



Florida Department of Environmental Protection

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July 12, 2017

Steven Cutshaw
Division of Recreation and Parks
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 525
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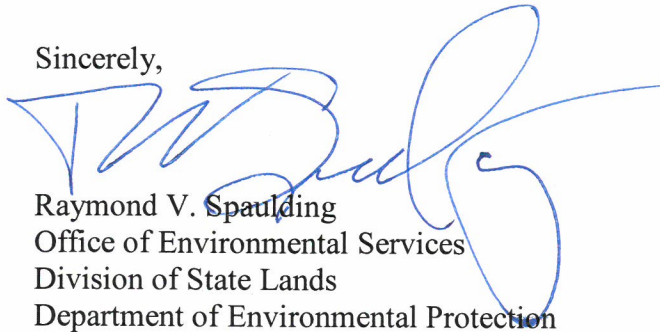
RE: Troy Spring State Park - Lease No. 4143

Dear Mr. Cutshaw:

The Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Troy Spring State Park management plan. The next management plan update is due July 12, 2027.

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

Sincerely,



Raymond V. Spaulding
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

Troy Spring State Park

Approved Unit Management Plan

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Recreation and Parks
July 2017



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INTRODUCTION

Troy Spring State Park is located in Lafayette County about 6 miles northwest of Branford (see Vicinity Map). Access to the park is from County Road 425 off of U.S. Highway 27 (see Reference Map). The Vicinity Map also reflects significant land and water resources existing near the park.

Troy Spring State Park was initially acquired on June 12, 1995 with funds from the Conservation and Recreation Lands (CARL) program. Currently, the park comprises 78.40 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on March 10, 1997 the Trustees leased (Lease Number 4143) the property to DRP under a 50-year lease. The current lease will expire on March 9, 2047.

Troy Spring 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 Troy Spring State Park, as a CARL acquisition, is to protect the environmentally unique and irreplaceable hydrogeological and cultural features of the site and to provide land for recreational use.

Park Significance

- The park protects the 70-foot deep first magnitude Troy Spring and its 325-foot spring-run stream that discharges into the Middle Suwannee River. These aquatic karst features and surrounding sandhill, alluvial forest, bottomland forest, and floodplain swamp form varied habitat for a diversity of imperiled species, including pallid cave crayfish, Suwannee bass, West Indian manatee, gopher tortoise, and little blue heron.
- The park preserves two prehistoric midden sites representing Indian Pond culture of the Weeden Island Period and the wreckage of the Civil War-era Confederate steamboat Madison, which served as a general store on the Suwannee River during the 1850s.
- The park offers ample resource-based recreational opportunities for diving and swimming in the spring, boating on the Suwannee River, and hiking through the park's scenic uplands.

Troy Spring State Park is classified as a state park in the DRP's unit classification system. In the management of a state park, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational

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

Purpose and Scope of the Plan

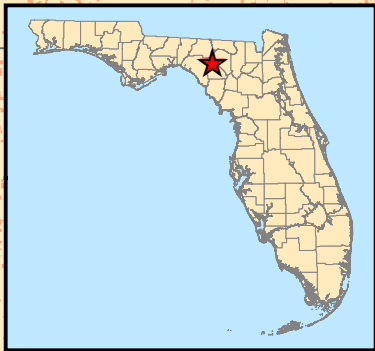
This plan serves as the basic statement of policy and direction for the management of Troy Spring State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures 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 2000 approved plan.

The plan consists of three interrelated components: Resource Management Component, Land Use Component and Implementation 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 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.

The Implementation Component consolidates the measurable objectives and actions for each of the park's management goals. An implementation schedule and cost estimates are included for each objective and action. Included in this table are (1) measures that will be used to evaluate the DRP's implementation progress, (2) timeframes for completing actions and objectives, and (3) estimated costs to complete each action and objective.

All development and resource alteration proposed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal



Legend

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

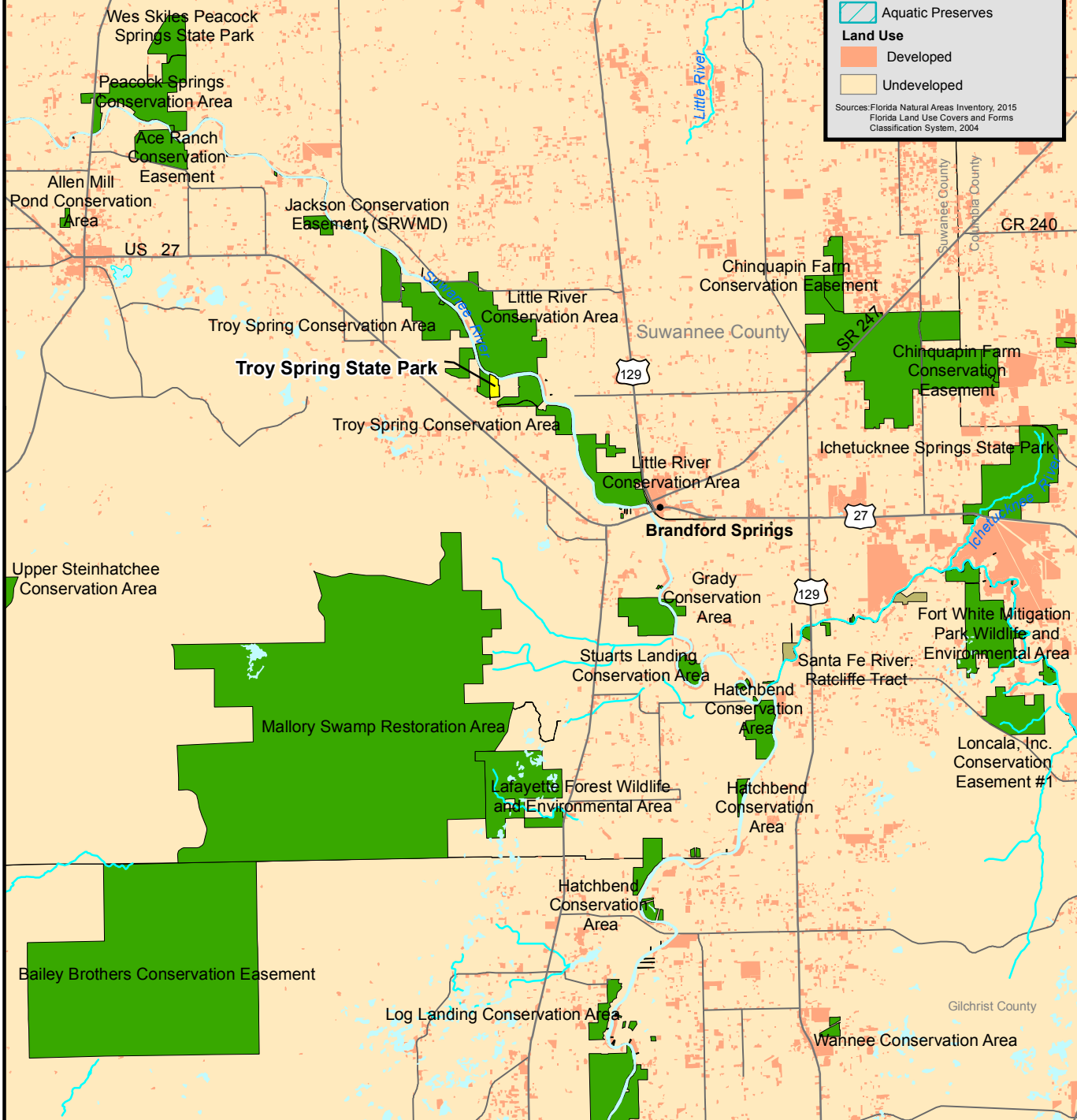
Conservation and Recreation Lands

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

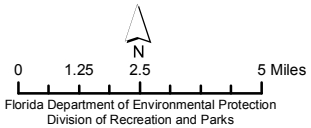
Land Use

- Developed
- Undeveloped

Sources: Florida Natural Areas Inventory, 2015
Florida Land Use Covers and Forms Classification System, 2004



TROY SPRING STATE PARK






VICINITY MAP




Image courtesy of USGS Earthstar Geographics SIO © 2016 Microsoft Corporation

Legend

-  Park Boundary
-  Other Managed Conservation Land
-  Springs

TROY SPRING STATE PARK


 0 0.05 0.1 0.2 Miles
 Florida Department of Environmental Protection
 Division of Recreation and Parks
 Date of aerial: 2011

REFERENCE MAP

instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes, and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

In the development of this plan, the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of the DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenue 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.

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.

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 hearing and an advisory group meeting to present the draft management plan to the public. These meetings were held on Wednesday, March 29 and Thursday, March 30, 2017, respectively. Meeting notices were published in the Florida Administrative Register, March 19, 2017, Volume 43, Issue 54, 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

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

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

RESOURCE MANAGEMENT COMPONENT

Introduction

In accordance with Chapter 258, Florida Statutes, the Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The management measures expressed in this plan are consistent with the Department's overall mission in ecosystem management. Cited references are contained in Addendum 3.

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 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.

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

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Troy Spring is located in the Gulf Coastal Lowlands geomorphologic region, and more specifically in the Suwannee River Lowlands (White 1970). The Gulf Coastal Lowlands are described as gently sloping terraces that originate in the highlands and extend towards the coast. Limestone is typically at or near the surface throughout most of this region, with sand or sandy clay overlying it.

Park elevations range from just under 20 feet to approximately 45 feet above mean sea level (msl). The highest points are in the southern half of the property and the lowest are at the northern end near the Suwannee River. Most of the park lies within the 100-year floodplain as calculated by the Suwannee River Water Management District (SRWMD) for this reach of the Suwannee River.

Some alterations of natural topography have taken place in the park. The most obvious alterations are located in the park's bottomland forest, where a previous owner of the property dredged three or four relatively small ponds. Large spoil piles and a series of ditches are associated with these ponds.

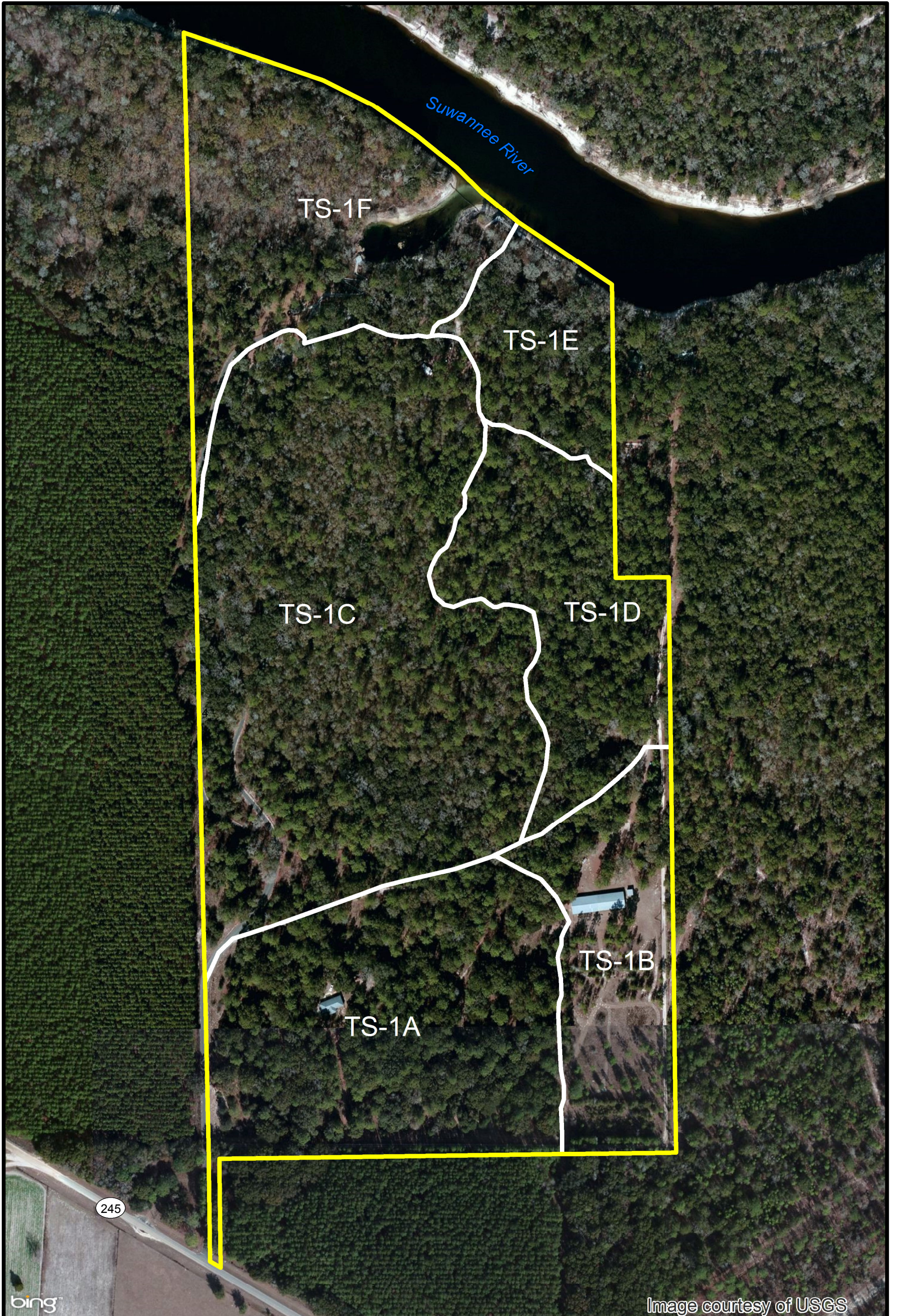
Geology

The series of geologic strata that underlie the park include, from youngest to oldest, Pliocene to Recent surficial sands and clays, Ocala Group, Avon Park Limestone, Lake City Limestone, and Oldsmar Limestone (Crane, 1986).

The upper surficial material consists of Recent Age deposits mixed with Pliocene-Pleistocene Age sediments that accumulated as terraces as sea levels fluctuated during successive glacial periods. The Pleistocene deposits are mostly fine-grained sands, clayey at the surface, but coarser with increasing depth. Large pebbles of phosphate and quartz are commonly found at the base of the sand. Recent and Pleistocene deposits may reach 20 feet in thickness.

The Ocala Group, an Eocene deposit, actually consists of three limestone formations of similar character. From youngest to oldest, these are the Crystal River, Williston, and Inglis Formations. These formations are so similar that they were recently grouped as the Ocala Limestone (Scott et al. 1991). Limestone of the Ocala Group ranges from a loose, porous, cream-to-white colored coquina composed of large foraminifera and shells to a brown, solution-riddled, echinoid-rich mineral. Deposit thickness varies from 100 to 200 feet.

Avon Park Limestone consists of alternate layers of dark brown dolomite and chalky limestone, both of which may contain chert and gypsum. This formation varies from



170 to 270 feet in thickness. When Avon Park Limestone occurs in combination with Lake City Limestone, geologists often refer to it as the Avon Park Formation (Scott et al. 1991).

Lake City Limestone, another Eocene formation, is very similar to Avon Park Limestone. Gypsum and anhydrite may occur at the base of the formation. The Lake City Limestone may be as much as 500 feet thick.

The last formation of Eocene Age is the Oldsmar Limestone, also known as the Oldsmar Formation (Scott et al. 1991). While the top half of the formation is a very porous, brown limestone with some gypsum and anhydrite, the bottom half is a thick zone of dolomite with chert or anhydrite. Oldsmar Limestone ranges between 250 and 350 feet in thickness.

Soils

Four soil types occur within Troy Spring State Park according to the Soil Survey for Lafayette County (see Soils Map). Soils include Penney sand, 0 to 5 percent slope; Blanton - Ortega complex, 0 to 5 percent slope; Fluvaquents, frequently flooded; and Garcon - Albany - Meadowbrook complex, 0 to 5 percent slope, occasionally flooded. See Addendum 3 for complete descriptions of these soils (Weatherspoon et al. 1998).

For much of the park, soils are relatively stable and soil erosion is minimal. However, there are several localized areas where significant erosion has occurred, the most severe of which is on the northern shore of the spring run, where canoes and motorized watercraft once landed or launched. On weekends and holidays prior to 2002, 40-50 motorboats, canoes, and jet-skis would often congregate inside and just outside the spring run at one time. The motorized vessels produced significant wakes, and operators of motorboats and jet-skis typically beached their craft on the shore with considerable force. According to long-term residents of the area, approximately 10-15 feet of shoreline at this location eroded away between about 1980 and 2000. The need to stabilize the shoreline, prevent further erosion, better manage visitor use patterns, and install appropriate facilities was addressed during initial development of the park in 2002.

In 2002, the park closed the spring-run stream to motorized watercraft, establishing a floating buoy system at the mouth of the run to prohibit entry. To provide motorized watercraft patrons with alternative public access, the DRP constructed a floating dock on the Suwannee River just downstream from the spring run, designed to allow patrons to moor their boats without compromising the spring system but still have reasonable access to the park. Reliable functioning of the floating dock has been sporadic, however, due to the extreme fluctuations of water levels on the Suwannee. When the river is at a low stage, the dock rests on the river bottom and boats cannot access it. When the river is at flood stage, boat patrons may not be able negotiate the floating walkway safely because it may be angled very steeply. Maintenance of the mooring facility has also proven to be a major challenge, as it is beginning to show serious signs of weathering and

degradation due to the Suwannee River's dynamic flood events. In addition, the trail leading to the floating dock is now experiencing erosion issues of its own that the park is in the process of addressing.

While exclusion of motorized watercraft from the spring run has helped stabilize the shoreline, continued recreational pressure from swimmers and divers still leads to soil erosion, especially when water levels are low. The greatest impact from recreation occurs when visitors gather at exposed sandy areas along the shoreline of the run, trampling native vegetation and causing significant erosion. Numerous unauthorized foot trails fragment the adjacent forested wetland communities. When the Suwannee River is extremely low, the riverbank and the entire shoreline on either side of the spring run may have relatively uncontrolled numbers of visitors sunbathing and accessing the spring. During these low water periods, visitors accessing the spring from the main access ramp cannot reach the water's edge without walking on uneven limestone and trampling plants.

Another site prone to significant soil erosion is the steep slope below the historic log home, which is located above the southeast shoreline of the spring run. Runoff from heavy rains is eroding the slope and undermining many of the old hardwood trees that grow there and along the shoreline, and the trees are at risk of falling into the spring run. During Tropical Storm Faye in August 2008, a significant amount of sandy soil washed down the slope into the spring run. This sand formed a narrow shelf along the edge of the run and has since persisted as a "beach" that seems to attract visitors seeking shallower water for wading and swimming. Unfortunately, the increased recreational pressure at this site has exacerbated the erosion there. The park has implemented a number of measures to mitigate impacts from storm water runoff, including improving the gutter system on the log structure to reduce direct runoff from the roof. The park has also installed hay bales, logs, and other materials on the slope for use as water bars to attenuate storm water runoff and divert it from areas that are prone to erosion. These efforts have not succeeded in completely stemming the erosion, so staff will need to consider additional measures.

One factor that may have increased erosion on slopes above the spring run is that the park at one time frequently mowed the entire area between the Log Cabin Visitor Center and the current park office, as well as a broad swath of mesic hammock connecting that area to the main parking lot. Much of the ground surface was devoid of cover. During rain events, water often sheet flows across this gently sloping area to the steep slopes above the spring, where it can then rush downward relatively unimpeded, eroding slopes, undermining trees, and contributing to excessive sediment deposition in the spring run. The simplest solution would be to allow groundcover species to reestablish over much of the area, leaving only a minimum number of traditionally maintained corridors to accommodate vehicular and pedestrian traffic. Supplemental plantings of appropriate native species may be necessary to complete the restoration. Management activities in the park will follow generally accepted best management practices to prevent additional soil erosion and conserve soil and water resources on site.



Minerals

Though no mining activities are known to have occurred in the park, limestone is extracted in the surrounding region for use as road base material. Whether mineral deposits of commercial value exist in the park is unknown.

Hydrology

Troy Spring is located in southwestern Suwannee County within the third reach of the Middle Suwannee River (MSR) basin (Hornsby et al. 2002). As a whole, the Suwannee River basin drains approximately 10,000 square miles in Florida and Georgia. Average flow of the Suwannee system is 7,100 million gallons per day (mgd), which ultimately discharges into the Gulf of Mexico. The Suwannee River is designated an Outstanding Florida Water and a Class III waterbody. Average annual rainfall for this region approaches 60 inches a year (Fernald and Purdum 1998).

Regionally within the MSR basin, the upper Floridan aquifer is unconfined and close to the surface (Scott et al. 1991). The exposed aquifer in this region gives rise to numerous springs that discharge into the Suwannee River and significantly augment its flow. In fact, groundwater is the source of nearly all inflow to the river within the MSR basin (Pittman et al. 1997). Spring flow contributes about half of the river's discharge in this region, and other groundwater sources account for the remaining amount. During flood stage, however, the cycle may reverse and springs may act as "siphons" or inflow points for river water to enter the upper Floridan aquifer.

Recent research has indicated that substantial nitrate loading and other related water quality issues are associated with river and groundwater mixing along this reach of the Suwannee River (Katz et al. 1999; Katz and Hornsby 1998; Berndt et al. 1998; Pittman et al. 1997). Currently, silviculture and agriculture are primary land uses in much of the MSR basin, although home site development is increasing within the river corridor. Since the Floridan aquifer is unconfined in this region, there is cause for concern. Contaminated runoff, or malfunctioning septic or sewage systems, can easily pollute the aquifer.

One watershed level process that seldom receives adequate consideration during studies of river hydrology is flooding. Flood events on the Suwannee River are naturally occurring since the river is unobstructed by artificial dams at present. The stretch of the Suwannee River between River Miles 82 and 83, which includes Troy Spring State Park, floods often. The SRWMD has calculated the following flood elevations for this section of the river during 2, 10, and 100-year events.

Table 1. Flood Elevations				
Event (msl)				
River Mile	2-year	10-year	100-year	Flood of Record
82	26	35	40	38
83	27	36	40	40

Natural communities along the river that lie at or below 30 feet msl are frequently inundated when the Suwannee River is at flood stage. Within the park, those communities include the spring-run stream, floodplain swamp, alluvial forest, and some of the bottomland forest. Additional bottomland forest and some of the mesic hammock also flood during 10-year events, sometimes to the extent that floodwaters may create access problems along the main park drive.

