



**FORT COOPER
STATE PARK**
Park Chapter

GULF COAST REGION

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Fort Cooper State Park

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Fort Cooper State Park

Planning Region: Gulf Coast

County: Citrus

Lease/Management Agreement Number: 2541

Overview: The park preserves and interprets the site of a Second Seminole War fort where 380 sick and wounded soldiers of the First Georgia Battalion Volunteers survived 16 days of siege by over 500 Seminole Warriors. The park's natural areas provide diverse wildlife habitat, including sandhill, hardwood hammocks, basin marsh, and the 50-acre clearwater Lake Holathlikaha.

Total Acreage: 708.05

Natural Communities	Acres
Basin Marsh	107.02
Depression Marsh	2.57
Mesic Flatwoods	6.41
Mesic Hammock	178.40
Sandhill	292.90
Sandhill Upland Lake	46.00

Altered Land Cover	Acres
Borrow Area	0.30
Developed	24.21
Pine Plantation	43.74
Successional Hardwood Forest	52.76

Acquisition: Fort Cooper State Park was initially acquired on December 23, 1970 with funds from the Land Acquisition Trust Fund (LATF).

Resource Management Component

Hydrology

- Assess the park's hydrological restoration needs.
- Restore natural hydrological conditions and functions to approximately 145 acres of sandhill upland lake natural community.

Natural Communities

- Maintain 330 acres within the optimum fire return interval.
- Conduct habitat/natural community restoration activities on 5 acres of sandhill community.
- Conduct habitat/natural community improvement activities on 37 acres of sandhill community.
- Conduct natural community/habitat improvement activities on 15 acres of mesic flatwoods community.
- Conduct natural community/habitat improvement activities on 40 acres of pine plantation.

Fort Cooper State Park

Imperiled Species

- Update baseline imperiled species occurrence inventory lists for plants and animals.
- Monitor and document two selected imperiled animal species in the park.
- Monitor and document two selected imperiled plant species in the park.

Invasive and Nuisance Species

- Annually treat 22 acres of invasive plant species.
- Develop and implement measures to prevent the accidental introduction or further spread of invasive plants in the park.
- Implement control measures on 1 invasive animal species in the park.

Cultural Resources

- Assess and evaluate 15 of 15 recorded cultural resources in the park.
- Compile reliable documentation for all recorded historic and archaeological resources.
- Monitor and conduct additional assessments of recorded cultural resources determined to be in poor condition.

Land Use Component

Conceptual Land Use

Entrance Area

- Addition of an administrative support building.

Day Use Area/Lake Holathlikaha

- Addition of a Fishing dock.
- Restroom Accessibility Improvements.

South End Support Area

- Replace sheds with one three-bay garage.
- Replace portable restroom with a permanent restroom at the primitive campground.

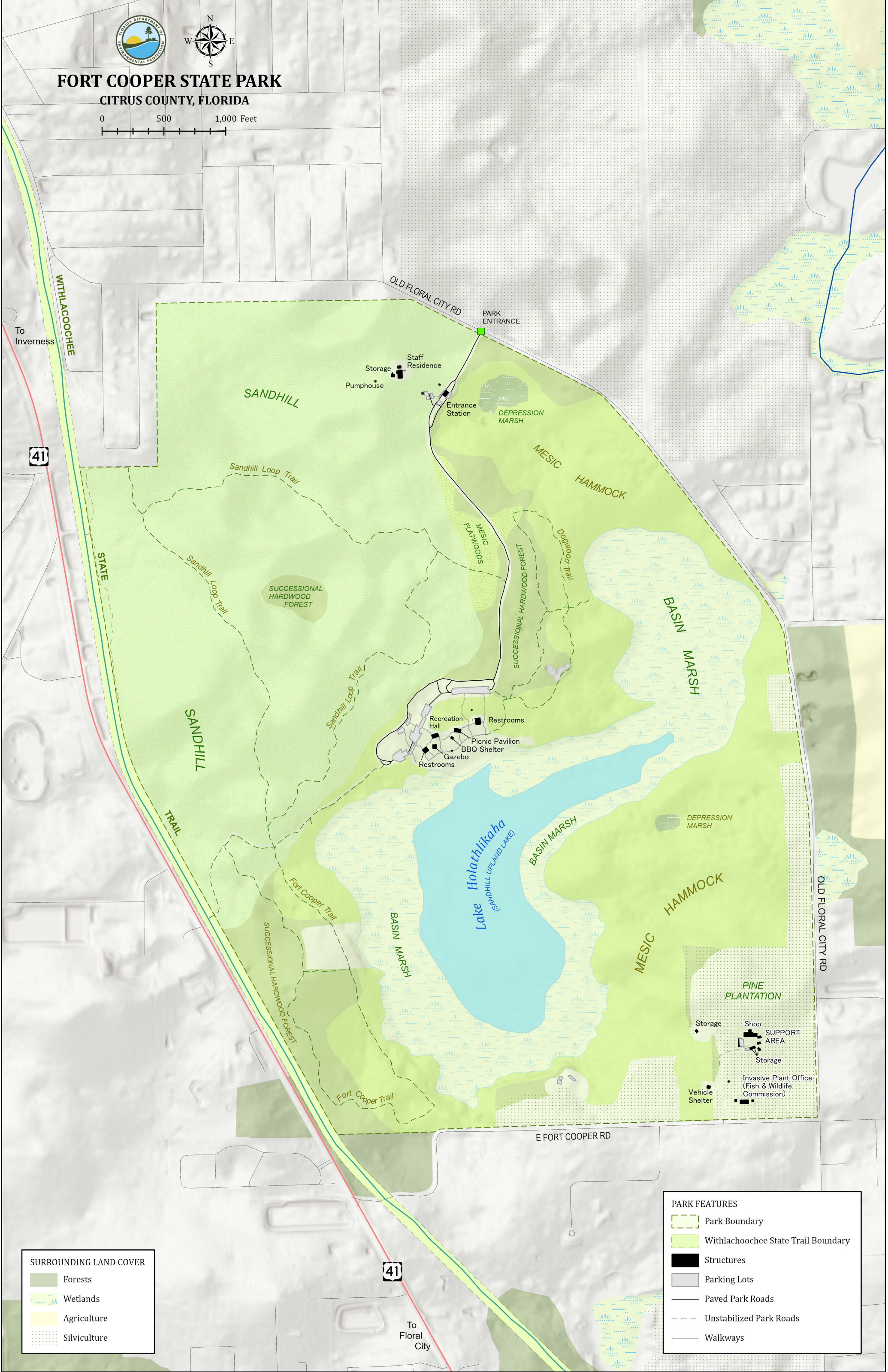
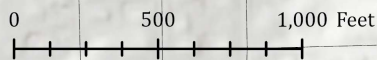
Optimum Boundary

