This component also compiles the management goals, objectives and actions expressed in the separate parts of this management plan for easy review. Estimated costs for the ten-year period of this plan are provided for each action and objective, and the costs are summarized under standard categories of land management activities.

MANAGEMENT PROGRESS

Since the approval of the last management plan for Ellie Schiller Homosassa Springs Wildlife State Park in 2007, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within four of the five general categories that encompass the mission of the park and the DRP.

Park Administration and Operations

- Staff are routinely cross-trained in all departments in order to insure efficient park operations.
- The park maintains an active special event and marketing program for increase attendance and revenue.
- Emergency action planning as been developed to evacuate the animals in the case of flooding during storm events.

Natural Resources

- Limerock trails have been eliminated and converted to raised boardwalks and concrete sidewalks which has restored natural drainage patterns.
- All burn zones were burned, and no backlogged acres remain.
- The park continues to maintain working relationships with agencies responsible for collecting hydrologic data for spring and river systems. This data is shared with park staff and visitors when warranted.
- The park continues to monitor water quality in the park.
- Exotic plants are routinely removed, and native vegetation planted.
- The park continues to work with FWC, USFWS and the MRP to rehabilitate and release manatee.
- The park continues to work with FWC to rehabilitate and release orphan bear cubs.
- Several floating wetlands have been installed in the park to improve water quality.

Cultural Resources

- Archaeological sites are regularly monitored.
- The park has 3 ARM certified staff.
- The engineering study has been updated for Underwater Observatory.

Recreation and Visitor Services

- The park is active in interpretive programming that focuses on the importance of springs and wildlife conservation.
- The park is fully assessible to visitors with disabilities.
- The park maintains an active volunteer program which supports all aspects of park operations.

Park Facilities

- The decking in the shorebird aviary and at the manatee program area was replaced.

- A new extension of the boardwalk was constructed creating a Deer Walk.
- Many upgrades to the animal care facilities/equipment has been obtained and constructed

Future Objectives

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

Many of the actions identified in the plan can be implemented using existing staff and funding. However, a number of continuing activities and new activities with measurable quantity targets and projected completion dates are identified that cannot be completed during the life of this plan unless additional resources for these purposes are provided. The plan's recommended actions, time frames, and cost estimates will guide the DRP's planning and budgeting activities over the period of this plan. It must be noted that these recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that the DRP can adjust to changes in the availability of funds, improved understanding of the park's natural and cultural resources, and changes in statewide land management issues, priorities, and policies.

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

Goal I: Provide administrative support for all park functions.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Continue day-to-day administrative support at current levels.**	Administrative support ongoing	**C**	**$3,111,189**
Objective B	**Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.**	Administrative support expanded	**C**	**$3,188,199**

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

Goal II: Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	**Conduct/obtain an assessment of hydrological needs.**	Assessment conducted	**ST or LT**	**$46,260**
Action 1	Continue to cooperate with other agencies and independent researchers in hydrological research and monitoring.	Cooperation ongoing	UFN	$4,000
Action 2	Continue to monitor and track surface and groundwater quality issues within the region	Monitoring ongoing	C	$2,000
Action 3	Continue to monitor land use or zoning changes in the region and offer comments	Monitoring ongoing	C	$2,000
Action 4	Seek funding for dye trace studies within the spring shed to determine groundwater sources for karst features	Funding acquired	ST	$360
Action 5	Conduct dye trace studies within the spring shed to determine groundwater sources for karst features	Project completed	UFN	$30,900
Action 6	Continue to cooperate with the SWFWMD to establish meaningful MDL's that will ensure maintenance of historic flows	Cooperation ongoing	C	$3,000
Action 7	Assess and evaluate hydrological impacts in the park where natural sheetflow has been disrupted; initiate corrective actions	Assessment Conducted	ST	$2,000
Action 8	Develop a hydrological restoration plan for the park and prioritize restoration projects	Plan completed	ST	$2,000
Objective B	**Restore natural hydrological conditions and function to approximately 4.35 acres of Spring Run**	# Acres restored or with restoration underway		**$4,000**
Action 1	Conduct and assessment and evaluate the feasibility of conducting experimental SV plantings in the spring and spring run stream	Assessment conducted	ST	$2,000
Action 2	Conduct an assessment and evaluate the feasibility of conducting experimental plantings to remove nutrients from Bird Island tributary	Assessment conducted	ST	$2,000

Objective C	**Evaluate and mitigate the impacts of soil erosion on water resources**		**ST, LT**	**$3,800**
Action 1	Investigate best management options for erosion mitigation in public access areas	Assessment conducted	ST	$2,000
Action 2	Monitor areas prone to erosion	Monitoring ongoing	C	$900
Action 3	Implement corrective measures to reduce impacts of soil erosion on water resources	Project completed	ST	$900

Goal III: Restore and maintain the natural communities/habitats.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Within 10 years have 14 acres maintained within optimal fire return interval.**	# Acres within FRI target	**LT**	**$10,000**
Action 1	Develop/update annual burn plan	Plan updated	C	$4,000
Action 2	Manage fire dependent communities by burning between 5 – 12 acres annually	Average # acres burned annually	C	$6,000
Objective B	**Conduct habitat/natural community restoration on 0 acres**	# acres restored or with restoration underway	**ST or LT**	**$0**
Objective C	**Conduct habitat/natural community improvement activities on 5 acres of hydric hammock**	# acres improved or underway	**ST or LT**	**$19,500**
Action 1	Develop a restoration plan to remove spoil and concrete debris	Plan developed/ updated	ST	$2,000
Action 2	Implement restoration plan	Project completed	LT	$17,500

Goal IV: Maintain, improve or restore imperiled species populations and habitats.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	**Update baseline imperiled species occurrence inventory lists for plants and animals.**	List updated	**C**	**$2,500**
Objective B	**Monitor and document 1 selected imperiled animal species.**	# Species monitored	**C**	**$25,000**
Action 1	Implement monitoring protocols for 1 imperiled animal species including the West Indian Manatee	# Protocols developed	ST	$25,000
Objective C	**Monitor and document 1 selected imperiled plant species.**	# Species monitored	**C**	**$2,500**
Action 1	Develop monitoring protocols for 1 selected imperiled plant species including southern tubercled prchid *(Plantanthera flava)*	# Protocols developed	ST	$500
Action 2	Implement monitoring protocols for 1 imperiled plant species including that listed in Action 1 above	# Species monitored	C	$2,000
Objective D	**Continue partnerships with FWC and USFWS in the rehabilitation of native imperiled species.**		**C**	**$0**
Action 1	Continue working with FWC and USFWS as a partner facility in the Manatee Rescue, Rehabilitation, and Release Program		C	$0
Action 2	Continue to work with FWC to provide housing and care for orphaned black bear cubs to be released back to the wild		C	$0
Action 3	Continue serving as a rehabilitation center for other imperiled species and as a permanent home for non-releasable imperiled species		C	$0

Goal V: Remove exotic and invasive plants and animals and conduct needed maintenance-control.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Annually treat 4 acres of exotic plant species.**	# Acres treated	**C**	**$18,000**
Action 1	Annually develop/ update exotic plant management work plan.	Plan developed/ updated	C	$8,000
Action 2	Implement annual work plan by treating 4 acres annually, and continuing maintenance and follow up treatments	Plan implemented	C	$10,000
Objective B	**Implement control measures on 1 exotic and nuisance animals species.**	# Species for which control measures implemented	**C**	**$2,500**
Action 1	Remove exotic animals as the appear			$2,500

Goal VI: Protect, preserve and maintain the cultural resources.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	**Assess and evaluate 11 of 14 recorded cultural resources in the park**	Documentation complete	**LT**	**$5,000**
Action 1	Complete 11 assessments/ evaluations of archaeological sites. Prioritize preservation and stabilization projects.	Assessments complete	LT or ST	$5,000
Action 2	Complete 0 Historic Structures Reports (HSR's) for historic buildings and cultural landscape. Prioritize stabilization, restoration, and rehabilitation projects	Reports and priority lists completed	LT	$0
Objective B	**Compile reliable documentation for all recorded historic and archaeological sites**	Documentation complete	**LT**	**$3,000**
Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.	# Sites recorded or updated	ST	$3,000
Objective C	**Bring 0 of 14 recorded cultural sites into good condition**	# sites in good condition	**LT**	**$13,000**
Action 1	Design and implement regular monitoring programs for cultural sites	# sites monitored	C	$3,000
Action 2	Create and implement a cyclical maintenance program for each cultural resource	Programs implemented	C	$10,000

Goal VII: Provide public access and recreational opportunities.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	**Maintain the park's current recreational carrying capacity 6,464 users per day**	# Recreation/ visitor	**C**	**$4,666,783**
Objective B	**Expand the park's recreational carrying capacity by 160 users**	# Recreation/ visitor	**ST or LT**	**$4,782,297**
Objective C	**Continue to provide the current repertoire of 15 interpretive, educational, and recreational programs on a regular basis**	# Interpretive/ education programs	**C**	**$75,000**
Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.		**Measure**	**Planning Period**	**Estimated Manpower and Expense Cost* (10-years)**
Objective A	**Maintain all public and support facilities in the park.**	Facilities maintained	**C**	**$4,666,783**
Objective B	**Continue to implement the park's transitional plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990**	Plan Implemented	**ST or LT**	**$20,000**
Objective C	**Improve/repair 7 existing facilities and 0.75 miles of trail as identified in the Land Use Component**	# Facilities/Miles of Trail/Miles of Road	**LT**	**$708,028**
Objective D	**Expand maintenance activities as existing facilities are improved and new facilities are developed**	Facilities maintained	**C**	**$4,782,297**

Summary of Ten-Year Cost Estimates		
Management Categories	**Total Estimated Manpower and Expense Cost (10 years)**	**Percentage**
Administration and Support	**$6,299,388**	**39.6%**
Resource Management	**$155,060**	**1%**
Hydrology	$54,060	0.34%
Natural Communities	$29,500	0.19%
Imperiled Species	$30,000	0.20%
Exotic Species	$20,500	0.13%
Cultural Resources	$21,000	0.14%
Recreation and Visitor Services	**$9,449,080**	**59.4%**
Public Access	$3,938,755	24.8%
Capital Improvements	$5,510,325	34.6 %
Total Ten-Year Cost Estimate	**$15,903,528**	**100%**

Resource Management Component

Natural Resources

Topography

Ellie Schiller Homosassa Springs Wildlife State Park (Homosassa Springs) is situated in the Gulf Coastal Lowlands, a physiographic province that includes most of the broad coastal plain between the Brooksville Ridge and the Gulf of Mexico (White 1970). Topography in the Gulf Coastal Lowlands is generally level, but ancient dunes occasionally rise above the flat terrain, some attaining elevations as high as 100 feet above mean sea level (msl). Within the coastal lowlands are swamps and marine terraces of Pleistocene age (10,000 to 1.8 million years ago) that formed during cycles of sediment deposition and erosion as sea levels fluctuated (Rupert and Arthur 1990). Homosassa Springs is located on one such marine terrace, the Pamlico Terrace, which occurs at elevations below 25 feet msl. Sands and clayey sands of variable thickness,

The major topographic feature in 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 (Scott et al. 2004). Subsurface openings in the southwest side of the basin lead to a series of caverns and solution features (Karst Environmental Services 1992). A detailed description of the topography of the main spring vent and aquatic cave system is provided below in the Hydrology section of this plan.

Topographic alterations that occurred at Homosassa Springs before the state acquired the property include the excavation of Pepper Creek as a tour boat channel, construction of Fishbowl Drive along the historic route of the Mullet Express, creation of a tram road between Fishbowl Drive and U.S. Highway 19/98, and deposition of fill in several developed areas. Pepper Creek is not actually a natural feature but rather a very large drainage ditch. Spoil produced during excavation of the ditch was deposited along both sides of the channel, forming an elevated berm as high as 12 feet above msl. While much of Pepper Creek is a linear canal, underlain by Eocene and Oligocene limestone and dolomite, are characteristic of this terrace (Spencer 1984, Pilny et al. 1988).

Homosassa Springs is further described as being within the Chassahowitzka Coastal Strip physiographic region (White 1970, Brooks 1981). This low-lying coastal area contains an abundance of subsurface and exposed limestone. Characteristic natural communities include basin swamps, hydric hammocks, and pine flatwoods. Typical elevations in the region are 10 feet above msl or less. An elevated escarpment about three miles east of the park and parallel to U.S. Highway 19 forms the western edge of the Brooksville Ridge, which surficially consists of ancient coastal ridge sands (Karst Environmental Services 1992). Although much of Homosassa Springs lies below the five-foot contour, elevations at the eastern end of the park near U.S. Highway 19/98 range from 5 - 10 feet above msl (see Topographic Map).

there is a winding section in the eastern part of the park that appears more natural. However, it too was artificially created in the 1960s for the Homosassa Wildlife Park attraction. The Division of Recreation and Park s (DRP) continues to maintain a large portion of Pepper Creek for tour boat operations.

Geology

Rock outcrops and rocks overlain by thin surface sediments are common in the Homosassa region (Wolfe et al. 1990). These are ancient marine deposits associated with changes in sea level that occurred over millennia. Listed from youngest to oldest, regional underlying deposits include lower layers of the Ocala Limestone, the 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 layers away, along with the Suwannee Limestone and upper layers of the Ocala Limestone (Karst Environmental Services 1992, Jones et al. 2011).

Within the park, the Eocene-age Ocala Limestone is at or near the land surface, and intact portions comprise the upper 36 to 125 feet of the underlying stratigraphy (Jones et al. 2011). Within the Homosassa Springs basin, the stratigraphic units of the Ocala Limestone and the Avon Park Formation are well defined. Cave divers who have accessed the main spring at Homosassa have clearly observed the boundary between the Ocala and Avon at 48 feet below msl (Karst Environmental Services 1992).

Below the Ocala Limestone 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 is 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. It is 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 Eocene-age deposit is the Oldsmar Formation, which underlies the Lake City Limestone. This formation is composed of dolomite and limestone along 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; there is also a small limestone component. 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 certain areas, such as the Pepper Creek canal. No other remarkable alterations of geologic formations have occurred in the park.

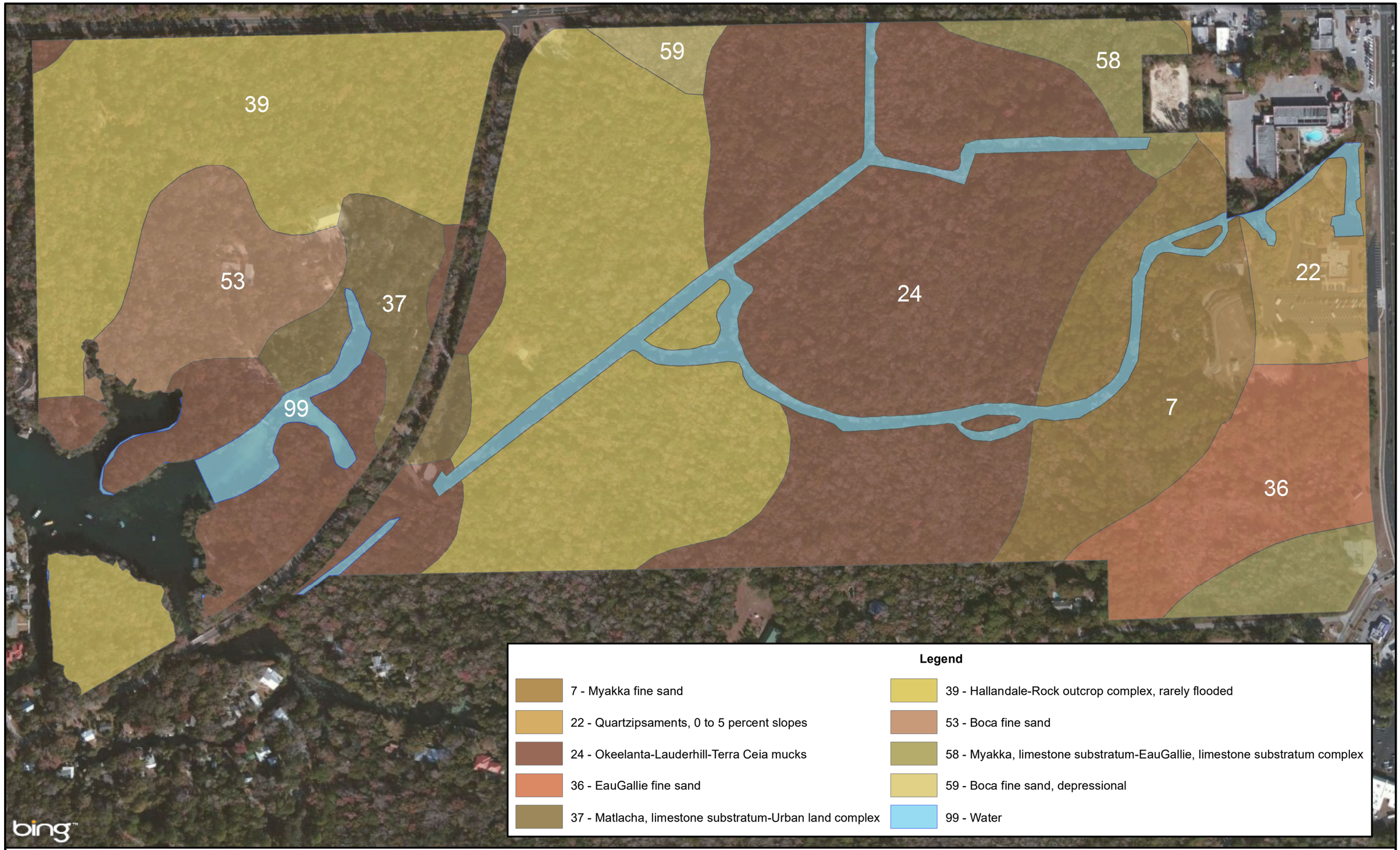
Soils

Nine soil types occur within the park (Pilny et al. 1988). These soils include moderately well-drained sands created when wetlands were filled during earthmoving activities; 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 apparent. Trees are necessarily very shallow rooted.

Alterations of natural topography and drainage patterns by road construction, canal excavation, and spoil deposition have changed the soil characteristics in many areas of the park. Where spoil piles are located atop wetland soils, plant species typical of more upland environments have become established, attracted to the better drained microhabitat created by the artificial spoil. In some areas, particularly sites that historically were developed, offsite fill from the Brooksville Ridge east of the park now caps the native soils (Ellis et al. 1998a; Ellis et al. 1998b). Foreign soils from this ridge were used in at least two areas of the park, the main park entrance on U.S. Highway 19/98 and the original attraction area adjacent to the Homosassa head spring.

Before the state acquired the attraction, the



ELLIE SCHILLER HOMOSASSA SPRINGS WILDLIFE STATE PARK

N

0 150 300 600 Feet

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

SOILS MAP

previous owners had used various types of fill (e.g., offsite soil, pea gravel, limerock gravel) to construct walkways and to improve site stabilization. Erosion, sedimentation, and stormwater runoff from facilities development had in some cases adversely affected water quality within the attraction, including in the head spring area and in the Homosassa River (DRP District 2 files). Once the DRP assumed management of the attraction in 1988, staff immediately began to implement erosion control measures, minimize sediment deposition, and improve stormwater runoff throughout the park. Stabilization and erosion prevention measures may still be needed in some areas of the park. Management activities will follow generally accepted best management practices to prevent further soil erosion and to conserve onsite soil and water resources.

Minerals

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

Hydrology

Homosassa Springs Wildlife State Park encompasses the primary headwaters of the Homosassa River in southwest Citrus County (Leeper et al. 2012). The main hydrological features within the park include an intact tract of hydric hammock, a large drainage canal (Pepper Creek) that was excavated prior to the 1950s, and several major spring vents that constitute the second largest source of freshwater discharge to the Homosassa River (Simmons et al 1989; Basso 2010).

Homosassa Springs is in a broad karst-dominated landscape that lies at the southern extent of Florida's "Big Bend" coastline, but more specifically within the northern third of the Springs Coast region (Wolfe et al. 1990). In this region, there are numerous spring-fed rivers, embedded within a large matrix of hydric hammock, salt marsh, mangrove swamp and other nearshore habitats, which provide the nearby estuarine environment with a constant supply of freshwater (Raabe and Stumpf 1996; Mattson et al. 2007).

The Springs Coast is appropriately named because it contains five known springsheds and seven major spring-fed rivers, including the Homosassa, Crystal, and Chassahowitzka rivers. Crystal River Preserve State Park lies immediately north of Homosassa Springs Wildlife State Park and shares a common boundary with a portion of it. In addition, St. Martins Marsh Aquatic Preserve (AP) is situated downstream of the park near the mouth of the Homosassa River (FDEP 2016a). St. Martins Marsh AP and Big Bend Sea Grasses AP to its north comprise Florida's most significant publicly managed estuary, containing the largest seagrass beds in the state (FDEP 2014). The Homosassa, Crystal, and Chassahowitzka rivers, as well as St. Martins Marsh AP are all classified as Outstanding Florida Waters (OFW). The Homosassa River is a Class II waterbody that flows westward for nearly eight miles before emptying into the Gulf of Mexico (Leaper et al. 2012).

The primary source of freshwater for the Homosassa River is the Homosassa Springs Group, a series of about 25 named springs occurring both inside and outside the park within an area of approximately four-square miles around the upper Homosassa River (Champion and Starks 2001). Springs located outside the park are in the Southeast Fork and in the Halls and Hidden rivers (Knochenmus and Yobbi, 2001; Leeper et al. 2012). The Southeast Fork springs are immediately upstream of the park, while spring vents in the Halls and Hidden rivers lie to the north and south of the park respectively.

Spring flow from the Homosassa Springs Group emanates from an expansive groundwater discharge area that is fed directly by the Floridan aquifer (Yobbi and Knochenmus 1989a). The Floridan is the principal source of most of the drinking water used in the Homosassa area. The upper boundary of the Floridan aquifer is at or very near the land surface within the park, as evidenced by the scattered karst features and spring vents. A surficial aquifer is not present in the park (Fretwell 1983; Jones et al. 2011).