An especially important relationship exists between downstream flooding in a major river and episodic inundation within adjacent floodplain communities (Pringle 1997; Diehl 2000; Light et al. 2002). In Troy Spring State Park, at least three natural communities significantly benefit from this flooding phenomenon: bottomland forest, alluvial forest and floodplain swamp. These floodplain communities are highly dependent on the ephemeral nature of the flooding regime. If intermittent flooding of the Suwannee River did not occur, the adjacent floodplain communities would experience major changes in soils and in species composition. In fact, any alteration of the normal flooding regime of the Suwannee, especially in conjunction with reductions in base flow of springs along the middle reach of the river, could cause significant changes in the character of these wetland communities (Light et al. 2002; Sepulveda 2002).

Troy Spring is the only known spring in the park (Scott et al. 2004). It is classified as a first magnitude spring. The spring pool measures 138 feet north to south and 118 feet east to west. The main boil, located at the base of exposed limestone along the west side of the pool, is 60 feet deep. The spring discharges to the Suwannee River through a 325-foot spring-run stream. Even though cave divers have not mapped the Troy Spring cave system, they have partially explored the underground conduits. However, cave diving in this system is currently problematic due to the instability of limestone caverns within the conduits. A crumbling limestone ceiling at the conduit entrance has partially buried the old cave guidelines, creating potentially very dangerous conditions for divers trying to map and explore the system (Wes Skiles, pers. comm.).

Although the groundwater sources for Troy Spring are still being delineated, one recently connected inflow point is located to the northeast at a sinking stream called "Little River" (Greenhalgh et al. 2016). Divers have explored several miles of cave at the Little River swallet, referred to as "Stick Sink Swallet" (Wes Skiles, pers. comm.). The relationship between Stick Sink, Little River, and Troy Spring appears to be very similar to that of Rose Sink and Rose Creek and their known spring discharge points at the Ichetucknee Springs Group (Skiles et al. 1997). Further

springshed delineation using dye-trace studies should be a future priority for the DRP. Such studies would enable hydrologists to map additional groundwater connections between other surfacewater features and Troy Spring, as well as with Little River Spring just downstream along the Suwannee.

Water Quality

State and federal agencies have sporadically collected water quality data for surface water at Troy Spring since 1960 (Scott et al. 2004). In 2002, the SRWMD began to organize and coordinate its data collection activities more efficiently. Over the past 30 years, in its capacity as a lead agency for water resources, the SRWMD has increased its involvement in coordinating assessments of water quality and quantity and in supporting springs protection research. The SRWMD is also conducting trend analyses of current water quantity and quality conditions, which it uses in addressing future water supply needs within the district (Suwannee River Hydrologic Observatory 1997; Upchurch et al. 2007). The data collected primarily guides the SRWMD decision-making process in issuing consumptive use permits and approving water supply projects, in watershed planning, and in managing district projects. It also aids the SRWMD in the development of state-mandated minimum flows and levels (MFLs) for water bodies throughout the district.

In the 1990s, the FDEP embarked on a period of much greater involvement in surface and groundwater assessment by initially accumulating and analyzing all available datasets associated with required water quality assessments in Florida (Hand et al. 1990; Scott et al. 1991). In 1996, with expanded efforts in 2000, FDEP initiated its own statewide water-monitoring program (FDEP 2001; FDEP 2005). Referred to as the Integrated Water Resource Monitoring Program, it has evolved from the initial efforts to become a mandate for implementing the requirements of the 1999 Florida Watershed Restoration Act and Section 303(d) of the Federal Clean Water Act (Copeland et al. 1999; Maddox et al. 1992; FDEP 2005). This watershed approach provides a framework for implementing the Total Maximum Daily Load (TMDL) requirements necessary for restoring and protecting water quality in specific watersheds (Clark and DeBusk 2008). Implementation of a Basin Management Action Plan (BMAP) is FDEP's primary resource for addressing specific water issues and reducing the amount of water quality impacts through use of numeric nutrient criteria (FDEP 2007; Grubbs 2001). All priorities for TMDL development in Florida follow strict adherence to verified priority waterbody lists reviewed by the United States Environmental Protection Agency (USEPA 1995). Much of the important hydrological information collected, stored, and managed by these agencies can now be accessed through a variety of web-based databases (Florida Geological Survey 2007; USGS 2009; FDEP 2008a, FDEP 2008b).

The water monitoring programs have revealed that the quality of water discharging from Troy Spring has declined significantly over the period of record (Upchurch et al. 2007). Stored data from 1960 to 2008 indicate nitrate-nitrogen levels have ranged from 0.85 to 3.05 mg/L. Groundwater throughout this region is highly vulnerable to specific land use activities. A recent DEP well-sampling study in the Troy Springshed has indicated that significantly polluted conditions exist, with 10% of the samples showing nitrate levels of more than 10 mg/L (Harrington et al.

2010). According to that DEP study, the highest nitrate level measured in a well sampled within the Troy springshed was a staggering 26 mg/L. It should come as no surprise, then, that water quality continues to receive a “poor” rating under both the DEP and SRWMD rating systems, in addition to not meeting Class III water standards (Hand et al. 1996; Hornsby and Mattson 1997). A highly significant overall trend of increased nitrate concentrations through time is characteristic of the Troy Spring system (Upchurch et al. 2007; FDEP 2008c).

Anecdotal evidence indicates that the quality and clarity of water discharged from Troy Spring in the past was usually very good. The water was typically so clear that one could easily see from the surface of the spring to the bottom, a depth of nearly 70 feet (Ferguson et al. 1947). At present, however, according to park reports, the spring is often “pea green” in color and visibility is very low. Samples analyzed by the University of Florida in 1997 indicated that the majority of the total solids were non-volatile. The turbidity may be due to the presence of clay silt particulates in emissions from the spring vents, possibly the result of subterranean collapses in conduits feeding the spring (French 1997). Researchers now cite two significant nutrient sources as contributing to the overall decline in water quality at Troy Spring: animal wastes from the 23 poultry farms and 11 cattle-feeding operations within the Troy springshed, and agricultural fertilizers that have been heavily used in this region since the mid-1970s (Katz et al. 1999; Harrington et al. 2010). The FDEP basin status report for this region indicates that the Middle Suwannee River, including Troy Spring, became a potentially impaired waterbody in 2001 because of high mercury concentrations in fish tissues, unbalanced abiotic levels (including low dissolved oxygen), and high nutrient levels (FDEP 2001). Currently, Troy Spring is listed as verified impaired for nutrients, dissolved oxygen and mercury, which means that its surface waters do not meet applicable state water quality standards for these three parameters (Hallas and Magley 2008).

Very little research has addressed how increased contaminant levels have affected benthic macroinvertebrate communities in spring ecosystems (Woodruff 1993; Steigerwalt 2005; Dormsjo 2008; Politano 2008). Some researchers have suggested that the presence of a diverse freshwater gastropod population could function as an indirect indicator of good water quality, and therefore could serve as a reliable indicator of ecosystem health (Thompson 2000). Research at Troy Spring has revealed a very troubling trend in the decline of a once common and widespread spring crustacean, the white tubercled crayfish (*Procambarus spiculifer*). Anecdotal evidence of *Procambarus spiculifer* populations at Troy Spring between the 1930s and 2002 indicates that numbers have decreased dramatically. In fact, only one individual was observed during a survey in 2002 (Hobbs 1942; District 2 files; Dick Franz, pers. comm.).

Water quality appears to be declining in many springs along the lower and middle Suwannee River. The FDEP Ambient Monitoring Section of the Division of Water Facilities has a 28-square mile VISA (Very Intense Study Area) located upstream of Troy Spring in north-central Lafayette County. Groundwater samples are taken from 19 wells and 7 springs. Data analyzed from 1990 through 1997 indicate that nitrate levels in groundwater within the VISA are elevated above background levels

measured elsewhere in the state (Maddox et al. 1998). Troy Spring was recently documented as being one of the highest nitrate-polluted springs in the state (Harrington et al. 2010). If groundwater quality in the Troy springshed continues to decline, many of the values for which Troy Spring was acquired will be seriously compromised. The excellent water clarity, the size and depth of the spring boil, and the presence of the submerged wreck of a Confederate steamboat (the C.S.S. Madison) once made Troy Spring a very popular diving/snorkeling destination. Lately, however, this recreational activity has declined significantly due to reduced water clarity. To improve conditions at Troy Spring, the DRP adopted additional protective measures in 2002. Those measures included the exclusion of boat traffic from the spring and spring run for public safety reasons and to reduce water quality impacts, eliminate stream bottom damage from propeller scarring, and preserve the park's most significant historic resource, the Madison shipwreck.

In the majority of Florida's springs, including Troy, increased nitrogen and phosphorus levels are now recognized as a significant driving force behind large-scale blooms of benthic macroalgae (Stevenson et al. 2007). The growth of macroalgae (also known as periphyton) in many Florida springs is now so rampant that submerged macrophytes are smothered, and in fact, large-scale macrophyte die-offs have occurred. Widespread increases in periphyton are occurring in nearly all of Florida's springs, which is a recognized symptom of declining spring health (Mirti et al. 2006; Stevenson et al. 2007).

Water Quantity

During the period from 2002-2008, the average annual discharge of Troy Spring was approximately 108 cubic feet per second (cfs) (USGS 2008). The maximum flow ever recorded was 468 cfs on March 9, 2008. One significant complicating factor in documenting discharge at this spring is the flooding that occurs regularly in the Suwannee River Basin. Other discharge measurements for Troy Spring have ranged from 148 to 205 cfs (Rosenau et al. 1977). Flows measured by the SRWMD in 1997 ranged from 93.45 cfs in June to 141.63 cfs in September (Hornsby and Mattson 1997).

The SRWMD is responsible for issuing water use permits in the region, and in doing so, must ensure that proposed uses are in the public interest, which includes the conservation of fish and wildlife habitat and the protection of recreational values. Water scientists who have noticed the recent trend in the Suwannee River Basin toward longer drought cycles and increased consumptive use of groundwater resources have begun to express strong concerns about lowered water tables and decreased spring flows. Given the projected water supply needs for the area, the USGS predicts that spring flows throughout the state, including those at Troy Spring, will continue to decline (Sepulveda 2002).

Water managers have recently begun to address concerns about the quality and quantity of the water that discharges from Troy and other major springs in Florida (Upchurch and Champion 2004). The development of standards for Spring Protection Areas and Springshed Protection Areas for Troy Spring has evolved as a strategy to protect specific areas in the Troy Spring watershed from "significant

harm" (Chapter 373.042 F.S.). Currently, there are no known Surface Water Protection Areas for the Troy springshed. Stick Sink Swallet, however, as discussed above, falls within the recommended Troy Spring Springshed Protection Area, and future dye-trace work within the region should remain a top priority.

Many of Florida's largest springsheds, including Troy's, have undergone a detailed delineation process (FGS 2007). Springshed boundaries, however, are not static. They can change dramatically over time, depending on the amount of consumptive use of groundwater that takes place in various parts of the springshed. For example, recent research has revealed that a significant region of groundwater supply in the eastern part of the SRWMD, considered a groundwater divide of sorts between the SRWMD and the SJRWMD, has declined to the extent that a westward shift in groundwater potentiometric contours has occurred. The shift appears to be in response to the artificial depletion of groundwater reserves caused by large-scale pumping in Duval and Nassau Counties (Grubbs and Crandall 2007). This regional drawdown may be partially responsible for shrinking springsheds and declining spring flows within parts of the SRWMD, including the Ichetucknee (Mirti 2001; Grubbs and Crandall 2007). Both water management districts are now attempting to coordinate more closely when issuing consumptive use permits and monitoring groundwater withdrawals.

The SRWMD is also responsible for prioritizing and establishing MFLs for water bodies within its boundaries. The SRWMD is currently developing a MFL for the Middle Suwannee River, which extends from the mouth of the Withlacoochee River south to Fanning Springs. There are a number of first and second magnitude springs along this middle reach of the Suwannee that will ultimately be assigned a spring-specific MFL.

Once MFLs for the Middle Suwannee River and associated springs are established, implementation of protection areas within those watersheds will be based on projected relative impacts of groundwater withdrawals and on vulnerability of the aquifer (SRWMD 2005). If MFLs developed by water management districts are to succeed in providing water bodies with adequate protection against significant harm, it will be important to have a diverse group of stakeholders available to assist in guiding the MFL review process. Participation by FDEP in the review process will be important, especially since significant problems (e.g. declines in spring flows) have already occurred at other springs in DRP District 2 (Madison Blue, Fanning, and Manatee Springs) despite MFLs recently assigned to them (SRWMD 2004; SRWMD 2005).

Given the recent documentation of flow reductions at Troy Spring and of shrinking springsheds in the SRWMD, it will be important that DRP staff continue to engage other agencies and the public in cooperative efforts to maintain high standards of water resource protection in the Troy springshed. Most critical will be to work closely with the SRWMD and other agencies during development of the Middle Suwannee River MFLs to ensure that Troy Spring receives the highest level of spring flow protection possible.

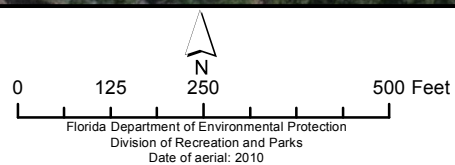


LEGEND

Natural Communities

- MEH - Mesic Hammock 7.47 ac.
- UMW - Upland Mixed Woodland 19.33 ac.
- AF - Alluvial Forest 6.56 ac.
- BF - Bottomland Forest 15.03 ac.
- FS - Floodplain Swamp 0.52 ac.
- BST - Blackwater Stream 1.29 ac.
- SRST - Spring-Run Stream 1.17 ac.
- AFP - Abandoned Field/Abandoned Pasture 2.20 ac.
- AP - Artificial Pond 0.63 ac.
- CPP - Clearcut Pine Plantation 2.06 ac.
- DV - Developed 7.83 ac.
- SHF - Successional Hardwood Forest 19.48 ac.

TROY SPRING STATE PARK



NATURAL COMMUNITIES MAP
EXISTING CONDITIONS

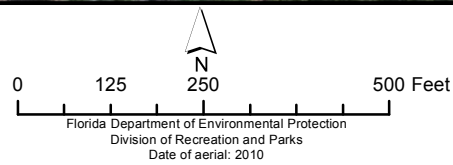


LEGEND

Natural Communities

■	MEH - Mesic Hammock 7.47 ac.
■	SH - Sandhill 23.74 ac.
■	UMW - Upland Mixed Woodland 19.33 ac.
■	AF - Alluvial Forest 6.56 ac.
■	BF - Bottomland Forest 15.66 ac.
■	FS - Floodplain Swamp 0.52 ac.
■	BST - Blackwater Stream 1.29 ac.
■	SRST - Spring-Run Stream 1.17 ac.
▨	DV - Developed 7.83 ac.

TROY SPRING STATE PARK



NATURAL COMMUNITIES MAP
DESIRED FUTURE CONDITIONS

The natural hydroperiod of a section of floodplain in the northeast corner of the park may be somewhat altered due to the presence of a slightly elevated, unpaved roadway that connects the log cabin by the spring with a home on adjacent property. However, an 18-inch culvert placed under the road at the lowest elevation of the floodplain provides at least some hydrological relief by reducing the extent of impoundment of floodwaters.

Previous landowners long ago altered the natural hydrological regime of wetlands in the center of Troy Spring State Park. Artificial ponds dredged in the bottomland forest by those landowners may now be affecting groundwater levels in the immediate vicinity. Several natural-appearing depressions are located near the ponds. Drainage ditches, presumably excavated when the ponds were dug, connect these depressions to the ponds. The ditches may be altering the hydroperiods of not only the depressions, but also the surrounding bottomland forest.

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 of each natural community and identifies the actions that will be required to bring the community to its desired future condition (DFC). Specific management objectives and actions for natural community management, exotic species management, imperiled species management [and 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 fire frequency generally determine the species composition of an area, and that areas which 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.

At the point in time when the park's natural communities have reached their desired future conditions, they are considered to be in a maintenance status and share certain basic characteristics and management requirements. These include the maintenance of the optimal fire return intervals for fire dependent communities, the maintenance control of non-native plant and animal species, the maintenance of natural hydrological functions (including historic water flows and water quality), the maintenance of proper vegetative structure that represents the natural diversity of the community, the maintenance of healthy populations of plant and wildlife species (including those that are imperiled or endemic), and the maintenance of intact ecotones between natural communities across the landscape.

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

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 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*), American holly (*Ilex opaca*), coastalplain staggerbush (*Lyonia fruticosa*), highbush blueberry (*Vaccinium corymbosum*), and sparkleberry (*Vaccinium arboreum*). The groundcover may be sparse and patchy, but it will generally contain panicgrasses (*Panicum* spp.), switchgrass (*Panicum virgatum*), and sedges, as well as various ferns and forbs. 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 at Troy Spring occurs in the northern part of the park in areas that are generally below the 35-foot contour, but slightly higher than adjacent bottomland or alluvial forest communities. A narrow strip of good quality mesic hammock of the evergreen levee variety occupies the primary levee along the Suwannee River upstream from the spring run. The remainder of the park's mesic hammock, located in Zones 1C, 1E, and 1F, is in relatively poor to fair condition due to past land use practices such as under-brushing. Water oak is the dominant canopy species, with live oak, southern magnolia, pignut hickory, sweetgum (*Liquidambar styraciflua*), and loblolly pine (*Pinus taeda*) scattered about. Cabbage palm is virtually absent. The understory consists mainly of young growths of the above-named species, plus American holly, sparkleberry, highbush blueberry, and occasional saw palmetto. The groundcover includes yellow jessamine (*Gelsemium sempervirens*), which grows profusely in places, greenbrier (*Smilax* spp.), panic grass, and patches of turf grass that are remnants of the landscaping efforts of previous landowners.

General management measures: Maintenance of the quality of the mesic hammock on the river levee will require a long-term commitment to protecting the area from overuse by visitors. Regarding the park's lesser quality mesic hammock, the best management scheme would be to protect it from additional disturbance to the extent possible. Allowing the natural process of succession to take place should eventually yield a more typical hammock community with an appropriate mix of plant species. District biologists may need to further evaluate groundcover

composition in the hammock and decide whether to reintroduce certain grass species characteristic of mesic hammock. Control and eventual eradication of the exotic turf grass will likely require the application of herbicides.

SANDHILL

Desired future condition: The dominant tree in the sandhills of north Florida will be longleaf pine (*Pinus palustris*). Herbaceous cover, dominated by wiregrass (*Aristida beyrichiana*), will be 80% or greater and reach a height of less than three feet. In addition to the characteristic groundcover species and longleaf pines, the sandhill community will contain scattered individual trees, clumps, or ridges of onsite oak species such as turkey oak (*Quercus laevis*), sand post oak (*Quercus margaretta*), and bluejack oak (*Quercus incana*). In old growth conditions, sand post oaks will commonly be 150-200 years old, and some turkey oaks will be over 100 years old. Optimal fire return interval for this community is 2-3 years.

Description and assessment: The higher elevations within the park are largely successional hardwood forest or highly disturbed sandhill. These areas are shown as successional hardwood forest on this plan's Natural Communities Map, Existing Conditions. The sandhill areas have been impacted by various disturbances including logging, conversion of native groundcover to bahiagrass pasture, and long-term fire exclusion. Nowhere in the sandhill does the groundcover appear to be in fair condition or better. Bahiagrass (*Paspalum notatum*) now covers a significant portion of the former 24-acre sandhill community. The few longleaf pines that have managed to survive in the former pasturelands are likely volunteers from longleaf stands on adjacent or nearby private properties. A portion of the southeast corner of the former pasturelands once contained a slash pine plantation. The pines were harvested in 2008.

Sandhill at Troy Spring State Park are in poor condition and mapped as successional hardwood forest, clear-cut pine plantation, and abandoned pasture. Although the park will introduce prescribed fire, restoration of this area is a long-term goal due to the limited extent of sandhill in the park. A significant tract of good to excellent quality sandhill is located adjacent to the park's east boundary. This property, the O'Brien Tract, is included in the park's optimum boundary. If portions of these sandhills were eventually acquired, the ecological value of the park sandhill would increase greatly, since the O'Brien Tract would connect the park with several hundred acres of good to excellent quality sandhill currently managed by the SRWMD in the Troy Springs Conservation Area.

General management measures: Fire is the primary tool for maintaining and improving sandhills. The Troy Spring sandhills will need frequent prescribed fires to reverse the invasion of offsite hardwood species and prevent their reintroduction. Although growing season fires are preferred to stimulate groundcover response, dormant season fires may be used to reduce hardwood densities and to increase fire frequency. Restoration of former agricultural lands to sandhill or upland mixed woodland, while technically feasible, would require significant resources to restore the diverse groundcover that defines those community types. Truly successful conversion of the bahiagrass pasture and the former pine plantation to the original

sandhill community will require supplementary measures besides fire. The former pine plantation (approximately 4 acres) seems to be the best candidate for restoration within the next ten years. Among the management measures likely to be employed are mechanical and herbicide treatment of invasive hardwoods, herbicide treatment of bahiagrass, and planting of representative sandhill species such as longleaf pine and wiregrass.

UPLAND MIXED WOODLAND

Desired future condition: Dominant tree species in north Florida will include longleaf pine (*Pinus palustris*), southern red oak (*Quercus falcata*), sand post oak (*Quercus margaretta*), and mockernut hickory (*Carya tomentosa*). Hardwood tree species will frequently be dominant or co-dominant with pines. Flowering dogwood (*Cornus florida*) and pignut hickory (*Carya glabra*) may be present, as well as sub-canopy species such as sparkleberry (*Vaccinium arboreum*). Percent herbaceous cover will be comparable to that of sandhill, attaining a height of 3-4 feet during spring and summer. In some areas, grasses and forbs will reach heights of 6-8 feet or more during the fall due to blooming of taller grass species such as yellow indiagrass (*Sorghastrum nutans*), silver plumegrass (*Saccharum alopecuroides*), and big bluestem (*Andropogon gerardii*). In old growth conditions, the oaks and hickories will commonly be 150-200 years old. Optimal fire return interval for this community is 2-5 years, depending on the fire frequency in adjacent natural communities.

Description and assessment: Upland mixed woodland in peninsular Florida, also known as Southern Red Oak Woods (Duever et al. 1997), is a broad transition zone between sandhill or upland pine (collectively referred to as "high pine") and non-fire adapted communities such as floodplain communities. This transition zone often occurs on soils that are intermediate in drainage and fertility characteristics between sandhill and floodplain soils. Fire also exerts a defining influence on the limits of upland mixed woodland. FNAI previously grouped upland mixed woodland within the upland pine community, and only recently assigned formal designation as a distinct community type (FNAI 2009). Typically, upland mixed woodland burns with a frequency similar to that of its neighboring high pine community.

At Troy Spring State Park, a long history of fire suppression and timbering has blurred the distinctions among the three "high pine" communities that are dominated by longleaf pine. Although sorting out the three communities can be difficult, it appears that about 21 acres of the upland portions of the park are best classified as upland mixed woodland. The most significant example of this community type is found in a broad band around the bottomland forest in the center of the park. This area might never have evolved into upland mixed woodland if a "natural" fire regime had been allowed to maintain the landscape. It may exist now mainly because the upland pine forest that was originally there underwent succession due to fire exclusion. This community is in poor condition since much of it is heavily overgrown with invasive offsite hardwoods.

General management measures: Restoration of a natural fire regime to the upland mixed woodland will be essential to the recovery of this rare and unique community type. Reintroducing fire may require additional hardwood removal efforts to allow

prescribed fires to penetrate further into areas currently dominated by offsite species of hardwoods. Some hardwood treatment areas may also need restoration of groundcover species.

ALLUVIAL FOREST

Desired future condition: Alluvial forests are hardwood forests found in river floodplains on ridges or slight elevations above floodplain swamp. Generally, they are flooded for one to four months annually during the growing season. In north Florida, typical overstory trees include overcup oak (*Quercus lyrata*), laurel oak (*Quercus laurifolia*), water hickory (*Carya aquatica*), American elm (*Ulmus americana*), and red maple (*Acer rubrum*). Understory species include swamp dogwood (*Cornus foemina*), willow (*Salix* spp.), and American hornbeam (*Carpinus caroliniana*). Presence of groundcover will vary. Netted chain fern (*Woodwardia areolata*) and other shade-tolerant herbaceous species are often present.

Description and assessment: Alluvial forest occurs in the northern part of the park as a slough-like drainage feature that parallels the Suwannee River. Most of this community is in excellent condition. It supports a high diversity of tree species, most notably cedar elm. It has suffered little disturbance other than logging in the distant past. The alluvial forest in the northeast corner of the property, however, is in poor to fair condition. Previous owners had constructed a slightly raised, unpaved roadway in that area, connecting the log cabin by the spring with a home on an adjacent property. The roadway in effect bisects the linear drainage way that runs along that stretch of alluvial forest. One 18-inch culvert placed at the lowest elevation of the drainage way provides some hydrological connection between the two fragments of forest. Turf grasses such as St. Augustine grass (*Stenotaphrum secundatum*) have proliferated throughout the disturbed area, and mowing practices instituted before the state acquired the property continued until recently. Turf grasses have supplanted much of the original groundcover, and nearly the entire understory has been removed.

General management measures: Maintenance of a natural hydrological regime is critical to the long-term health of alluvial forest. Many of the issues concerning flooding that were described in the Hydrology section of this plan also apply to alluvial forest. Staff should monitor the northeast corner of the park to see if the elevated roadbed in the alluvial forest affects the natural hydrological regime in any way. Removal of the road may be necessary to accomplish complete restoration of the natural hydrology. Monitoring of the alluvial forest for possible impacts from invasive plant species or feral hogs will continue.

BOTTOMLAND FOREST

Desired future condition: Bottomland forest is a relatively low-lying, mesic to hydric community prone to periodic flooding. It is found on terraces and levees in river floodplains and in shallow depressions. Bottomland forest will typically have a closed canopy of mature deciduous and evergreen trees. The overstory in north Florida will usually contain species such as sweetgum (*Liquidambar styraciflua*), sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), water oak (*Quercus nigra*), live oak (*Quercus virginiana*), swamp chestnut oak (*Quercus*

michauxii), loblolly pine (*Pinus taeda*), and spruce pine (*Pinus glabra*). Red maple (*Acer rubrum*) and bald cypress (*Taxodium distichum*) may also be present. The understory will be open or dense. Understory species typically include wax myrtle (*Myrica cerifera*), dwarf palmetto (*Sabal minor*), and swamp dogwood (*Cornus foemina*). Groundcover presence will be variable and may consist of witchgrass (*Dicanthelium* sp.) and various sedges (*Carex* spp.).

Description and assessment: A broad depression near the center of the park is best classified as bottomland forest. It is in generally poor condition, mainly due to past land use practices. This area has been logged in the past, probably several times. At least one small, ephemeral wet natural depression occurs within these bottomlands. A previous owner of the property had dredged several small ponds within the bottomland forest. A ditch now connects the ephemeral wetland with one of those ponds. Extent of impact on the natural hydrological regime is unknown.

General management measures: Maintenance of a natural hydrological regime is critical to the long-term health of bottomland forest. The DRP needs to determine whether past dredging has significantly altered the hydrology of the park's bottomland forest. If impacts are deemed significant enough, then the DRP must decide if hydrological restoration is feasible. The strategic placement of ditch blocks and the pushing of spoil into adjacent dredged ponds may be the only actions needed to achieve adequate restoration of the bottomland forest. In any case, staff will need to develop a basic restoration plan that considers possible hydrological repairs to the system as well as the recovery of characteristic plant species. One possible complication of a restoration plan that features use of the spoil piles as fill material for the ponds is that the water storage capacity of the bottomland forest may be reduced. That could increase the frequency of flooding at the lowest point on the park drive where it passes through the edge of the bottomland forest.

FLOODPLAIN SWAMP

Desired future condition: Floodplain swamp in north Florida occurs in low-lying areas along streams and rivers; it is frequently, or permanently, flooded. Soils will consist of a mixture of sand, organics, and alluvial materials. The closed canopy will typically be dominated by bald cypress (*Taxodium distichum*), but commonly will include tupelo species (*Nyssa* spp.) as well as water hickory (*Carya aquatica*), red maple (*Acer rubrum*), and overcup oak (*Quercus lyrata*). Trees bases will typically be buttressed. The understory and groundcover will usually be sparse.

Description and assessment: A limited area of floodplain swamp occurs within the park. This linear slough-like feature, which drains into the spring run, lies within a broad band of alluvial forest extending westward from the springhead. Some cedar elms occur in the swamp area. The community is in good to excellent condition.

General management measures: Maintenance of a natural hydrological regime is critical to the long-term health of floodplain communities. Many of the issues concerning flooding that were described previously in the Hydrology section also pertain to the floodplain forest. Monitoring of the floodplain swamp for possible impacts from invasive plant species or feral hogs will continue.

BLACKWATER STREAM

Desired future condition: This community in the park (i.e., the Suwannee River) is characterized as a perennial watercourse originating in lowlands where extensive wetlands with organic soils collect rainfall and runoff, discharging them slowly to the stream. The flow of the Suwannee, especially within the Middle Suwannee River basin, also depends greatly on groundwater discharge from springs such as Troy Spring. Blackwater streams in north Florida will typically contain brown-stained waters that are laden with tannins, particulates, and dissolved organic matter derived from drainage through adjacent swamps. These streams will have sandy bottoms overlain by organic matter. During low-flow periods in the Suwannee River, however, groundwater will constitute over 90% of the discharge, and water clarity will become good. Emergent and floating vegetation including golden club (*Orontium aquaticum*), various smartweeds (*Polygonum* spp.), grasses and sedges will sometimes occur, but steep riverbanks and dramatic seasonal fluctuations in water level often limit their distribution. Minimizing disturbances and alterations and preserving adjacent natural communities will be important considerations during management of blackwater streams.

Description and assessment: The Suwannee River forms the north boundary of the park. Additional information about the river is included in the Hydrology section. While the condition of the river, despite declining water quality and quantity, is still generally good, erosion is occurring along portions of the riverbank. Some erosion is attributable to natural flooding and some is a result of increased visitor use.

General management measures: Management of a complex aquatic system such as the Suwannee River is a difficult task. Since many impacts to this system have their origins either upstream or from groundwater sources, management considerations must necessarily extend beyond the park boundary. Protection of the Middle Suwannee River basin is a priority. DRP will continue to work with other agencies responsible for monitoring water quality and quantity on the river, and will continue to support the basic and applied research that is ongoing within this watershed.

Erosion issues originating within the park are primarily visitor access issues related to recreational use. The greatest impact from recreation occurs when an excessive number of watercraft use all available floating dock space and must then beach along the riverbank to access Troy Spring. During low river levels, much of the river shoreline both upstream and downstream of the spring run will contain anchored or beached watercraft.

SPRING-RUN STREAM

Desired future condition: Spring-run streams are perennial water courses which derive most, if not all, of their water from limestone artesian openings into the underground aquifer. Spring waters are typically cool, clear, and circumneutral to slightly alkaline. These factors allow for optimal sunlight penetration and minimal environmental fluctuation, which will 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 a sandy

bottom, while organic materials concentrate around fallen trees and limbs and in slow moving pools. Typical vegetation will include tapegrass (*Valisneria americana*), arrowheads (*Sagittaria* spp.), southern naiad (*Najas guadalupensis*), and pondweeds (*Potamogeton* spp.).

Description and assessment: Troy Spring consists of multiple spring vents and a spring run about 325 feet in length. The spring pool measures 138 feet north to south, and 118 feet east to west. Limestone is exposed in and around the pool, and water flows from a 60-foot deep boil that discharges to the Suwannee River.

There are currently no aquatic macrophytes found in Troy Spring and its spring run community, and periphyton levels in this system are high. In recent years, water quality issues have increasingly threatened the spring-run stream. Elevated nutrient levels in the groundwater are causing increases in periphyton growth. Lately, Troy Spring has experienced high turbidity levels and has lacked the clarity normally associated with karst springs. The high turbidity may be due to subterranean collapses or perhaps even to contamination within the springshed. A water quality issue of known concern at this spring is its excessively high nutrient level, a condition similar to that found at many springs along the MSR. Additional water quality information is included in the Hydrology section.

The spring run also experiences increased turbidity associated with peak periods of recreational use. Troy Spring has long been attractive to outdoor recreation enthusiasts. Activities such as swimming and sunbathing along the shoreline have subjected this aquatic system to highly intensive anthropogenic pressures. Foot traffic on the spring-run bottom causes an increase in suspended sediments and silt in the water column. In addition, human activities along the entire shoreline above the spring and spring-run have caused significant erosion damage to this system. Additional soil erosion information is included in the Soils section above.

General management measures: Management of a complex aquatic system such as Troy Spring is a difficult task. Since many impacts to this spring system originate in groundwater sources, management considerations must necessarily extend outside the park boundary. Protection of the Middle Suwannee River basin and of influences further upstream is a priority. Park and district staff will continue to work with state agencies responsible for monitoring water quality and quantity, and will support basic and applied research ongoing within this watershed. Staff will also continue to monitor and evaluate impacts of recreation on the park's spring-run stream.

Significant planning must be implemented to guide visitor access and restore the shoreline area of this spring. The restoration objective in the Resource Management Program section contains for additional information.

SUBTERRANEAN CAVE - AQUATIC

Desired future condition: Caves are characterized as below-ground cavities in karst areas. A cave system may contain portions classified as terrestrial and portions classified as aquatic. Aquatic caves vary from shallow pools that are highly susceptible to disturbance to systems that are more stable and totally submerged.

While the Troy Spring aquatic cave system is totally submerged, and has continuous groundwater flow, it is still fragile. Desired future cave management at Troy will include protecting the system from changes that may affect flows, light penetration or microclimate, or that may cause increased pollution.

Description and assessment: Due to its underground location, the aquatic cave natural community at Troy Spring is not depicted on the Natural Communities Map. There are very few records of exploration of this cave system, and therefore its current condition is unknown. As of 2010, the main cave entrance was extremely fragile, crumbling and unsafe for human entrance. Nonetheless, the conduit system associated with the cave is likely to be very extensive and probably has a significant connection to the Stick Sink Swallet upstream to the northeast. Water quality issues for the aquatic cave system are similar to those previously described for the spring-run stream. At least one troglobite species, the pallid cave crayfish (*Procambarus pallidus*), is known to occur within the aquatic cave. Additional information about water quality issues is contained in the Hydrology section above.

General management measures: District and park staffs will continue to support exploration of the cave system, following the guidance of cave diving professionals. It is very important that district and park staff begin to understand the upstream conduit connections for the Troy Spring Springshed, specifically the conduit system to the northeast of the park called Stick Sink Swallet that divers are currently exploring. Dye-trace work in this springshed is lacking, and any research that expands our understanding of the Little River/Stick Sink swallet system could fill a large gap in our knowledge of groundwater movement in this region.

To prevent silting in of the aquatic caves, staff will have to carefully monitor the erosion of slopes above the spring run and correct problems as they arise. A significant amount of planning will be necessary for the park to guide visitor access more effectively and restore the shoreline area of this spring. Refer to the hydrological restoration objective in the Resource Management Program section of the plan for additional information.

ALTERED LANDCOVER TYPES

Desired future condition: Where altered landcover types occur, desired future conditions will, in most cases, be historical natural community types described above.

ABANDONED FIELD/ABANDONED PASTURE

Portions of the former sandhill was converted to pasture in the southeast corner of the park. This area lies to the south of the horse stable. Restoration of this to sandhill is not a high priority but prescribed fire will be used to initiate restoration and to manage the habitat for the resident gopher tortoises.

CLEARCUT PINE PLANTATION

Slash pines were planted north and south of the pasture area south of the horse stable. These offsite pines were harvested in 2008. Like the adjacent abandoned

pasture, this area was once sandhill, and restoration efforts should initially focus on prescribed fire and replanting with longleaf pines.

DEVELOPED

Developed areas at the park include an historic log home; a shop building; a ranger residence; a wooden barn; a day-use area including restrooms, parking lot, spring access ramp, and picnic area; and a park entrance drive.

The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Priority invasive plant species (EPPC Category I and II species) will be removed from all developed areas. Other management measures include proper stormwater management and development guidelines that are compatible with prescribed fire management in adjacent natural areas. Due to the nature of the karst features in the region, the DRP will place particular emphasis on proper treatment of sewage originating from the developed areas of the park. Advanced treatment systems may be required to ensure that effluent from septic systems do not contribute to a decline in groundwater quality.

ARTIFICIAL POND

Two artificial ponds and associated spoil piles are located within the bottomland forest. Restoration of these ponds to bottomland forest is a low priority since they do provide some freshwater habitat for wildlife.

SUCCESSIONAL HARDWOOD FOREST

The successional hardwood forest is located in the southern end of the park, and was once sandhill. Long-term fire exclusion and removal of the longleaf pines has allowed a hardwood forest to develop on the site. Restoration to sandhill is not a high priority, although the successional hardwood forest should be periodically burned to initiate restoration.

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.

Imperiled animal species at Troy Springs State Park are associated with the former sandhill, upland mixed woodland, blackwater stream and spring run natural communities. The only imperiled animal species formally confirmed in the upland habitats is the gopher tortoise, but imperiled gopher tortoise commensals may also occur in the park. Continued restoration of upland fire-adapted communities will serve to benefit these species. Species that use the spring run or Suwannee River make up a larger component of the imperiled species. The Gulf sturgeon, Suwannee cooter and Florida manatee are denizens of the Suwannee River and may often enter the spring area. Florida manatee seasonally enters the park, most often in winter months; attracted to the warm waters of river springs during colder weather.

The aquatic cave systems within the park harbor several species of sensitive aquatic cave fauna. The pallid cave crayfish is currently the only confirmed imperiled species present at Troy Spring. Two amphipods (*Crangonyx* sp., and *Hyalella* sp.), one isopod (*Caecidotea* sp.) and at least one species of Hydrobiid snail have been observed by researchers, but are not yet confirmed to species. Once taxonomists have determined the exact species of these sensitive cave fauna, the park's imperiled species list will likely grow.

Currently, the only imperiled plant species recorded in the park is the rainlily (*Zephyranthes atamasca*). District and park staffs will need to conduct thorough surveys during various seasons to determine if additional imperiled plant species are present.

Troy Spring State Park has two imperiled species of turtle, the gopher tortoise and the Suwannee alligator snapping turtle (*Macrochelys suwanniensis*) in the Suwannee River. Turtle species historically harvested for meat in the region include these imperiled species, as well as the recently de-listed Suwannee cooter (*Pseudemys concinna suwanniensis*). Harvest or possession of gopher tortoises was prohibited statewide in 1988. Taking of Suwannee cooters from the wild was prohibited in 2009. In addition, species of similar appearance are also protected from collection from the wild. These include all Florida turtles of the genus *Pseudemys* and the common snapping turtle (*Chelydra serpentina*). Collection of these species, or any other turtle for that matter, is prohibited within the state park. The area under jurisdiction of the park includes the length of the spring run as well as a 400-foot zone from the edge of mean high water along sovereign submerged lands of the Suwannee River adjacent to the park boundary.

The use of prescribed fire in the management of the limited upland areas of the park should benefit sandhill-adapted species such as the gopher tortoise. Without protection and proper management of the adjacent, privately owned sandhill, however, it is less likely that a gopher tortoise population can be sustained within the park for an appreciable length of time.

Judging from the extent and quality of the sandhill adjacent to the park, Sherman's fox squirrels probably visit the unit, and there is at least one sighting within the park. Table 2 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 2. Imperiled Species Inventory						
Common and <i>Scientific Name</i>	Imperiled Species Status				Management Actions	Monitoring Level
	FWCC	USFWS	FDACS	FNAI		
PLANTS						
Rainlily <i>Zephyranthes atamasca</i>			LT		10	1
INVERTEBRATES						
Pallid Cave Crayfish <i>Procambarus pallidus</i>				G2G3, S2S3	4,10	2
FISH						
Gulf Sturgeon <i>Acipenser oxyrinchus desotoi</i>	FT	LT		G3T2, S2	4,10	1
REPTILES						
Gopher Tortoise <i>Gopherus polyphemus</i>	ST	C		G3,S3	1,6,1 3	2
Suwannee Alligator Snapping Turtle <i>Macrochelys suwanniensis</i>	SSC			G1G2, S1S2	4,10	1
BIRDS						
Little Blue Heron <i>Egretta caerulea</i>	ST			G5,S4	4,10	2
MAMMALS						
Sherman's Fox Squirrel <i>Sciurus niger shermani</i>	SSC			G5T3, S3	1,6	1
West Indian Manatee <i>Trichechus manatus</i>	FE	LE		G2S2	4,10	2

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 & 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.

Exotic and Nuisance Species

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to 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.

There are relatively few invasive exotic plant species in the park. Infestations of these exotics are generally small and easily treatable using conventional mechanical and chemical controls. The most widespread problem species is the camphortree, which was originally restricted to spoil piles on the edges of the dredged ponds within the bottomland forest, but now occurs individually or in small clumps in other parts of the park as well. Other FLEPPC Category I and II exotic plants found in the park include Japanese climbing fern, Japanese honeysuckle and wisteria. The Japanese climbing fern has been treated several times. The park needs to inspect the infestation sites periodically and retreat as necessary.

The park should conduct surveys for exotics annually, covering about half the park each year so that the entire park is surveyed over a two-year period. An advantage in scouting the whole park is that staff will have a better opportunity for early detection and treatment of new invasive exotic plants before they have a chance to become well established. That is the most economical and time effective way to control invasive exotics. Historically, tungoil tree also occurred in the park.

Since approval of its last management plan in the year 2000, the park has treated 11 acres of exotic plants. All exotic plant treatments to date have been in-house efforts by park and district staff. Treatment of exotics occurs annually.

Table 3 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 3.

Table 3. Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	FLEPPC Category	Distribution	Management Zone
PLANTS			
Mimosa <i>Albizia julibrissin</i>	I	1	TS-1F
Camphortree <i>Cinnamomum camphora</i>	I	2	TS-1A, TS-1C, TS-1D, TS-1E, TS-1F
Japanese Honeysuckle <i>Lonicera japonica</i>	I	2	TS-1F
		3	TS-1F
Japanese Climbing Fern <i>Lygodium japonicum</i>	I	1	TS-1F
Chinese Wisteria <i>Wisteria sinensis</i>	II	2	TS-1F

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 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, prioritizing those species causing the most 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, gray squirrels, venomous snakes and alligators. Nuisance animals are dealt with on a case-by-case basis.

Feral hogs and armadillos occasionally occur in the park, and staff members remove them whenever possible. No nuisance species are known to occur at Troy Spring State 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, and by 2005 it had appeared in Duval County, Florida. In 2009, the disease was discovered in Suwannee County. The beetle (and laurel wilt) has now spread throughout most of Florida and into many of the neighboring states. Although most of the adult red bays are 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. The park should continue to restrict the movement of firewood into and out of the park and educate visitors about the issue.

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.

Special Natural Features

The primary natural features of Troy Spring State Park include the first magnitude spring and spring run and the adjacent Suwannee River. The park was acquired as part of the Florida First Magnitude Springs, Phase II, CARL Project in order to protect Troy Spring.

Cultural Resources

This section addresses the cultural resources present in Troy Spring State Park which may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State 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 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 historic structures and landscapes 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 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. Every cultural resource's significance derives from historical, architectural or archaeological contexts. Evaluation 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.

For collections, there are no criteria for use in 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.

Pre-Historic 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: Three archaeological sites at Troy Spring State Park are recorded in the FMSF. Two sites are prehistoric (8LF55 and 8LF56) and one is an underwater

historic shipwreck (8LF5). Prior to the CARL Archaeological Survey investigations of 1996, which examined a small portion of the park (Wheeler and Newman 1996), the only site recorded at Troy Spring had been the underwater site. A predictive model for the park was completed in 2012 (Collins et al 2012).