Because of its proximity to the coast, the Homosassa Springs Group has long been characterized as an “oligohaline” or saltwater influenced system (Sloan 1956). The only exceptions to this are the Southeast Fork springs, which historically have always discharged freshwater with very little influence from high chloride content groundwater (Yobbi 1992; Jones et al. 2011). The Homosassa River is like neighboring spring-fed streams in that they all exhibit very distinct salinity gradients between headwater areas and outfalls into the Gulf (Champion and Starks 2001). Daily tidal cycles as well as saline groundwater influences both play key roles in determining water chemistry changes within the Homosassa River.

The surface water and groundwater contributing area for the Homosassa Springshed comprises about 292 square miles, roughly the southern half of Citrus County and eastern Hernando County (SWFWMD 2016a). Even though the tentative boundaries of this springshed have been mapped, water scientists suggest that this defined area is not the only region contributing groundwater to the system. Groundwater resources in portions of the Suwannee River, St. Johns and Southwest Florida Water Management Districts may also influence the volume of groundwater discharge in the Homosassa River system (Leeper et al. 2012).

Dye trace research is an important tool used in delineating possible groundwater connections between surface waterbodies in karst terrain (Aley 1999; Skiles et al. 1991). No dye trace work has yet been conducted in the Homosassa Springshed even though connections among the various karst features in the region likely exist. Dye trace work, in conjunction with cave mapping, can provide evidence that surface runoff entering the Upper Floridan aquifer within the Homosassa Springshed may travel rapidly through underground conduits, ultimately exiting at spring vents. Dye trace studies in other Florida springsheds have demonstrated travel times as fast as one mile per day (Karst Environmental Sciences 2009; Champion and Upchurch 2003). These studies have revealed that there is a direct link between surface/groundwater connectivity and rapid transport of surface runoff through karst features to exit points at springs (Hisert 1994; Hirth 1995; Butt et al. 2006). They have also provided scientists with a better understanding of how surface contaminants move through the Floridan aquifer (Macesich 1988).

Collectively, springs in the Homosassa Springs Group have an average discharge range of 287 cfs (186 mgd) to 354 cfs (229 mgd) (Jones et al. 2011; Leeper et al. 2012). The cumulative volume of discharge from this spring group affords Homosassa Springs first magnitude spring status, placing it among 32 other first magnitude spring systems in Florida (Rosenau et al. 1977; Spechler and Schiffer 1995; Scott et al. 2004). In 2012, the South West Florida Water Management District (SWFWMD) governing board adopted a Minimum Flow and Level (MFL) guidance rule for the Homosassa head spring and Southeast Fork springs combined (Leaper et al. 2012). Water scientists’ analyses indicated that any groundwater withdrawals causing more than a 3% reduction in historic flows could cause significant harm to this waterbody. Therefore, a minimum five-year moving average of 133 cfs was suggested as the MFL for the Homosassa/Southeast Fork springs to maintain 97% of the historic flows.

A complex of at least nine named springs forms the headwaters of the Homosassa River within Homosassa Springs Wildlife State Park. Included among the nine are the Main Spring Pool (i.e., #1, #2, and #3 spring vents), Blue Hole Spring, Unnamed Spring #1, Unnamed Spring #2, Bear Spring, Banana Spring and Alligator Spring. The Main Spring Pool, which is the largest contributor of spring discharge within the park, contains several vents. These are the only vents at Homosassa where flow rates have been measured individually. Blue Hole Spring and the two unnamed springs are situated along the southern shoreline downstream from the Main Spring Pool. Discharge from these three springs is generally not very strong, especially during drought periods, and they often reverse flow

under normal tidal conditions. Bear, Banana, and Alligator springs are all located in an upstream tributary of the Homosassa (i.e., Bird Island Tributary) that flows south through the park's wildlife exhibits before entering the Main Spring Pool above the Long River Bridge. Immediately downstream and west of the Main Spring Pool is a medium-sized embayment called Mitten Cove. Judging from historic aerial photographs, Mitten Cove appears to have been the site of a previously flowing spring surrounded by hydric hammock.

Even though the nine-spring complex within the park constitutes the primary head spring of the Homosassa River, discharge from this source only provides the second largest input to the river (Leeper et al. 2012). For the period of record (POR) from 1931 to 1974, the average discharge for all springs in the wildlife park was reported to be 106 cfs, with a range of 80 cfs to 165 cfs (Rosenau et al. 1977; Scott et al. 2004). These flow records include all nine known springs in the park. Beginning in 1995, the United States Geological Survey (USGS) and SWFWMD began to collect continuous daily measurements from the three main vents in the Main Spring Pool. For the period of record from 1995 to 2010, the Main Spring Pool's average discharge was reported to be 89 cfs, with a range of 34 cfs to 141 cfs (Leeper et al. 2012).

The Southeast Fork tributary, containing at least 10 named spring vents, merges with the Homosassa River approximately 0.2 miles downstream of the Main Spring Pool. The channelized Pepper Creek empties into the Southeast Fork very close to its confluence with the Homosassa River, immediately upstream from Fishbowl Drive. Several small vents have been observed in the lower reaches of Pepper Creek (Karst Environmental Services 1992). For the period of record from 1931 to 1974, the Southeast Fork springs had an average discharge of 69.1 cfs (Jones et al. 2011). Continuous daily measurements have been collected from Southeast Fork by the USGS and SWFWMD since 2000. For the period of record from 2000 to 2010, the Southeast Fork springs' average discharge was reported to be 61 cfs, with a range of 23 cfs to 100 cfs (Leeper et al. 2012).

The Main Spring Pool is composed of multiple spring vents that emerge from a steep-sided, rectangular-shaped open basin measuring about 90 feet by 50 feet and having a maximum depth of about 35 feet (Karst Environmental Services 1992). Large limestone rock ledges overhang the pool, extending outward from the basin walls along the west and southwest sides. In the northern half of the pool there is an extremely large piece of collapsed limestone resting on the bottom amongst many smaller boulders. The contour of the basin bottom is highly irregular, with numerous collapsed boulders scattered throughout the entire area. Groundwater flow can be detected at numerous vents around the bases of these boulders as well as from the opening to the large main conduit located on the southwest side of the pool. Partly submerged below the surface of the Main Spring Pool is a floating underwater viewing platform that was originally constructed in 1964.

In the early 1990s, professional cave scientists explored and mapped Homosassa's Main Spring Pool, and sampled water chemistry as well (Karst Environmental Services 1992). These researchers provided park management with some of the first maps, groundwater quality characteristics, sediment analyses, spring discharge rate analyses, and detailed descriptions of the basin, conduits and caves at Homosassa Springs Wildlife State Park. The researchers discovered that the diver-accessible portion of the Main Spring Pool cavern extends downward to 70 feet below msl, at which point the passages become too narrow or unsafe to traverse. At the 70-foot depth, a large open cave room called the "Lower Chamber" extends north and south beneath the Main Spring Pool basin. Divers have documented that discharges from the numerous spring vents located beneath the collapsed boulders on the floor of the basin, as well as from the main spring conduit, are ultimately connected to three primary groundwater sources at vents within the Lower Chamber (Karst Environmental

Services 1992).

Within the Lower Chamber, each of the three main groundwater sources has a distinct water chemistry that is uniquely characterized by a specific concentration range of chlorides (i.e., salinity) and total dissolved solids (Karst Environmental Services 1992; Jones et al. 2011). The freshest groundwater source comes from a "honeycomb-like maze" of conduits in the northern end of the Lower Chamber, some exceeding 70 feet in depth, but all of them too difficult for divers to traverse safely. Chloride concentrations measured at this source have ranged from 324 and 590 milligrams per liter (mg/L). The highest concentration of chlorides comes from a second groundwater source located in the central area of the Lower Chamber, where the discharge from numerous small vents contains chloride concentrations ranging from 1250 to 2000 mg/L. A third groundwater source is found in the southernmost section of the Lower Chamber, where there is a very narrow conduit called the "Body Tube". Groundwater flows through the Body Tube contain intermediate chloride concentrations that have ranged from 860 to 1525 mg/L. The total dissolved solids at each groundwater source mimics this same progressive phenomenon.

One notable peculiarity of the Homosassa aquatic cave system is the apparent instability of underwater karst formations (Karst Environmental Services 1992). The entire cave system is considered a collapse-cavern feature, perhaps one that is undergoing significant changes because of a rapid dissolution of limestone. Similar chemical eroding processes occur in many estavelle springs along the Suwannee River (Gulley et al. 2011). High salinity estuarine coastal waters that move through preferential flow pathways and enter the Upper Floridan aquifer within the Homosassa Springshed might explain these higher rates of cavern dissolution (Tihansky 2004). In the mid-1950s, for example, scientists observed fine, flocculant, reddish iron precipitate within the Homosassa head spring (Odum 1957). Since the head spring is not always covered with this type of flocculant, it is assumed that there may have been a collapse event during the research period. The only other similar event recorded at the head spring occurred on March 2, 2011 when the entire head spring was observed to be milky orange/red with many areas covered by thick flocculent material (DRP District 2 files). This turbidity event lasted for about 3-4 days before normal clarity returned to the head spring. Although there was no direct confirmation of the origin of the red flocculent, the consensus was that there was a conduit collapse within the aquatic cave system.

Two additional spring-fed tributaries of the Homosassa River are the Halls and Hidden rivers. The confluence of the 3.2-mile long Halls River with the Homosassa is about one mile downstream from the park.

As mentioned previously, minimal surface drainage occurs in the Springs Coast region, including at Homosassa. The major influences on surface water movement are Gulf of Mexico tides and groundwater flow from the Floridan aquifer (Fretwell 1983; Yobbi 1989; Yobbi and Knochenmus 1989b). Aquifer recharge is derived almost entirely from rainfall that occurs within the springshed. Groundwater flow is generally from east to west and aquifer discharge to the surface occurs at springs, submarine vents, and lesser known fractures and seeps (Raabe and Bialkowska-Jelinska 2007). The continuous discharge of groundwater into Springs Coast estuaries plays an essential role in maintaining the health and productivity of the coastal ecosystems (Raabe and Bialkowska-Jelinska 2010).

Average annual rainfall for the Springs Coast region approaches 56 inches per year (Jones et al. 2011; Fernald and Purdum 1998). For the most part, surface water runoff in the park passes through the hydric hammock community, eventually entering the Homosassa River and its estuarine system. The park's hydric hammock plays a significant role in hydrologic processes within the landscape (Wharton et al. 1977; Vince et al. 1989). During periods of heavy rainfall, hydric hammocks tend to flood and surface waters travel slowly through the community as sheet

flow. By temporarily storing surface water, hydric hammocks improve water quality and attenuate freshwater pulses into the Homosassa estuarine system (Vince et al. 1989; Wolfe 1990).

Water Issues

Complex interactions between surface waters and groundwater play a significant role in steering ecological processes in coastal ecosystems, including those in the Springs Coast region (Raabe and Bialkowska-Jelinska 2007). Within the interface between the park's natural areas and downstream estuarine communities, major issues of concern include watershed alteration, groundwater withdrawal, saltwater intrusion, and nutrient enrichment.

Watershed alteration: Several prominent landscape alterations, most notably at Pepper Creek and Parsonage Point, have caused unnecessary disruption of natural sheet flow regimes in the park's hydric hammock community.

The Pepper Creek waterway is an approximately 3-mile long, artificially constructed complex of drainage ditches that originate outside the park in urban parts of the town of Homosassa Springs. Pepper Creek proper is composed of three main sections, including a northern canal that enters the park beneath Halls River Road, an eastern canal that enters the park beneath U.S. Highway 19/98 near the park's main entrance, and a sinuous portion that lies entirely within the park boundary. Ultimately the Pepper Creek drainage system empties directly into the Southeast Fork tributary of the Homosassa River.

Aerial photography clearly illustrates that the northern and eastern ditches were constructed prior to the 1950s, whereas the winding canal section in the park was designed specifically for the Homosassa Wildlife attraction in the 1960s, well before the state of Florida acquired the property. Dredge spoil piles line the Pepper Creek waterway, forming earthen berms that contribute to the disruption of sheet flow in the adjacent hydric hammock. Additionally, the canals can artificially drain the hammock community and create drier soil conditions than would naturally occur. Prior to the dredging of this channel, much of the original hydric hammock through which Pepper Creek now passes was undoubtedly inundated with freshwater for longer periods.

Because much of the developed area around Homosassa Springs, including U.S. Highway 19/98, connects directly to the Pepper Creek drainage system, hydrologists consider the ditch to be a major point source of storm water pollution for the Homosassa River. Base flow of Pepper Creek is typically less than 5 cfs, but volume estimates of runoff passing through the ditch during large storm events total as high as 250 cfs (Citrus County 1989).

Pepper Creek not only serves as a drainageway for much of the Homosassa Springs area, but also as a waterway to transport visitors from facilities on U.S. Highway 19/98 to the wildlife exhibits area of the park. There are approximately 200,000 visitors that annually use the tour boat. A weir system located in the park maintains sufficient depth for the boats to operate. This weir system underwent maintenance activities in 2014.

Algae and other nuisance aquatic plants often proliferate within Pepper Creek and may contribute to water quality problems further downstream. On a seasonal cycle, the aquatic plants bloom, die and decay, adding sediments to the waterway. Control of aquatic plants has been a continual maintenance issue .

A small spring beneath the boat dock at the visitor center on U.S. Highway 19/98 contributes to the flow of Pepper Creek. Given that this area of Pepper Creek was artificially constructed, it is unknown if this spring might be a result of the breaching of a shallow conduit during dredging operations. Several small seeps and boils also exist where Pepper Creek empties into the Homosassa River near the southwestern boundary of the park. Again, it is unknown if these seeps/springs are naturally occurring.

Parsonage Point Road, located near the west boundary of the park, has been a target area for wetland restoration since 1998. A plan for the Parsonage Point restoration has already been developed (DRP District 2 files). A park residence is situated at the north end of the road and a river dock on the south. A single road that extended west toward the park boundary and another old road that ran parallel to the service road were both restored in 2009 (DRP District 2 files). The 2009 restoration project included the removal of 0.32 acres of road to grade, re-vegetation of native species in the hydric hammock, and removal of materials from an old Florida Department of Transportation (FDOT) dump site which contained a substantial amount of concrete/steel debris and fill prior to state acquisition of the parcel. Additional information about the restoration of Parsonage Point will be provided below in the Management section of this plan.

Groundwater withdrawal: Many water managers have long been concerned about the unsustainable depletion of groundwater resources in the Floridan aquifer (Bush and Johnston 1988; Grubbs and Crandall 2007; Copeland et al. 2011). Concerns were heightened during the recent drought periods of 1998-2002 and 2010-2012, as water scientists documented significant declines in spring discharge at nearly all of Florida's first magnitude springs, including those along the Springs Coast (Copeland et al. 2011; Pittman 2012). One recent statewide analysis concluded that the drought of 1999-2001 had precipitated significant negative health trends in all the spring systems in the state, including Homosassa, because of lowered groundwater levels, significant saline encroachment, and simultaneous increases in groundwater use during one of the worst droughts on record in Florida (Verdi et al. 2006).

Whether the evidence indicates that fluctuations in groundwater supply are natural (i.e., due to Atlantic multi-decadal oscillation) or anthropogenic (i.e., due to water supply withdrawals) is still being debated (Kelly 2004; Williams et al. 2011). Nonetheless, coastal springs have experienced significant increases in lateral saline encroachment compared to inland systems because of their proximity to the freshwater/saline water interface (Marella and Berndt 2005; Hydrogeologic Inc. 2011).

Saltwater intrusion: Saltwater encroachment along Florida's coasts has long been recognized as a threat to groundwater quality (Fairchild and Bentley 1977; Fretwell 1983). Throughout the Springs Coast region, a natural saltwater wedge that diminishes in thickness landward extends inland from the Gulf, intruding into the Floridan aquifer. The depth of the saline wedge ranges from zero at the coast to around 250 feet inland (Fernald and Purdum 1998; Guvanasen et al. 2011). Boundaries of the zone of transition from saltwater (19,000 mg/L chloride) to freshwater (25 mg/L chloride) can fluctuate in response to changes in aquifer recharge and discharge (Fretwell 1983). Data clearly illustrates that saltwater intrusion into the Floridan aquifer contributes to the brackish nature of spring vents within Homosassa Springs Wildlife State Park, and that this phenomenon can alter the water chemistry of freshwater spring vents over time.

It has been demonstrated that during periods of low groundwater levels, seawater can move inland through existing dissolution channels and mix directly with waters of the Floridan aquifer (Tihansky 2004; Shaban et al. 2005). Not only are there conduits in the aquifer that can carry seawater inland, but there are also large interconnected fractures and faults in the limestone bedrock underlying the Floridan aquifer. These faults, which trend either northeast or northwest, are referred to as "preferential flow pathways" (Lines et al. 2012). Flow pathways can extend adverse water quality or quantity impacts over a much larger region than just at a local point source. For example, saltwater intrusion in Pinellas County expanded significantly through preferential flow paths when groundwater levels were artificially lowered during localized extractions from water supply fields that were placed too close to the coastline (Tihansky 2004).

A recent statewide analysis of water quantity and quality variables compared groundwater and spring water parameters from 1991 to 2003 (Copeland et al. 2011). Analysis of data from that period indicated that the Floridan aquifer's freshwater "lens" had decreased significantly in volume and that significant saltwater encroachment had occurred throughout most of the state.

Nutrient enrichment: Over the past 40 years, the Springs Coast region has experienced rapid development and population growth which has led to increased groundwater consumption, saltwater encroachment, and nutrient enrichment, especially within recognized springsheds. Water scientists now believe that these cumulative factors are responsible for the deterioration of estuarine and freshwater resources in this region (Copeland et al. 2011; Yarbro and Carlson 2013; Knight and Clark 2016).

One example of the declining health of coastal spring ecosystems is that, as late as the 1970s, spring-run streams within the Homosassa and Crystal River Springs Groups supported dense and biologically diverse assemblages of submerged aquatic vegetation (SAV) (Sloan 1956; Odum 1957; Frazer et al. 2006, Jacoby et al. 2014). However, long-term monitoring of freshwater springs in this region has indicated that SAV abundance and diversity have declined precipitously over the last few decades (Frazer et al. 2006).

In the 1950s, the Homosassa Springs complex was characterized as an oligohaline freshwater system containing both native macroalgae and SAV components (Whitford 1956; Sloan 1956). It is noteworthy that in the mid-1900s a diverse assemblage of "attached" and "unattached" algae comprised over 50% of the aquatic plant growth at many of Florida's springs, including Homosassa (Whitford 1956). If the Homosassa Springs ecosystem of today had retained its healthy condition, it would still contain a biologically diverse assemblage of algae and microscopic diatoms, as well as a diversity of submerged aquatic plants.

Historical narratives and photographic records of Homosassa Spring illustrate that a high diversity (at least 8 species) of SAV once covered significant areas of the spring bottom (Sloan 1956; Whitford 1956; Frazer et al. 2006; Wetland Solutions Incorporated 2010). In their research at Homosassa in the mid-1950s, ecologist Howard T. Odum and his colleagues recorded that 30% of the head spring bottom was covered by three dominant species of SAV. In order of abundance, these species were American eelgrass (*Vallisneria americana*), sago pondweed (*Stuckenia pectinata*) and southern waternymph (*Najas guadalupensis*). In contrast, the dominant aquatic plant upstream of the head spring within the Bird Island tributary was water-lettuce (*Pistia stratiotes*), a non-native floating plant (Wetland Solutions Incorporated 2010).

Ecological studies at Homosassa from the late 1980s through the present day indicate that it is highly likely at least four additional SAV species once occurred within the head spring in varying abundance, including coontail (*Ceratophyllum demersum*), small pondweed (*Potamogeton pucillus*), a native macroalga called muskgrass (*Chara* sp.), and the non-native hydrilla (*Hydrilla verticillata*) (Frazer et al. 2006). The Homosassa River in the late 1960s was reported to be infested with the non-native Eurasian watermilfoil (*Myriophyllum spicatum*) (Blackburn and Weldon 1967). In 2005, Eurasian watermilfoil remained the most dominant macrophyte in the Homosassa River, but in dramatically lower abundance. The highest overall vegetative biomass was contributed by the nuisance macroalga, *Lyngbya wollei* (Frazer et al. 2006). Since 2005, the only SAV found within the Homosassa head spring has essentially been various species of nuisance macroalgae.

In 1996, the FDEP initiated a formal, statewide monitoring program for surface waters and groundwater, including waters within the Homosassa (Maddox et al. 1992; FDEP 2005). These efforts were expanded in 2000. This program, called the Integrated Water Resource Monitoring Program (IWRMP), follows a comprehensive watershed approach based on natural hydrologic units.

The 52 hydrologic basins in Florida are on a five-year rotating schedule that allows water resource issues to be addressed at different geographic scales (Livingston 2003). In addition, the IWRMP has assigned a waterbody identification number (WBID) to each waterbody. This watershed approach provides a framework for implementing Total Maximum Daily Load (TMDL) requirements to restore and protect waterbodies that are declared impaired (Clark and DeBusk 2008).

The FDEP has completed two major water quality assessments for waterbodies in the Springs Coast region, including one at Homosassa Springs (FDEP 2006; FDEP 2008). Homosassa Spring (i.e., WBID 1345G) was declared impaired for nutrients, specifically excess nitrates, and a TMDL was assigned (Bridger et al. 2014). As of 2017, a Basin Management Action Plan was being developed, but a draft document was not yet available.

There is a vast amount of historic water quality data available for Homosassa Springs (Rosenau et al. 1977; Scott et al. 2004; Wetland Solutions Incorporated 2010; USGS 2016). Many water management agencies collect, store, and manage hydrological information that is accessible to all through a variety of web-based databases (SWFWMD 2016b; USGS 2016; FDEP 2016b; FDEP 2016c). Additionally, there are a substantial number of water quality and quantity parameters now available as live, satellite tracked data that are updated daily on a springs dashboard website (SWFWMD 2016a).

Water quality has been measured at the Homosassa Main Spring since 1946, first by the USGS and more recently by the SWFWMD (SWFWMD 2016b). In 1992, Karst Environmental Services installed dedicated sampling tubing in the three Main Spring Pool source areas. The SWFWMD currently collects water quality data from them on a quarterly basis (Karst Environmental Services 1992; SWFWMD, 2016b).