Site 8LF5 includes the remains of the Confederate steamship *Madison*, which was built around 1854 or 1855 for Captain James M. Tucker. The *Madison* served as a general store on the Suwannee River during the 1850s. Captain Tucker also operated a mail line between Ellaville and Cedar Key using the vessel. The steamer served as an ad hoc "warship" in the Confederate navy in 1861, when it was used to investigate and eventually take control of four vessels transporting supplies to the Union naval base in Key West. Afterwards, the ship was scuttled under the orders of James M. Tucker (the owner) when he and his troops (Company H, 8th Florida Infantry) went to fight in Virginia (Barker-Benfield 1995, cited in Wheeler and Newman 1996). Due to salvaging efforts over the years, all that remains of the *Madison* is the hull (Wheeler and Newman 1996).

The *Madison* is a highly significant resource requiring particularly sensitive management. The location of the wreck along and across much of the spring run may conflict with the recreational use of the spring. Impacts from recreational use at the site that once occurred with some regularity include scarring by motorboat propellers during low water, use of the wreck as an anchor site for motorboats, and disturbance by divers and snorkelers.

The two prehistoric sites at Troy Spring State Park represent the Indian Pond culture, which was contemporaneous with the Weeden Island period. Artifacts associated with the sites include prehistoric pottery, lithics and some bone. One site (8LF55) could be important in the understanding of the Indian Pond culture.

In addition to the sites already recorded in the FMSF, there is another potential site, a historic homestead. While no physical evidence has yet been found for this site, old records and maps indicate that the Davis homestead was located on the bank of the Suwannee River here. The DRP should collaborate with the Division of Historic Resources' Public Lands Archaeology to conduct further research to confirm the location of this site prior to submitting it to the FMSF. A predictive model for the park was completed in 2012 (Collins et al 2012).

Condition Assessment: At this time, all of the archaeological sites are in good condition. The *Madison* site has endured looting in the past, but the remains of the shipwreck are currently quite stable. A buoy line across the spring run now protects the site from boat traffic. One concern is that at low water it is possible for swimmers and snorkelers to stand on the wreck. The park continually strives to educate visitors about the sensitivity of the site. Feral pigs are not currently a problem in the park, but if they ever become established, they could threaten the archaeological sites.

Level of Significance: Archaeological resources in the park have not yet been evaluated for significance.

General management measures: The *Madison* has been subject to damage and looting in the past. To protect the site, the park currently prohibits boats from entering the spring run and does not allow swimmers to stand on the remains of the ship. The park should continue these preventative measures. Additional interpretation of the *Madison* wreck may also help reduce damage to the site. The park needs to continue its periodic photo documentation of the condition of the site. In addition to photo documentation the park should periodically record the dimensions of the vessel to track changes, erosion and/or degradation.

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: There is one historic structure at Troy Spring, the Log Cabin Visitor Center, LF00092. This structure was recently submitted to the FMSF. The cabin was originally built as a private residence in 1956, and it was later transferred to the state. Currently it serves as a Visitor Center. Its construction is 1950s era cypress split log, with extensive brickwork. It overlooks Troy Spring Run and the Suwannee River.

Condition Assessment: The Log Cabin is currently in fair condition. The main concern with the structure is erosion of the slope on the northwest side of the cabin facing the spring run. This erosion has already damaged the steps leading from the cabin to the spring and has partially undermined the brick terraces on the steep slope above the spring run. The erosion is now approaching the cabin. Some of the cabin roof timbers are in need of replacement and the bricks need re-pointing. The DRP needs to evaluate the cabin and develop a plan for its future. If no action is taken, the cabin will likely suffer damage or destruction from the continuing erosion.

Level of Significance: The structure has not been evaluated for significance.

General management measures: Currently there is no Historic Structures Report for the Log Cabin historic structure. The DRP will stabilize the cabin until a Historic Structures Report is prepared.

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: Troy Spring State Park has a small collection. The park is currently the home of the wreckage of the steamship *Madison*. The *Madison* remains in the location where it sank in the mid-1800s, near the mouth of the spring run. Some artifacts from the *Madison* wreckage are housed in the Visitor Center. One piece of wood that drifted away from the wreckage long ago was recovered and is currently on display in the Visitor Center. A long piece of metal, believed to be the coal stoker from the *Madison*, has hung above a window in the Visitor Center since before the state took ownership, and it remains there today. The Visitor Center itself is a historical structure, a log cabin residence built in the late 1950s. The restrooms and kitchen are reminiscent of the popular styles of the 1950s and 60s, and the original stove is still in the kitchen. Other incidental items on display include a ceramic pot used in turpentine, not found on site but acquired for interpretative purposes; gopher tortoise shells; and a porous limestone rock used to demonstrate karst geology. The park also recently accepted a donation of several taxidermy mounts.

There are informal collections of research and documentation housed within the Troy Spring office files. These collections include information about the modern history of the Troy Spring property, about the *Madison* and Captain Tucker, about the historic towns of Old Troy and New Troy, and about the Davis homestead, as well as some documentation obtained from interviews with park visitors during Old Timer's Day.

Condition Assessment: The collections are in good condition. Erosion that threatens the condition of the Log Cabin LF00092 may also threaten the collection, however. The documents are kept under climate-controlled condition.

Level of Significance: The collections have not been evaluated for significance, but the most important parts of the collections are the pieces of the *Madison* that are on display in the Visitor Center. Other artifacts on display interpret the logging operations of the region and the natural areas typical of the surrounding countryside, but they do not originate from within the park itself.

General management measures: At this time, the park does not have a Scope of Collections Statement or a management assessment of the collection.

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 4. Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
The Madison LF00005	Historic Confederate, 19 th Century	Archaeological	NE	G	P
Troy Spring 1 LF00055	Weeden Island II, Prehistoric	Archaeological	NE	G	P
Troy Spring 2 LF00056	Prehistoric	Archaeological	NE	G	P
Old Log Cabin Visitor Center at Troy Spring LF00092	Historic 20 th Century	Historic Structure	NE	F	RH

Significance:

NRL=National Register Listed
 NR = National Register Eligible
 LS = Locally Significant
 NE = Not Evaluated
 NS = Not Significant

Condition:

G= Good
 F=Fair
 P=Poor

Recommended Treatment:

RS = Restoration
 RH = Rehabilitation
 ST = Stabilization
 P = Preservation
 R = Removal

RESOURCE MANAGEMENT PROGRAM

Management Goals, Objectives and Actions

Measurable objectives and actions have been identified for each of the DRP's management goals for Troy Spring State Park. Please refer to the Implementation Schedule and Cost Estimates in the Implementation Component of this plan for a consolidated spreadsheet of the recommended actions, measures of progress, target year for completion and estimated costs to fulfill the management goals and objectives of this park.

While, the Division of Recreation and Parks utilizes the 10-year management plan to serve as the basic statement of policy and future direction for each park, a number of annual work plans provide more specific guidance for DRP staff to accomplish many of the resource management goals and objectives of the park. Where such detailed planning is appropriate to the character and scale of the park's natural resources, annual work plans are developed for prescribed fire management, exotic plant management and imperiled species management. Annual or longer-term work plans are developed for natural community restoration and hydrological restoration. The work plans provide the DRP with crucial flexibility in its efforts to generate and implement adaptive resource management practices in the state park system.

The work plans are reviewed and updated annually. Through this process, the DRP's resource management strategies are systematically evaluated to determine their effectiveness. The process and the information collected is used to refine techniques, methodologies and strategies, and ensures that each park's prescribed management actions are monitored and reported as required by Chapters 253.034 and 259.037, Florida Statutes.

The goals, objectives and actions identified in this management plan will serve as the basis for developing annual work plans for the park. Since the plan is based on conditions that exist at the time the plan is developed, the annual work plans will provide the flexibility needed to adapt to future conditions as they change during the 10-year management planning cycle. As the park's annual work plans are implemented through the 10-year cycle, it may become necessary to adjust the management plan's priority schedules and cost estimates to reflect these changing conditions.

Natural Resource Management

Hydrological Management

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. Following are hydrological management objectives and actions recommended for Troy Spring State Park.

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

The main hydrological features of Troy Spring State Park include a first magnitude spring, its spring-run stream, and the Suwannee River along with its associated floodplain natural communities. Extensive research and monitoring efforts by the SRWMD, FDEP, USGS, and FWC, especially since the year 2000, have produced an abundance of information documenting the decline in hydrological health of the Troy system (see details in the Hydrology section above). Efforts to restore Troy Spring will benefit from the continued collection and interpretation of hydrological data.

In recognition of that, the Division of Recreation and Parks will continue its tradition of closely cooperating with agencies and independent researchers engaged in hydrological research and monitoring programs within the springshed of Troy Spring, and it will encourage and facilitate additional research within that area. Management recommendations derived from that research will be essential to the decision-making process that will inevitably precede implementation of plans to restore the health of this regionally important springshed.

As a supplement to the routine monitoring provided by other agencies, the park will establish photo points and conduct annual assessments of macrophyte/periphyton populations. The photo points will be useful in documenting natural changes in spring water clarity that are associated with Suwannee River flood events and that may affect recreational use of the spring. The photo points will also enable staff to track artificial changes caused by erosion and the deposition of sediments. Shoreline erosion caused by foot traffic along the edges of the spring run has become a serious management issue. A factor contributing to that is the lack of a formally designated access route for visitors to travel from the floating dock on the Suwannee River to the use area at the spring.

Stick Sink Swallet is an important groundwater source for Troy Spring. Supporting efforts of additional dye-trace work to continue Troy springshed delineation will be important for the DRP.

Within the next ten years, staff will evaluate the artificial ponds and ditches within the bottomland forest to determine if they are negatively affecting the local water table by conveying surface waters away. If hydrological assessments indicate that the ditches are causing serious enough impacts to warrant a response, then the ditches may be filled or blocked. Planning for potential restoration of the dredged ponds should await additional research. While reestablishment of the ponds' natural contours may be an option, any attempted restoration should not cause unacceptable impacts to surrounding natural communities or to park facilities.

Objective: Restore natural hydrological conditions and functions to approximately 0.1 acres of spring-run stream natural community.

As discussed previously in the Hydrology section, at least three anthropogenic factors are adversely affecting the 1.34-acre spring-run stream at Troy Spring State Park. (1) Higher nutrient levels are stimulating an increase in periphyton growth, (2) decreased groundwater discharge may be causing a reduction in spring flow, and (3) recreational pressures may now be too great for portions of the spring run and adjacent floodplain communities. True restoration of natural hydrological conditions and functions in the spring run will happen only when there is some mitigation of the three negative factors mentioned above. Within-park sources of impacts, such as recreation, may be easier to address than outside sources. Following are hydrological restoration actions recommended for the park.

Within the next five years, investigate best management options to improve public access to the spring while limiting the sanctioned swimming and sunbathing areas to less sensitive portions of the spring. That may involve a redesign of visitor access locations and possibly an implementation of other measures to protect portions of the spring from what may be overly intensive recreational use. Such measures may include the closing and rehabilitation of unauthorized trails and a reduction in the mowed footprint between the Visitor Center and the visitor parking lot at the head of the spring.

Continue to coordinate closely with all agencies, including SRWMD, FDEP, USGS, and FWC, that are involved in the protection and improvement of hydrological resources at Troy Spring State Park. Coordination may consist of regular attendance at meetings concerned with regional or local hydrology, and the maintenance of relevant correspondence. Coordination with county governments will also be essential. Park staff will review county land use changes proposed for properties outside the park, watchful for potential impacts to the water quality and quantity of Troy Spring. Staff will provide comments to public officials if any threats to surface or groundwater resources at Troy Spring become apparent. The DRP will continue to work closely with FDEP and SRWMD personnel in seeking ways to mitigate increased nutrient levels in Troy Spring. A major part of this process will be implementation of the USEPA-issued regional TMDL standards for area water bodies. The DRP will also respond promptly if water quality impacts occur that are attributable to inappropriate location or design of park facilities, and will mitigate those impacts using the best available means. Finally, the DRP will continue to work closely with the SRWMD to ensure that MFLs developed for the Middle Suwannee

River, including Troy Spring, are implemented judiciously and that spring flows do not decrease to the point that the Troy system suffers significant harm.

Aggressively pursue outreach opportunities to educate the public about anthropogenic impacts to the Troy Spring system, impacts that are extensive and attributable both to outside sources and to within-park sources. The DRP will need strong public support if it hopes to be effective in reducing the threat level of these impacts.

Within the next five years, assess the feasibility of conducting experimental plantings of key species of submerged macrophytes within about 0.1 acre of the Troy Spring Run.

Natural Communities Management

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

As discussed above, 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 community improvements. Following are the natural community management objectives and actions recommended for Troy Spring 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 Department of Agriculture and Consumer Services, Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the FFS.

Objective: Within 10 years, have 32 acres of the park maintained within the optimum fire return interval.

As of 2016, the DRP had not yet initiated a prescribed fire program at Troy Spring State Park, but a prescribed is planned for 2017. Restoration of the most fire-suppressed natural communities at this park will require mechanical and chemical removal of offsite hardwood species before prescribed fires will be truly effective in restoring degraded areas. The park is divided into multiple burn zones or management zones (see Management Zones Map).

Most permanent firebreaks within the park are service roads or paved roads. Where appropriate, the park utilizes some natural firebreaks as well. One of the main goals of the prescribed fire program at Troy Spring is to restore the sandhill and upland mixed woodland communities. Offsite hardwood species have become very dominant in both these communities. Fire will not be able to penetrate overgrown areas effectively unless the park reduces the density of the offsite hardwoods through extensive girdling and herbicide treatments. It will be critical that staff follow up the hardwood treatments with frequent prescribed burning.

A small number of adult longleaf pines remain scattered throughout the former sandhill and upland mixed woodland communities, as well as a few remnant post oaks, sand post oaks, and mockernut hickories. As part of the restoration process, it will be important to maintain all the longleaf pines in the park, including the isolated ones, because they produce highly flammable needle fuel, their genetic stock deserves preservation, and they have the capability of producing future seedlings. Currently, prescribed fire may not be able to penetrate burn zones far enough to reach all of the pines. However, if burners know the exact locations of the remnant pines, they will be able to carry fire to them more easily and burn around individual trees. To assist burners in that regard, staff should locate and map all remnant longleaf pines in the park within the next five years. To supplement prescribed burning, areas around pines should be some of the first targeted for invasive hardwood removal.

Park staff will contact adjacent residents before conducting prescribed burns in the park. To foster public support and avoid possible future efforts to restrict prescribed burning of natural areas, DRP staff will vigorously promote the benefits of prescribed fire. Staff will monitor any future restrictions on prescribed burning in the region.

In general, fire return intervals should be more frequent than originally suggested by FNAI in the Guide to Florida Natural Communities (FNAI 1990). Rather than 2 to 5 years for sandhills, the fire-return interval should be closer to the shorter end of the range to be more effective in this pyrogenic community (FNAI 2010). It is recommended that altered landcover types that were once sandhills be burned at least every three years. The upland mixed woodland should burn every 2-5 years. Although the growing season, or lightning season, is the preferred time of year to conduct prescribed fires, managers may use dormant season burns effectively during the restoration phases. This should result in an increased number of burns due to lengthening of the prescribed fire season. Additionally, dormant season fires conducted during periods of lower relative humidity are more effective at penetrating overgrown upland mixed woodlands than growing season fires that typically occur at a higher relative humidity.

Table 5 contains a list of all fire-dependent natural communities in the park, their associated acreages and optimal fire return intervals, and the annual target for acres to burn in the park.

Table 5. Prescribed Fire Management		
Natural Community	Acres	Optimal Fire Return Interval (Years)
Successional Hardwood Forest	19.47	2-3
Upland Mixed Woodland	19.33	2-5
Abandoned Field/ Abandoned Pasture	2.20	2-3
Clearcut Pine Plantation	2.06	2-3
Annual Target Acreage	12-25	

The park is partitioned into burn zones, and burns are conducted according to the prescribed burn cycle determined for each zone (see Management Zones Map). The park updates its burn plan 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 10-year management plan.

Based upon fire return intervals and acreage figures for the park’s natural communities, the park will need to burn at least 12 acres each year to maintain the natural communities within their target fire-return intervals. The park may not always reach every zone burned within its maximum recommended fire-return interval, but some zones may actually burn more frequently. Nevertheless, the number of acres kept within the target fire-return interval should not be less than 32 acres, or approximately 75 percent of the total fire-dependent acres within the park.

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/experience, backlogged zones, if burn objectives have been met, 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 Communities Restoration

In some cases, the reintroduction and maintenance of natural processes is not enough to reach the natural community desired future conditions 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 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 communities' 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, small-scale vegetation management, and so forth.

Following are the natural community/habitat restoration and maintenance objectives and actions recommended to create the desired future conditions in the sandhill and upland mixed woodland communities at Troy Spring State Park.

Objective: Conduct habitat/natural community restoration activities on 2 acres of former sandhill community and on 2 acres of upland mixed woodland community.

Within two years, develop a detailed restoration plan for the former sandhill and upland mixed woodland natural communities. Logging activities in the past removed many of the longleaf pines that originally were in those communities, and fire suppression has allowed invasive offsite hardwoods to become dominant. In many places, fire alone will not be sufficient to achieve effective restoration, so supplemental methods will be necessary. A well thought out plan that establishes what actions will occur where and in what timeframe will ensure that restoration proceeds in an orderly and effective manner.

Over the next ten years, begin to implement the restoration plan for the park's former sandhill and upland mixed woodland communities. Restoration of these communities will require a combination of management methods. In abandoned pasture areas dominated by bahiagrass, the park will probably need to treat invasive hardwoods both chemically and mechanically, treat the bahiagrass with herbicide, and then plant longleaf pines and wiregrass. In most parts of the upland mixed woodland, suppression of natural fire over many decades has allowed offsite hardwood species to shade out all native groundcover species and most of the natural mid-story and canopy species. Control of these hardwoods will be essential to the reintroduction of fire in the more overgrown areas. The park should treat, on average, at least 0.2 acre of former sandhill and 0.2 acre of upland mixed woodland per year over the next ten years. If dedicated funding becomes available for larger restoration efforts using outside contractors, then treatment of additional acreage may be possible. Sites adjacent to areas already in good enough condition to carry prescribed fire should be given priority for treatment. The park will need to establish a regular monitoring program to track progress of the restoration efforts through photo points or other means.

Natural Communities Improvement

Improvements are similar to 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 for the park.

Objective: Conduct habitat/natural community improvement activities on 4 acres of sandhill community.

Over the next ten years, plant longleaf pines in the abandoned pasture and clearcut pine plantation located due south of the horse barn. That area currently maintains a sizeable population of gopher tortoises, and any restoration project there will have to consider their welfare. The area will also be visible to park visitors. Planting of longleaf pines will enhance the park's ability to maintain that area through prescribed burning, and will improve gopher tortoise habitat over the long term.

Imperiled Species Management

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

The DRP strives to maintain healthy 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. Park staff will review data collected by the FWC, USFWS, FDACS and FNAI as part of their ongoing research and monitoring programs periodically to inform management of decisions that may have an impact on imperiled species at the park. Management of imperiled species will be guided by Florida's Imperiled Species Management Plan (FWC 2016) and appropriate Species Action Plans.

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 which 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. Following are the objectives and actions recommended for maintenance, improvement, or restoration of imperiled species populations and habitats in the park.

Objective: Update baseline imperiled species occurrence inventory lists for plants and animals, as needed.

Only one imperiled plant species has been recorded at Troy Spring State Park. DRP staff will conduct periodic floristic surveys to determine if additional species occur within the park.

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

Baseline surveys by district and park staff, which started in the late 1990s, have documented few imperiled animal species thus far. District and park staffs will continue to monitor and document all imperiled species observed within the park, particularly gopher tortoises, West Indian manatees, and troglobitic arthropods.

Gopher Tortoise

Continued cooperation with the FWC will be an important part of the management of this threatened species. District staff will need to develop a monitoring protocol. Park staff will report to the FWC Wildlife Research Laboratory in Gainesville all observations of the incidence of Upper Respiratory Tract Disease (URTD) and of dead tortoises in the park. Providing interpretive information at the park will be an essential tool in curbing the practice of releasing stray tortoises into the park. Public education about the seriousness of the disease will assist in the management of the disease statewide. Staff will continue to refer to the FWC Gopher Tortoise Management Plan (FWC 2007b) to guide management of this imperiled species.

West Indian Manatee

Park staff will continue to document the occurrence of manatees in the park's spring run habitat. Data collected will include the location, number, and where possible, the size and distinguishing characteristics of the animals. Any decline in the output of the spring could potentially affect manatee access to this warm water refuge, so tracking spring discharge and water quality will continue to be an important component of the monitoring protocol. Staff will refer to the FWC Manatee Management Plan (FWC 2012) to guide management of this imperiled species.

Troglobitic Arthropods

Qualified researchers have conducted routine censuses of aquatic cave-dwelling crayfish, amphipods, and isopods. Repeated censuses will document fluctuations in arthropod populations that might correlate to flooding events or alterations in water quality. District and park staffs will continue to support research that leads to positive identification, to the species level, of currently unidentified cave fauna.

Exotic Species Management

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

The DRP actively removes invasive exotic species from state parks, with priority being given to those causing the most ecological damage. Removal techniques may include mechanical treatment, herbicides, or biocontrol agents. Following are objectives and actions recommended for removal and maintenance control of exotic and invasive plants and animals in the park.

Objective: Annually treat 0.25 acres of exotic plant species in the park.

Periodic surveys of the park for invasive exotic plants will be necessary. Staff should check about half the park annually, not only to assess the status of known infestations, but also to proactively search for any new invasive species that might have appeared since the last survey. Staff will map any exotics found, treat them immediately, and update the exotic plant management annual work plan as needed.

Staff should become familiar with all locations of camphortree within the park and treat each location within one year of discovery. Maintenance treatments after the initial treatment may occur on a biennial basis. The Japanese honeysuckle, infesting approximately 2000 square feet of the park, will require annual treatments to achieve control. Staff will also need to treat the aggressively spreading Japanese climbing fern at least annually, if not more often. Any other FLEPPC Category I and II species found during park surveys will also need prompt attention.

Objective: Implement control measures on 2 nuisance and exotic animal species in the park.

Remove feral hogs and armadillos from the park as needed.

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 Division of Recreation and Parks is implementing the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in Troy Spring 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 and collections care must be submitted to the Florida Department of State, 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 DHR for consultation and the Division of Recreation and Parks 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 the Division of Recreation and Parks 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 DHR.

Objective: Assess and evaluate 4 of 4 recorded cultural resources in the park.

Conduct multiple assessments/evaluations of all four cultural sites in the park over the course of the next 10 years, and prioritize any preservation or stabilization proposals that may derive from the assessment recommendations. Populations of feral hogs are increasing on many public lands, and some of the archaeological sites in the park are in areas infrequently visited by staff. If disturbances such as erosion, looting, or feral hog rooting occur at cultural sites and remain undetected for too long a period, damage could become significant. Regular assessments by staff will enable the timely detection of disturbances and a quick response. Periodic assessment and evaluation of the Madison shipwreck and the Log Cabin Visitor Center will likewise be necessary. For all sites, staff should compare current evaluations with previous ones to determine whether management actions have been successful or not.

Determine if a Historic Structures Report (HSR) is necessary for the Log Cabin Visitor Center. As discussed previously in the Hydrology and Soils sections, the stream bank below the cabin is eroding and threatening to undermine its structural integrity. The DRP needs to determine whether it should rehabilitate the cabin in situ, move it, deconstruct and reconstruct it, or document it and demolish it. In the meantime, staff will evaluate the condition of the cabin annually.

Document the condition of the *Madison* photographically every other year. Photo documentation will provide valuable information about the changing condition of the resource and will serve as a backup reference should floods or other damage occur.

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

Ensure that all known sites are recorded or updated in the Florida Master Site File. One possible site that may have been inadvertently overlooked is the Davis homestead. Historic maps indicate that the Davis homestead in the mid-1800s was either in or close to what is now Troy Spring State Park. The park needs to gather additional evidence that might pinpoint the exact location of the Davis site. If that location happens to fall within the current boundaries of the park, then staff will submit this site to the Florida Master Site File. A predictive model for the park was completed in 2012 (Collins et al 2012).

Develop and adopt a Scope of Collections for Troy Spring. While the park has a very small collection, a brief Scope of Collections Statement will give park staff guidance as to what, if any, additional items should be accepted into the collection.

Document the historical context of the Log Cabin structure as part of the process of determining its eligibility for listing in the National Register of Historic Places.

Objective: Bring 1 of 4 recorded cultural resources into good condition.

Design and implement a monitoring program that includes a provision for the visual inspection of each cultural site in the park at least once a year. An integral part of this monitoring program will be an annual assessment of the Old Log Cabin Visitor Center. Erosion along the spring run and riverbank are threatening the structural integrity of the Log Cabin. It is important that staff routinely track changes in the cabin to aid in evaluating the structure and in determining what the DRP needs to do to manage the structure properly.

Create and implement a cyclical maintenance program for each of the park's cultural resource sites. This will be especially important for sites subject to chronic and significant disturbances such as erosion.

To the extent feasible, implement recommendations for preservation and stabilization of the Log Cabin Visitor Center as determined by an HSR or other in-depth evaluation. This could mean bringing the Log Cabin into good condition.

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. 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 as 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.

Additional Considerations

A significant effort has already been made under the P2000 program to acquire conservation lands along the Suwannee River and its tributaries. Much of the river's 10-year floodplain is technically undevelopable, so even privately owned lands in the floodplain should continue to function somewhat as natural connectors between tracts of public conservation land along the river. Much of the wildlife presently utilizing Troy Spring (including river otters and bobcats) will probably continue to do so for the near future; however, as has been noted elsewhere, if the park is not successful in acquiring an upland connection to other lands in the Troy Spring WMA, the long-term persistence of species dependent on open pineland (e.g., gopher tortoises, pocket gophers, fox squirrels) is doubtful.

The optimum boundary for this unit should include property not yet acquired within the CARL project boundary, as well as lands that would encompass all of an alluvial forest depression (and an upland buffer) extending westward from the spring.

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 located 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 managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan (see Addendum 8).

Troy Spring State Park was subject to a land management review on March 15, 2002. The review team made the following determinations:

1. The land was not being managed for the purpose for which it was acquired.
2. The actual management practices, including public access, do not comply with the management plan for this site.

LAND USE COMPONENT

Introduction

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Florida Department of Environmental Protection (DEP), Division of Recreation and Parks (DRP). 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 hearings, 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.

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 opportunities to deal systematically with various planning issues such as location, regional demographics, adjacent land uses, and park interaction with other facilities.

Troy Spring State Park is located within Lafayette County, approximately 45 miles northwest of Gainesville in the north central part of the state. Approximately 160,000 people live within 30 miles of the park (U.S. Census estimate 2015).

Significant resource-based recreation opportunities exist within 15 miles of Troy Spring State Park. The Department of Environmental Protection manages Ichetucknee Springs State Park and Wes Skiles Peacock Springs State Park. These properties offer opportunities for hiking, picnicking, swimming, scuba diving, and snorkeling. Additionally, Ichetucknee Springs State Park offers

birding, paddling, and tubing. The Fort White Wildlife and Environmental Area and Little River Conservation Area, FWC properties, provide amenities for hunting, fishing, wildlife viewing, hiking, and paddling.

The park is located in the North Central Vacation Region, which includes Alachua, Bradford, Columbia, Dixie, Gadsden, Gilchrist, Hamilton, Jefferson, Lafayette, Leon, Levy, Madison, Suwanee, Taylor, Union, and Wakulla counties (Visit Florida 2013). According to the 2013 Florida Visitor Survey, approximately 2% of domestic visitors to Florida visited this region. Roughly 95% visitors to the region traveled to the North Central Region for leisure purposes. The top activities for domestic visitors were visiting friends or relatives and shopping. Summer was the most popular travel season, but visitation was generally spread throughout the year. Most visitors traveled by non-air (85%), reporting an average of 3 nights and spending an average of \$79 per person per day (Visit Florida 2013).

Florida's Statewide Comprehensive Outdoor Recreation Plan (SCORP) indicates that participation rates in this region for freshwater beach activities, saltwater boat fishing, saltwater and freshwater boat ramp use, freshwater fishing, canoeing/kayaking, visiting archaeological and historic sites, wildlife viewing, picnicking, hiking, camping, off-highway vehicle riding, horseback riding, and hunting are higher than the state average with demand for additional facilities increasing through 2020 park (FDEP 2013).

Existing Use of Adjacent Lands

The land uses surrounding Troy Spring State Park include low density residential, silvicultural, and agricultural uses. Land use trends demonstrate shifts from silviculture to dairy farming in the vicinity. To the east, the park is defined by the Suwannee River, which is heavily used for recreational boating, fishing and personal watercraft. In the area surrounding Troy Spring State Park, weekend and retirement home development is increasing. The SRWMD owns several non-contiguous properties collectively referred to as the Troy Spring Conservation Area.

Planned Use of Adjacent Lands

Lafayette County is one of the more remote counties in the state. In 2009, the population of Lafayette County was approximately 7,949 residents (according to U.S. Census estimates). Out of Florida's 67 counties, Lafayette is ranked sixty-sixth and sixty-fifth in population and density, respectively. Mayo, the only incorporated area within the county, is located approximately 12 miles west of the park. In 2007, approximately 1,013 people lived in Mayo, accounting for approximately 12% of county residents. The remaining 88% of the population (approximately 6,995 people) lived in the unincorporated area. Despite the relative low population within Lafayette County, according to 2007 BEBR estimates, over 400,000 people reside within 50 miles of the park boundary. Residents of Gainesville account for approximately 30% of this figure.

U.S. Census Bureau information indicates that between 2000 and 2009, the population of Lafayette County grew by approximately 13.2%. This is below the statewide average of 16.9%, but congruent with the medium estimated growth rate projected by BEBR. If the county population continues to grow at this rate, the population could reach 10,000 by the year 2020.

A review of proposed amendments to the Comprehensive Plan shows minimal development activity within the county, aside from a few planned projects that are generally concentrated around Mayo. Development on the lands adjacent to Troy Spring State Park is generally projected remain at the current use level, and it is anticipated that any private upland not included in future state or local government acquisitions may become designated for single family residential use. However, several protections are in place to monitor development and minimize impact to the park area. For example, language added to the Comprehensive Plan gives the county authority to provide special standards designed to minimize impact on environmentally sensitive areas, prior to development (Policy I.1.4). The plan also specifically names Troy Spring as a protected resource for the management of stormwater runoff (Policy I.7.4). In addition, the park falls within the Suwannee River System 100-Year Floodplain Special Planning Area (Policy I.29). Development within this area requires coordination between the county, the water management district, and all other agencies with relevant jurisdiction.

Access to the Suwannee River from adjacent properties facilitate recreational activities, primarily including boating, fishing, jet skiing, canoeing, and kayaking. Boats and non-motorized personal watercraft enter the park through the spring-run from the Suwannee River.

Property Analysis

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

Recreation Resource Elements

This section assesses the 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

The forested uplands of Troy Spring State Park are typical of the Suwannee River floodplain, and include upland mixed woodland, bottomland forest, mesic hammock, and alluvial forest. The park's small size limits opportunities for the development of trails and overnight accommodation such as camping areas and cabins.

Water Area

The park contains an approximately 70-foot deep spring, located up a short run from the Suwannee River. This first magnitude spring is suitable for the park's traditional recreational activity, swimming. Scuba diving and snorkeling can also be supported within the spring. The spring will flood along with the Suwannee River and the clear blue water that normally characterizes the spring will turn dark with river tannins. Swimming, scuba diving, and snorkeling is not permitted in the spring during flood stage. Non-motorized craft such as canoes and kayaks can be launched from the spring. However, the relatively small size of the spring and the short length of the spring-run stream are not compatible with other types of water based recreation activities such as recreational boating and the use of personal watercraft.

Shoreline

The park includes approximately one quarter of a mile along the Suwannee River shoreline, and almost 900 feet of spring-run shoreline. When river levels are low, the shoreline of the Suwannee River is suitable for fishing. Due to the steep change in topography, the shoreline along the spring and spring run is narrow and highly susceptible to erosion. It is not compatible with activities such as sunbathing, fishing, or picnicking.

Natural Scenery

Views from atop the high banks of the Suwannee River and the steep spring bowl are excellent.

Significant Habitat

Gulf sturgeon, gopher tortoises, Suwannee bass, Suwannee cooter and Suwannee alligator snapping turtle are among the most significant listed animal species that can be found at Troy Spring State Park. All listed species are protected under established Division management policies, and visitor impacts carefully monitored to identify potential impacts. Opportunities for wildlife viewing are excellent.

Natural Features

Troy Spring is the most significant natural feature in the park, and is also its primary visual resource. As a first magnitude spring, it discharges a relatively large volume of water. The spring has a funnel shaped vent, surrounded by a steep bowl, with a 5 to 10-foot relief. Water levels, water clarity and water volume fluctuate dramatically depending on precipitation, groundwater tables and floods.

Archaeological and Historic Features

The park contains at least two known pre-historic sites and is in close proximity to the presumed locations of two former settlements, Old Troy and New Troy. However, one underwater historic site, the submerged remains of the steamship *The Madison* is both physically and visually accessible by park visitors. While improved protection for this underwater wreck is needed its central and relatively shallow location can be safely viewed from a distance. This creates a valuable opportunity for the interpretation of the site and the region's cultural history.

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 town of Old Troy located approximately 8 miles up the Suwannee River from present day Branford, served as the first county seat for Lafayette County. In the mid-1800s the town was burned and the settlers relocated to a nearby site, New Troy. For a short period of time, this new town was known as McIntosh. By 1871 the town name had reverted back to New Troy. On New Year's Eve 1892 the town of New Troy burned. Shortly after this occurrence, county residents voted to move the county seat to Mayo, its current location. The location of both settlements is uncertain, though there are indications that New Troy was located on the SRWMD's Ruth Springs tract in the Troy Springs Conservation Area, downstream of Troy Spring State Park. Both towns are historically associated with Troy Spring itself, and are important to the history of both the spring and the region. Prior to state acquisition traditional recreational uses occurred at the spring and included swimming, boating, snorkeling and scuba diving.

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 Future Land Use Map (FLUM) in the Lafayette County Comprehensive Plan (Revised 2003, Adopted November 28, 2005) shows three land classifications within and surrounding the park area. Parcels within the Suwannee River Floodplain owned by the SRWMD are designated conservation (C) areas. Other areas along the river, including the northern half of the park, are designated environmentally sensitive areas-2 (ESA-2) which is developable to a maximum density of less than or equal to 1 dwelling unit per acre. Lands on either side of the U.S. Hwy 27 corridor, including the southern half of the park, are designated agriculture-2 (A-2), and are developable to less than or equal to 1 dwelling unit per 5 acres.

Current Recreational Use and Visitor Programs

The primary recreational activities at the park are swimming and picnicking. Peak visitation occurs during the summer. During the summer months, visitors primarily access the park in two ways, by car or by boat. Recreational boaters on the Suwannee River often tie up along the river shoreline and walk along the spring-run shoreline to access the spring. The spring is popular for snorkeling and scuba diving. Reduced water clarity and visibility occasionally restrict both snorkeling and scuba diving activities. Visitors also picnic, and enjoy a short nature trail. A small visitor center provides interpretative information about the natural and cultural resources of the park.

Troy Spring State Park recorded 7,970 visitors in FY 2015/2016. By DRP estimates, the FY 2015/2016 visitors contributed \$685,147 million in direct economic impact, the equivalent of adding 12 jobs to the local economy (FDEP 2016).

Other Uses

Hazel B. Kirby maintains a 20-foot wide legal access easement to her property through Troy Spring State Park.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis. At Troy Spring State Park, the sandhill, upland mixed woodland, alluvial forest, floodplain swamp, spring-run stream, and blackwater stream natural communities are designated as protected zones.

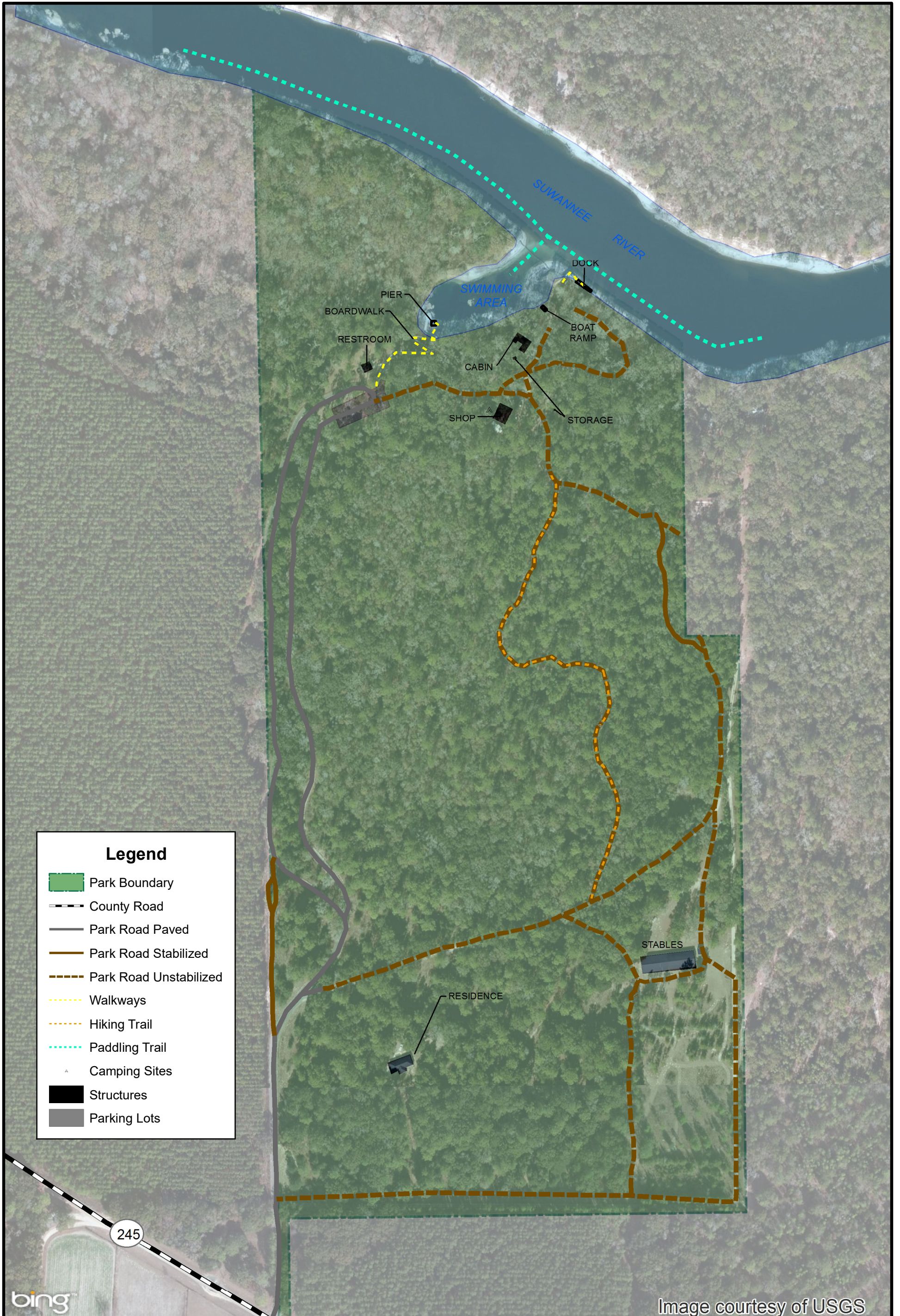
Existing Facilities

Recreation Facilities

Bathhouse
Horse barn
Visitor Center
Picnic Tables
Swimming Deck
Boat dock and boardwalk
Nature Trail (0.3 mi.)

Support Facilities

Shop
Train caboose
Woodshed
Residence
Service roads (1.5 mi.)



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 330 users per day.

One of the greatest challenges for public land managers is balancing reasonable levels of public access with the need to preserve and enhance the natural and

cultural resources of protected landscapes. The existing recreational carrying capacity at Troy Spring State Park is appropriate. However, due to the sensitive nature of the spring and spring-run ecosystem it will be important for the Division to continue to monitor for potential recreational impacts to the natural and cultural resources of the park.

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

This plan proposes to expand and improve fishing, picnicking, and equestrian opportunities within Troy Spring State Park.

Objective: Continue to provide the current repertoire of 1 interpretive, educational and recreational programs on a regular basis.

A former log cabin residence now serves as the park visitor center. This facility provides the park with a central resource for interpretive and environmental education programs, as well as an administrative office.

Objective: Develop 5 new interpretive, educational and recreational programs.

In addition to the visitor center, interpretive exhibits are recommended at locations throughout the park to inform the public regarding the park's natural and cultural resource management activities. Above the spring run along the southern edge of the spring bowl is a promontory that offers an excellent view of the underwater wreck *The Madison*. An interpretive overlook should be developed in this location.

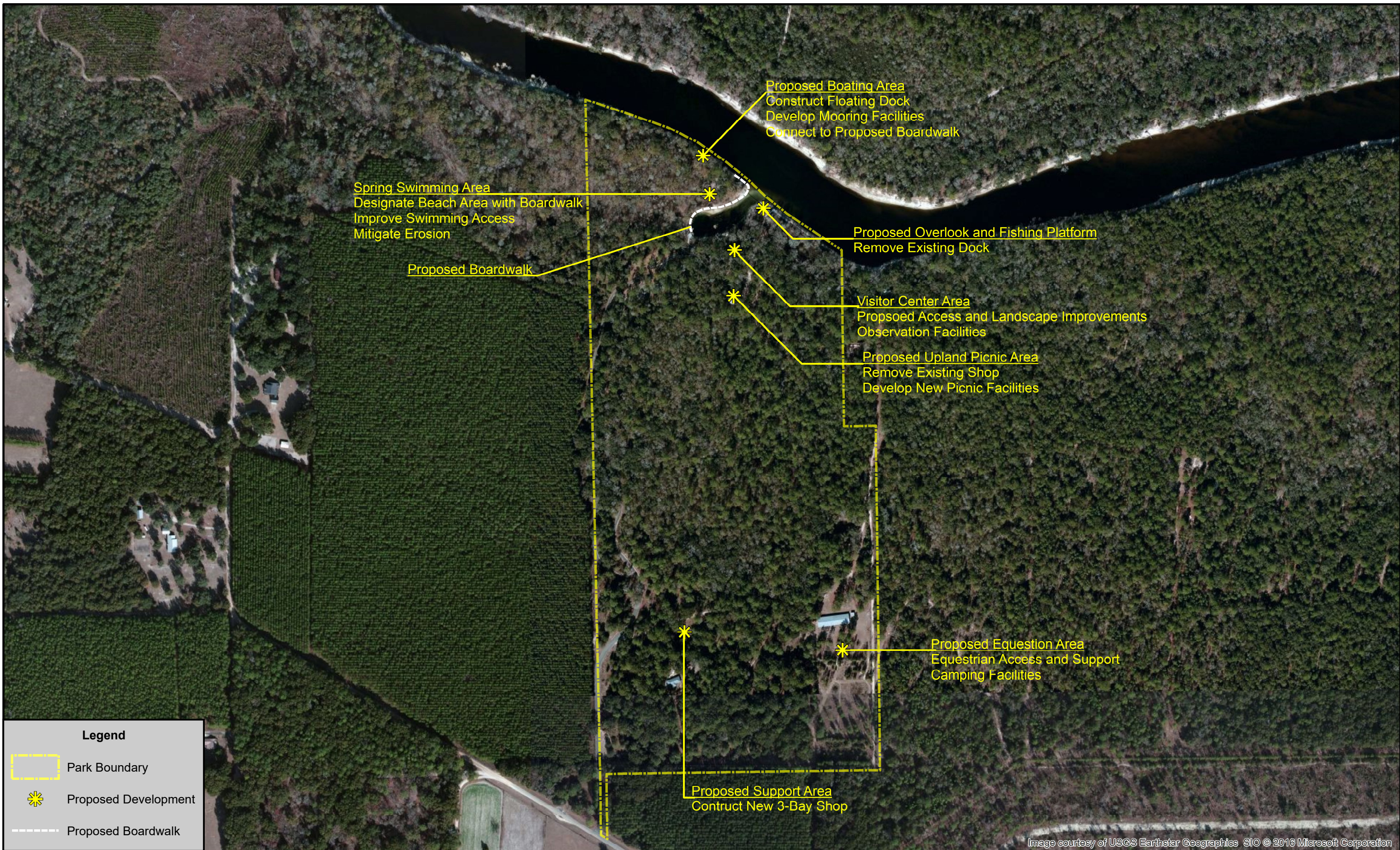
Unsupervised public access to the known cultural sites in the park is not recommended, however, educational and interpretive tours by qualified staff and volunteers should be important components of the park's programs.