Historically, groundwater discharged at the Homosassa main springs had nitrate concentrations at the background level of 0.05 mg/L (Cohen et al. 2007). However, when the USGS measured nitrate values in 1946, the concentration had increased to 0.2 mg/L; by 1988, the level had increased to 0.34 mg/L (USGS 2016). As of 2016, nitrates in the Main Spring Pool have risen to a maximum level of 0.69 mg/L (Harrington et al. 2010; SWFWMD 2016b; USGS 2016). Similar significant increases in nitrate levels have been observed in spring discharges in other parts of the state, particularly further north in the Suwannee River Basin.

Unfortunately, elevated groundwater nutrients (i.e., nitrates and phosphorus) have contributed to significant declines in the ecological health of spring systems across Florida, including Homosassa (Jones et al. 2011; Munch et al. 2006; Albertin 2007; Wetland Solutions Inc. 2010). Studies suggest that the visible presence of nuisance algal biomass in a spring ecosystem is an indicator of an imbalanced distribution of aquatic flora (i.e., Rule 62-302.500 (48) (b) F.A.C.). The United States Environmental Protection Agency (EPA) states that waterbodies with periphyton levels exceeding 150 mg/m^2 may be biologically impaired and may experience a decline in ecosystem health. It is now widely recognized that increased levels of nuisance algae, along with nutrient enrichment, are symptoms of the declining ecological health of springs in Florida (Kolasa and Pickett 1992; Hornsby et al. 2000; Stevenson et al. 2007; Brown et al. 2008).

In 2013, Homosassa was declared a priority waterbody within SWFWMD's Surface Water Improvement and Management (SWIM) program (SWFWMD 2016c). The SWIM planning for Homosassa began in 2016. Because of observed reductions in water clarity, decreases in SAV cover, and the spread of nuisance aquatic vegetation/algae, water managers will establish water quality improvement projects throughout the Homosassa Springshed with the goal of restoring historic surface and groundwater conditions within the now impaired OFW (Jones et al. 2011; Jacoby et al. 2014).

The majority of the wildlife exhibits at Homosassa Springs are located around the periphery of Bird Island tributary, which includes Banana and Alligator springs where crocodilians, otters, a hippopotamus named Lucifer, and other water loving species are on display. Bear Spring and several other small spring vents in the Wildlife Walk area (Bird Park) are where captive and wild wading birds congregate. Flows from all the Bird Island tributary springs merge to form an unnamed stream that empties into the northeast part of the Homosassa Main Spring Pool. A weir at the mouth of the Bird Island tributary controls water levels in the system upstream. Waste products from both captive and free-ranging wildlife can cause nutrient and fecal coliform levels in the tributary to become elevated.

Once the state acquired the wildlife park in 1988 and the DRP assumed management in 1989, it became a high priority to improve water quality in the wildlife exhibits area by reducing or eliminating animal waste inputs into the Bird Island tributary. Historically, large amounts of organic matter, fecal waste and soil sediments had accumulated in the outfall area of the Bird Island tributary on the downstream side of the hippopotamus enclosure. Because Homosassa Springs Wildlife State Park maintains a captive group of Florida manatees year-round, federal regulations apply here. Since 1996, the United States Department of Agriculture and the USFWS have required the DRP to conduct weekly water quality testing for fecal coliform bacteria at the main spring and the Long River Bridge.

By 1999, the DRP had already connected nearly all the animal exhibits, including the hippopotamus's, to an upgraded centralized wastewater treatment facility. Several years later the entire park became connected to the Citrus County sewage system (Citrus County 1989). These changes have dramatically decreased the amount of wildlife waste deposited into the lower Bird Island tributary, and ultimately the Homosassa head spring, by nearly 50-80%, although complete containment of the hippopotamus wastes has not been achieved. The hippopotamus has been living in its enclosure for nearly 50 years, and in 2017 it will be 57 years old. Hippos generally have a life expectancy ranging from 50 to 55 years. When Lucifer the hippo dies, the park will probably convert the enclosure to a Florida native wildlife exhibit.

Some observers still consider the park's captive animals to be a major source of the relatively higher levels of fecal coliform found in the Homosassa River downstream from the park (Griffin et al. 2000). The DRP has attempted to resolve this issue by funding two independent multi-year studies within the park specifically designed to answer questions regarding overall water quality in the Bird Island tributary in comparison with the Homosassa River outside the park (Griffin et al. 2000; FDEP 2015).

In one study, water scientists monitored and analyzed various water quality parameters, including fecal coliform bacteria, both inside and outside the park. These researchers confirmed that fecal coliform bacteria were present in the Bird Island tributary and that humans were not the source (Griffin et al. 2000). The study also indicated that bacterial levels in all waters exiting the park via the Homosassa River were at nearly the same levels as waters sampled in the Southeast Fork tributary that joins the Homosassa River just below the park (Griffin et al. 2000). Based on these observations, the researchers concluded that the contribution of the park's wildlife facilities to bacterial levels in the Homosassa River was relatively minor and was comparable to that produced by other sources within the Homosassa watershed.

In 2015, the FDEP similarly investigated potential water quality impacts of the Bird Island tributary on the Homosassa River. In this research, scientists set out to determine the influence of the Bird Island tributary on water quality in the Main Spring (FDEP 2015). Researchers discovered that, for most water quality parameters, the concentrations measured downstream from the Bird Island tributary outfall into the Main Spring Pool were nearly identical to those measured upstream of the outfall. It is important to note that since the Bird Island tributary has a

total discharge volume of less than 2% of the Homosassa River headwaters area, the tributary's contribution of nitrate and orthophosphate to the head spring was only 0.34% and 3.5% respectively. The total mean nitrate and orthophosphate loading measured in the park headwaters during the study was 287.80 and 9.51 pounds per day respectively. An exception to the above was the mean ammonium concentration in the Bird Island tributary as compared to both the Main Spring Pool and the river downstream from the Long River Bridge. Water in the Bird Island tributary had an ammonium concentration nearly five times greater than that in the Main Spring Pool, but given the relatively low discharge rate from this upstream tributary, the ammonium input quickly became diluted.

Between 1989-1999, the DRP completed nearly 20 major restoration projects within the head spring area designed to significantly reduce hydrological impacts of the wildlife exhibit area (DRP District 2 files). An abbreviated list of these projects includes the phasing out of non-native wildlife from exhibits and replacement with native Florida species, construction of several new wastewater treatment facilities, implementation of several water quality studies, removal of unnatural sediment buildup from the upper springs (i.e., Bird Island tributary), removal of some water control structures, initiation of a phased project to improve runoff infiltration in the Bird Park, construction of elevated walkways, and construction of drainage retention swales.

Since 2000, the DRP has implemented at least 15 additional projects with similar goals, including additional phases of surface water drainage improvements, soil stabilizing native plantings, shoreline restoration, connection of the entire park to the Citrus County wastewater treatment system, additional waste water lift station upgrades, and removal of sediments from the main spring and Mitten Cove. After completion of these projects, the only water control structure that will remain in place within the Bird Island tributary is downstream of the hippo exhibit at the terminus of the upper tributary.

Projects implemented to remove impervious walkways and replace them with elevated boardwalks were designed to help eliminate erosion, restore natural drainage, and create better stormwater infiltration within the adjacent hydric hammock community. The elevated walkway projects have proven to be extremely beneficial to water quality in the head spring and have been systematically implemented since the late 1990s (Ellis et al. 1998b).

Hydrological Management Program

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

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

Objective A: Conduct/obtain an assessment of the park's hydrological restoration needs.

Action 1	Continue to cooperate with other agencies and independent researchers in hydrological research and monitoring programs.
Action 2	Continue to monitor and track surface and groundwater quality issues within the region.

Action 3 Continue to monitor land use or zoning changes in the region and offer comments as appropriate.

Action 4 Seek funding for dye trace studies within the springshed to determine groundwater sources for karst features within the park.

Action 5 Conduct dye trace studies within the springshed to determine groundwater sources for karst features within the park.

Action 6 Continue to cooperate with the SWFWMD to establish meaningful MFLs that will ensure maintenance of historic flows.

Action 7 Assess and evaluate hydrological impacts in the park where natural sheetflow has been disrupted; initiate corrective actions as appropriate.

Action 8 Develop a hydrological restoration plan for the park and prioritize restoration projects.

Significant hydrological features at Homosassa include a major spring complex and remnant hydric hammock. Preserving surface water and groundwater quality and controlling erosion and sedimentation into creek systems and karst features will remain top priorities for the DRP. The following are hydrological assessment actions recommended for the park.

The DRP will continue its tradition of close cooperation with state and federal agencies and independent researchers engaged in hydrological research and monitoring programs within the park, and it will encourage and facilitate additional research in those areas. Agencies such as the SWFWMD, USGS, and FDEP will be relied upon to keep the DRP apprised of any declines in surface water quality or any suspected contamination of groundwater in the region. District 2 staff will continue to monitor Environmental Resource Permit (ERP) and Water Use Permit (WUP) requests for the region to provide timely and constructive comments that promote protection of the park's water resources. Additional cooperative efforts may include facilitating the review and approval of research permits and providing researchers with assistance in the field. Recommendations derived from the monitoring and research activities will be essential to the decision-making process during management planning.

The proximal sources of flow from the Floridan aquifer to spring features in the park are still unknown. To remedy that, the DRP should continue to encourage hydrological studies that are designed to understand underground conduit connections within the Homosassa Springshed (as discussed in the Hydrology section above). Previous dye trace studies in other managed springsheds in Florida have provided park managers with invaluable information about the various sources of springs and the timing of surface to groundwater interactions that potentially affect important surface water bodies. For water managers to be able to protect water quality and potentially restore spring flows to their historic levels, they will need to know these springshed connections.

Staff will continue to monitor land use or zoning changes within lands bordering the park. Major ground disturbances on neighboring properties or inadequate treatment of runoff into local streams could ultimately cause significant degradation of resources in the park. When appropriate, District 2 staff will provide comments to other agencies regarding proposed changes in land use or zoning that may affect the park.

The DRP will continue to work closely with the SWFWMD to ensure that MFLs developed for the Homosassa Springs Group are implemented conscientiously and that historic groundwater flows are protected.

DRP staff will initiate hydrological assessments of natural systems in the park wherever wetland communities have been artificially impounded or ditched and where ecological functions have been disrupted, especially within the hydric hammock on the eastern side of the park and including Pepper Creek. If it is determined that the natural hydrological regime has been significantly altered, then the DRP, using best

management practices, may initiate corrective actions such as installing culverts in appropriate locations or restoring spoil areas back to the historic grade of the adjacent natural landscape.

Objective B: Restore natural hydrological conditions and functions to approximately 4.35 acres of spring-run stream natural community.

Action 1 Conduct an assessment and evaluate the feasibility of conducting experimental SAV plantings in the spring and spring-run stream.

Action 2 Conduct an assessment and evaluate the feasibility of conducting experimental plantings to remove nutrients from Bird Island tributary.

Research has already indicated that the Homosassa spring-run stream has experienced major anthropogenic impacts because of increased nutrients, reductions in groundwater flow, saltwater encroachment and a collapse of the SAV population. It is unknown if these changes will be permanent in nature, but they have been occurring since the 1960s.

DRP staff will continue to coordinate with and assist FDEP, SRWMD and independent researchers in monitoring water quality and quantity in the spring system and in numerous park monitoring wells as well as at other open water karst features within the park. DRP staff will seek to increase the frequency of monitoring if changes in water quality or abnormal fluctuations in discharge are noted.

Restoration of Homosassa Springs is critically important for maintaining the site as a warm water refugium for the federally endangered West Indian manatee. In that respect, DRP staff over the next ten years will examine the feasibility of conducting experimental plantings of key species of SAV within Homosassa Springs and its spring-run stream to reestablish plant species native to this system.

The DRP will continue its long-standing commitment to restoring historic water quality conditions in the Bird Island tributary. Projects that are proposed to eliminate higher nutrient loads in this upper tributary spring system will be assessed for feasibility and implemented accordingly.

Objective C: Evaluate and mitigate the impacts of soil erosion in the park.

Action 1 Investigate best management options for erosion mitigation in public access areas.

Action 2 Monitor areas prone to erosion.

Action 3 Implement corrective measures to reduce impacts of soil erosion on water resources.

Some areas in the wildlife facilities portion of the park continue to have erosion issues periodically despite past corrective measures. The following are erosion control actions recommended for the park.
Additional stormwater treatment projects within the park may be needed to minimize erosion during strong storm events by diverting stormwater into surrounding hydric hammock to encourage natural infiltration.

Natural Communities

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

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors such as climate, geology, soil, hydrology and

HS-2B
51.80 ac.

HS-1C
30.66 ac.

HS-1B
39.90 ac.

HS-1A
10.84 ac.

HS-3
11.35 ac.

HS-2C
3.60 ac.

HS-1D
25.80 ac.

HS-4B
1.81 ac.

HS-4A
1.26 ac.

HS-4C
4.03 ac.

HS-4D
2.90 ac.

HS-5
13.21 ac.

HS-2A
3.69 ac.

Legend

- Contain Cultural Resouces
- Managed with Prescribed Fire
- Park Boundary

ELLIE SCHILLER HOMOSASSA SPRINGS WILDLIFE STATE PARK

N

0 0.02 0.04 0.08 Miles

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

MANAGEMENT ZONES MAP

fire frequency generally determine the species composition of an area, and that areas that are similar with respect to those factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, however, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs. Some physical influences, such as fire frequency, may vary from FNAI's descriptions for certain natural communities in this plan.

When a natural community within a park reaches the desired future condition, it is considered to be in a "maintenance condition." Required actions for sustaining a community's maintenance condition may include; maintaining optimal fire return intervals for fire dependant communities, ongoing control of non-native plant and animal species, maintaining natural hydrological functions (including historic water flows and water quality), preserving a community's biodiversity and vegetative structure, protecting viable populations of plant and animal species (including those that are imperiled or endemic), and preserving intact ecotones that link natural communities across the landscape.

The park contains 7 distinct natural communities as well as altered landcover types (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Addendum 5.

Table 1. Natural Communities and Altered Landcovers Existing Conditions

Natural Communities	**Acreage***	**Percentage**
Mesic Flatwoods	11.03	
Mesic Hammock	8.44	
Depression Marsh	2.82	
Dome Swamp	2.61	
Hydric Hammock	133.82	
Spring-Run Stream	4.35	
Altered Landcovers	**Acreage***	**Percentage**
Spoil Area	7.74	
Canal/Ditch	10.22	
Developed	19.81	
Total Acreage	**200.84**	**100%**

MESIC FLATWOODS

<u>*Desired future condition:*</u> In the typical mesic flatwoods of west central Florida, the dominant pine will usually be longleaf pine (*Pinus palustris*) with occasional stands of south Florida slash (*Pinus elliottii* var. *densa)* in coastal situations adjacent to tidal marsh. Native herbaceous groundcover will cover at least 50% of the area at a height of less than three feet. Saw palmetto (*Serenoa repens*) will comprise less than 50% of the total shrub cover, also at a height of less than 3 feet. Other common shrub species may include gallberry (*Ilex glabra*), winged sumac (*Rhus copallinum*), fetterbush (*Lyonia lucida*), wax myrtle (*Myrica cerifera*), yaupon holly (*Ilex vomitoria*), running oak (*Quercus pumila*), pawpaw (*Asimina* spp.), dwarf live oak (*Quercus minima*), shiny blueberry (*Vaccinium myrsinites*), coontie (*Zamia pumila*), bracken fern (*Pteridium aquilinum*) and dwarf huckleberry (*Gaylussacia dumosa*). These shrubs will generally be knee-high or less in height. Few if any large trunks of saw palmetto will run prostrate along the ground. Herbaceous species diversity will be high, vary with site moisture, and may include peas (*Galactia* spp.), goldenrods (*Solidago* spp.), queensdelight (*Stillingia sylvatica),* blackroot (*Pterocaulon virgatum*), foxtail grass (*Setaria parviflora*), wiregrass (*Aristida stricta),*

silkgrass *(Pityopsis graminifolia)* and multiple species from the *Liatris* and *Carphephorus* genera. The optimal fire return interval for this community is one to three years.

Description and assessment: 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. 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. 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. Nearly all the mesic flatwoods in the park were prescribe burned in 2015 and 2016. 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. Skunk vine (*Paederia foetida*) and other invasive plants also occur in the mesic flatwoods, and feral hogs are also having some impacts through rooting. The current condition of the mesic flatwoods in the park is fair to good.

General Management Measures: Continued prescribed burning should release many of the suppressed or dormant herbaceous species that remain on site. The old drainage ditches and associated spoil piles should be assessed to determine if they are impacting the local hydrology of the mesic flatwoods. Removal of spoil areas may cause more damage than good, and the drainage ditches appear to be already blocked in several areas. Invasive plants will be controlled through prescribed fire and chemical methods. Control of feral hogs should be implemented as necessary.

MESIC HAMMOCK

Desired future condition: Mesic hammock is a well-developed evergreen hardwood and/or palm forest that can occur, with variation, through much of peninsular Florida. Live oak (*Quercus virginiana*) will typically dominate the canopy, which is often dense. Cabbage palm (*Sabal palmetto*) may be intermixed in the canopy and in the understory as well. In north-central Florida, southern magnolia (*Magnolia grandiflora*) and pignut hickory (*Carya glabra*) will often be components in both the canopy and subcanopy, with laurel oak (*Quercus laurifolia*) and water oak (*Quercus nigra*) occurring as well. The shrubby understory may be dense or open, tall or short, and will typically be composed of saw palmetto (*Serenoa repens*), beautyberry (*Callicarpa americana*), yaupon holly (*Ilex vomitoria*), highbush blueberry (*Vaccinium corymbosum*), and sparkleberry (*Vaccinium arboreum*). The groundcover may be sparse and patchy, but it will generally contain panic grasses (*Panicum* spp.), wiregrass, switchgrass (*Panicum virgatum*), and sedges, as well as various forbs and ferns such as bracken fern (*Pteridium aquilinum*). Vines and epiphytes will be abundant on live oaks and on the cabbage palms and other subcanopy trees. Mesic hammocks will generally have sandy soils with some organic materials mixed in, and there may be a thick layer of leaf litter at the surface. Mesic hammocks are rarely inundated and are not considered fire-adapted communities; typically, they are shielded from fire.

Description and assessment: Mesic hammock occurs 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. Some of the mesic hammock 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 mesic hammock. Patches too small to differentiate readily are included within the hydric hammock designation. The current condition of the mesic hammock is fair to good.

General Management Measures: Little active management of mesic hammock is required beyond control of feral hog populations and periodic surveys for invasive exotic plants.

DEPRESSION MARSH

Desired future condition: Depression marshes in coastal north Florida characteristically will be smaller, open vista wetlands dominated by low, emergent herbaceous and shrub species. Trees will be few, and if present, will occur primarily in the deeper portions of the community. There will be little accumulation of dead grassy fuels due to frequent burning. The soil surface will often be visible through the vegetation when the community is not inundated. Dominant vegetation will typically include sawgrass, panicgrasses (*Panicum* spp.), maidencane (*Panicum hemitomon*), cutgrass (*Leersia* sp.), sand cordgrass (*Spartina bakeri*), pickerelweed (*Pontederia cordata*), arrowheads (*Sagittaria* spp.), common buttonbush (*Cephalanthus occidentalis*), St. John's-wort (*Hypericum tetrapetalum*), and coastalplain willow (*Salix caroliniana*). The optimal fire return interval for this community is two to four years depending on the fire frequency of adjacent communities.

Description and assessment: Three areas classified as depression marsh occur in the southeast portion of the park. All 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 hydrologically with the dome swamp. The current condition of the depression marshes is poor.

General Management Measures: Where appropriate, the park should burn depression marshes at the same time as adjacent fire-type natural communities. Maintenance of a natural ecotone is important, as is keeping the marshes free of invasive exotic species. Removal of well-established slash pines and other hardwoods that have resisted fire may require additional measures such as felling or herbicide control.

DOME SWAMP

Desired future condition: Dome swamp is an isolated, forested depression wetland occurring within a fire-maintained matrix such as mesic flatwoods. The characteristic dome appearance is attributable to the growth of smaller trees on the outer edge (shallower water and less peat) and larger trees in the interior. Pond cypress will typically dominate, but swamp tupelo (*Nyssa sylvatica* var. *biflora*) may also form a pure stand or occur as a co-dominant. Sub-canopy species in north Florida will generally include red maple (*Acer rubrum*), dahoon holly (*Ilex cassine*), swamp bay (*Persea palustris*), sweetbay (*Magnolia viginiana*), and loblolly bay. Shrubs will be absent to moderately common (a function of fire frequency), and may include Virginia willow (*Itea virginica*), fetterbush, buttonbush, wax myrtle, and titi. Herbaceous cover will be absent to dense and include ferns, maidencane (*Panicum hemitomon*), sawgrass (*Cladium jamaicense*), sedges (*Carex* spp.), lizards tail, and sphagnum moss (*Sphagnum* spp.). Vines and epiphytes will be common. Maintaining the appropriate hydrology and fire frequency will be critical for preserving the structure and species composition of the community. Dome swamps should generally burn on the same frequency as adjacent fire-type communities, with fires being allowed to burn across ecotones naturally. Fires in dome swamps should be appropriately planned for intervals of two to ten years to avoid buildup of high fuel loads.

Description and assessment: A dome swamp is located in the southeast corner of the property. This dome is dominated by younger hardwoods, although some young pond cypress trees are also present. A band of herbaceous vegetation occurs around the edges of the dome. 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 connects hydrologically

with the depression marsh areas immediately to the north, however surface alterations and past fire suppression have affected the drainage patterns. The current condition of the dome swamp is poor.

General Management Measures: Dome swamp should be protected from additional hydrological disturbances. However, prescribed fires conducted in adjacent fire-maintained natural communities should be allowed to burn through the ecotone into the dome swamp periodically, under conditions appropriate for restoring the natural transition zone. Control of feral hogs may also be necessary. Park staff will regularly monitor the dome swamp for the appearance of invasive exotic plants and will remove any found.

HYDRIC HAMMOCK

Desired future condition: Hydric hammock is characterized as a closed canopy, evergreen hardwood and/or palm forest with a variable understory dominated by palms and with a sparse to moderate groundcover of grasses and ferns. Typical canopy species in the Springs Coast region will include laurel oak (*Quercus laurifolia*), pignut hickory (*Carya glabra*), southern magnolia (*Magnolia grandiflora*), cabbage palm, sugar hackberry (*Celtis laevigata*), live oak, sweetbay (*Magnolia virginiana*), red cedar (*Juniperus virginiana*), swamp tupelo (*Nyssa sylvatica var. biflora*), American elm (*Ulmus Americana*), red maple and other hydrophytic tree species. Yaupon holly (*Ilex vomitoria*) and needle palm (*Rhapidophyllum hystrix*) will be among the sparse understory components. Soils will be poorly drained but only occasionally flooded. Hydric hammock will occasionally burn when fires are allowed to spread naturally across ecotones from adjacent upland natural communities.

Description and assessment: 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 removed many of the walkways, replacing them with elevated boardwalks to restore the natural sheet flow of the hydric hammock. The replacement of all remaining limerock walkways with elevated boardwalks should continue, especially where it is most effective in restoring the hydric hammock's natural hydrology. 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 existing vegetation on the spoil piles. At Parsonage Point in the northwest portion of the park, fill was placed in the hydric hammock to create a road to the shoreline of the Blue Waters area sometime between 1974 and 1985. Concrete debris was dumped in the hydric hammock along the sides of the road. Parsonage Point was added to the park in 1995, and initial restoration began in 2008 with the removal of spoil from portions of the roadway and vegetation

planting. Much of the concrete debris and most of the roadway remain onsite.

General Management Measures: Undisturbed hydric hammock typically requires little in the way of active management except for control of feral hogs and invasive exotic plants. At Homosassa Springs, maintenance or restoration of natural sheet flows will continue to be a priority in the management of the hydric hammock. While spoil piles associated with the Pepper Creek canal system may be left in place, restoration through removal of spoil and concrete debris at Parsonage Point will remain a priority.

SPRING-RUN STREAM

Desired future condition: Spring-run streams are perennial watercourses that derive most, if not all, of their water from limestone artesian openings from the underground aquifer. The waters will be typically cool, clear, and circumneutral to slightly alkaline. These factors allow for optimal sunlight penetration and minimal environmental fluctuations that promote plant and algae growth. However, the characteristics of the water can change significantly downstream as surface water runoff becomes a greater factor. Areas of high flow will typically have sandy bottoms while organic materials concentrate around fallen trees and limbs and slow moving pools. Typical vegetation will include tapegrass (*Vallisneria americana*), arrowheads (*Sagittaria* spp.), southern naiad (*Najas guadalupensis*), and pondweeds (*Potamogeton* spp.).

Description and assessment: Homosassa Springs has two main spring-run drainages, the main boil and the watercourse that flows from at least three upper tributary springs called Bird Island. Numerous other smaller springs and seepages occur within the park. The spring run associated with the main boil is relatively broad and shallow with large patches of bare sand. The main boil also houses the Fishbowl observatory, which is a floating, underwater observation chamber. 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 during the summer months. This barrier is removed during the winter months to allow entry of wild manatees, large fish and other large animals into the main spring boil. During the time the barrier is open, the captive manatees are maintained in a separate paddock within the main spring area. The number of manatees held in the main spring 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 Springs due to the intensive foraging of the captive manatees.

Due to factors, such as sediment displacement by captive manatees in the head spring, stormwater runoff from existing and historic lime rock trails, and alterations of smaller springs over the years, sediments have accumulated above and below the Long River Bridge. Water depth in several areas of the main spring run have varied from 0-5 feet, and when water levels were low, substantial areas were either dry or too shallow for use by aquatic organisms, including manatees. In 2006, SWFWMD and DRP implemented a spring ecosystem restoration project to remove unnatural sediment accumulation from Homosassa Spring to restore natural depth within the spring run.

The spring-run system that originates in Bird Island tributary has been developed as an exhibit 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 lowered levels of these pollutants by instituting some basic operational changes. The Hydrology section above contains additional details about this system. The

current condition of the spring-run streams is poor to good.

General Management Measures: Staff will continue to work with other agencies to improve the water quality in the spring-run streams, and to try and reduce the impact of the animal park on water quality and quantity. The park has been approached by researchers who would like to implement a floating aquatic plant project to test for its effectiveness in reducing nutrient loads between the Bird Island tributary and the Homosassa head spring. Additionally, researchers have shown a strong interest in testing the effectiveness of revegetating the SAV in spring run.

AQUATIC CAVE

Desired future condition: Caves are characterized as cavities below the ground surface in karst areas, a cave system may contain portions classified as terrestrial caves and portions classified as aquatic caves. The latter vary from shallow pools highly susceptible to disturbance, to more stable, totally submerged systems. Desired future conditions include protecting against alterations that may increase pollution in aquatic systems.

Description and assessment: Several aquatic caves are located underneath the main boil of Homosassa Springs. At the bottom of this depression, water flows from several vents and fissures, emerging from aquatic caves within Homosassa Springs. 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.

General Management Measures: Protection of the springshed of Homosassa Springs from excessive groundwater withdrawals and contamination are important management measures for the aquatic caves as well as the spring-run stream. However, most of the springshed for Homosassa Springs lies outside the park boundary. As with the spring-run stream, park staff will continue to work with other agencies and researchers on issues that extend beyond the park boundary.

Altered Landcover Types

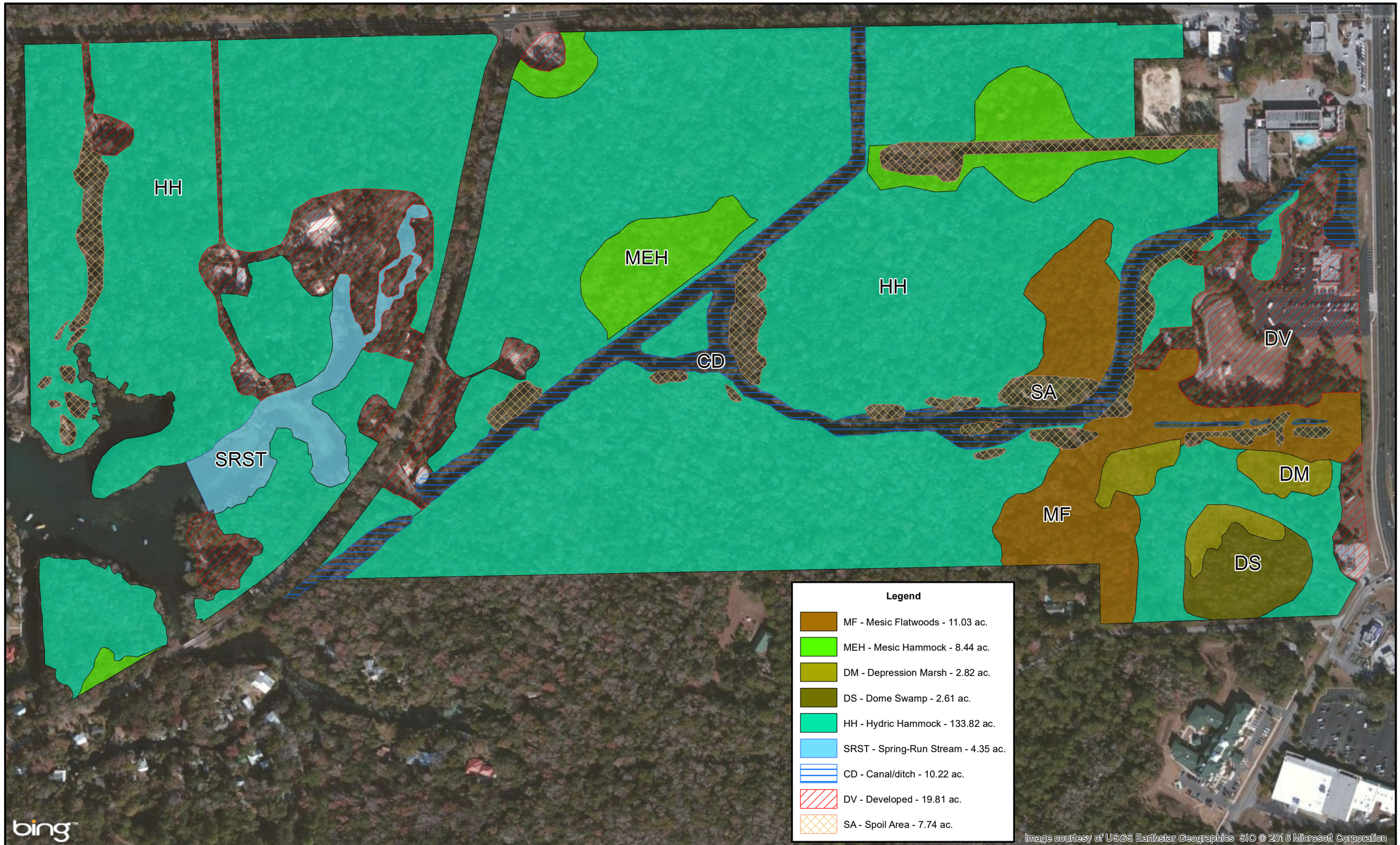
SPOIL AREA

Several spoil 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 hydric hammock restoration. Spoil piles are also common along the course of Pepper Creek and along former drainage canals. As mentioned above, the hydric hammock at Parsonage Point has multiple spoil areas of fill, limerock, and concrete debris.

CANAL/DITCH

Pepper Creek is classified as an altered landcover type due to the large-scale dredging that occurred during development of the attraction. The attraction created 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. 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 likely accumulating upstream of this structure and the park may need to address their disposition in the future. Untreated



ELLIE SCHILLER HOMOSASSA SPRINGS
WILDLIFE STATE PARK

N

0 150 300 600 Feet

Florida Department of Environmental Protection
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NATURAL COMMUNITIES MAP

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 a 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, parking areas, the boat dock and associated boat storage, the park warehouse and a park residence.

Resource management in the developed areas will focus on removal of all priority invasive exotic plants (i.e. Florida Exotic Pest Plant Council (FLEPPC) Category I and II species) and using native species in landscaping where possible. Other management measures will include maintenance of proper storm water and waste water management facilities and the designing of future development so that it is compatible with prescribed fire management in adjacent natural areas. There are no current plans to convert any of the developed areas back to their original natural community.

Natural Community Management

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

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

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

All prescribed burns in the Florida state park system are conducted with authorization from the FDACS, Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the FFS.

Objective A: Within 10 years, have 14 acres of the park maintained within the optimum fire return interval.

Action 1 Develop/update annual burn plan.

Action 2 Manage fire dependent communities by burning between 5-12 acres annually.

Table 2 contains a list of all fire-dependent natural communities found within the park, their associated acreage and optimal fire return interval, and the annual average target for acres to be burned.

Table 2: Prescribed Fire Management

Natural Community	Acres	Optimal Fire Return Interval (Years)
Mesic Flatwoods	11.03	1-3
Depression Marsh	2.82	2-4
Total Pyric Acres	**13.85**	
Annual Target Acreage	**5 – 12 acres**	

Prescribed fire is planned for each burn zone on the appropriate interval. The park's burn plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and very specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

Recent efforts establishing firebreaks have allowed the park to reintroduce fire into the mesic flatwoods and wetlands within the park. Nearly all the fire-dependent acreage within the park was burned in 2015 and 2016. The park uses soft lines and existing breaks where possible to reduce disturbance instead of creating new cleared or disked lines. The mesic flatwoods will need frequent prescribed fires to continue improving its condition. The depression marshes and dome swamp located within the southeast corner of the park, will also require additional fires after a lengthy period of fire exclusion. An average of 5 to 12 acres should be burned annually to maintain a natural fire return interval.

Cogongrass 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 continue to treat this highly invasive exotic species with an appropriate herbicide during the late growing season. The proximity of US 19 and the adjacent developed areas within the park are important smoke management concerns.

Wildlife at the park dependent on fire include gopher tortoises and other species in the mesic flatwoods. Transient black bears also use the mesic flatwoods and benefit from prescribed fire.

To track fire management activities, the DRP maintains a statewide burn database. The database allows staff to track various aspects of each park's fire management program including individual burn zone histories and fire return intervals, staff training and experience, backlog, etc. The database is also used for annual burn planning which allows the DRP to document fire management goals and objectives on an annual basis. Each quarter the database is updated and reports are produced that track progress towards meeting annual burn objectives.

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

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

Following are the natural community/habitat restoration and maintenance actions recommended to create the desired future conditions in the hydric hammock community (see Desired Future Conditions Map).

Objective B: Conduct habitat/natural community restoration activities on 0 acres of natural community.

There are no restoration activities needed during this planning period.

HH
MEH
HH
CD
DV
MF
SRST
DM
MF
DS

Legend

- MF - Mesic Flatwoods - 11.79 ac.
- MEH - Mesic Hammock - 8.44 ac.
- DM - Depression Marsh - 2.82 ac.
- DS - Dome Swamp - 2.61 ac.
- HH - Hydric Hammock - 134.08 ac.
- SRST - Spring-Run Stream - 4.35 ac.
- CD - Canal/ditch - 10.22 ac.
- DV - Developed - 19.81 ac.
- SA - Spoil Area - 2.72 ac.

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N

0 150 300 600 Feet

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NATURAL COMMUNITIES MAP

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

Objective C: Conduct natural community/habitat improvement activities on 5 acres of hydric hammock natural community.

Action 1 Implement additional phases of Parsonage Point Project.

Various areas of hydric hammock have been impacted by fill, placement of spoil piles and concrete debris. One area, the road to Parsonage Point, is an example of this. Additional concrete and spoil remains in the hydric hammock and should be removed. In several places the road consists of fill. Where the road elevation exceeds that of the surrounding area, it should be reduced to be level with the adjacent grade.

Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern.
Although the park displays many imperiled species as captive animals, a significant number of free-ranging imperiled species also make use of the park. Several species of herons and egrets forage, roost, and even breed within the park. A wading bird rookery is 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. 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 Exotic and Nuisance Species below).

Homosassa Springs is also a critical area for the Florida black bear. 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. The park lies within the Big Bend Bear Management Unit (BMU). The subpopulation of black bears in this part of the Big Bend area was estimated to be around 12-28 bears, mostly concentrated south of the park. The minimum subpopulation target is 200 bears according to the Florida Black Bear Management Plan (FWC 2012). Unfortunately, the Big Bend BMU suffers from low levels of genetic diversity (Dixon et al 2007). Wildlife managers know that bears migrate through the park along this narrow corridor that connects extensive public lands to the north and south. The Crystal River Preserve State Park and St. Martins Marsh State Aquatic Preserve are located north of Homosassa Springs, while the Withlacoochee State Forest (FFS), Chassahowitzka River and Coastal Swamps (SWFWMD), and Chassahowitzka National Wildlife Refuge (USFWS) lie to the south. 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 will continue to cooperate with FWC and the Big Bend Bear Stakeholder Group. The park will also continue to assist FWC with the rehabilitation and release of orphaned bear cubs. Prospects for the long-term survival of the Big Bend 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 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. The Homosassa shrew is still listed as a species of special concern by FWC pending additional research on its status and distribution (FWC 2013). 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 imperiled 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. Both the Crystal River and the Homosassa River are important winter refugia for the northwest Florida manatee population.

Homosassa Springs received its first permit as a manatee rehabilitation site in 1980 and currently has three female resident manatees. Assistance with manatee care is provided by Dr. Ray Ball, who is also the head veterinarian at Lowry Park Zoo. The park is an active member, along with Dr. Ray Ball, in the Manatee Rescue, Rehabilitation and Release Program set up by USFWS to manage rescued and rehabilitated manatees. All manatees in Florida, whether captive-born or wild-caught, are considered endangered and are held only under permit from the USFWS.

The park has 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. 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, but can be contained in a separate area away from the females.

In addition to the isolation pool, the park has a critical care containment pool that can hold 5 adult manatees. The park is listed as a temporary critical care facility and only takes critical care manatees as a harbor of last resort.

In the past, the park temporarily housed manatees before their eventual release back into the wild. In 1997, a papillomavirus was discovered in the captive manatee herd at Homosassa Springs. From 1998 to 2008 the captive manatees at the park were placed under quarantine. When active, the virus causes wart-like lesions on the skin of the infected animals. Transmission of the papillomavirus was not completely understood, and the park took measures to prevent direct physical contact between the captive and wild manatees. Barriers were installed in the spring run at the Long River Bridge to prevent direct and indirect contact

between the captive herd and wild manatees in the spring run. The park cooperated with other entities including the University of Florida, Harbor Branch Oceanographic Institute (HBOI), FWC, and USFWS in researching and monitoring the progression of the papillomavirus within the herd. After extensive research, scientists determined that the papillomavirus was restricted to manatees, most likely coevolved with manatees, and that most manatees carry a latent form of the papillomavirus. This information made it clear that the papillomavirus present in captive manatees did not threaten the wild population as officials had originally feared, prompting the park to lift the quarantine on its captive manatees.

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-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 FWC 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 FWC in the management of wild manatees that frequent areas adjacent to the park.

In January 2010, a barrier fence was erected within the captive manatee area at the request of the USFWS to create a paddock to separate the captive manatees from wild manatees that were brought in for short term rehabilitation. In December 2010, this paddock was used to house the captive animals and allow the opening of the main spring to wild manatees. From November 15th through the end of March wild manatees are allowed access to the warm waters of the main spring boil. When the wild manatees have access, the resident manatees are housed in the paddock area and given access to a heated pool.

In 2006, DRP and SWFWMD cooperated on a spring ecosystem restoration project to remove a total volume of 12,859 cubic yards (cy) of unnatural sediments from Homosassa Spring (i.e., head spring=1,989 cy, Blue Water=7,926 cy, Mitten Cove=2,944 cy). This project was conducted to benefit all aquatic organisms, including manatees (see spring-run stream in Natural Communities section above).

There are relatively few records of imperiled plant species within the park. Informal surveys indicate that several imperiled 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. 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 imperiled plant species.

Table 3 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others, and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Addendum 6.

Table 3: Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring Level**
	FWC	**USFWS**	**FDACS**	**FNAI**		
PLANTS						
Variableleaf Indian plantain *Arnoglossum diversifolium*			LT	G2,S2	4,10	Tier 1
Angularfruit milkvine *Gonolobus suberosus*			LT			Tier 1
Cardinal flower *Lobelia cardinalis*			LT		4	Tier 1
Southern tubercled orchid *Platanthera flava*			LT		4	Tier 1
REPTILES						
American alligator *Alligator sippiensis*	FT(S/A)	T(S/A)		G5,S4	4,10,13	Tier 1
Eastern indigo snake *Drymarchon couperi*	FT	LT		G3,S3	1,10,13	Tier 1
Gopher tortoise *Gopherus polyphemus*	ST	C		G3,S3	1,10,13	Tier 1
Suwannee cooter *Pseudemys suwanniensis*	SSC			G5T3,S3	4,10	Tier 1
BIRDS						
Little Blue Heron *Egretta caerulea*	SSC			G5,S4	4,10,13	Tier 1
Snowy Egret *Egretta thula*	SSC			G5,S3	4,10,13	Tier 1
Tricolored Heron *Egretta tricolor*	SSC			G5,S4	4,10,13	Tier 1
Swallow-tailed Kite *Elanoides forficatus*				G5,S2		Tier 1
White Ibis *Eudocimus albus*	SSC			G5,S4	4,10,13	Tier 1
Wood Stork *Mycteria americana*	FT	LT		G4,S2	4,10,13	Tier 1
Brown Pelican *Pelecanus occidentalis*	SSC				4,10,13	Tier 1
Roseate spoonbill *Platalea ajaja*	SSC			G5,S2	4,10,13	Tier 1
MAMMALS						
Homosassa shrew *Sorex longirostris eionis*	SSC			G5T3,S3	4	Tier 1
West Indian manatee *Trichechus manatus latirostris*	FE	LE		G2,S2	4,10,13	Tier 3
Florida black bear *Ursus americanus floridanus*				G5T2,S2	1,4,10,13	Tier 1

Management Actions:

1. Prescribed Fire
2. Exotic Plant Removal
3. Population Translocation/Augmentation/Restocking
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment

8. Predator Control
9. Erosion Control
10. Protection from visitor impacts (establish buffers)/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education
14. Other

Monitoring Level:

Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.

Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.

Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.

Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.

Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species

.

Detailed management goals, objectives and actions for imperiled species in this park are discussed in the Resource Management Program section of this component and the Implementation Component of this plan.

Imperiled Species Management Program

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

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

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

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

Objective A: Update baseline imperiled species occurrence inventory lists for plants and animals.

Objective B: Monitor and document 1 selected imperiled animal species in the park.

Action 1 Implement monitoring protocols for 1 imperiled animal species including the West Indian manatee.

Park staff will continue monitoring of the wild West Indian manatees that utilize the Blue Waters area year-round, and are allowed to enter the main spring boil in the winter months. Daily logs are kept to monitor manatee use of the warm water refuge during

winter months. The park cooperates with FWC and USFWS in the monitoring of wild manatees and in the monitoring of interactions between recreational users and wild manatees. The park provides extensive interpretive and education materials to the public about manatee protection and conservation.

Objective C: Monitor and document 1 selected imperiled plant species in the park.

Action 1 Develop monitoring protocols for 1 selected imperiled plant species including variableleaf Indian plantain (*Arnoglossum diversifolium*).

Action 2 Implement monitoring protocols for 1 imperiled plant species including that listed in Action 1 above.

District and park staff will develop a monitoring plan for the variable-leaved Indian-plantain and where possible, locate and map occurrences. The plant is native to hydric hammocks.

Objective D: Continue partnerships with FWC and USFWS in the rehabilitation of native imperiled species.

Action 1 Continue working with FWC and USFWS as a partner facility in the Manatee Rescue, Rehabilitation and Release Program.

Action 2 Continue working with FWC to provide housing and care for orphaned black bear cubs to be released back to the wild.

Action 3 Continue serving as a rehabilitation center for other imperiled species and as a permanent home for non-releasable imperiled species.

Homosassa Springs has long served as a rehabilitation facility for the West Indian manatee. The park works in partnership with FWC, USFWS, and other facilities in the state and U.S. to house and rehabilitate manatees for release back into the wild. The park also provides space for orphaned black bear cubs to assist FWC. Most of these juvenile bears are released within the Big Bend Bear Management Unit to supplement the wild population and provide additional genetic diversity.