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 park resources, and to streamline the efficiency of park operations. The following is a summary of improved and/or new facilities needed to implement the conceptual land use plan for Troy Spring State Park:



Spring Swimming Area
 Designate Beach Area with Boardwalk
 Improve Swimming Access
 Mitigate Erosion

Proposed Boardwalk

Proposed Boating Area
 Construct Floating Dock
 Develop Mooring Facilities
 Connect to Proposed Boardwalk

Proposed Overlook and Fishing Platform
 Remove Existing Dock

Visitor Center Area
 Proposed Access and Landscape Improvements
 Observation Facilities

Proposed Upland Picnic Area
 Remove Existing Shop
 Develop New Picnic Facilities

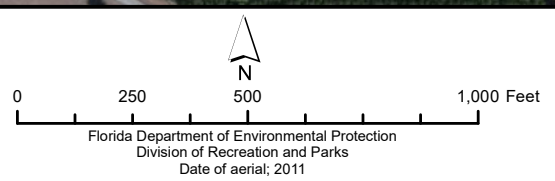
Proposed Equestrian Area
 Equestrian Access and Support
 Camping Facilities

Proposed Support Area
 Construct New 3-Bay Shop

Legend

- Park Boundary
- ✱ Proposed Development
- Proposed Boardwalk

Image courtesy of USGS Earthstar Geographics SIO © 2016 Microsoft Corporation



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 5 existing facilities.

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.

Spring Swimming Area

Troy Spring has historically served as a popular swimming destination for local residents. Picnicking and swimming remain the primary recreational activities at the park. Unfortunately, these traditional uses combined with the natural topography and the relatively compact size of the spring, exacerbate problems with natural processes such as flooding and erosion.

No developed upland area currently exists with easy physical or visual access to the spring basin. Visitors who arrive at the park by car access the spring via a steep ramp that ends at a small swimming deck. The natural tendency is to fan out along the spring shoreline in order to set up chairs, coolers, and towels. In addition, boaters, who have anchored their boats along the Suwannee River, walk along the delicate shoreline or cut unauthorized trails on the banks of the river and spring. As a result, portions of the narrow spring and spring-run shoreline are significantly eroding under foot traffic and sunbathing activities.

Facility improvements are needed to better protect the park's natural resources as well as to accommodate traditional swimming and sunbathing activities. An existing disturbed upland area is located on the north side of the spring bowl. At this particular location, the slope is relatively gentle and there is visual access to most of the swimming area. This area is also centrally located between the current spring access ramp and the most popular mooring spot for boaters. The area could be accessed by creating a continuous boardwalk from the existing swimming deck at the bottom of the access ramp along the northern edge of the spring and spring run and then along the Suwannee River shoreline. Designating a specific sunbathing or beach area accessible by the boardwalk is recommended to alleviate recurring problems with visitor use of the spring and spring run shoreline.

The current spring access ramp from the picnic area is in need of repair or redesign. Flood events along the Suwannee River completely inundate the lower portions of the ramp. This has compromised the integrity of the retaining walls that form the ramp. In particular, the cap of the retaining wall has separated at several locations.

Boating and Fishing

A floating dock and boardwalk that connect by a gangway were constructed at the park in 2011. The original intention was to encourage boaters to tie up to the dock to access the spring; however, the dock is undersized for the volume of boats visiting the park. Additionally, the frequent water level fluctuations of the Suwannee River, in combination with the dock's physical location, render it inaccessible for portions of the year. As a result, visiting boaters must bypass the dock and continue to beach along the river shoreline. The boat dock should be removed and replaced with an extension of the boardwalk for use as a river overlook and fishing platform. Fishing along the shore of the Suwannee River is quite popular with local residents and the park staff often see visitors fishing from the river shoreline or along the current boat dock. Improved facilities for fishing are recommended.

Visitor Center

The cabin building which serves as a small park visitor center is remarkable for its views over the spring and the Suwannee River floodplain, but the existing brick patios and walkways are undersized and not safely accessible. The landscape surrounding the visitor center is heavily impacted from routine mowing activities and foot traffic. Additionally, the existing trail to the south of the visitor center that leads to the boat dock and boardwalk along the river is not universally accessible. Distinct walkways or improved trails to connect the parking, picnicking facilities, and scenic overlooks with the visitor center should be developed. A detailed site plan for the installation of native landscaping, walkways, and observation decks should be developed to guide improved access, connectivity, and utilization of the visitor center.

Picnicking

The park's existing picnic facilities consist of scattered picnic tables adjacent to the main parking area. Permanent picnic shelters and provision for group picnics should be provided.

Equestrian Trails and Camping

While the park is too small to provide equestrian trails, it is adjacent to the larger contiguous properties of the Troy Spring Conservation Area maintained by the SRWMD. This presents an opportunity to develop a system of interconnected equestrian trails along the Suwannee River corridor. The recently renovated horse barn is designed to serve as both a day use and overnight equestrian facility. The barn, with the addition of an equestrian camping area, and an expanded trail network would provide equestrians with the opportunity for long or multi-day rides.

Objective: Construct 4 new facilities.

Boating Access

The Suwannee River is prone to extreme water level fluctuations that complicate the construction of permanent mooring facilities. However, mooring facilities or a mooring field for up to 15 boats, are recommend north of the

spring along the Suwannee River. This facility would connect to the proposed boardwalk along the shoreline that would provide access to the new swimming area. Additional site planning will be needed to determine the most appropriate design and location for this facility and may also require expansion of an idle-speed/no-wake zone along the park's boundaries on the Suwannee River.

Equestrian Camping Area

An equestrian camping area of up to 10 sites is to be developed to accommodate horseback riding in the park and into adjacent public lands where riding is suitable. Trail connections to adjacent public lands are recommended.

Picnic Area

The current shop is to be relocated, as discussed below, and the site repurposed as an upland picnic area. A large picnic pavilion should be constructed in this location. Also as identified in the previous plan two medium picnic shelters should be constructed within the current parking area.

Support Facilities

The existing shop will be removed from its current location next to the visitor center. A new 3-bay shop will be constructed in the southern portion of the park.

Facilities Development

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates (Table 7) 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

Equestrian Area

Trail connection
Equestrian camping area

Spring Swimming and Picnic Area

Large picnic pavilion
Erosion control
Boardwalk
Spring access ramp repairs

Boating and Fishing Areas

Floating dock
Mooring field
River overlook/Fishing dock

Visitor Center

Native landscape improvements
Walkway improvements

Support Facilities

New 3-bay shop

Recreational Carrying Capacity

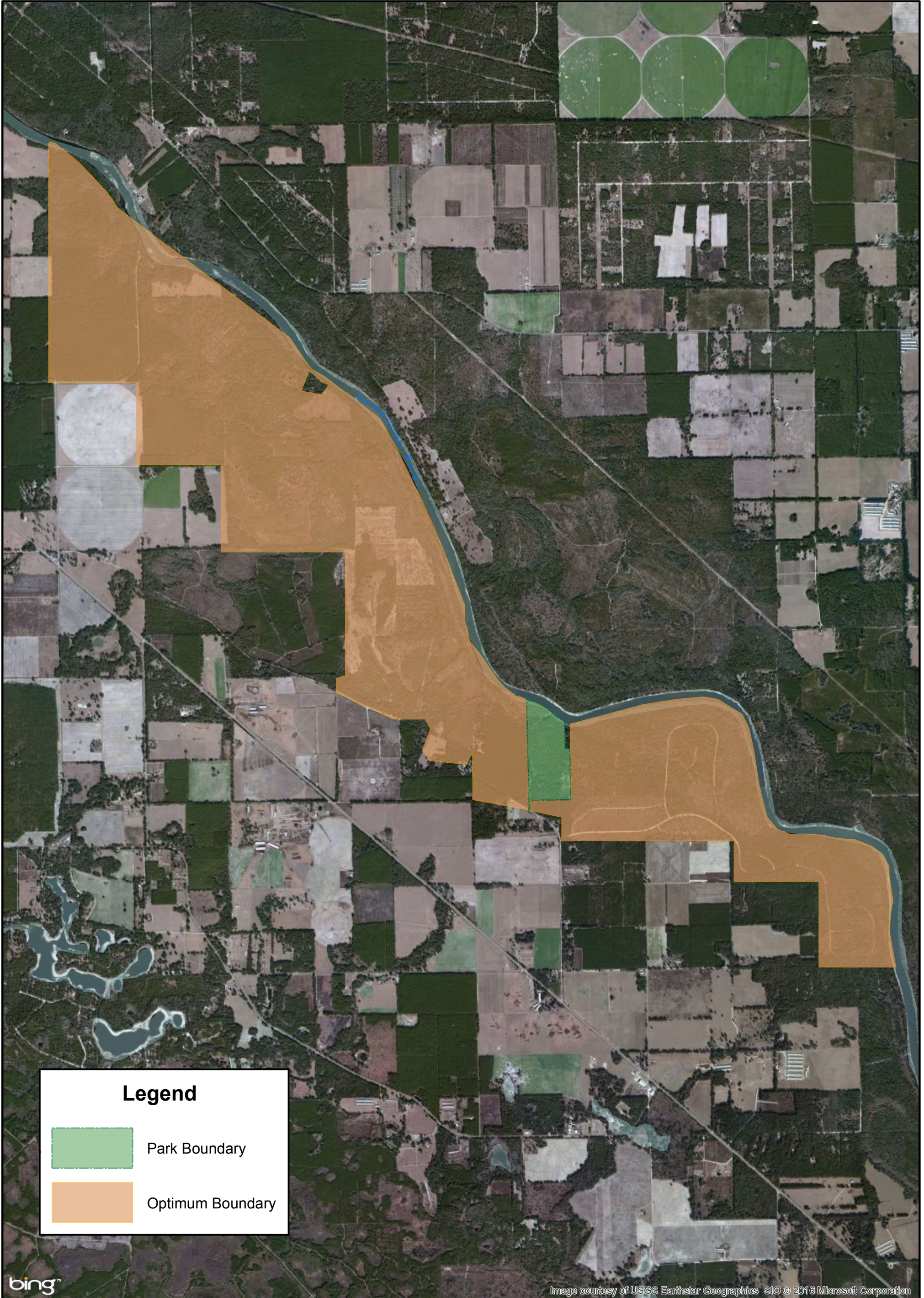
Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements 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 6).

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 indicated.



Table 6. Recreational Carrying Capacity

Activity/Facility	Existing Capacity*		Proposed Additional Capacity		Estimated Recreational Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Spring Swimming Area						
Swimming	70	140			70	140
SCUBA Diving	10	50			10	50
Picnicking	60	120	40	80	100	200
Boating Area						
Boat Docking (boats)	10	20			10	20
Boat Mooring (boats)			15	30	15	30
Fishing			5	10	5	10
Equestrian Camping	0	0	40	40	40	40
TOTAL	150	330	100	160	250	490

*Existing capacity revised from approved plan according to DRP guidelines

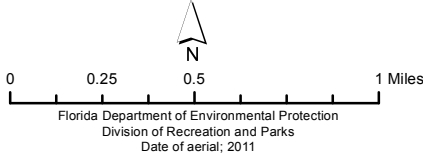


Legend

-  Park Boundary
-  Optimum Boundary

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Image courtesy of USGS Earthstar Geographics SIO © 2016 Microsoft Corporation



TROP SPRING STATE PARK

OPTIMUM BOUNDARY MAP

Optimum Boundary

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

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

The optimum boundary for Troy Spring State Park includes a wide extent of 83 parcels along the Suwannee River. Of these parcels, 19 are currently managed by the SRWMD, but may offer specific management benefits and recreation opportunities for the DRP. Acquisition of these lands would enhance the park's boundaries for resource management purposes, connect park property to adjacent conservation lands, and allow for increased public recreational use (see Optimum Boundary Map).

No lands are considered surplus to the management or conservation needs of the park at this time.

IMPLEMENTATION COMPONENT

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 Troy Spring State Park in 2000, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within three of the five general categories that encompass the mission of the park and the DRP.

Resource Management

Natural Resources

- Exotic plant surveys have been completed and maintained. An active treatment program targets Camphor Tree, Mimosa, Wisteria, Japanese Honeysuckle, and Japanese Climbing Fern.
- Water Monitoring programs to monitor water quality and quantity are performed by Suwannee River Water Management District, U.S. Geological Survey and park staff.
- Research permits have been granted for dye trace studies to better identify the spring shed.
- Natural Resource Management zones have been identified. The sandhill area has been the priority for administering prescribed fires. The zone has mechanically thinned and firebreaks have been created.
- An aerobic septic system has been added during the development of park facilities to minimize impact on the spring.
- A stabilized walkway has been constructed which helps to minimize erosion impacts.

Cultural Resources

- A barrier of floating buoys has been constructed where the spring run meets the river in order to protect the Madison from further impact resulting from boat wake.
- Interpretive efforts center around the Madison to bring awareness and appreciation of the cultural site in the spring run.
- The Madison has been extensively photographed underwater in an effort to document and monitor its status.

- Local area history pertaining to the park has been gathered and put on file within the park including information about the Madison and Captain Tucker, the towns of Old Troy and New Troy, and the owners of the property before the park was acquired.
- A stabilized walkway has been constructed to minimize foot traffic on the archaeological site which surrounds the spring.
- The log cabin has been documented as an historical structure.

Recreation and Visitor Services

- New interpretive programs were developed, including health walks, literacy programs, Saturday morning coffee with a ranger, and programs on request for groups such as 4-H and Scouts.
- The log cabin is utilized as a visitor center and site for park programming.
- A visitor brochure was created for the park.
- An interpretive nature trail was created with interpretive signage installed along the route.
- Informational kiosks and interpretive panels have been erected in the park, including general park information, springs interpretation, and other natural resource interpretation.

Park Facilities

- A paved park entrance and parking area, honor station, restroom, stabilized walkway, and boat dock have been added to the park along with a water well and aerobic septic system.
- A residence was built for the Park Services Specialist for site security.
- The cabin has had an ADA ramp added to provide accessibility to the visitor center. Displays have been created or acquired for the visitor center.
- A restroom and septic tank were added to the barn area, allowing the area to be utilized for primitive group camping and will be available if additional land is acquired for equestrian camping and trail riding.

MANAGEMENT PLAN IMPLEMENTATION

This management plan is written for a timeframe of ten years, as required by Section 253.034 Florida Statutes. The Ten-Year Implementation Schedule and Cost Estimates (Table 7) summarizes the management goals, objectives and actions that are recommended for implementation over this period, and beyond. Measures are identified for assessing progress toward completing each objective and action. A time frame for completing each objective and action is provided. 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 five standard land management categories: Resource Management, Administration and Support, Capital Improvements, Recreation Visitor Services, and Law Enforcement.

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 identified in Table 7 may need to be adjusted during the ten-year management planning cycle.

Table 7
Troy Spring State Park Ten-Year Implementation Schedule and Cost Estimates
 Sheet 1 of 6

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.

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	\$71,348
Objective B	Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise	Administrative support expanded	C	\$38,000
Goal II: Protect water quality and quantity in the park, 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 the park's hydrological restoration needs	Assessment conducted	C	\$22,300
Action 1	Continue to cooperate with agencies and researchers involved in hydrological research and monitoring programs at Troy Spring.	Cooperation ongoing	C	\$3,500
Action 2	Annually document the condition of the park's spring-run stream and floodplain natural communities.	Documentation ongoing	C	\$1,100
Action 3	Periodically assess the condition and effectiveness of septic systems associated with park facilities.	Assessments ongoing	C	\$1,700
Action 4	Seek funding to conduct a dye trace study at Stick Sink Swallet.	Funding secures	ST	\$300
Action 5	Evaluate possible hydrological impacts to the alluvial forest from former roadway and develop restoration plan if necessary.	Evaluation complete	ST	\$700
Action 6	Conduct a hydrological assessment of existing artificial ponds and ditches within the bottomland forest to determine potential remediation measures.	Assessment conducted	LT	\$15,000

* 2017 Dollars
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 UFN = currently unfunded need

Table 7
Troy Spring State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 2 of 6

NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.				
Objective B	Restore natural hydrological conditions and function to approximately 0.1 acres of spring run natural community	# Acres restored or with restoration underway	LT	\$12,800
Action 1	Redesign visitor use areas, close and rehabilitate unauthorized trails, and adjust routine maintenance activities in order to combat erosion and mitigate excessive sediment deposition within the spring and spring run.	Actions completed	LT	\$5,000
Action 2	Continue to cooperate with local, state and federal agencies in efforts to improve protection of hydrological resources through implementation of TMDL requirements for area water bodies, adoption of appropriate MFLs for the Middle Suwannee, and development of mitigation strategies to address the high nutrient levels at Troy Spring.	Cooperation ongoing	C	\$3,500
Action 3	Pursue outreach opportunities to educate the public about anthropogenic impacts to Troy Spring's hydrology.	Programs developed	ST	\$4,000
Action 4	Assess the feasibility of experimental plantings of submerged macrophytes within about 0.1 acre of the spring run.	Assessment conducted	ST	\$300
Goal III: Restore and maintain the natural communities/habitats of the park		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Within 10 years have 35 acres of the park maintained within optimal fire return interval	# Acres within fire return interval target	LT	\$33,500
Action 1	Develop/update annual burn plan.	Plan updated	C	\$16,000
Action 2	Manage fire dependent communities for ecosystem function, structure and processes by burning 12-34 acres annually, as identified by the annual burn plan.	Average # acres burned annually	C	\$17,100
Action 3	Within 5 years, locate and map all of the remnant longleaf pines in the park.	Mapping complete	LT	\$400
Objective B	Conduct habitat/natural community restoration activities on 2 acres of sandhill and 2 acres of upland mixed woodland natural communities	# Acres restored or with restoration underway	LT	\$2,000
Action 1	Develop restoration plan for the sandhill and upland mixed woodland natural communities.	Plan developed	ST	\$600
Action 2	Implement restoration plan and establish a regular monitoring protocol to track progress.	# Acres with restoration underway	LT	\$1,400
Objective C	Conduct habitat/natural community improvement activities on 4 acres of sandhill natural community	# Acres improved or with improvements underway	LT	\$750
Action 1	Plant longleaf pines within the 4 acres of sandhill located south of the barn.	Plan developed	LT	\$750

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Table 7
Troy Spring State Park Ten-Year Implementation Schedule and Cost Estimates
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Goal IV: Maintain, improve or restore imperiled species populations and habitats in the park		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Update baseline imperiled species occurrence inventory lists for plants and animals as needed.	List updated	C	\$1,600
Objective B	Monitor and document 2 selected imperiled animal species in the park	# Species monitored	C	\$2,700
Action 1	Develop monitoring protocols for 2 selected imperiled animal species including gopher tortoise, and West Indian manatee.	# Protocols developed	ST	\$200
Action 2	Implement monitoring protocols for 2 imperiled animal species listed in Action 1 above.	# Species monitored	C	\$2,500
Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Annually treat 20 acres of exotic plant species in the park.	# Acres treated	C	\$43,700
Action 1	Develop and annually update exotic plant management annual work plan.	Plan developed and updated	C	\$16,000
Action 2	Implement annual work plan by treating 20 acres annually and continuing maintenance and follow-up treatments as needed.	Plan implemented	C	\$25,200
Objective B	Implement control measures on 2 nuisance and exotic animal species in the park	# species for which control measures implemented	C	\$2,500

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Table 7
Troy Spring State Park Ten-Year Implementation Schedule and Cost Estimates
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NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.

Goal VI: Protect, preserve and maintain the cultural resources of the park		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Assess and evaluate 4 of 4 recorded cultural resources in the park	Documentation complete	LT	\$15,500
Action 1	Complete 4 assessments/evaluations of archaeological sites. Prioritize preservation and stabilization projects.	Assessments complete	LT	\$300
Action 2	Complete a Historic Structures Report (HSR) for the Log Cabin residence.	Reports and priority lists completed	LT	\$15,000
Action 3	Document the condition of the <i>Madison</i> every other year.	Documentation complete	C	\$200
Objective B	Compile reliable documentation for all recorded historic and archaeological sites	Documentation complete	LT	\$3,200
Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.	# Sites recorded or	ST	\$200
Action 2	Develop and adopt a Scope of Collections Statement.	Document adopted	ST	\$2,200
Action 3	Document the history of the Log Cabin residence.	Documentation complete	LT	\$400
Action 4	Compile reliable documentation for the location of the Davis Homestead and submit to the FMSF.	Site documented	ST	\$400
Objective C	Bring 1 of 4 recorded cultural resources into good condition	# Sites in good condition	LT	\$83,300
Action 1	Design and implement regular monitoring programs for 4 cultural sites.	# Sites monitored	C	\$1,000
Action 2	Create and implement a cyclical maintenance program for each cultural resource.	Programs implemented	C	\$54,800
Action 3	Implement the recommendations for preservation and stabilization of the Log Cabin Residence.	Project complete	LT	\$25,000

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Table 7
Troy Spring State Park Ten-Year Implementation Schedule and Cost Estimates
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NOTE: THE DIVISION'S ABILITY TO COMPLETE THE OBJECTIVES OUTLINED BY THE MANAGEMENT PLAN IS CONTINGENT ON THE AVAILABILITY OF FUNDING AND OTHER RESOURCES FOR THESE PURPOSES.