The park also houses imperiled species that cannot be released due to injuries or other restrictions. The park provides housing for whooping cranes and red wolves that are currently considered surplus to the captive breeding programs. This assists the agencies involved with the captive breeding programs, and allows the park to display and interpret these species to the public. The park also currently houses two Florida panthers that were rescued as kittens.

Exotic and Nuisance Species

Exotic species are plants or animals not native to Florida. Invasive exotic species can out-compete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade.

Exotic animal species include non-native wildlife species, free ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to exotic animals, the DRP actively removes exotic animals from state parks, with priority being given to those species causing the greatest ecological damage.

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include raccoons and alligators that are in public areas. Nuisance animals are dealt with on a case-by-case basis in accordance with the DRP's

Nuisance and Exotic Animal Removal Standard.
Detailed management goals, objectives and actions for management of invasive exotic plants and exotic and nuisance animals are discussed in the Resource Management Program section of this component.

Homosassa Springs has a diversity of invasive exotic plants, in part because of its development as an attraction prior to acquisition by the state. Another contributing factor is the ever-increasing urban interface along the park boundary. Some species such as Mexican petunia (*Ruellia simplex*), Sprenger's asparagus-fern (*Asparagus aethiopicus*) and wedelia (*Sphagneticola trilobata*) were planted as ornamentals. Others such as cogongrass (*Imperata cylindrica*) were probably introduced during development projects either within the park or on adjacent properties. Species such as skunkvine (*Paederia foetida*) have likely been introduced by birds.

Air potato (*Dioscorea bulbifera*) infestations are reduced by the biological control leaf beetle (*Lilioceris cheni*) which has been spreading throughout the area. The park staff regularly treats all invasive species, surveys infestations and tracks their activities in the statewide Natural Resources Tracking System database.

Since the last plan, the park has treated in-house 46.7 acres of invasive exotic plants. In addition to these efforts, more work to control exotics is needed at the park. Since many plants cross into the park from neighbors, a concerted neighborhood outreach and education effort could help reduce the number of exotic species and individual plants entering the park.

In 2002, the red bay ambrosia beetle (*Xyloborus glabratus*) was first detected in the United States in southeast Georgia. The beetle carries the fungal pathogen (*Raffaelea lauricola*) which it transmits to red bay trees (*Persea borbonia*) and other species in the Lauraceae family, causing laurel wilt disease and death. The beetle and its associated pathogen spread rapidly; by 2005 it had appeared in Duval County, Florida and in 2009 the disease was discovered in Citrus County. Since that time, the beetle (and laurel wilt) has spread throughout Florida and into many of the neighboring states. Although most of the adult red bays have been top-killed, the trees continue to resprout from their roots. It may be that members of the Lauraceae family will continue to survive in shrub form as the remnant tree root systems continue to resprout. At this point, much remains unknown about the long-term impacts of this disease on red bays and other Lauraceae. Staff should continue to restrict the movement of firewood into and out of the park and educate visitors about the issue.

Feral hogs (*Sus scrofa*), occasionally make an appearance in the park. They should be removed as needed. Black vultures have been an issue at the park over the years. The black vultures are attracted by the animal feed and other food sources in the park. Staff have obtained permits to use noisemakers and other forms of deterrence to encourage the black vultures to avoid the park. The use of loud noisemakers should be avoided during the wading bird nesting season, especially since there is a significant number of imperiled species that use the park (see Imperiled Species section above).

Table 4 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive, exotic plant species found within the park (FLEPPC, 2015). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table. For an inventory of all exotic species found within the park, see Addendum 5

.

Table 4: Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	**FLEPPC Category**	**Distribution**	**Management Zone (s)**
PLANTS			
Mimosa *Albizia julibrissin*	I	2	HS-2B
Sprenger's asparagus-fern *Asparagus aethiopicus*	I	1	HS-1A, HS-1B
Camphor-tree *Cinnamomum camphora*	I	1	HS-1A
Wild taro *Colocasia esculenta*	I	2	HS-2B, HS-2C
Air potato *Dioscorea bulbifera*	I	1	HS-2C
		2	HS-2B
Common water hyacinth *Eichhornia crassipes*	I	1	HS-2C
Cogongrass *Imperata cylindrica*	I	2	HS-1A, HS-1B, HS-1C, HS-1D, HS-2B, HS-2C, HS-4C, HS-4D, HS-5
		3	HS-1C
Lantana *Lantana camara*	I	2	HS-2A
Glossy privet *Ligustrum lucidum*	I	2	HS-2B, HS-2C
Peruvian primrosewillow *Ludwigia peruviana*	I	3	HS-1A, HS-1B
Japanese climbing fern *Lygodium japonicum*	I	2	HS-5
Bottlebrush *Melaleuca viminalis*	II	1	HS-1B
Tuberous sword fern *Nephrolepis cordifolia*	I	1	HS-5
		2	HS-1A, HS-1B, HS-1D, HS-2A, HS-2C
Skunk vine *Paederia foetida*	I	2	HS-4A, HS-4B, HS-5
Torpedo grass *Panicum repens*	I	3	HS-1A, HS-1B
Mexican petunia *Ruellia simplex*	I	2	HS-2A
Chinese tallowtree *Triadica sebifera*	I	2	HS-4C, HS-4D, HS-5
Tropical soda apple *Solanum viarum*	I	2	HS-1A
Wedelia *Sphagneticola trilobata*	II	2	HS-2B, HS-5
		3	HS-1D
Syngonium podophyllum Arrowhead vine	I	1	HS-2C
		3	HS-2C
Elephant ear *Xanthosoma sagittifolium*	II	2	HS-2B

Distribution Categories:

0 No current infestation: All known sites have been treated and no plants are currently evident.
1 Single plant or clump: One individual plant or one small clump of a single species.
2 Scattered plants or clumps: Multiple individual plants or small clumps of a single species scattered within the gross area infested.
3 Scattered dense patches: Dense patches of a single species scattered within the gross area infested.
4 Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.
5 Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.
6 Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.

Exotic Species Management Program

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

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

Objective A: Annually treat 4 acres of exotic plant species in the park.

Action 1 Annually develop/update exotic plant management work plan.
Action 2 Implement annual workplan by treating 4 acres in park, annually, and continuing maintenance and follow-up treatments, as needed.

Annually, DRP staff will develop and implement a management plan for non-native invasive plants. The number of acres of exotic plants treated per year is likely to vary depending on the status of established infestations and any new infestations that might occur or be detected during the management plan period. However, the annual goal will remain the same, to treat all infestations that are in maintenance and treat any new infestations before they can increase in size.

Priority should be given to FLEPPC Category I and II species when treating exotic plant species in the park. Non-invasive exotic plants that occur within the park will be removed whenever possible and replaced with native species. A plan and schedule should be developed that complies with DRP standards for scouting and mapping invasive exotics in every zone within the park. Areas that have sources of particularly aggressive species will need to be scouted more frequently. Finding new populations of invasive exotic plants before they become established will help prevent larger infestations from occurring and reduce the cost and effort needed to control them. All known and newly detected locations of exotic plants should be located by GPS and mapped. Established, up-to-date control technologies will be utilized for each species treated.

Objective B: Implement control measures on 1 exotic animal species in the park.

Action 1 Remove exotic animals as they appear in the park.

Occasionally feral hogs or other exotic animals appear in the park. They should be removed as needed.

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 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 the spring systems of Florida. The manatee programs conducted by

park staff and a large number of volunteers provide critical public outreach and education to publicize the plight of the manatee in Florida.

Cultural Resources

This section addresses the cultural resources present in the park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Addendum 7 contains the FDOS, Division of Historical Resources (DHR) management procedures for archaeological and historical sites and properties on state-owned or controlled properties; the criteria used for evaluating eligibility for listing in the National Register of Historic Places, and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

Condition Assessment

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

Level of Significance

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

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

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

Prehistoric and Historic Archaeological Sites

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

Description: The park has nine archaeological sites listed with the Florida Master Site File (FMSF). Eight sites are prehistoric, one also has a historic component and one is a historic site. There is also one resource group from the historic era.

The archaeological sites represent the culture of native peoples who lived near the water resources of the Homosassa River from the Archaic period through the Weeden Island period. The Homosassa Spring Site (CI208) is underwater. The spring vent was dredged in the past and 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 construction of the original walkway, probably in the 1960s, had 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), is a disturbed lithic scatter site of unspecified prehistoric context. CI1232 and CI1233 are both in the spring run. CI1232 is redeposited refuse from an extractive site. CI1233 is intact refuse from a resource extraction area and disturbance of this site should be avoided. Parsonage Point (CI1313) is a non-diagnostic Archaic scatter located in a very disturbed area.

During the late 18th century, the spring and attraction was a stop along a rail line (CI557) called the 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 goods to Homosassa such as 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. The train track ran along the shoulder of what is now Fishbowl Drive and is recorded as a resource group.

A predictive model for the park was completed in 2011 (Collins et al. 2012).

Condition Assessment: The condition of all the sites is good or fair. Some were disturbed during the development of the attraction prior to becoming a state park, but are currently stable. Primary threats are possible disturbance from any future development.

General Management Measures: The park should maintain a file of all cultural sites. Sites should be visited annually and checked for stability and condition. Any significant changes to the sites should be documented. Sites that are listed as fair condition are stable. They cannot be returned to good condition due to previous disturbance.

Historic Structures

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

Description: The park has 3 historic structures and one resource group containing structures relating to the attraction.

The historic structure CI375 consists of the structural components of the tourist attraction at Homosassa Springs. While documented accounts of visitation to the spring by persons of European descent date back to the 1880s, CI375 was built during the 1960s. Structure CI1382 was formerly a commercial structure, and it also was built in the 1960s. CI1383 is also a 1960s-era structure that serves as the visitor center. These latter two structures are included in the resource group CI1402.

Condition Assessment: The condition of CI1383 and CI375 is good. The condition of CI1382 is fair. The latter structure is not used by the park and could deteriorate due to lack of use.

General Management Measures: All the historic structures other than CI1382 are used by the park for park operations or as part of the attraction. They should be included in a regular maintenance schedule. They are not considered significant historic structures.

CI1382 is in a separate area from the rest of the park operations and not used by the park. The structure should be documented and the Division of Historic Resources should be consulted for permission to demolish the building.

Collections

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

Description: The park's primary collection consists of material relating to the history of the Homosassa Springs attraction and the surrounding community. Documents include newspaper articles, photographs and other ephemera dating mostly to the 1960s. Some photographs and material date to as early as the 1920s. A few items such as the original sign depicting a sheepshead fish are displayed in the visitor center.

A much smaller collection consists of natural history items, mainly skulls of native Florida animals and a few skeletons from species like bobcat (*Lynx rufus*) and West Indian manatee (*Trichechus manatus*). These have been displayed at the park's Discovery Center or kept in storage to use for interpretive programs.

Some items were recovered from the spring-run stream during a dredging project. These have been transferred to DHR.

Condition Assessment: The condition of the park's collection is generally good although some individual items may be in fair condition and not stable. The items pertaining to the history of the park and surrounding community area stored in the air-conditioned archive room which is dedicated completely to this collection. Many photographs have been digitized; other original documents are stored in metal cabinets. The natural history collection is stored in the teaching classroom.

General Management Measures: Park staff should update the Scope of Collection Statement to reflect the focus on the history of Homosassa Springs attraction and the surrounding community. They should also further develop and implement conservation actions in consultation with an archivist. Some previous recommendations such as the purchase of an archival scanner, transferring documents to wooden cabinets and improving climate control are still important to implement. Park staff should continue to work with Division staff to document the collection in Past Perfect.

The park has previously consulted with an archivist and has implemented some of the recommendations. Further humidity control is needed and wood storage cabinets should replace the metal ones. The process of properly storing the material is ongoing and archival supplies are needed. Items such as archival paper and an archival scanner would

benefit the park's collection. The park should periodically seek the input of an archivist on the management of the collection to maintain it in good condition.

Detailed management goals, objectives and actions for the management of cultural resources in this park are discussed in the Cultural Resource Management Program section of this component. Table 4 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the Florida Master Site File. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

Table 5. Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	**Culture / Period**	**Description**	**Significance**	**Condition**	**Treatment**
CI00208 Homosassa Springs	Archaic, 8500 B.C.-1000 B.C.	Archaeological Site	NE	G	P
CI00209 Homosassa Springs Midden	Weeden Island, A.D. 450-1000	Archaeological Site	NE	G	P
CI00375 Homosassa Springs Attraction	C1940, Boom Times	Historic Structure	NE	G	P
CI00414 Parking Lot	Prehistoric lacking pottery	Archaeological Site	NS	G	P
CI00557 Ocala & Gulf Railroad	Nineteenth century American, 1821-1899 Twentieth century American, 1900-present	Resource Group	NS	G	P
CI01046 Little Spring Site	Prehistoric/Unspecified Weeden Island, 20th Century American	Archaeological Site	NE	G	P
CI01077 Manatus	Middle Archaic	Archaeological Site	NE	G	P
CI01232 B-27	Prehistoric/Unspecified	Archaeological Site	NE	G	P
CI01233 H-7	Prehistoric/Unspecified	Archaeological Site	NE	G	P
CI01281 HSWSP-1	Prehistoric/Unspecified	Archaeological Site	NS	G	P
CI01313 Parsonage Point 1	Archaic, 8500 B.C.-1000 B.C.	Archaeological Site	NS	G	P
CI01382 8746A W. Halls River Road	c1965	Historic Structure	NS	F	R
CI01383 Homosassa Springs Wildlife Visitor Center	c1964	Historic Structure	NS	G	P
CI01402 8746 W. Halls River Road	1964-1966	Resource Group	NS	G	P

Significance:

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

Condition

G	Good
F	Fair
P	Poor
NA	Not accessible
NE	Not evaluated

Recommended Treatment:

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

Cultural Resource Management

Cultural resources are individually unique, and collectively, very challenging for the public land manager whose goal is to preserve and protect them in perpetuity. The DRP will implement the following goals, objectives and actions to preserve the cultural resources found in Ellie Schiller Homosassa Springs Wildlife State Park.

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

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

Objective A: Assess and evaluate 11 of 14 recorded cultural resources in the park.

Action 1	Complete 11 assessments/evaluations of archaeological sites and resource groups.

No Historic Structures Reports are needed. All archaeological sites and resource groups should be assessed. The park should maintain files for each cultural site.

Objective B: Compile reliable documentation for all recorded historic and archaeological resources.

Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.
Action 2	Consult with the Bureau of Archaeological Research (BAR) to identify areas needing a Level 1 survey.
Action 3	Develop and adopt a Scope of Collections Statement.

All known sites have been recorded with the Florida Master Site File but the park should continue to record sites as they are found. Park staff should also continue to be participate in the Archaeological Resource Management (ARM) training so that they can better recognize and protect cultural sites.
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Objective C: Bring 0 of 14 recorded cultural resources into good condition.

Action 1	Design and implement regular monitoring programs for 14 cultural sites
Action 2	Create and implement a cyclical maintenance program for each cultural resource.

Since all but one of the cultural sites are in good condition, park efforts should concentrate on maintaining the good condition. The park should maintain files of all cultural resources and include them in a monitoring program to check for threats.

To maintain the historic structures in good condition, the park should implement a cyclical maintenance program that focuses on preventative maintenance.

Special Management Considerations

Timber Management Analysis

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

A timber management analysis was not conducted for this park since its total acreage is below the 1,000-acre threshold established by statute. Timber management will be re-evaluated during the next revision of this management plan.

Arthropod Control Plan

All DRP lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, the DRP works with the local mosquito control district to achieve consensus. By policy of DEP since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation.

An Arthropod Management Plan was updated in 2016 by the Division of Recreation and Parks and Citrus County Mosquito Control District.

Sea Level Rise

Potential sea level rise is now under study and will be addressed by Florida's residents and governments in the future. The DRP will stay current on existing research and predictive models, in coordination with other DEP programs and federal, state, and local agencies. The DRP will continue to observe and document the changes that occur to the park's shorelines, natural features, imperiled species populations, and cultural resources. This ongoing data collection and analysis will inform the Division's adaptive management response to future conditions, including the effects of sea level rise, as they develop.

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.

Prior to state acquisition, the zoological and tourist areas of the park caused severe 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.

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 in the Implementation Component of this management plan.

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The considered recommendations of the land management review team and updated this plan accordingly.

Ellie Schiller Homosassa Springs State Park has not been subject to a land management review since it falls below the threshold of 1,000 acres.

Land Use Component

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.

Demographics

Ellie Schiller Homosassa Springs Wildlife State Park is located within Citrus County about 7 miles south of Crystal River and 19 miles west of Inverness in the central west part of the state. Approximately 436,000 people live within 30 miles of the park (U.S. Census 2010).

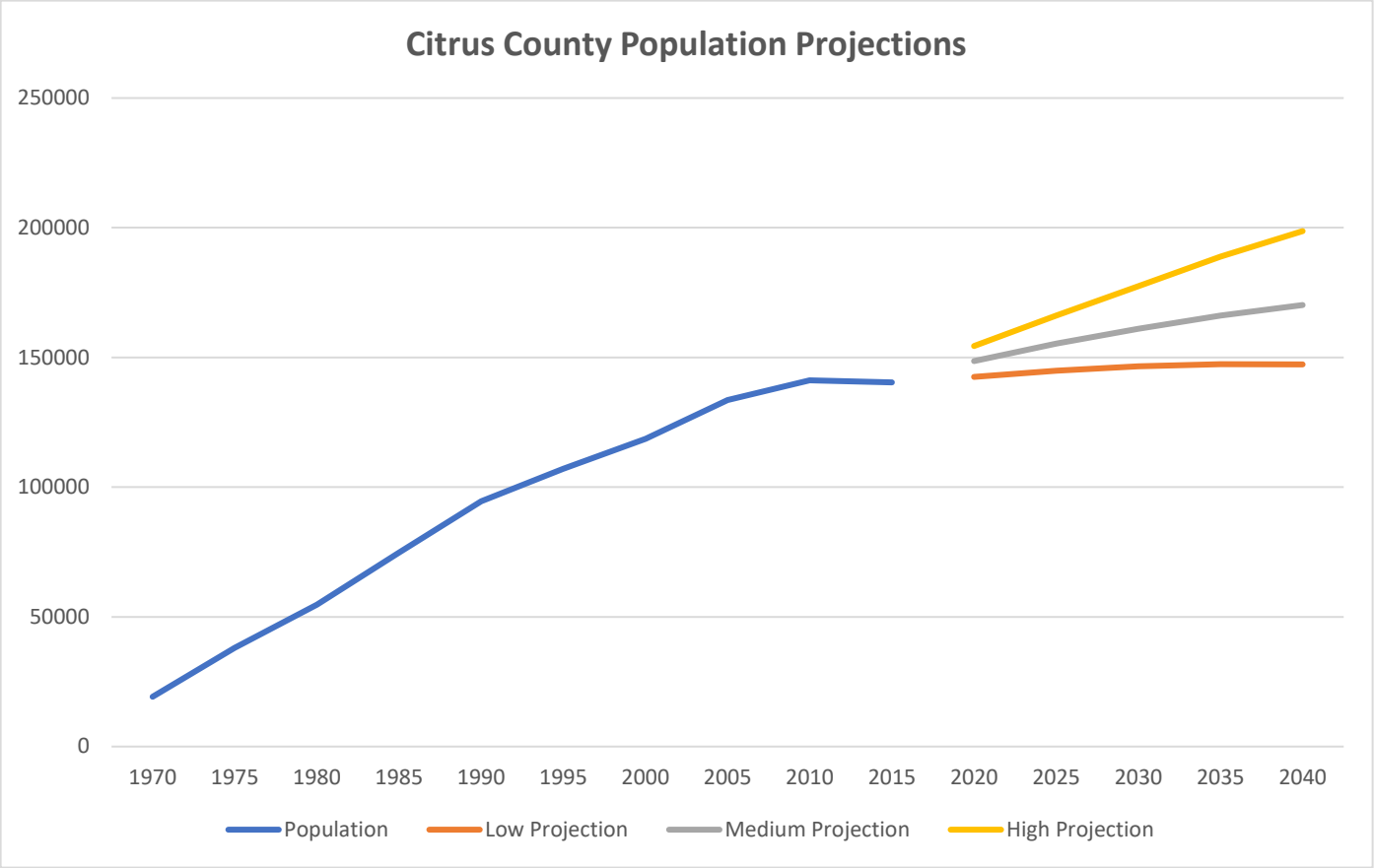
According to the U.S. Census Data (2013), approximately 12% of residents in Citrus County identify as black, Hispanic or Latino, or another minority group. Over half (54%) of residents can be described as youth or seniors (U.S. Census 2010). 56% of the population is of working age (16 to 65) (U.S. Census Bureau 2010). Citrus County ranked 34th statewide in per capita personal income at $34,380 (below the statewide average of $41,497) (U.S. Bureau of Economic Analysis 2013).

Table 6. Current Populations*

Citrus County		
Total Population		
147,929		
Urban Centers		
Homosassa	**Homosassa Springs**	**Crystal River**
2,578	13,791	3,118
Surrounding Counties		
Hernando	**Levy**	**Marion**
190,865	40,770	359,977

Regional Population Growth

According to population projections calculates by the Bureau of Economics and Business Research (BEBR), Citrus County is expected to experience an approximately 21% increase in population by 2040, from an estimated 141,500 in 2015 to 171,700 by 2040 (BEBR 2015). While most of the growth is expected in the central portions of the county (Hernando/Citrus County 2040 LRTP 2015), this growth could lead to an increase in park usage as residents venture out to see this park and all of the wildlife within the park including the manatees in the spring. The population growth also poses future impacts to the area that go with urbanization including declining surface water, increase in storm-water runoff, increased traffic, and increased pollution within the park's watershed.



Land Use and Zoning

Existing Use of Adjacent Lands

Ellie Schiller Homosassa Springs Wildlife State Park is a 210 acre park located in the city of Homosassa Springs. The park is entirely in Citrus County and lies between the cities of Homosassa and Homosassa Springs. This park is surrounded by multiple land uses that are adjacent to the property. Along the parks north eastern boundary is low density residential across West Halls River Road. To the northwest across West Halls River Road lies an over 600-acre parcel that is undeveloped currently. Low density residential uses are also present along the parks southern boundary. At the eastern boundary of the park lies US Highway 19 and its associated commercial land uses. To the west of the park is wetlands followed by the town of Homosassa. West Fishbowl Drive, a county-maintained road, runs North to South through the middle of the park.

Planned Use of Adjacent Lands

The western boundary of the park abuts the Old Homosassa community, characterized by old fishing businesses along the Homosassa River. In order to protect the community character, a proposed overlay district would prohibit non-residential and high intensity residential development (Citrus County 2003). There has been significant development pressure on Homosassa because of the attraction of the coast and proximity of the Suncoast Parkway (U.S. 19). The overlay is one measure to keep the community from infringing growth.

Citrus County lies within Florida's Nature Coast, which also includes Wakulla, Jefferson, Taylor, Dixie, Levy, Hernando, and Pasco Counties. Florida's Nature Coast is distinguished by the abundance of outdoor recreational opportunities and scenic beauty. According to the 2016 Citrus County Annual Report, tourism in Citrus County has continually surpassed records set forth by the county and therefore remains the most sought out destination in Central Florida (Citrus County Tourism, 2016). This increase

in tourism is directly tied to the growth of the cities in Citrus County and around Ellie Schiller Homosassa Springs Wildlife State Park.

Given that the growth rate of Citrus County is increasing, areas surrounding the park that are not in flood prone areas or not already zoned conservation will likely become more developed. The areas surrounding the park to the east are already becoming more developed due to the commercial and residential district that surrounds U.S Highway 19/98. Adjacent to the park on U.S. 19 between U.S. 98 and C.R. 488, there are proposed improvements that include the expansion of the existing four-lane road to six lanes to accommodate an additional travel lane and paved shoulder. Bike lanes traveling in either direction will be incorporated into a segment of the corridor. A proposed pedestrian overpass is suggested at the Crystal River bike path over U.S. 19. To the Northwest of the park there is still a large parcel of undeveloped land that is Crystal River Preserve State Park.

Regional Conservation, Recreation, and Trails

Florida Greenways and Trails System (FGTS)

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

In some cases, existing or planned priority trails run through or are adjacent to state parks, or they may be in close proximity and can be connected by a spur trail. State parks can often serve as trailheads, points-of-interest, and offer amenities such as camping, showers and laundry, providing valuable services for trail users while increasing state park visitation.

Withlacoochee State Trail runs to the east of the park, connecting to the Heart of Florida loop. The trail is the longest paved rail trail in the state running 46 miles. Ellie Schiller Homosassa Springs Wildlife State Park has a Paddling Trail Opportunity Corridor listed on the 2018 FGTS Priority and Opportunity Paddling Trail. To the South of the park lies the Chassahowitzka River and Coastal Swamp Trail. The Florida Circumnavigational Paddling Trail's closest point to the park is located at the nearby Crystal River Preserve State Park.

Statewide Comprehensive Outdoor Recreation Plan

The park is located in the Central West Vacation Region, which includes Citrus, Hernando, Hillsborough, Pasco, and Pinellas counties (Visit Florida 2013). According to the 2013 Florida Visitor Survey, approximately 11.1% of domestic visitors to Florida visited this region. Roughly 85% visitors to the region traveled to the Central West for leisure purposes. The top activities for domestic visitors were beach/waterfront and visiting friends or relatives. Spring was the most popular travel season, but visitation was generally spread throughout the year. More than half of visitors traveled by non-air (53%), reporting an average of 4 nights and spending an average of $146 per person per day (Visit Florida 2013).

Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP) indicates that participation rates in this region for saltwater beach activities, saltwater and freshwater fishing, freshwater boat-ramp use, nature study, hiking, and camping are higher than the state average with demand for additional facilities increasing through 2020 (FDEP 2013).

The table below identifies significant resource-based recreation opportunities within 15 miles of Ellie Schiller Homosassa Springs Wildlife State Park.

Table 7. Resource-Based Recreational Opportunities Ellie Schiller Homosassa Springs Wildlife State Park

Name	Biking	Hiking	Swim / Beach Access	Boating / Paddling	Fishing	Wildlife Viewing	Camping	Picnicking	Hunting	Equestrian
Florida Forest Service										
Withlacoochee State Forest	✓	✓		✓	✓	✓	✓	✓	✓	✓
Hernando County/City of Inverness										
Fickett Hammock Preserve		✓		✓	✓	✓				
Whispering Pines Park	✓	✓						✓		
Florida Fish and Wildlife Conservation Commission										
Chassahowitzka Wildlife Management Area	✓	✓				✓			✓	
Janet Butterfield Brooks Preserve Wildlife and Environmental Area	✓	✓				✓			✓	
U.S. Fish and Wildlife Service										
Chassahowitza National Wildlife Refuge				✓	✓				✓	
Florida Park Service										
Crystal River Preserve State Park	✓	✓		✓	✓	✓				
Crystal River Archeological State Park	✓	✓		✓	✓	✓		✓		
Marjorie Harris Carr Cross Florida Greenway	✓	✓		✓	✓	✓	✓	✓		✓
Yulee Sugar Mill Ruins Historic State Park						✓		✓		

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.

Recreational Resource Elements

This section assesses the park's recreational resource elements, those physical qualities that, either singly or in certain combinations, can support various resource-based recreation activities. Breaking down

the property into such elements provides a means for measuring the property's capability to support potential recreational activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Land Area

Of the 210 acres at Ellie Schiller Homosassa Springs Wildlife State Park over 130 acres are ecologically sensitive Hydric Hammock, Dome Swamp, or Depression Marsh natural community that is frequently inundated by storm and other high-water events. This limits the recreational activities that can take place in these areas. However, the park has placed boardwalks and observation areas that can still be accessed for recreational activities. Additionally the park's facilities allow visitors to view interpretive exhibits and panel to educate themselves on the animals in the park as well as issues that they face in the wild.

Water Area

The centerpiece of this park is a first-magnitude freshwater spring, which produces millions of gallons of fresh, crystal clear water every hour. This spring creates the headwaters of the Homosassa River which continues to flow off park property. Saltwater and freshwater fish species are attracted to this large natural spring with its comfortable year-round temperature of 72 degrees. Thirty-four different species of fish have been identified in this spring. The floating observatory allows visitors to go under the water to view various species of fish as well as manatees year-round. An additional water area, Pepper Creek, runs 1.2 miles from the visitor's center to the west entrance area. Visitors can enjoy nature and all its qualities via boat tours that are given along this creek.

Shoreline

Within the park boundary the shoreline of the Homosassa River can be viewed from multiple observation desks as well as from the fishbowl underwater observatory. Erosion control and protection of the edges of the shoreline should be consider in any new trails or construction.

Natural Scenery

Ellie Schiller Homosassa Springs Wildlife State Park offers a variety of different natural communities which vary from the large amounts of hydric hammock to the smaller areas of the mesic flatwoods and mesic hammocks. These differing natural communities offer distinct habitats for numerous species of trees and animals that can be viewed throughout the park.

Significant Habitat

Although the park displays many imperiled species as captive animals, a significant number of free-ranging imperiled species also make use of the park. The hydric hammock community that makes up most of the park houses these imperiled species. Some of these imperiled species include several heron and egret species, the black bear, the Homosassa schrew, and the ever-popular West Indian manatee. All listed species will be protected under established Division management practices and policies to ensure that impacts remain minimal to the imperiled plants and animals. Monitoring of visitor impacts will be conducted to identify potential impacts in advance.

Natural Features

The most spectacular natural feature in the park is Homosassa Spring, which forms the headwaters of the Homosassa River. The spring has attracted humans for thousands of years, and manatees for 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 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 the spring systems of Florida. The manatee programs conducted by park staff and many volunteers provide critical public outreach and education to publicize the struggle of the manatee in Florida.

Archaeological and Historical Features

Ellie Schiller Homosassa Springs Wildlife State Park has many important and archeological sites within its boundaries, with good potential for additional discoveries. The park has nine archaeological sites listed with the Florida Master Site File (FMSF). Eight sites are prehistoric, one also has a historic component and one is a historic site. The archaeological sites represent the culture of native peoples who lived near the water resources of the Homosassa River from the Archaic period through the Weeden Island period. The spring vent was sampled in the past and 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. More information about these cultural and historical sites is discussed on the Resource Management Component.

Assessment of Use

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

Past Uses

The 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.

Future Land Use and Zoning

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

The current zoning designation for the park is mostly conservation intended to protect and conserve sensitive land, water, and other natural resources (Citrus County 2012). A coastal and lakes community is within the park to the northwest but is

currently vacant. Low density residential development is to the southeast, adjacent to a general commercial district that follows the highway corridor. A Public/Semi-Public, Institutional (PSI) district is in the eastern area of the park where the Homosassa Springs Visitors Center is located. The current future land use designation is predominantly conservation. Therefore, there are no expected conflicts between the future land use or zoning designations and typical state park land uses.

Current Recreational Use and Visitor Programs

There is a variety of recreational opportunities at Ellie Schiller Homosassa Springs State Park. Recreational opportunities include hiking, wildlife viewing, nature trail, boat tours, picnicking, geo-seeking, birding, and tours. Along the wildlife trail visitors can view manatees, black bear, Florida panther, red wolves, bobcats, a variety of bird species, and many other animals native to Florida. Visitors looking for an opportunity to view fish and manatees from under the water can use the floating underwater observatory to get a closer look at these creatures. The park's visitor center offers the opportunity for visitors to experience the Manatee Education Center as well as board boats for touring. These tour boats travel along Pepper Creek from the visitor center to the West Entrance. Children can find a variety of hands on experiences and activities in the Children's Education Center. Additional programs and wildlife encounters can be viewed daily and the schedule of these events can be found at the park as well as on the parks brochure.

Other Uses

Fishbowl Drive, a county road, bisects the park from North to South. The road is heavily used and causes noise problems in various parts of the park. Additionally weddings can be held at the parks gazebo located in the garden of the spring area.

Protected Zones

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

At Ellie Schiller Homosassa Springs Wildlife State Park all wetlands and floodplain as well as known imperiled species habitat have been designated as protected zones. The park's current protected zone is delineated on the Conceptual Land Use Plan.

Existing Facilities

Most of the recreational and support facilities at Ellie Schiller Homosassa Springs Wildlife State Park are located in the area of the park West of Fishbowl Drive. The visitor's center, dog kennels, tram station and the boat docks are located on the East side of Fishbowl Drive. From the main parking area at the visitor's center guests can either take a tram along the birding trail or a boat tour along Pepper Creek. Both options take visitors through a unique experience on their way to the west entrance. Picnic facilities are located in the southwest area of the park in the garden of the springs. Along the wildlife walk visitors can stroll through the park and view many species that make Florida their home as well as some that do not. Pavilions and restrooms are located throughout the park for visitors to use at their convenience. Support facilities including a shop, warehouse, boat house, and staff residences are also on the property. (see Base Map) An inventory of the park's recreational and support facilities is listed below.

Recreation Facilities

Visitor Center
Interpretive Exhibits
Boat Dock
Restaurant
Pepper Creek Birding Trail (Tram Road)
Tour Boats ()

West Entrance
Entrance Building

Wildlife Walk
Boardwalk
Rain Shelters
Bear Enclosure
Shorebird Enclosure
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
Gardens
Garden Pavilion
Picnic Area
River Pavilion

Support Facilities

Visitor Center
Visitor Center Building
Paved Parking
Overflow Parking
Residence
Warehouse
Tram Station
Tram Road
Dog Kennels
Boathouse

West Entrance
Entrance Building
Paved Parking
Overflow Parking
Dog Kennels
Boathouse
Concession Office
Tram Station

Wildlife Walk
Wildlife Care Building
Wildlife Care Enclosures

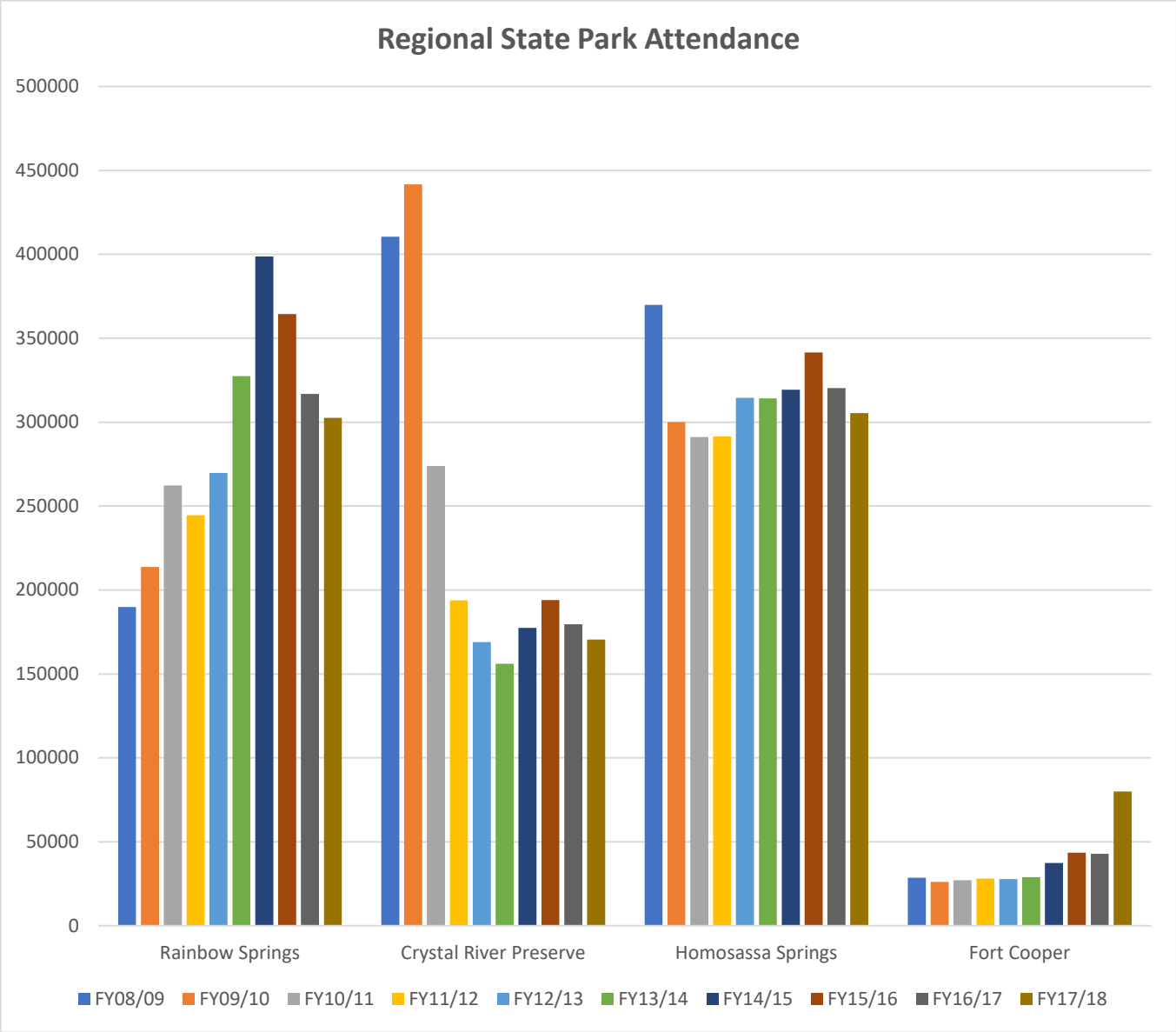
Homosassa Spring
Manatee Care Building
Manatee Handling Pool

Children's Education Center
Restrooms

Shop
Residences (2)
Shop Building

Attendance Analysis

The chart below shows annual attendance at Ellie Schiller Homosassa Springs Wildlife State Park over the past 10 years, as compared to other state parks in the region. Ellie Schiller Homosassa Springs Wildlife State Park recorded 305,393 visitors in FY2017/2018. By DRP estimates, the FY 2017/2018 visitors contributed 26.4 million in direct economic impact, the equivalent of adding 369 jobs to the local economy (FDEP 2018).



Conceptual Land Use Plan

The following narrative represents the current conceptual land use proposal for this park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape and social setting (see Conceptual Land Use Plan). The conceptual land use plan is modified or amended, as new information becomes available regarding the park's natural and cultural resources or trends in recreational uses, in order to adapt to changing conditions. Additionally, the acquisition of new parkland may provide opportunities for alternative or expanded land uses. The DRP develops a detailed development plan for the park and a site plan for specific facilities based on this conceptual land use plan, as funding becomes available.

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

cultural site locations) are investigated in greater detail. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal.

Creation of impervious surfaces is minimized to the greatest extent feasible in order to limit the need for stormwater management systems, and all facilities are designed and constructed using best management practices to limit and avoid resource impacts. Federal, state and local permit and regulatory requirements are addressed during facility development. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses

Public Access and Recreational Opportunities

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

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

***Objective: Maintain the park's current recreational carrying capacity of 6,464 users per day*.**

The park will continue to provide opportunities for hiking, picnicking, tours, and wildlife viewing. Interpretive programs will continue to be offered.

Objective: Expand the park's recreational carrying capacity by 160 users per day.

Hiking opportunities via a Nature Trail will be added to connect visitors from the Main Visitor's Center on US 19 to the West Entrance along Fishbowl Road. This will give visitors a third option to connect the two areas.

Objective: Continue to provide the current repertoire of 15 interpretive, educational and recreational programs on a regular basis.

Ellie Schiller Homosassa Springs Wildlife State Park currently offers 15 interpretive, educational, and recreational programs that focus on a variety of topics ranging from the history of the park and importance of springs to the importance of conservation efforts on each of the animals that are viewed in the park. Current programs include daily animal programs on alligators, manatees, hippos, and other wildlife throughout the park. Additional programs include a boat and tram program to interpret the significance of the park while transporting guests to the main area of the park. Park staff and volunteers actively participate in a roaming interpretation program to visitors throughout the park. Various "hands on" programs and puppet programs are geared towards children and can be found in the Discovery Center.

Proposed Facilities

Capital Facilities and Infrastructure

Goal: Develop and maintain the capital facilities and infrastructure necessary to implement the recommendations of the management plan.

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of the recreational opportunities, to improve the protection of

ELLIE SCHILLER HOMOSASSA SPRINGS WILDLIFE STATE PARK

N

0 150 300 600 Feet

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

BASE MAP PAGE 1

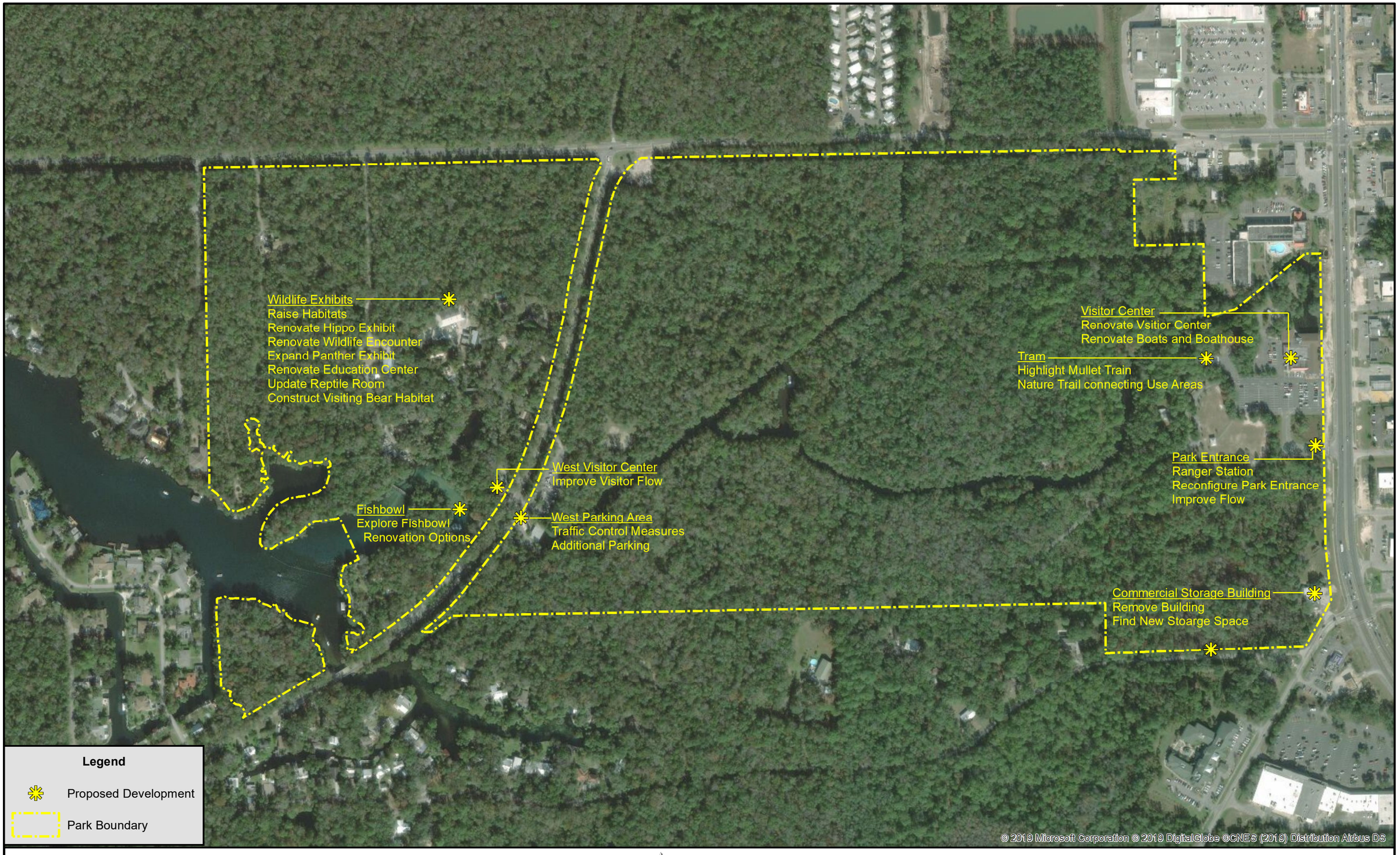
ELLIE SCHILLER HOMOSASSA SPRINGS WILDLIFE STATE PARK

N

0 50 100 200 Feet

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

BASE MAP PAGE 2



ELLIE SCHILLER HOMOSASSA SPRINGS STATE PARK

N

0 0.025 0.05 0.1 Miles

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

CONCEPTUAL LAND USE PLAN

park resources, and to streamline the efficiency of park operations.