Goal VII: Provide public access and recreational opportunities in the park		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain the park's current recreational carrying capacity of 330 users per day	# Recreation/visitor	C	\$35,674
Objective B	Expand the park's recreational carrying capacity by 160 users per day	# Recreation/visitor	LT	
Objective C	Continue to provide the current repertoire of 1 interpretive, educational and recreational programs on a regular basis	# Interpretive/education programs	C	\$5,000
Objective D	Develop 5 new interpretive, educational and recreational programs	# Interpretive/education programs	LT	\$35,000
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	\$428,088
Objective B	Continue to implement the park's transition plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990	Plan implemented	LT	\$2,600
Objective C	Improve and/or repair 5 existing facilities as identified in the Land Use Component	# Facilities/Miles of Trail/Miles of Road	LT	\$2,000,000
Objective D	Construct 4 new facilities as identified in the Land Use Component	# Facilities/Miles of Trail/Miles of Road	LT	\$3,000,000
Objective E	Expand maintenance activities as existing facilities are improved and new facilities are developed	Facilities maintained	C	\$32,000

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Table 7
Troy Spring State Park Ten-Year Implementation Schedule and Cost Estimates
Sheet 6 of 6

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Summary of Estimated Costs

Management Categories	Total Estimated Manpower and Expense Cost* (10-years)
Resource Management	\$223,850
Administration and Support	\$109,348
Capital Improvements	\$5,500,000
Recreation Visitor Services	\$75,700
Law Enforcement Activities	Note: Law enforcement activities in Florida State Parks are conducted by the FWC Division of Law Enforcement and by local law enforcement agencies.

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Addendum 1—Acquisition History

LAND ACQUISITION HISTORY REPORT					
Park Name	Troy Spring State Park				
Report Date	5/23/2016				
County Jurisdiction	Lafayette County, Florida				
Trustees Lease Number	Lease No. 4143				
Current Park Size	78.40 acres				
Purpose of Acquisition	<i>The state of Florida acquired Troy Spring State Park for conservation and to develop recreational facilities.</i>				
Acquisition History					
Parcel Name or Parcel DM-ID	Date Acquired	Initial Seller	Initial Purchaser	Acreage	Instrument Type
MDID 8182	6/12/1995	Florida Sheriffs Youth Raches, Inc.	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida	81.485 acres (before adjustment)	Warranty Deed
Management Lease					
Parcel Name or Lease Number	Date Leased	Initial Lessor	Initial Lessee	Current Term	Expiration Date
Lease No. 4143	3/10/1997	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida	The state of Florida Department of Environmental Protection, Division of Recreation and Parks	50 years	3/9/2047
Outstanding Issue	Type of Instrument	Brief Description of the Outstanding Issue		Term of the Outstanding Issue	
There is no known deed related reservation or restriction that applies to the use of Troy Spring State Park.					

Addendum 2—Advisory Group Members and Report

**Troy Spring State Park
Advisory Group Members**

**Local Government
Representatives**

Commissioner Earnest Jones, Chair
Lafayette County Board of County
Commissioners

Steve Walker, Chair
Lafayette County Soil and Water
Conservation District

Agency Representatives

Amy Conyers, Manager
Troy Spring State Park
Division of Recreation and Parks

Ginger Morgan, Landowner
Assistance Coordinator
North Central Florida Region
Florida Fish and Wildlife
Conservation Commission

Doug Longshore, Regional Forester
North Florida Region
Florida Forest Service

Edwin McCook, Land Management
Specialist
Suwannee River Water
Management District

Jason O'Donoughue, Public Lands
Archaeologist
Division of Historical Resources,
Bureau of Archaeological Research

**Environmental and
Conservation Representatives**

Jacqui Sulek, President
Four Rivers Audubon Society

Trisha Haight, President
Sparkleberry Chapter
Florida Native Plant Society

**Tourism and Economic
Development Representatives**

Vi Johnson, President
Lafayette County Chamber of
Commerce

**Recreational and Educational
User Representatives**

Joseph Citelli, Chair
Florida Speleological Society, Cave
Diving Section

Eva Bolton, Program Coordinator
Lafayette County 4-H

Adjacent Landowner

Melissa Harris, residential property
owner

Citizen Support Organization

Michael Stine, President
North Florida Springs Alliance

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

The advisory group meeting to review the proposed unit management plans (UMP) for Ichetucknee Springs State Park and Troy Spring State Park was held in the city of Fort White at the Fort White Community Center on Thursday, March 30, 2017 at 9:00 AM.

Commissioner Bobby Sasnett represented the Holmes County Board of County Commissioners. Ronald Williams, Ricky Gamble, and Earnest Jones, Lamar Moseley, Steve Walker, Trisha Haight, Melissa Harris, Jimmy Norris, and Vi Johnson were not in attendance. Bob Knight represented the Ichetucknee Alliance. Al Clements represented the Florida Speleological Society. Jason O'Donoughue submitted written comments for the Division of Historical Resources in advance of the meeting. All other appointed advisory group members were present.

Attending Division of Recreation and Parks (DRP) staff members were Clifton Maxwell, Brian Fugate, Craig Parenteau, Rick Owen, Dan Pearson, Robert Soderholm, Justin Tiseth, Sam Cole, William Register, Amy Conyers, Jennifer Miller, and Daniel Alsentzer.

Mr. Alsentzer began the meeting by explaining the purpose of the advisory group and reviewing the meeting agenda. He provided a brief overview of the DRP's planning process and summarized public comments received during the public hearing as well as the written comments received from members not in attendance. Mr. Alsentzer then asked each member of the advisory group to express his or her comments on the draft plans. After all comments were shared, Mr. Alsentzer described next steps for drafting the plans and the meeting was adjourned.

Summary of Advisory Group Comments

Ginger Morgan (Florida Fish and Wildlife Conservation Commission (FWC)) recommended using photographic documentation of fox squirrels to supplement written descriptions. Ms. Morgan inquired about fire return intervals; why the entirety of the park's fire-type acreage is not included under the ten-year objective. District staff explained that not all areas identified with a desired future condition of upland mixed woodland and upland pine are burnable at this time due to hardwood invasion, and would accordingly need additional restoration measures before successfully carrying fire. Ms. Morgan recommended adding an explanation of this factor to the fire management program section. She recommended that the DRP project future conditions to allow for adaptive management, especially as methodologies are subject to change over the 10-year period. Ms. Morgan noted the title status of the Ichetucknee siltsnail and inquired about the proper common name for the short-tailed snake. She suggested adding the brown-headed nuthatch to the park's monitored species list. She recommended including the Santa Fe crayfish as a State Threatened species in the Imperiled Species Table. Ms. Morgan noted that seasonally high visitation on the Ichetucknee River results in high turbidity and trampling of submerged aquatic vegetation. She encouraged the DRP to further evaluate the carrying capacity to protect aquatic habitat during both low and high water events, particularly in the grassy flats area.

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

Doug Longshore (Florida Forest Service (FFS)) inquired whether the Ichetucknee Trace parcels are managed as separate units from Ichetucknee Springs State Park. DRP staff explained that Ichetucknee Trace is a separate park unit and provided a brief overview of its purpose and access. Mr. Longshore stated that the proposed resource management goals and objectives for both Ichetucknee Springs and Troy Spring are appropriate for the existing and desired future conditions and consistent with best management practices.

Al Clements (Florida Speleological Society) appreciated that the DRP has recently opened Blue Hole to year-round access for both swimming and diving user groups, but advised that diving access may be challenging during busy swimming visitation. Mr. Clements commented that graffiti has occasionally been carved into limestone by scuba and free divers, but that conservation/leave no trace principles are being emphasized in open water scuba training. He noted that cavern and cave dive training programs have long educated on the sensitivity of karst features. Mr. Clements affirmed the revenue benefits of requiring additional fees for diving access. He commented on the volume of litter that formerly characterized the access areas at Ichetucknee Springs and Troy Spring prior to state acquisitions. He appreciated the opportunity for a representative of the cave diving community to attend the advisory group meeting for both Ichetucknee Springs and Troy Spring state parks.

Michael Stine (North Florida Springs Alliance) reminded the advisory group that this citizen support organization (CSO) no longer includes Ichetucknee Springs State Park, but that he and members of the CSO are highly familiar with the park. He commended the plan, but referenced the water quality and quantity issues in the Ichetucknee Springs system. Mr. Stine elaborated on the rapid recovery of troglobite populations as observed in the cave fauna surveys. He noted that the CSO volunteers have been successful in efforts to remove graffiti from the park's caves. Mr. Stine encouraged instituting an additional access fee for divers at Ichetucknee Springs and Troy Spring and stated that such a fee would not discourage use and would considerably raise revenue. Mr. Stine suggested that the population of Hobbs cave amphipod may be greater than estimated but is difficult to confirm. He stated that reductions of flow level and pollution are of equal concern at Troy Spring as at Ichetucknee Springs.

Trini Johannesen (Friends of Ichetucknee Springs State Park) emphasized the importance of community and educational outreach in park programming. She commended the draft plan for proposing additional programs of this type and encouraged collaboration with area schools. She noted that Columbia County has integrated springs protection into academic curricula. Ms. Johannesen offered the support of the CSO in interpretive/educational outreach.

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

Loye Barnard (adjacent landowner, Ichetucknee Springs) stated that the Ichetucknee Springs State Park offers remarkable recreational and interpretive values in its natural condition and that minimal development is a virtue. She encouraged keeping a small footprint for future land use planning. Ms. Barnard stated that she is also a visitor of Troy Spring and encouraged viewshed considerations when developing use areas around the basin. She stated that impervious pavement is hydrologically problematic and visually unattractive.

Jacqui Sulek (Four Rivers Audubon Society) noted from comments voiced during the public hearing that the UMPs are focused on lands within existing park boundaries, not the broader region. She urged managing agencies and local government jurisdictions to cooperate on reduction of offsite impacts. Ms. Sulek described observations of brown algae and the lack of river grass. She commented that turbid water conditions result from large numbers of visitors entering the river within short intervals. Ms. Sulek additionally noted that establishing minimum flow levels (MFL) does not serve to mitigate existing ecological damages. She advised that the presence or lack of manatees in the Ichetucknee River should influence MFL. She noted that loss of vegetation is partly the result of trampling, which most often occurs during low water periods, and the diminished resilience of aquatic plant species is attributable to consistently lower water supply. Ms. Sulek commented that the most significant threats to the resources in Florida's springs parks result from outside sources. She encouraged strengthening the language in the plans to call for community and inter-agency cooperation. Ms. Sulek offered the assistance of the Audubon chapter in developing interpretation of bird species at both Ichetucknee Springs and Troy Spring state parks. Regarding, the proposed boat mooring sites along the edge of the Suwannee River boundary at Troy Spring, Ms. Sulek stated that it would promote overnight use.

Bob Knight (Ichetucknee Alliance) commented that the plans for both parks include clear and detailed descriptions of their respective resources. Mr. Knight described the causal relationships between groundwater uptake, terrestrial nitrate and phosphate applications. He stated that the Ichetucknee River contains twice the allowable levels of nitrogen. He cited University of Florida studies indicating that low flow in the Ichetucknee River is a factor in algae growth. He stated that water velocity decreases with reduced average flow. Mr. Knight commented that the Ichetucknee River has experienced a loss of plant species diversity. He urged DEP to coordinate with the Suwannee River Water Management District regarding the Basin Management Action Plans (BMAP) to reduce offsite impacts to the springs parks. Regarding park operations, Mr. Knight commended the DRP for its internal management of Ichetucknee Springs State Park, but encouraged further studies to refine the park's ecological and recreational carrying capacity. Mr. Knight commented that nutrient content at Troy Spring is high and that most of its nitrogen content is received from agricultural run-off. He stated that a Middle Suwannee River watershed management plan is being developed.

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

William Stasiewicz (Florida Paddling Trails Association) commented that public access changes at Ichetucknee Springs State Park have not been convenient for paddlers and encouraged the DRP to consider paddling launch and landing facilities. Mr. Stasiewicz stated that there is a need for a formal paddling launch at Troy Spring with an accessible footpath leading to the launch point. He advised that some vegetation clearing may be required for a launch access. Mr. Stasiewicz stated that the park and local agencies should encourage visitation of the springs and river by paddling versus motorized watercraft. He noted the convenience of visiting Troy Spring as its location is particularly accessible from the Suwannee River and suggested that launching from the park would allow visitors to experience other springs within the vicinity.

Eva Bolton (Lafayette County 4-H) stated that she was appointed as a representative of recreational/educational user groups for Troy Springs, but also has family heritage related to Ichetucknee Springs as she is a direct descendent of the Dampiers. Ms. Bolton commented on the significant cultural history of Ichetucknee Springs. Ms. Bolton recognized the agricultural economic tradition and character of the greater springshed region and would like to work with the local community to introduce more of a conservation element, especially through the 4-H organization for which she is an instructor. Ms. Bolton inquired about the feasibility of offering reduced fees or park passes in exchange for volunteering or infrastructural donations to the parks. She encouraged finding ways to revitalize sense of personal investment in Troy Spring State Park among Lafayette County residents.

Paula Vann (Columbia County Tourist Development Council (TDC)) stated that the role of the TDC is to market the county's resources to encourage visitation. She stated that marketing is a form of education and can be developed specifically to broadly inform potential visitors about resources in the parks. Ms. Vann commented that the TDC has engaged in outreach in Fort White and offered to assist with park signage and marketing. She discussed the potential to emphasize ecologically responsible tourism.

Edwin McCook (Suwannee River Water Management District (SRWMD)) had no comments regarding land management for either Ichetucknee Springs or Troy Spring state parks. He encouraged linking the O'Leno and Suwannee River Greenway and enhancing access to Ichetucknee Springs by the shared-use path. Mr. McCook stated that he has coordinated legislative tours of the Ichetucknee River. He noted the positive responses he has observed on these tours. Mr. McCook discussed the optimum boundary as proposed in the Troy Spring UMP. He stated the SRWMD is currently working on access easements for equestrian use in the adjacent Troy Spring Conservation Area and has other acquisitions within the Troy Spring vicinity to consider.

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

Andy Jackson (Suwannee County Soil and Water Conservation District) stated that he is a lifelong Suwannee County resident and is highly familiar with the Ichetucknee, Santa Fe, and Suwannee rivers and regional watershed. He stated that having an agricultural background, he knows that the farming community strives to reduce impacts to the watershed. Mr. Jackson encouraged a cooperative approach to solving the springs protection issues and stated that youth will be critical to finding solutions.

Summary of Written Advisory Group Comments

Jason O'Donoghue (Division of Historical Resources (DHR)) identified discrepancies between cultural resource records listed in the Ichetucknee Springs State Park RMC and Florida Master Site File (FMSF), including Wayside Park, Dampier's Landing, Ichetucknee Railroad Crossing, and the McCormick Pole Barn. He noted that the Paleoindian period in Florida spans 11,500–9,500 B.C. and the Archaic period 9,500–1,500 B.C. and recommended revisions to a site description in the plan. Mr. O'Donoghue advised that eight surveys have taken place on or adjacent to the park since 2001. He concurred that a geoarchaeological assessment of the Ichetucknee Head Spring would be beneficial to guide restoration and avoid unnecessary impacts. He stated that Public Lands Archaeology has the specialized staff and a springs specialist who are available to assist, as are personnel from DHR's Underwater Archaeology program. He recommended additional treatment to stabilize the dugout canoe on display at the Ichetucknee Education and Exhibit Center. Mr. O'Donoghue also provided comments on the Troy Spring UMP. He advised that the CARL Archaeological Survey Investigations of 1996 were not exhaustive and examined only a small portion of the park. He offered that staff from DHR's Public Lands Archaeology program are available to conduct a preliminary cultural resources survey and provide management recommendations. He concurred that the disposition of the Madison "creates a valuable opportunity for interpretation of the site and the region's cultural history" and encouraged continuing efforts to educate visitors about the sensitivity of the Madison shipwreck. He recommended additional interpretive signage outlining the significance of the Madison and its protection under Florida law. He recommended that in addition to photo documentation, the DRP should record the dimensions of the vessel to track changes in exposure, erosion, or degradation.

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

Summary of Public Comments

Jim Stevenson discussed the balance between preservation and recreation and provided background on the management of visitor use in Florida state parks. He stated that he is unaware of any historical basis for the name "Saylor" Sink as prior to state acquisition in 2002, the Ichetucknee Springs Basin Working Group renamed this feature "Ichetucknee" Sink to raise public awareness about its relationship to Ichetucknee Springs. He recommended revising the name in the Ichetucknee Springs UMP. Mr. Stevenson stated that secondary use that should be restricted to former agricultural fields of planted pines and urged that oversight of contractors by the park manager and park biologist is required to ensure the highest level of sensitivity. Regarding the three power line easements across the Ichetucknee River, Mr. Stevenson encouraged that cutting of vegetation should be limited adjacent to the river to screen the cleared easements from view. He stated that this matter was negotiated by the state park director in 1971. Mr. Stevenson stated that the Ichetucknee Headspring had a long tradition of quiet local use, including baptisms, family reunions, and picnics, but that high visitation following the park's opening as a park, reduced the serene character of the spring site. He recommended drawing visitor use downstream of the Headspring, such that tubers would enter at the midpoint. He stated that increased canoe and kayak concession rentals for use on the upper river would enhance revenue and reduce shuttling visitors from the south use area to the north use area to retrieve vehicles and also reduce the risk of accidents on adjacent county roads. Mr. Stevenson encouraged construction of a large picnic pavilion near the restroom and existing parking at the north use area to improve accommodation of group activities. He recommended careful attention to placement of the pavilion to not diminish the viewshed toward the Headspring.

Brack Barker commented that more consistent enforcement of park rules is needed. Mr. Barker recommended that access for paddlers be improved during tubing season. He recommended that the riparian zone, including up to 100 yards inland, along the river be designated an archaeological zone to increase protection from intrusive activities, citing the Mission site as an example of the importance of cultural resource protection due to the shallow depth that the church was found.

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

Staff Recommendations

- Language in the Imperiled Species section of the Ichetucknee Springs State Park UMP was revised to include current designations and monitoring protocols for brown-headed nuthatch, Santa Fe crayfish, Suwannee cooter, and Florida gopher frog.
- Reference to successful volunteer efforts to remove defacement of karst in the Blue Hole cavern was added to the Natural Communities section for Ichetucknee Springs State Park.
- Explanations of water level monitoring and visitor access guidelines for low water conditions were added to the Land Use Component for Ichetucknee Springs State Park.
- Operational and existing facilities descriptions were revised to reflect current usage in the Land Use Component for Ichetucknee Springs State Park.
- Descriptions of historic structures and archaeological sites were updated to reflect the most current cultural resource records for both Ichetucknee Springs and Troy Spring state parks.
- Language was added to the Cultural Resource Management section of the Troy Spring State Park UMP to call for additional monitoring and interpretation of the Madison archaeological site. The DRP will continue to work with DHR to ensure that artifacts are preserved and curated according to best practices.
- Additional revisions were made throughout the documents to address editorial corrections, consistency of spelling and notations, and other minor corrections.

Notes on Composition of the Advisory Group

Florida Statutes Chapter 259.032 Paragraph 10(b) establishes a requirement that all state land management plans for properties greater than 160 acres will be reviewed by an advisory group:

“Individual management plans required by s. 253.034(5), for parcels over 160 acres, shall be developed with input from an advisory group. Members of this advisory group shall include, at a minimum, representatives of the lead land managing agency, co-managing entities, local private property owners, the appropriate soil and water conservation district, a local conservation organization, and a local elected official.”

Troy Spring State Park and Ichetucknee Springs State Park

Advisory Group Meeting Report

Advisory groups that are composed in compliance with these requirements complete the review of State park management plans. Additional members may be appointed to the groups, such as a representative of the park's Citizen Support Organization (if one exists), representatives of the recreational activities that exist in or are planned for the park, or representatives of any agency with an ownership interest in the property. Special issues or conditions that require a broader representation for adequate review of the management plan may require the appointment of additional members. The DRP's intent in making these appointments is to create a group that represents a balanced cross-section of the park's stakeholders. Decisions on appointments are made on a case-by-case basis by Division of Recreation and Parks staff.

Addendum 3—References Cited

Troy Spring State Park References Cited

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Addendum 4—Soil Descriptions

Troy Spring State Park Soil Descriptions

(2) Penney sand, 0 to 5 percent slope - This nearly level and gently sloping, excessively drained soil sits on broad ridges and on isolated knolls. The major soil component contains 90 percent Penney soils. The typical soil profile has a surface layer of sand to a depth of 55 inches and fine sand extends to a depth of about 55 to 80 inches. The parent material contains Eolian or sandy marine deposits. Permeability of this soil is rapid with no flooding or ponding. The available water capacity is very low (about 2.7 inches). The depth to the water table is about 72 to 84 inches. The minor soil components include 5 percent Blanton and 5 percent Ortega.

(4) Blanton - Ortega complex, 0 to 5 percent slope - This complex consists of nearly level to gently sloping, moderately well drained soils. Excessively drained soils occur on upland ridges. The major soil components of this complex contain Blanton (55 percent) and Ortega (26 percent). The typical soil profile for Blanton has fine sand to 44 inches and sandy clay loam to 80 inches. The typical soil profile for Ortega is fine sand to 80 inches. The parent materials for this complex contain sandy, loamy, or Eolian marine deposits. The available water capacity is low (about 3 to 4 inches). The depth to the water table is approximately 42 to 66 inches. The minor soil components, Albany, Penney and Ridgewood solids, make up 19 percent of this complex.

(29) Fluvaquents, frequently flooded - This nearly level, very poorly drained soil occurs in flood plains. Ninety percent of this unit contains Fluvaquents soil. The typical soil profile has mucky fine sand to 3 inches and sandy clay loam from 3 to 21 inches. The subsoil is sandy loam and extends to depths of about 80 inches. The parent materials contain sandy and loamy fluvial sediments. These soils are subject to frequent flooding. The available water capacity is moderate (about 6.2 inches). The depth to the water table is 0 to 6 inches. The minor soil components include 5 percent Pamlico and 5 percent Dorovan.

(43) Garcon - Albany - Meadowbrook complex, 0 to 5 percent, occasionally flooded - This complex consists of nearly level and gently sloping, somewhat poorly drained soils on stream terraces, and poorly drained soils in depressions along the river. The major soil components of this complex contain Garcon (55 percent), Albany (15 percent) and Meadowbrook (15 percent). They have rapidly permeable sandy layers to depths of 26 to 63 inches over moderately to moderately rapid permeable subsoil. The parent materials contain sandy and loamy marine deposits. These soils are occasionally flooded. The available water capacity is low to very low. The depth to the water table ranges from 0 to 36 inches. The minor soil components, Blanton, Mandarin, Leon, and Ortega, make up 15 percent of this soil complex.