The following is a summary of renovated and new facilities needed to implement the conceptual land use plan for Ellie Schiller Homosassa Springs Wildlife State Park:

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

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

Objective: Improve/repair 7 existing facilities and 0.75 miles of trail.

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

Park Entrance:
Recommended improvements include the enhancement of the area with a ranger station, reconfiguring of the entrance, and improving the traffic flow in and out of the park. These improvements will allow the park to have another place to collect fees.

Commercial Storage Building:
Recommended improvements include the removal of this storage building and finding new storage opportunities for the park.

US 19 Visitor Center:
Recommended improvements include renovating the visitor center to improve visitor circulation and renovating the boats and boathouse to improve the quality of the visitor experience provided.

Tram:
Recommended improvements include highlighting the Mullet Train as well as enhancing the area with a nature trail from the US 19 Visitor Center to the West Visitor Center to provide guests with an additional option to get from one use area to the other.

West Visitor Center/Parking Area:
Recommended improvements include renovations to improve better visitor circulation as well as realigning the park entrance and exit to improve traffic flow during peak park visitation. Additional parking at the West Visitor Center and some type of traffic control measure will be included to help visitors cross Fishbowl Drive.

Wildlife Exhibits:
Recommended improvements include the renovating the current hippo exhibit to demonstrate a more natural wetland habitat. All habitats should be raised in order to protect them from flooding. The wildlife encounter area will be renovated towards a more ranger/campfire circle feel to enhance the visitors experience in this area. The panther exhibit will be expanded in order to give more room to roam. The park's reptile room and Education Center will both be updated and renovated to provide for a more visitor friendly experience. Additionally, a wild bear habitat in the woods behind the veterinary center will be constructed to provide rescued cubs a more natural environment that will help them thrive upon release into the wild.

Fishbowl:
Recommended improvements include making this structure more ADA compliant. Options include replacing the AC unit with a smaller unit to provide more space for wheelchairs to be in the Fishbowl. A lift is recommended to get visitors with chairs into and out of the bowl easier. Additional options include removing the current fishbowl and replacing it with a similar experience for visitors. The park will take advantage of the opportunity to expand interpretive programing in the Fishbowl as well.

Facilities Development

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates (Table 8) located in the Implementation Component of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist DRP in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes. New facilities and improvements to existing facilities recommended by the plan include:

Recreation Facilities

Wildlife Exhibits
Raise Habitats
Renovate Hippo Exhibit
Renovate Wildlife Encounter
Expand Panther Exhibit
Renovate Education Center
Update Reptile Room
Construct Visiting Bear Habitat

Fishbowl Observatory
Explore Fishbowl Renovation Options

Tram
Highlight Mullet Tram
Nature Trail Connecting Use Areas (3/4 mil.)

Support Facilities

West Visitor Center/Parking Area
Improve Visitor Flow
Traffic Control Measures
Additional Parking

.

East Visitor Center
Renovate Visitor Center
Renovate Boats and Boathouse

Commercial Storage Building
Remove Building
Find New Storage Space

Park Entrance
Ranger Station
Reconfigure Park Entrance
Improve Flow

Recreational 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 7).

The recreational 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 7

Table 8. Recreational Carrying Capacity Estimates		
Existing Use Areas	**Visitors at One Time**	**Daily Visitors**
Wildlife Park	2,732	5,464
Nature Trail	5	10
Picnicking	95	190
Visitor Center	400	800
Proposed Use Areas	**Visitors at One Time**	**Daily Visitors**
Nature Trail	40	160
Estimated Recreational Capacity	**Visitors at One Time**	**Daily Visitors**
Wildlife Park	2,732	5,464
Nature Trail	45	170
Picnicking	95	190
Visitor Center	400	800

Optimum Boundary

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

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

Various properties adjacent to the southern portion of the park on the east side of Fishbowl Drive were highlighted due to the significance of protecting the various springs, protecting manatees, protecting the security of the park, and possible willing sellers.

ELLIE SCHILLER HOMOSASSA SPRINGS WILDLIFE STATE PARK

N

0 150 300 600 Feet

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

OPTIMUM BOUNDARY MAP

Addendum 1 - 8

Addendum 1—Acquisition History

Ellie Schiller Homosassa Springs Wildlife State Park
Acquisition History

LAND ACQUISITION HISTORY REPORT

Park Name	Ellie Schiller Homosassa Springs Wildlife State Park
Date Updated	7/20/2018
County	Citrus County, Florida
Trustees Lease Number	Lease No. 3786
Legal Description	A legal Description is available upon request to the Department of Environmental Protection
Current Park Size	200.25 acres
Purpose of Acquisition	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida has acquired Ellie Schiller Homosassa Springs State Park to preserve and protect the natural resources of the property and to use the property to provide recreational opportunities and experience for enjoyment and benefit of the people of Florida and its visitors.

Acquisition History (Include only the acquisition of a parcel or parcels with 10 acres or more)

Parcel Name or Parcel DM-ID	Date Acquired	Initial Seller	Initial Purchaser	Size in acres	Instrument Type
DMID12028	12/30/1988	Citrus County, Florida	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees).	156.393	Deed of Conveyance
DMID12028	9/19/2001	Karen Mesker Richard Vesley Daniel Vesley and Abra Gleen-Allen Figureroa	Trustees	13.261	Warranty Deed
DMID 12027	12/27/1994	Fred Parsons and his wife Mary Parsons	Trustees	13.261	Warranty Deed

Management Lease

Parcel Name or Lease Number	Date Leased	Initial Lessor	Initial Lessee	Current Term	Expiration Date
Lease No. 3786	9/1/1989	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida	State of Florid Department of Natural Resources, Division of Recreation and Parks.	Fifty (50) years	8/10/2039

Outstanding Issue	Type of Instrument	Brief Description of the Outstanding Issue	Term of the Outstanding Issue
There are no known deed-related issues such as restrictions or reservations on use of any portion of Ellie schiller Homosassa Springs Widlife State Park			

Addendum 2—Advisory Group Members and Report

List

Report

Addendum 3—References Cited

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Addendum 4—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, at a depth of less than 10 inches for 1-4 months, 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 and has been reworked and shaped by earth-moving 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 very rapid. The available water capacity is also variable, but generally 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 on the flatwoods and is nearly level and poorly drained. 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 to 4 months. It recedes during dry periods, but generally is 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 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 consists 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, after very heavy rains, the surface may be covered by shallow water for up to a month. 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.

(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, within 10 inches of the surface for 2 to 4 months in most years, 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 and moderate in the subsoil. 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, are somewhat elongated, and 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 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. 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, and the content of organic matter and natural fertility are low.

Addendum 5—Plant and Animal List

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

PTERIDOPHYTES

Giant leather fern..... *Acrostichum danaeifolium*
Toothed misorus fern ..... *Blechnum serrulatum*
Scouring-rush..... *Equisetum hyemale* var. *affine*
Tuberous sword fern..... *Nephrolepis cordifolia* *
Cinnamon fern..... *Osmunda cinnamomea*
Royal fern ..... *Osmunda regalis* var. *spectabilis*
Golden polypody ..... *Phlebodium aureum*
Resurrection fern ..... *Pleopeltis polypodioides* var. *michauxiana*
Tailed bracken..... *Pteridium aquilinum* var. *pseudocaudatum*
Water spangles..... *Salvinia minima*
Hairy maiden fern ..... *Thelypteris hispidula* var. *versicolor*
Widespread maiden fern ..... *Thelypteris kunthii*
Shoestring fern..... *Vittaria lineata*
Virginia chain fern..... *Woodwardia virginica*

GYMNOSPERMS

Sago palm..... *Cycas revoluta* *
Red cedar ..... *Juniperus virginiana*
Slash pine..... *Pinus elliottii*
Longleaf pine..... *Pinus palustris*
Pond-cypress..... *Taxodium ascendens*
Coontie..... *Zamia pumila*

ANGIOSPERMS

MONOCOTS

Bromeliad ..... *Aechmea* sp. *
Indian ginger..... *Alpinia calcarata* *
Shell ginger..... *Alpinia zerumbet* *
Bushy bluestem ..... *Andropogon glomeratus* var. *pumilus*
Jack-in-the-pulpit..... *Arisaema triphyllum*
Wiregrass..... *Aristida stricta* var. *beyrichiana*
Sprenger's asparagus-fern ..... *Asparagus aethiopicus* *
Cast iron plant..... *Aspidistra elatior* *
Common carpetgrass..... *Axonopus fissifolius*
Big carpetgrass..... *Axonopus furcatus*
Hedge bamboo ..... *Bambusa multiplex* *
Rescuegrass ..... *Bromus catharticus* *
Canna..... *Canna* sp. *
Greenwhite sedge ..... *Carex albolutescens*
Godfrey's sedge..... *Carex godfreyi*
Long's sedge ..... *Carex longii*

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Longleaf woodoats	*Chasmanthium laxum var. sessiliflorum*	
Jamaica swamp sawgrass	*Cladium jamaicense*	
Wild taro	*Colocasia esculenta* *	
Common dayflower	*Commelina diffusa* *	
Seven-sisters; string-lily	*Crinum americanum*	
Bermudagrass	*Cynodon dactylon* *	
Baldwin's flatsedge	*Cyperus croceus*	
Manyspike flatsedge	*Cyperus polystachyos*	
Variable witchgrass	*Dichanthelium commutatum*	
Openflower witchgrass	*Dicanthelium laxiflorum*	
Southern crabgrass	*Digitaria ciliaris*	
Air potato	*Dioscorea bulbifera* *	
Florida yam	*Dioscorea floridana*	
Threeway sedge	*Dulichium arundinaceum*	
Brazilian waterweed	*Egeria densa* *	
Common water-hyacinth	*Eichhornia crassipes* *	
Viviparous spikerush	*Eleocharis vivipara*	
Green-fly orchid	*Epidendrum conopseum*	
Bigtop lovegrass	*Eragrostis hirsuta*	
Centipedegrass	*Eremochloa ophiuroides* *	
Pinewoods fingergrass	*Eustachys petraea*	
Toothpetal false reinorchid	*Habenaria floribunda*	
Orange daylily	*Hemerocallis fulva* *	
Hydrilla; waterthyme	*Hydrilla verticillata* *	
Cogongrass	*Imperata cylindrica* *	
Forked rush	*Juncus dichotomus*	
Shortleaf spikesedge	*Kyllinga brevifolia*	
Carolina redroot	*Lachnanthes caroliana*	
Italian ryegrass	*Lolium perenne* *	
Common banana	*Musa x paradisiaca* *	
Heavenly bamboo	*Nandina domestica* *	
Woodsgrass	*Oplismenus hirtellus*	
Egyptian paspalidium	*Paspalidium geminatum*	
Knotgrass	*Paspalum distichum*	
Thin paspalum	*Paspalum setaceum*	
Green arrow arum	*Peltandra virginica*	
Common reed	*Phragmites australis*	
Water-lettuce	*Pistia stratiotes*	
Southern tubercled orchid	*Platanthera flava*	HH
Annual bluegrass	*Poa annua* *	
Pickerelweed	*Pontederia cordata*	
Hairy shadow witch	*Ponthieva racemosa*	
Arrow bamboo	*Pseudosasa japonica* *	
Needle palm	*Rhapidophyllum hystrix*	
Starrush whitetop	*Rhynchospora colorata*	
Fascicled beaksedge	*Rhynchospora fascicularis*	

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Mingled beaksedge	*Rhynchospora mixta*	
Cabbage palm	*Sabal palmetto*	
Bulltongue arrowhead	*Sagittaria lancifolia*	
Saw palmetto	*Serenoa repens*	
Narrowleaf blue-eyed grass	*Sisyrinchium angustifolium*	
Annual blue-eyed grass	*Sisyrinchium rosulatum* *	
Saw greenbrier	*Smilax bona-nox*	
Prairie wedgescale	*Sphenopholis obtusata*	
Ladiestresses	*Spiranthes* sp.	
Smutgrass	*Sporobolus indicus* *	
St. Augustinegrass	*Stenotaphrum secundatum*	
Ballmoss	*Tillandsia recurvata*	
Southern needleleaf	*Tillandsia setacea*	
Spanish moss	*Tillandsia usneoides*	
Bluejacket; Ohio spiderwort	*Tradescantia ohiensis*	
Purplequeen	*Tradescantia pallida* *	
Tapegrass	*Vallisneria americana*	
Arrowleaf elephant's ear	*Xanthosoma sagittifolium* *	
Spanish bayonet	*Yucca aloifolia*	
Zeuxine	*Zeuxine* sp. *	
DICOTS		
Slender threeseed mercury	*Acalypha gracilens*	
Boxelder	*Acer negundo*	
Red maple	*Acer rubrum*	
Common bugle	*Ajuga reptans* *	
Mimosa	*Albizia julibrissin* *	
Alligatorweed	*Alternanthera philoxeroides* *	
Common ragweed	*Ambrosia artemisiifolia*	
Peppervine	*Ampelopsis arborea*	
Snapdragon	*Antirrhinum majus* *	
Groundnut	*Apios americana*	
Peanut	*Arachis hypogaea* *	
Devil's walkingstick	*Aralia spinosa*	
Variableleaf indian plantain	*Arnoglossum diversifolium*	HH
Scarlet milkweed	*Asclepias curassavica*	
Chinese boxorange	*Atalantia buxifolia* *	
Groundsel tree; sea-myrtle	*Baccharis halimifolia*	
Herb-of-grace	*Bacopa monnieri*	
Wax begonia	*Begonia cucullata* *	
Rattan vine	*Berchemia scandens*	
Beggarticks	*Bidens alba*	
Crossvine	*Bignonia capreolata*	
False nettle; bog hemp	*Boehmeria cylindrica*	
Boxwood	*Buxus microphylla* *	
American beautyberry	*Callicarpa americana*	

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Trumpet creeper	*Campsis radicans*	
Hairy bittercress	*Cardamine hirsuta* *	
American hornbeam	*Carpinus caroliniana*	
Water hickory	*Carya aquatica*	
Pignut hickory	*Carya glabra*	
River sheoak	*Casuarina cunninghamiana* *	
Madagascar periwinkle	*Catharanthus roseus* *	
Silver cock's comb	*Celosia argentea* *	
Sugarberry; hackberry	*Celtis laevigata*	
Spadeleaf	*Centella asiatica*	
Common buttonbush	*Cephalanthus occidentalis*	
Spotted sandmat	*Chamaesyce maculata*	
Spotted water hemlock	*Cicuta maculata*	
Nuttall's thistle	*Cirsium nuttallii*	
Sweet orange	*Citrus x aurantium* *	
Garden croton	*Codiaeum variegatum* *	
Canadian horseweed	*Conyza canadensis*	
Flowering dogwood	*Cornus florida*	
Swamp dogwood	*Cornus foemina*	
Carolina frostweed	*Crocanthemum carolinianum*	
Marsh parsley	*Cyclospermum leptophyllum* *	
Climbing hydrangea	*Decumaria barbara*	
Zarzabacoa comun	*Desmodium incanum* *	
Panicledleaf ticktrefoil	*Desmodium paniculatum*	
Carolina ponysfoot	*Dichondra carolinensis*	
Common persimmon	*Diospyros virginiana*	
Golden dewdrops	*Duranta erecta* *	
American burnweed	*Erechtites hieraciifolius*	
Oakleaf fleabane	*Erigeron quercifolius*	
Early whitetop fleabane	*Erigeron vernus*	
Loquat	*Eriobotrya japonica* *	
Baldwin's eryngo	*Eryngium baldwinii*	
Coralbean; Cherokee bean	*Erythrina herbacea*	
American strawberrybush	*Euonymus americanus*	
Dogfennel	*Eupatorium capillifolium*	
White ash	*Fraxinus americana*	
Carolina ash	*Fraxinus caroliniana*	
Green ash; pumpkin ash	*Fraxinus pennsylvanica*	
Stiff marsh bedstraw	*Galium tinctorium*	
Pennsylvania everlasting	*Gamochaeta pensylvanica* *	
Spoonleaf purple everlasting	*Gamochaeta purpurea*	
Gardenia	*Gardenia jasminoides* *	
Yellow jessamine	*Gelsemium sempervirens*	
Carolina cranesbill	*Geranium carolinianum*	
Angularfruit milkvine	*Gonolobus suberosus*	MEH
Loblolly bay	*Gordonia lasianthus*	

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
English ivy	*Hedera helix* *	
Scarlet rosemallow	*Hibiscus coccineus*	
Queen-devil	*Hieracium gronovii*	
Coastalplain hawkweed	*Hieracium megacephalon*	
Manyflower marshpennywort	*Hydrocotyle umbellata*	
Dwarf St. John's-wort	*Hypericum mutilum*	
East Palatka holly	*Ilex x attenuata*	
Dahoon	*Ilex cassine*	
Chinese holly	*Ilex cornuta* *	
Gallberry	*Ilex glabra*	
American holly	*Ilex opaca*	
Yaupon	*Ilex vomitoria*	
Garden impatiens	*Impatiens walleriana* *	
Virginia willow	*Itea virginica*	
Grassleaf lettuce	*Lactuca graminifolia*	
Crapemyrtle	*Lagerstroemia indica* *	
Lantana; shrubverbena	*Lantana camara* *	
Japanese privet	*Ligustrum japonicum* *	
Chinese privet	*Ligustrum sinense* *	
Canadian toadflax	*Linaria canadensis*	
Sweetgum	*Liquidambar styraciflua*	
Lilyturf	*Liriope* sp. *	
Cardinalflower	*Lobelia cardinalis*	SRST
Sweet alyssum	*Lobularia maritima* *	
Japanese honeysuckle	*Lonicera japonica* *	
Creeping primrosewillow	*Ludwigia repens*	
Wild bushbean	*Macroptilium lathyroides*	
Southern magnolia	*Magnolia grandiflora*	
Sweetbay	*Magnolia virginiana*	
Black medick	*Medicago lupulina* *	
Climbing hempvine	*Mikania scandens*	
Carolina bristlemallow	*Modiola caroliniana*	
Red mulberry	*Morus rubra*	
Wax myrtle	*Myrica cerifera*	
Myrsine	*Myrsine cubana*	
Oleander	*Nerium oleander* *	
Swamp tupelo	*Nyssa sylvatica* var. *biflora*	
Cutleaf eveningprimrose	*Oenothera laciniata*	
Dwarf lilyturf; mondograss	*Ophiopogon japonicus* *	
Eastern hophornbeam	*Ostrya virginiana*	
Common yellow woodsorrel	*Oxalis corniculata*	
Pink woodsorrel	*Oxalis debilis* *	
Florida pellitory	*Parietaria floridana*	
Virginia creeper	*Parthenocissus quinquefolia*	
Swamp bay	*Persea palustris*	
Split-leaf philodendron	*Philodendron bipinnatifidum* *	

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Heartleaf philodendron	*Philodendron hederaceum* var. *oxycardium* *	
Turkey tangle fogfruit	*Phyla nodiflora*	
American pokeweed	*Phytolacca americana*	
Narrowleaf silkgrass	*Pityopsis graminifolia*	
Virginia plantain	*Plantago virginica*	
Yew plum pine	*Podocarpus macrophyllus* *	
Black cherry	*Prunus serotina*	
Wild coffee	*Psychotria nervosa*	
Scarlet firethorn	*Pyracantha coccinea* *	
Carolina desertchicory	*Pyrrhopappus carolinianus*	
Laurel oak; diamond oak	*Quercus laurifolia*	
Overcup oak	*Quercus lyrata*	
Swamp chestnut oak	*Quercus michauxii*	
Water oak	*Quercus nigra*	
Shumard's oak	*Quercus shumardii*	
Live oak	*Quercus virginiana*	
Azalea	*Rhododendron* x southern hybrid *	
Swamp azalea	*Rhododendron viscosum*	
Winged sumac	*Rhus copallinum*	
Rose	*Rosa* sp. *	
Sand blackberry	*Rubus cuneifolius*	
Sawtooth blackberry	*Rubus pensilvanicus*	
Carolina wild petunia	*Ruellia caroliniensis*	
Heartwing dock	*Rumex hastatulus*	
Shortleaf rosegentian	*Sabatia brevifolia*	
Smallflower mock buckthorn	*Sageretia minutiflora*	
Carolina willow	*Salix caroliniana*	
Lyreleaf sage	*Salvia lyrata*	
American elder; elderberry	*Sambucus nigra* subsp. *canadensis*	
Pineland pimpernel	*Samolus valerandi* subsp. *parviflorus*	
Canadian blacksnakeroot	*Sanicula canadensis*	
Lizard's tail	*Saururus cernuus*	
Dusty miller	*Senecio cineraria* *	
Common coleus	*Solenostemon scutellarioides* *	
Anisescented goldenrod	*Solidago odora*	
Seaside goldenrod	*Solidago sempervirens*	
Spiny sowthistle	*Sonchus asper* *	
Creeping oxeye	*Sphagneticola trilobata* *	
Florida hedgenettle	*Stachys floridana*	
Aztec marigold	*Tagetes erecta* *	
Ricepaper plant	*Tetrapanax papyrifer* *	
Carolina basswood	*Tilia americana* var. *caroliniana*	
Eastern poison ivy	*Toxicodendron radicans*	
Society garlic	*Tulbaghia violacea* *	
Climbing aster	*Symphyotrichum carolinianum*	
Rice button aster	*Symphyotrichum dumosum*	

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for imperiled species)
Winged elm	*Ulmus alata*	
American elm	*Ulmus americana*	
Shiny blueberry	*Vaccinium myrsinites*	
White crownbeard	*Verbesina virginica*	
Walter's viburnum	*Viburnum obovatum*	
Sweet viburnum	*Viburnum odoratissimum* *	
Fourleaf vetch	*Vicia acutifolia*	
Florida vetch	*Vicia floridana*	
Pansy	*Viola x wittrockiana* *	
Muscadine	*Vitis rotundifolia*	
Frost grape	*Vitis vulpina*	
Chinese wisteria	*Wisteria sinensis* *	
Oriental false hawksbeard	*Youngia japonica* *	

* Non-native species

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

INVERTEBRATES

Beetles

Bark Beetle	*Ambrosiodmus tachygraphus*	MF
Weevil	*Cossonus corticola*	MF
Coarsewriting Engraver	*Ips calligraphus*	MF
Clown Beetle	*Platysoma* sp.	MF
Bark-gnawing Beetle	*Temnocheila virescens*	MF

Butterflies and Moths

Gulf Fritillary	*Agraulis vanillae*	MTC
Gemmed Satyr	*Cyllopsis gemma*	MEH
Monarch	*Danaus plexippus*	MTC
Horaces Duskywing	*Erynnis horatius*	MTC
Common Buckeye	*Junonia coenia*	MTC
E. Tiger Swallowtail	*Papilio glaucus*	MTC
Palamedes Swallowtail	*Papilio palamedes*	MTC
Spicebush Swallowtail	*Papilio troilus*	MTC
Cloudless Sulphur	*Phoebis sennae*	MTC
Pearl Cresent	*Phyciodes tharos*	MTC
Echo	*Seirarctia echo*	MF
American Lady	*Vanessa virginiensis*	MTC

Crustaceans

Blue Crab	*Callinectes sapidus*	SRST
Amphipod	*Gammarus* sp.	SRST
Shrimp	*Palaemonetes* sp.	SRST
Peninsula Crayfish	*Procambarus paeninsulanus*	SRST

Dragonflies and Damselflies

Variable Dancer	*Argia fumipennis*	SRST
Blue-ringed Dancer	*Argia sedula*	SRST
Gray-green Clubtail	*Arigomphus pallidus*	SRST
Purple Bluet	*Enallagma cardenium*	SRST
Florida Bluet	*Enallagma pollutum*	SRST
Prince Baskettail	*Epitheca princeps*	SRST
Ramburs Forktail	*Ischnura ramburii*	SRST
Blue Dasher	*Pachydiplax longipennis*	MTC
Carolina Saddlebags	*Tramea carolina*	MTC

Grasshoppers

Obscure Birdwing	*Schistocerca obscura*	MTC

Mayflies

E. Blue-winged Olive	*Baetis intercallaris*	SRST

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Angler's Curses	*Caenis diminuta diminuta*	SRST
Small Minnow	*Callibaetis floridanus*	SRST
Speckled Dun	*Callibaetis pretiosus*	SRST
Tiny Sulphur Dun	*Procloeon rubropictum*	SRST
Tiny Blue-winged Olive	*Pseudocloeon propinquum*	SRST
Fuzzy Beige	*Tricorythodes albilineatus*	SRST

FISH

Yellow Bullhead	*Ameiurus natalis*	SRST
American Eel	*Anguilla rostrata*	SRST
Sheepshead	*Archosargus probatocephalus*	SRST
Hardhead Catfish	*Arius felis*	SRST
Gafftopsail Catfish	*Bagre marinus*	SRST
Crevalle Jack	*Caranx hippos*	SRST
Common Snook	*Centropomus undecimalis*	SRST
Goby	*Ctenogobius* sp.	SRST
Grass Carp	*Ctenopharynogodon idella* *	SRST
Spotted Seatrout	*Cynoscion nebulosus*	SRST
Sheepshead Minnow	*Cyprinodon variegatus*	SRST
Atlantic Stingray	*Dasyatis sabina*	SRST
Sharksucker	*Echeneis naucrates*	SRST
Okefenokee Pygmy Sunfish	*Elassoma okefenokee*	SRST
Ladyfish	*Elops saurus*	SRST
Lake Chubsucker	*Erimyzon sucetta*	SRST
Silver Mojarra	*Eucinostomus argenteus*	SRST
Tidewater Mojarra	*Eucinostomus harengulus*	SRST
Marsh Killifish	*Fundulus confluentus*	SRST
Seminole Killifish	*Fundulus seminolis*	SRST
Eastern Mosquitofish	*Gambusia holbrooki*	SRST
Least Killifish	*Heterandria formosa*	SRST
Pinfish	*Lagodon rhomboides*	SRST
Spotted Gar	*Lepisosteus oculatus*	SRST
Longnose Gar	*Lepisosteus osseus*	SRST
Florida Gar	*Lepisosteus platyrhincus*	SRST
Warmouth	*Lepomis gulosus*	SRST
Bluegill	*Lepomis macrochirus*	SRST
Redear Sunfish	*Lepomis microlophus*	SRST
Spotted Sunfish	*Lepomis punctatus*	SRST
Bluefin Killifish	*Lucania goodei*	SRST
Rainwater Killifish	*Lucania parva*	SRST
Schoolmaster Snapper	*Lutjanus apodus*	SRST
Gray Snapper	*Lutjanus griseus*	SRST
Tarpon	*Megalops atlanticus*	SRST
Inland Silverside	*Menidia beryllina*	SRST

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Clown Goby	*Microgobius gulosus*	SRST
Largemouth Black Bass	*Micropterus salmoides*	SRST
Striped Mullet	*Mugil cephalus*	SRST
White Mullet	*Mugil curema*	SRST
Golden Shiner	*Notemigonus crysoleucas*	SRST
Redeye Chub	*Notropis harperi*	SRST
Coastal Shiner	*Notropis petersoni*	SRST
Tadpole Madtom	*Noturus gyrinus*	SRST
Sailfin Molly	*Poecilia latipinna*	SRST
Black Drum	*Pogonias cromis*	SRST
Red Drum	*Sciaenops ocellatus*	SRST
Atlantic Needlefish	*Strongylura marina*	SRST
Hogchoker	*Trinectes maculatus*	SRST

AMPHIBIANS

Frogs and Toads

Florida Cricket Frog	*Acris gryllus dorsalis*	HH
Greenhouse Frog	*Eleutherodactylus planirostris* *	HH
Green Treefrog	*Hyla cinerea*	HH
American Bullfrog	*Lithobates catesbeianus*	SRST
Pig Frog	*Lithobates grylio*	SRST
Southern Leopard Frog	*Lithobates sphenocephala*	SRST

Salamanders

Two-toed Amphiuma	*Amphiuma means*	SRST

REPTILES

Crocodilians

American Alligator	*Alligator mississippiensis*	SRST

Turtles

Florida Softshell	*Apalone ferox*	SRST
Snapping Turtle	*Chelydra serpentina*	SRST
Florida Chicken Turtle	*Deirochelys reticularia chrysea*	SRST
Gopher Tortoise	*Gopherus polyphemus*	SRST
Florida Mud Turtle	*Kinosternon subrubrum steindachneri*	SRST
Florida Redbelly Cooter	*Pseudemys nelsoni*	SRST
Peninsula Cooter	*Pseudemys peninsularis*	SRST
Suwannee Cooter	*Pseudemys suwanniensis*	SRST
Eastern Musk Turtle	*Sternotherus odoratus*	SRST
Florida Box Turtle	*Terrapene bauri*	HH

Snakes

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Florida Cottonmouth	*Agkistrodon piscivorus conanti*	DS, DM, HH
Southern Black Racer	*Coluber constrictor priapus*	MF, DV
Eastern Coachwhip	*Coluber flagellum flagellum*	MF
E. Diamond-backed Rattlesnake	*Crotalus adamanteus*	MF
Southern Ringneck Snake	*Diadophis punctatus punctatus*	HH
Eastern Indigo Snake	*Drymarchon couperi*	HH
Mud Snake	*Farancia abacura*	HH, DM
Eastern Hognose Snake	*Heterodon platyrhinos*	MF
Scarlet Kingsnake	*Lampropeltis elapsoides*	MF
Eastern Coral Snake	*Micrurus fulvius*	HH
Florida Watersnake	*Nerodia fasciata pictiventris*	SRST, DM
Eastern Ratsnake	*Pantherophis alleghaniensis*	HH, MF, DV
Eastern Corn Snake	*Pantherophis guttatus*	HH
Eastern Ribbonsnake	*Thamnophis sauritus*	MTC
Gartersnake	*Thamnophis sirtalis*	MTC
Lizards		
Green Anole	*Anolis carolinensis*	HH, DV
Cuban Brown Anole	*Anolis sagrei* *	DV
Six-lined Racerunner	*Aspidoscelis sexlineata*	MF
Eastern Glass Lizard	*Ophisaurus ventralis*	HH
Southeastern Five-lined Skink	*Plestiodon inexpectatus*	MF, DV
Broadhead Skink	*Plestiodon laticeps*	HH, DV
Ground Skink	*Scincella lateralis*	HH
BIRDS		
Waterfowl		
Wood Duck	*Aix sponsa*	SRST, CD, OF
Mallard	*Anas platyrhynchos*	SRST, CD
Blue-winged Teal	*Anas discors*	SRST
Green-winged Teal	*Anas crecca*	SRST
Lesser Scaup	*Aythya affinis*	SRST
Red-breasted Merganser	*Mergus serrator*	SRST
New World Quails		
Northern Bobwhite	*Colinus virginianus*	MF
Grebes		
Pied-billed Grebe	*Podilymbus podiceps*	SRST, CD
Pigeons and Doves		
Mourning Dove	*Zenaida macroura*	MTC
Hummingbirds		

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Ruby-throated Hummingbird	*Archilochus colubris*	HH, DV
Rails and Coots		
Purple Gallinule	*Porphyrio martinicus*	SRST, CD
Common Gallinule	*Gallinula galeata*	SRST, CD
Limpkins		
Limpkin	*Aramus guarauna*	SRST
Cranes		
Sandhill Crane	*Antigone canadensis*	OF
Plovers		
Killdeer	*Charadrius vociferus*	DV
Sandpipers		
American Woodcock	*Scolopax minor*	HH
Gulls, Terns, and Skimmers		
Laughing Gull	*Leucophaeus atricilla*	SRST, DV, OF
Ring-billed Gull	*Larus delawarensis*	DV, OF
Herring Gull	*Larus argentatus*	DV, OF
Storks		
Wood Stork	*Mycteria americana*	SRST, HH, DV
Cormorants		
Double-crested Cormorant	*Phalocrocorax auritus*	SRST, CD
Anhingas		
Anhinga	*Anhinga anhinga*	SRST, CD
Pelicans		
Brown Pelican	*Pelecanus occidentalis*	SRST, OF
Herons, Egrets, and Bitterns		
Great Blue Heron	*Ardea herodias*	DS, DM, SRST, CD
Great Egret	*Ardea alba*	DS, SRST, CD
Snowy Egret	*Egretta thula*	SRST, CD
Little Blue Heron	*Egretta caerulea*	DS, DM, SRST, CD
Tricolored Heron	*Egretta tricolor*	SRST, CD
Green Heron	*Butorides virescens*	DS, SRST, CD
Black-crowned Night-Heron	*Nycticorax nycticorax*	SRST, CD
Yellow-crowned Night-Heron	*Nyctanassa violacea*	SRST, CD
Ibises and Spoonbills		

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
White Ibis	*Eudocimus albus*	DV, OF
Roseate Spoonbill	*Platalea ajaja*	DV
New World Vultures		
Black Vulture	*Coragyps atratus*	MF, DV, OF
Turkey Vulture	*Cathartes aura*	MF, OF
Kites, Eagles, and Hawks		
Osprey	*Pandion haliaetus*	SRST, CD, OF
Swallow-tailed Kite	*Elanoides forficatus*	OF
Bald Eagle	*Haliaeetus leucocephalus*	SRST, OF
Sharp-shinned Hawk	*Accipiter striatus*	MEH, HH, DV, OF
Red-shouldered Hawk	*Buteo lineatus*	MTC
Short-tailed Hawk	*Buteo brachyurus*	HH, OF
Red-tailed Hawk	*Buteo jamaicensis*	OF
Owls		
Eastern Screech-Owl	*Megascops asio*	MF, MEH, DV
Great Horned Owl	*Bubo virginianus*	MF, MEH, DV
Barred Owl	*Strix varia*	DS, HH
Kingfishers		
Belted Kingfisher	*Megaceryle alcyon*	SRST, CD
Woodpeckers		
Red-bellied Woodpecker	*Melanerpes carolinus*	MTC
Yellow-bellied Sapsucker	*Sphyrapicus varius*	MEH, HH, DV
Downy Woodpecker	*Picoides pubescens*	MTC
Pileated Woodpecker	*Dryocopus pileatus*	MEH, HH, DV
Parrots		
Monk Parakeet	*Myiopsitta monachus* *	DV, OF
Vireos and Allies		
White-eyed Vireo	*Vireo griseus*	MF, MEH, SA, DV
Yellow-throated Vireo	*Vireo flavifrons*	MF
Blue-headed Vireo	*Vireo solitarius*	MEH, MF, DV
Crows and Jays		
Blue Jay	*Cyanocitta cristata*	MTC
American Crow	*Corvus brachyrhynchos*	MTC, OF
Fish Crow	*Corvus ossifragus*	MTC, OF
Swallows		
Purple Martin	*Progne subis*	DV, OF

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Tits and Allies		
Carolina Chickadee	*Poecile carolinensis*	MTC
Tufted Titmouse	*Baeolophus bicolor*	MTC
Wrens		
Carolina Wren	*Thryothorus ludovicianus*	MTC
Gnatcatchers		
Blue-gray Gnatcatcher	*Polioptila caerulea*	MF, MEH, DV
Kinglets		
Ruby-crowned Kinglet	*Regulus calendula*	MTC
Thrushes		
Eastern Bluebird	*Sialia sialis*	MF, DV
American Robin	*Turdus migratorius*	MTC
Mockingbirds and Thrashers		
Gray Catbird	*Dumetella carolinensis*	MF, SA, DV
Brown Thrasher	*Toxostoma rufum*	MF, SA, DV
Northern Mockingbird	*Mimus polyglottos*	MTC
Starlings		
European Starling	*Sturnus vulgaris* *	DV
Waxwings		
Cedar Waxwing	*Bombycilla cedrorum*	MF, DV, OF
Finches and Allies		
House Finch	*Haemorhous mexicanus*	DV
Pine Siskin	*Spinus pinus*	MTC
American Goldfinch	*Spinus tristis*	MTC
New World Warblers		
Ovenbird	*Seiurus aurocapilla*	MEH. HH
Black-and-white Warbler	*Mniotilta varia*	MTC
Northern Parula	*Setophaga americana*	MTC
Black-throated Blue Warbler	*Setophaga caerulescens*	MEH, HH
Palm Warbler	*Setophaga palmarum*	SA, DV
Pine Warbler	*Setophaga pinus*	MF
Yellow-rumped Warbler	*Setophaga coronata*	MTC
Cardinals, Grosbeaks, and Allies		
Summer Tanager	*Piranga rubra*	MF, DV
Northern Cardinal	*Cardinalis cardinalis*	MTC

* Non-native species

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Blackbirds and Allies		
Red-winged Blackbird	*Agelaius phoeniceus*	DS, DM, DV, OF
Boat-tailed Grackle	*Quiscalus major*	DM, DV
MAMMALS		
Didelphids		
Virginia Opossum	*Didelphis virginiana*	MTC
Insectivores		
Southern Short-tailed Shrew	*Blarina carolinensis*	MEH, HH
Eastern Mole	*Scalopus aquaticus*	MF, DV
Homosassa Shrew	*Sorex longirostris eionis*	MEH, HH
Bats		
Tricolored Bat	*Perimyotis subflavus*	HH, DV
Edentates		
Nine-banded Armadillo	*Dasypus novemcinctus* *	MTC
Lagomorphs		
Eastern Cottontail	*Sylvilagus floridanus*	MF, SA, DV
Marsh Rabbit	*Sylvilagus palustris*	DM, DS
Rodents		
Southern Flying Squirrel	*Glaucomys volans*	MEH, HH
Golden Mouse	*Ochrotomys nuttalli*	HH, MEH
Cotton Mouse	*Peromyscus gossypinus*	MF, MEH
Black Rat	*Rattus rattus* *	DV
Eastern Gray Squirrel	*Sciurus carolinensis*	MTC
Hispid Cotton Rat	*Sigmodon hispidus*	MF, DV
Carnivores		
River Otter	*Lutra canadensis*	SRST, CD
Bobcat	*Lynx rufus*	MTC
Raccoon	*Procyon lotor*	MTC
Gray Fox	*Urocyon cinereoargenteus*	MF, DV
Florida Black Bear	*Ursus americanus floridanus*	HH, DS
Artiodactyls		
White-tailed Deer	*Odocoileus virginianus*	MTC
Feral Pig	*Sus scrofa* *	MTC
Sirens		
West Indian Manatee	*Trichechus manatus*	SRST

* Non-native species

Ellie Schiller Homosassa Springs Wildlife State Park Animals

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

* Non-native species

TERRESTRIAL

Beach Dune	BD
Coastal Berm	CB
Coastal Grassland	CG
Coastal Strand	CS
Dry Prairie	DP
Keys Cactus Barren	KCB
Limestone Outcrop	LO
Maritime Hammock	MAH
Mesic Flatwoods	MF
Mesic Hammock	MEH
Pine Rockland	PR
Rockland Hammock	RH
Sandhill	SH
Scrub	SC
Scrubby Flatwoods	SCF
Shell Mound	SHM
Sinkhole	SK
Slope Forest	SPF
Upland Glade	UG
Upland Hardwood Forest	UHF
Upland Mixed Woodland	UMW
Upland Pine	UP
Wet Flatwoods	WF
Xeric Hammock	XH

PALUSTRINE

Alluvial Forest	AF
Basin Marsh	BM
Basin Swamp	BS
Baygall	BG
Bottomland Forest	BF
Coastal Interdunal Swale	CIS
Depression Marsh	DM
Dome Swamp	DS
Floodplain Marsh	FM
Floodplain Swamp	FS
Glades Marsh	GM
Hydric Hammock	HH
Keys Tidal Rock Barren	KTRB
Mangrove Swamp	MS
Marl Prairie	MP
Salt Marsh	SAM
Seepage Slope	SSL
Shrub Bog	SHB
Slough	SLO
Slough Marsh	SLM
Strand Swamp	STS

Wet Prairie ..... WP

LACUSTRINE

Clastic Upland Lake ..... CULK
Coastal Dune Lake ..... CDLK
Coastal Rockland Lake ..... CRLK
Flatwoods/Prairie ..... FPLK
Marsh Lake ..... MLK
River Floodplain Lake..... RFLK
Sandhill Upland Lake ..... SULK
Sinkhole Lake ..... SKLK
Swamp Lake..... SWLK

RIVERINE

Alluvial Stream ..... AST
Blackwater Stream ..... BST
Seepage Stream ..... SST
Spring-run Stream ..... SRST

SUBTERRANEAN

Aquatic Cave ..... ACV
Terrestrial Cave ..... TCV

ESTUARINE

Algal Bed ..... EAB
Composite Substrate ..... ECPS
Consolidated Substrate ..... ECNS
Coral Reef ..... ECR
Mollusk Reef..... EMR
Octocoral Bed ..... EOB
Seagrass Bed ..... ESGB
Sponge Bed..... ESPB
Unconsolidated Substrate..... EUS
Worm Reef..... EWR

MARINE

Algal Bed ..... MAB
Composite Substrate ..... MCPS
Consolidated Substrate ..... MCNS
Coral Reef ..... MCR
Mollusk Reef ..... MMR
Octocoral Bed ..... MOB
Seagrass Bed ..... MSGB
Sponge Bed ..... MSPB
Unconsolidated Substrate ..... MUS
Worm Reef ..... MWR

ALTERED LANDCOVER TYPES

Abandoned field/Abandoned pasture ..... AFP
Agriculture ..... AG
Artificial Pond ..... AP
Borrow Area ..... BA
Canal/ditch ..... CD
Clearcut pine plantation ..... CPP
Clearing/Regeneration CL
Developed ..... DV
Impoundment ..... IM
Invasive exotic monoculture ..... IEM
Pasture - improved ..... PI
Pasture - semi-improved ..... PSI
Pine plantation ..... PP
Restoration Natural Community ..... RNC
Road ..... RD
Spoil area ..... SA
Successional hardwood forest ..... SHF
Utility corridor ..... UC

MISCELLANEOUS

Many Types of Communities ..... MTC
Overflying ..... OF

Addendum 6—Imperiled Species Ranking Definitions

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 Fish and Wildlife Conservation 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 fabricated 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 or 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 or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.

S4..... apparently secure in Florida (may be rare in parts of range)

S5..... demonstrably secure in Florida

SH ..... of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)

SX..... believed to be extinct throughout range

SA..... accidental in Florida, i.e., not part of the established biota

SE..... an exotic species established in Florida may be native elsewhere in North America

SN ..... regularly occurring but widely and unreliably distributed; sites for conservation hard to determine

SU ..... due to lack of information, no rank or range can be assigned (e.g., SUT2).

S?..... Not yet ranked (temporary)

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

LEGAL STATUS

FEDERAL

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

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

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

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

PT ..... Proposed for listing as Threatened Species.

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

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

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

EXPE, XE..... Experimental essential population. A species listed as experimental and essential.

EXPN, XN .... Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes.

STATE

ANIMALS .. (Listed by the Florida Fish and Wildlife Conservation Commission - FWC)

FE ..... Federally-designated Endangered

FT ..... Federally-designated Threatened

FXN..... Federally-designated Threatened Nonessential Experimental Population

FT(S/A) ..... Federally-designated Threatened species due to similarity of appearance

ST..... Listed as Threatened Species by the FWC. 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 therefore is destined or very likely to become an endangered species within the near future.

SSC..... Listed as Species of Special Concern by the FWC. 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 that, in the near 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 7—Cultural Information

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, '*Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:
http://www.flheritage.com/preservation/compliance/guidelines.cfm

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

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

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

Phone: (850) 245-6425

Toll Free: (800) 847-7278
Fax: (850) 245-6435

The criteria to be used for evaluating eligibility for listing in the National Register of Historic Places are as follows:

1) Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- **a)** are associated with events that have made a significant contribution to the broad patterns of our history; and/or
- **b)** are associated with the lives of persons significant in our past; and/or
- **c)** embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- **d)** have yielded, or may be likely to yield, information important in prehistory or history.

2) Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the *National Register*. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

- **a)** a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
- **b)** a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- **c)** a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
- **d)** a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; ora reconstructed building, when it is accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or a property primarily commemorative in intent, if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
- **e)** a property achieving significance within the past 50 years, if it is of exceptional importance.

Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations and additions while preserving those portions or features that convey its historical, cultural or architectural values.

Stabilization is defined as the act or process of applying measures designed to reestablish a weather resistant enclosure and the structural stability of an unsafe or deteriorated property while maintaining the essential form as it exists at present.

Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity and materials of an historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.

Addendum 8—Local Government Comprehensive Plan Compliance

Insert County Compliance Check