Addendum 5—Plant and Animal List

Troy Spring State Park Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
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PTERIDOPHYTES

Japanese climbing fern.....	<i>Lygodium japonicum</i> *	
Resurrection fern.....	<i>Polypodium polypodioides</i> var. <i>michauxiana</i>	
Tailed bracken	<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	

GYMNOSPERMS

Red cedar	<i>Juniperus virginiana</i>	
Slash pine	<i>Pinus elliottii</i>	
Longleaf pine	<i>Pinus palustris</i>	
Loblolly pine	<i>Pinus taeda</i>	
Bald cypress	<i>Taxodium distichum</i>	

ANGIOSPERMS

MONOCOTS

Bushy bluestem	<i>Andropogon glomeratus</i>	
Bottlebrush threeawn.....	<i>Aristida spiciformis</i>	
Hammock sedge.....	<i>C. fissa</i>	
Long's sedge.....	<i>Carex longii</i>	
Longleaf woodoats.....	<i>Chasmanthium laxum</i> var. <i>sessiliflorum</i>	
Flat sedge	<i>Cyperus</i> sp.	
Florida yam	<i>Dioscorea floridana</i>	
Bahia grass.....	<i>Paspalum notatum</i> *	
Dwarf palmetto	<i>Sabal minor</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Narrow plumegrass.....	<i>Saccharum baldwinii</i>	
Saw palmetto.....	<i>Serenoa repens</i>	
Narrowleaf blue-eyed grass	<i>Sisyrinchium angustifolium</i>	
Saw greenbrier	<i>Smilax bona-nox</i>	
Wild sarsaparilla	<i>Smilax glauca</i>	
Sarsaparilla vine.....	<i>Smilax pumila</i>	
St. Augustine grass	<i>Stenotaphrum secundatum</i> *	
Spanish moss	<i>Tillandsia usneoides</i>	
Adam's needle	<i>Yucca filamentosa</i>	
Atamasco lily	<i>Zephyranthes atamasca</i>AF	

DICOTS

Three-seeded mercury	<i>Acalypha gracilens</i>	
Red maple	<i>Acer rubrum</i>	
Oppositeleaf spotflower	<i>Acmella oppositifolia</i>	

* Non-native Species

Troy Spring State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Mimosa	<i>Albizia julibrissin</i> *	
Tung-oil tree.....	<i>Aleurites fordii</i> *	
Bastard false indigo	<i>Amorpha fruticosa</i>	
Pepper-vine	<i>Ampelopsis arborea</i>	
Slim-leaf pawpaw	<i>Asimina angustifolia</i>	
Bigflower pawpaw.....	<i>Asimina obovata</i>	
Smallflower pawpaw	<i>Asimina parviflora</i>	
Sea-myrtle	<i>Baccharis halimifolia</i>	
White wild indigo	<i>Baptisia alba</i>	
River birch.....	<i>Betula nigra</i>	
Spanish needles	<i>Bidens bipinnata</i>	
Cross-vine.....	<i>Bignonia capreolata</i>	
Bog-hemp	<i>Boehmeria cylindrica</i>	
American Beautyberry.....	<i>Callicarpa americana</i>	
Trumpetcreeper	<i>Campsis radicans</i>	
American hornbeam.....	<i>Carpinus caroliniana</i>	
Mockernut hickory	<i>Carya alba</i>	
Water hickory	<i>Carya aquatica</i>	
Pignut hickory	<i>Carya glabra</i>	
Sugarberry	<i>Celtis laevigata</i>	
Common buttonbush	<i>Cephalanthus occidentalis</i>	
Partridge-pea.....	<i>Chamaecrista fasciculata</i>	
Mexican-tea	<i>Chenopodium ambrosioides</i> *	
White fringe tree	<i>Chionanthus virginicus</i>	
Camphor-tree	<i>Cinnamomum camphora</i> *	
Purplethistle	<i>Cirsium horridulum</i>	
Net-leaf leather flower	<i>Clematis reticulata</i>	
Blue mistflower	<i>Conoclinium coelestinum</i>	
Flowering dogwood	<i>Cornus florida</i>	
Swamp dogwood	<i>Cornus foemina</i>	
Harlequin	<i>Corydalis micrantha</i> subsp. <i>australis</i>	
Parsley hawthorn.....	<i>Crataegus marshallii</i>	
Slender scratch daisy.....	<i>Croptilon divaricatus</i>	
Rabbit bells.....	<i>Crotalaria rotundifolia</i>	
Florida balm.....	<i>Dicerandra densiflora</i>	
Carolina pony's-foot.....	<i>Dichondra carolinensis</i>	
Common persimmon.....	<i>Diospyros virginiana</i>	
Tall elephant's-foot.....	<i>Elephantopus elatus</i>	
Carolina scalystem.....	<i>Elytraria caroliniensis</i>	
American strawberrybush.....	<i>Euonymus americanus</i>	
Yankeeweed	<i>Eupatorium compositifolium</i>	
Eastern swamp privet	<i>Forestiera acuminata</i>	
Pop ash.....	<i>Fraxinus caroliniana</i>	
Blue huckleberry	<i>Gaylussacia frondosa</i> var. <i>tomentosa</i>	
Yellow jessamine	<i>Gelsemium sempervirens</i>	
Water locust	<i>Gleditsia aquatica</i>	
Rabbit's tobacco.....	<i>Gnaphalium obtusifolium</i>	

* Non-native Species

Troy Spring State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Pine-barren frostweed.....	<i>Helianthemum corymbosum</i>	
Innocence	<i>Houstonia procumbens</i>	
St. Andrew's cross.....	<i>Hypericum hypericoides</i>	
Fourpetal St. John's-wort	<i>Hypericum tetrapetalum</i>	
Common yellow stargrass.....	<i>Hypoxis curtissii</i>	
Bitter mint.....	<i>Hyptis mutabilis*</i>	
American holly	<i>Ilex opaca</i>	
Yaupon	<i>Ilex vomitoria</i>	
Hairy indigo	<i>Indigofera hirsuta*</i>	
Pinweed	<i>Lechea sp.</i>	
Sweetgum	<i>Liquidambar styraciflua</i>	
Downy lobelia	<i>Lobelia puberula</i>	
Japanese honeysuckle.....	<i>Lonicera japonica*</i>	
Coral honeysuckle	<i>Lonicera sempervirens</i>	
Seaside primrose-willow	<i>Ludwigia maritima</i>	
Lady lupine.....	<i>Lupinus villosus</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	
Japanese magnolia	<i>Magnolia X Soulangeana*</i>	
Snow squarestem.....	<i>Melanthera nivea</i>	
Creeping cucumber.....	<i>Melothria pendula</i>	
Partridge berry.....	<i>Mitchella repens</i>	
Lax hornpod	<i>Mitreola petiolata</i>	
Wax-myrtle	<i>Myrica cerifera</i>	
Prickly-pear cactus	<i>Opuntia humifusa</i>	
Wild olive	<i>Osmanthus americanus</i>	
Common yellow wood-sorrel	<i>Oxalis corniculata</i>	
Virginia creeper.....	<i>Parthenocissus quinquefolia</i>	
Manyflower beardtongue	<i>Penstemon multiflorus</i>	
Red bay	<i>Persea borbonia</i>	
Downy phlox.....	<i>Phlox pilosa</i>	
Oak mistletoe	<i>Phoradendron leucarpum</i>	
Turkey-tangle fogfruit	<i>Phyla nodiflora</i>	
Black cherry	<i>Prunus serotina</i>	
Hog plum	<i>Prunus umbellata</i>	
Southern red oak	<i>Quercus falcata</i>	
Turkey oak	<i>Quercus laevis</i>	
Laurel oak	<i>Quercus laurifolia</i>	
Overcup oak	<i>Quercus lyrata</i>	
Sand post oak.....	<i>Quercus margaretta</i>	
Water oak	<i>Quercus nigra</i>	
Post oak.....	<i>Quercus stellata</i>	
Live oak	<i>Quercus virginiana</i>	
Swamp honeysuckle	<i>Rhododendron sp.</i>	
Winged sumac	<i>Rhus copallinum</i>	
Sand blackberry	<i>Rubus cuneifolius</i>	
Southern dewberry.....	<i>Rubus trivialis</i>	
Rudbeckia	<i>Rudbeckia sp.</i>	

* Non-native Species

Troy Spring State Park Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Carolina wildpetunia.....	<i>Ruellia caroliniensis</i>	
Hastate-leaved dock	<i>Rumex hastatulus</i>	
Carolina willow	<i>Salix caroliniana</i>	
Pineland pimpernel	<i>Samolus valerandi</i> var. <i>parviflorus</i>	
Gulf sebastian- bush	<i>Sebastiania fruticosa</i>	
Gum bully.....	<i>Sideroxylon lanuginosum</i>	
Hairy leafcup	<i>Smallanthus uvedalia</i>	
Peat moss	<i>Sphagnum</i> sp.	
Queen's delight	<i>Stillingia sylvatica</i>	
Carolina basswood.....	<i>Tilia americana</i> var. <i>caroliniana</i>	
Eastern poison oak	<i>Toxicodendron pubescens</i>	
Eastern poison ivy	<i>Toxicodendron radicans</i>	
Forked blue-curls	<i>Trichostema dichotomum</i>	
American elm	<i>Ulmus americana</i>	
Sparkleberry.....	<i>Vaccinium arboreum</i>	
Highbush blueberry	<i>Vaccinium corymbosum</i>	
Shiny blueberry.....	<i>Vaccinium myrsinites</i>	
Deerberry.....	<i>Vaccinium stamineum</i>	
Giant ironweed.....	<i>Vernonia gigantea</i>	
Walter's viburnum	<i>Viburnum obovatum</i>	
Rusty blackhaw.....	<i>Viburnum rufidulum</i>	
Violet	<i>Viola</i> sp.	
Muscadine grape	<i>Vitis rotundifolia</i>	
American wisteria.....	<i>Wisteria frutescens</i>	
Oriental hawk's-beard.....	<i>Youngia japonica</i> *	

* Non-native Species

Troy Spring State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
INVERTEBRATES		
Crustaceans		
Isopod	<i>Caecidotea</i> sp.	ACV
Subterranean amphipod.....	<i>Crangonyx</i> sp.....	ACV
Amphipod	<i>Hyalella</i> sp.....	ACV
Pallid cave crayfish	<i>Procambarus pallidus</i>	ACV
White tubercled crayfish.....	<i>Procambarus spiculifer</i>	SRST
Mollusks		
Asian clam	<i>Corbicula fluminea</i> *	ACV, SRST
Variable spike.....	<i>Elliptio icterina</i>	BST
Southern fatmucket.....	<i>Lampsilis straminea</i>	BST
Yellow sandshell.....	<i>Lampsilis teres</i>	SRST, BST
Iridescent Lilliput	<i>Toxolasma paulus</i>	SRST, BST
Florida pondhorn.....	<i>Uniomereus carolinianus</i>	SRST, BST
Southern rainbow.....	<i>Villosa vibex</i>	SRST, BST
Butterflies and Skippers		
Gulf Fritillary	<i>Agraulis vanillae</i>	MTC
Red-spotted Purple.....	<i>Basilarchia arthemis astyanax</i>	MTC
Pipe-vine Swallowtail	<i>Battus philenor</i>	MTC
Horace's Dusky Wing.....	<i>Erynnis horatius</i>	MTC
Little Yellow Sulfur	<i>Eurema lisa</i>	MTC
Sleepy Orange	<i>Eurema nicippe</i>	MTC
Zebra Swallowtail.....	<i>Eurytides marcellus</i>	MTC
Zebra Longwing	<i>Heliconius charitonius</i>	MTC
Ceraunus Blue	<i>Hemiargus ceraunus antibubastus</i>	MTC
Carolina Satyr.....	<i>Hermeuptychia sosybius</i>	MTC
Fiery Skipper	<i>Hylephila phyleus</i>	MTC
Buckeye.....	<i>Junonia coenia</i>	MTC
Clouded Skipper.....	<i>Lerema accuis</i>	MTC
Giant Swallowtail	<i>Papilio cresphontes</i>	MTC
Spicebush Swallowtail.....	<i>Papilio troilus</i>	MTC
Cloudless Sulfur	<i>Phoebis sennae</i>	MTC
Pearl Crescent	<i>Phyciodes tharos</i>	MTC
Whirlabout	<i>Polites vibex</i>	MTC
Question Mark	<i>Polygonia interrogationis</i>	MTC
Tropical Checkered Skipper	<i>Pyrgus oileus</i>	MTC
Long-tailed Skipper	<i>Urbanus proteus</i>	MTC
Red Admiral	<i>Vanessa atalanta</i>	MTC
American Painted Lady	<i>Vanessa virginiensis</i>	MTC
Southern Dog Face.....	<i>Zerene cesonia</i>	MTC
Grey hairstreak.....	<i>Strymon melinus</i>	MTC
White M Hairstreak.....	<i>Parrhasius m-album</i>	MTC
Black Swallowtail	<i>Papilio polyxenes</i>	MTC

* Non-native Species

Troy Spring State Park Animals

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for all species)
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VERTEBRATES

FISH

Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>	BST
Bowfin	<i>Amia calva</i>	SRST, BST
Warmouth	<i>Chaenobryttus gulosus</i>	SRST, BST
Golden topminnow	<i>Fundulus chrysotus</i>	SRST, BST
Eastern mosquitofish	<i>Gambusia holbrooki</i>	SRST, BST
Brook silverside	<i>Labidesthes sicculus</i>	SRST, BST
Longnose gar	<i>Lepisosteus osseus</i>	SRST, BST
Redbreast sunfish	<i>Lepomis auritus</i>	SRST, BST
Bluegill	<i>Lepomis macrochiru</i>	SRST, BST
Redear sunfish	<i>Lepomis microlophus</i>	SRST, BST
Spotted sunfish	<i>Lepomis punctatus</i>	SRST, BST
Suwannee bass	<i>Micropterus notius</i>	SRST, BST
Largemouth bass	<i>Micropterus salmoides</i>	SRST, BST
Spotted sucker	<i>Minytrema melanops</i>	SRST, BST
Striped mullet	<i>Mugil cephalus</i>	SRST, BST
Ironcolor shiner	<i>Notropis chalybaeus</i>	SRST, BST
Hogchoker	<i>Trinectes maculates</i>	SRST, BST

AMPHIBIANS

Frogs and Toads

Florida cricket frog	<i>Acris gryllus dorsalis</i>	FS
Southern toad	<i>Anaxyrus terrestris</i>	MEH, BF
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>	MEH, BF
Cope's Gray treefrog	<i>Hyla chrysoscelis</i>	MEH, BF
Green treefrog	<i>Hyla cinerea</i>	UMW, BF
Squirrel treefrog	<i>Hyla squirella</i>	UMW, BF
Southern leopard frog	<i>Lithobates sphenoccephala</i>	FS, BST

REPTILES

Turtles

Florida softshell turtle	<i>Apalone ferox</i>	SRST, BST
Suwannee alligator snapping turtle	<i>Macrochelys suwanniensis</i>	BST
Suwannee cooter	<i>Pseudemys concinna suwanniensis</i>	SRST, BST
Gopher tortoise	<i>Gopherus polyphemus</i>	SHF, UMW

Lizards

Green anole	<i>Anolis carolinensis</i>	MEH, BF
Broad-head skink	<i>Plestiodon laticeps</i>	MEH

Troy Spring State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Mediterranean gecko	<i>Hemidactylus turcicus*</i>	DV
Southern fence lizard.....	<i>Sceloporus undulatus undulatus</i>	SHF
Ground skink.....	<i>Scincella lateralis</i>	UMW
Snakes		
Southern black racer	<i>Coluber constrictor priapus</i>	SHF
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	SHF
Gray rat snake.....	<i>Pantherophis alleghaniensis</i>	MEH, BF
Coral snake.....	<i>Micrurus fulvius</i>	UMW
Redbelly water snake.....	<i>Nerodia erythrogaster erythrogaster</i>	SRST
Brown water snake.....	<i>Nerodia taxispilota</i>	SRST
Florida brown snake	<i>Storeria dekayi</i>	MEH, BF
BIRDS		
Cormorants		
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	BST
Ducks		
Wood Duck	<i>Aix sponsa</i>	BST
Turkeys		
Wild Turkey.....	<i>Meleagris gallopavo</i>	UMW, SHF
Quail		
Northern Bobwhite	<i>Colinus virginianus</i>	SHF
Herons and Bitterns		
Little Blue Heron	<i>Egretta caerulea</i>	SRST, BST
Vultures		
Turkey Vulture.....	<i>Cathartes aura</i>	OF, MTC
Black Vulture.....	<i>Coragyps atratus</i>	OF, MTC
Kites, Hawks, Eagles and Allies		
Sharp-shinned Hawk	<i>Accipiter striatus</i>	BF, MEH
Red-tailed Hawk	<i>Buteo jamaicensis</i>	SHF
Red-shouldered Hawk.....	<i>Buteo lineatus</i>	AF, SHF, UMW
Pigeons and Doves		
Mourning Dove	<i>Zenaida macroura</i>	MTC
Owls		
Barred Owl.....	<i>Strix varia</i>	AF, BF, FS

* Non-native Species

Troy Spring State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Kingfishers		
Belted Kingfisher.....	<i>Ceryle alcyon</i>	BST, SRST
Woodpeckers		
Common Flicker	<i>Colaptes auratus</i>	SHF
Pileated Woodpecker	<i>Dryocopus pileatus</i>	MEH, UMW
Red-bellied Woodpecker.....	<i>Melanerpes carolinus</i>	MEH, UMW
Downy Woodpecker.....	<i>Picoides pubescens</i>	MEH, UMW
Yellow-bellied Sapsucker.....	<i>Sphyrapicus varius</i>	MEH, UMW
Tyrant Flycatchers		
Great-crested Flycatcher.....	<i>Myiarchus crinitus</i>	AF, UMW, SHF
Eastern Phoebe.....	<i>Sayornis phoebe</i>	SHF
Vireos		
White-eyed Vireo	<i>Vireo griseus</i>	MEH, UMW
Yellow-throated Vireo	<i>Vireo flavifrons</i>	MEH, SHF, UMW
Red-eyed Vireo.....	<i>Vireo olivaceus</i>	AF, BF, MEH
Blue-headed Vireo.....	<i>Vireo solitarius</i>	MEH, UMW
Jays and Crows		
American Crow	<i>Corvus brachyrhynchos</i>	MTC
Fish Crow.....	<i>Corvus ossifragus</i>	MTC
Blue Jay.....	<i>Cyanocitta cristata</i>	MTC
Swallows		
Barn Swallow.....	<i>Hirundo rustica</i>	OF, MTC
Tree Swallow	<i>Iridoprocne bicolor</i>	OF, MTC
Chickadees and Titmice		
Tufted Titmouse.....	<i>Baeolophus bicolor</i>	MTC
Carolina Chickadee.....	<i>Poecile carolinensis</i>	MEH, UMW
Wrens		
Carolina Wren.....	<i>Thryothorus ludovicianus</i>	MTC
Kinglets		
Ruby-crowned Kinglet.....	<i>Regulus calendula</i>	MTC
Gnatcatchers		
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	MEH, SHF, UMW
Thrushes		
Hermit Thrush	<i>Catharus guttatus</i>	BF, MEH

* Non-native Species

Troy Spring State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Eastern Bluebird	<i>Sialia sialis</i>	SHF
American Robin	<i>Turdus migratorius</i>	MEH, UMW
Mockingbirds, Thrashers, and Allies		
Gray Catbird.....	<i>Dumetella carolinensis</i>	MEH
Brown Thrasher	<i>Toxostoma rufum</i>	MEH, BF
Wood-Warblers		
Yellow-rumped Warbler.....	<i>Setophaga coronata</i>	MEH, SHF, UMW
Yellow-throated Warbler	<i>Setophaga dominica</i>	SHF, UMW
Palm Warbler.....	<i>Setophaga palmarum</i>	SHF
Pine Warbler.....	<i>Setophaga pinus</i>	UMW, SHF
Common Yellowthroat.....	<i>Geothlypis trichas</i>	AF
Black-and-white Warbler	<i>Mniotilta varia</i>	MEH, UMW
Northern Parula	<i>Setophaga americana</i>	AF, MEH, UMW
Prothonotary Warbler	<i>Protonotaria citrea</i>	FS
Ovenbird.....	<i>Seiurus aurocapillus</i>	MEH, UMW
New World Sparrows, and Allies		
Chipping Sparrow.....	<i>Spizella passerina</i>	SHF
Cardinals, Grosbeaks, and Allies		
Northern Cardinal.....	<i>Cardinalis cardinalis</i>	MTC
American Goldfinch	<i>Spinus tristis</i>	MEH, UMW
Eastern Towhee.....	<i>Pipilo erythrophthalmus</i>	SHF, UMW
MAMMALS		
Didelphids		
Opossum	<i>Didelphis marsupialis</i> *	MTC
Edentates		
Nine-banded armadillo.....	<i>Dasypus novemcinctus</i>	MTC
Lagomorphs		
Eastern cottontail.....	<i>Sylvilagus floridanus</i>	MTC
Rodents		
Southern flying squirrel.....	<i>Glaucomys volans</i>	MEH, UMW, SHF
Southeastern pocket gopher.....	<i>Geomys pinetis</i>	SHF
Cotton mouse.....	<i>Peromyscus gossypinus</i>	MEH, UMW
Gray squirrel	<i>Sciurus carolinensis</i>	MTC
Sherman's fox squirrel.....	<i>Sciurus niger shermani</i>	AFP, CPP

* Non-native Species

Troy Spring State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Carnivores		
Raccoon.....	<i>Procyon lotor</i>	MTC
Manatees		
West Indian manatee	<i>Trichechus manatus</i>	BST, SRST
Artiodactyls		
White-tailed deer	<i>Odocoileus virginianus</i>	MTC
Feral hog	<i>Sus scrofa</i> *	AF, FS

* Non-native Species

Primary Habitat Codes

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

Primary Habitat Codes

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

Natural Community Habitat Codes

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

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.

FNAL 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)

Imperiled Species Ranking Definitions

- 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

Imperiled Species Ranking Definitions

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.

Imperiled Species Ranking Definitions

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

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

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.

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

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, and 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

Eligibility Criteria for National Register of Historic Places

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; or

Eligibility Criteria for National Register of Historic Places

- e) a 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
- f) a property achieving significance within the past 50 years, if it is of exceptional importance.

Preservation Treatments as Defined by Secretary of Interior's Standards and Guidelines

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.