Fort Cooper State Park encompasses a lake and other environmentally sensitive areas. Several additional parcels adjacent to the park are of interest to support watershed protection and expand imperiled species habitat protection. Specifically, two adjacent parcels to the north of the park would help protect the link between Lake Holathlikaha and the Tsala Apopka Chain of Lakes. The addition of these parcels would also create a buffer between the park and encroaching development. A few parcels to the east and south would expand habitat for imperiled species and serve as possible habitat restoration project



FORT COOPER STATE PARK

CITRUS COUNTY, FLORIDA



To Inverness

41

STATE

TRAIL

OLD FLORAL CITY RD

PARK ENTRANCE

Staff Residence
Storage
Pumphouse

Entrance Station

DEPRESSION MARSH

SANDHILL

Sandhill Loop Trail

SANDHILL

SANDHILL

SUCCESSIONAL HARDWOOD FOREST

Sandhill Loop Trail

Fort Cooper Trail

SUCCESSIONAL HARDWOOD FOREST

Fort Cooper Trail

MESIC HAMMOCK

MESIC FLATWOODS

SUCCESSIONAL HARDWOOD FOREST

Dogwood Trail

BASIN MARSH

Recreation Hall
Restrooms
Picnic Pavilion
BBQ Shelter
Gazebo
Restrooms

Lake Holathikaha
(SANDHILL UPLAND LAKE)

BASIN MARSH

DEPRESSION MARSH

MESIC HAMMOCK

OLD FLORAL CITY RD

PINE PLANTATION

Shop
SUPPORT AREA
Storage

Vehicle Shelter
Invasive Plant Office
(Fish & Wildlife Commission)

E FORT COOPER RD

41

To Floral City

SURROUNDING LAND COVER	
	Forests
	Wetlands
	Agriculture
	Silviculture

PARK FEATURES	
	Park Boundary
	Withlachoochee State Trail Boundary
	Structures
	Parking Lots
	Paved Park Roads
	Unstabilized Park Roads
	Walkways

INTRODUCTION

LOCATION AND ACQUISITION HISTORY

Fort Cooper State Park is located in Citrus County, approximately 2 miles southeast of Inverness. Access to the park is from U.S. Highway 41 and Old Floral City Road. The Gulf Coast Regional Map also reflects significant land and water resources existing near the park.

Fort Cooper State Park was initially acquired on Dec. 23, 1970, with funds from the Land Acquisition Trust Fund (LATF). Currently, the park comprises 708.05 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on June 23, 1971, the Trustees leased (Lease Number 2541) the property to the Division of Recreation and Parks (DRP) under a 99-year lease. The current lease will expire on June 22, 2070.

Fort Cooper State Park is designated single-use to provide public outdoor recreation and conservation. There are no legislative or executive directives that constrain the use of this property (see appendix). A legal description of the park property can be made available upon request to the Florida Department of Environmental Protection (DEP).

SECONDARY AND INCOMPATIBLE USES

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

DRP has determined that uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those management activities specifically identified in this plan) would not be consistent with the management purposes of the park.

In accordance with 253.034(5) F.S., the potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that timber harvesting for the express purpose of natural community restoration and management is appropriate as an additional source of revenue for land management since it is compatible with the park's primary purpose of outdoor recreation and conservation. Generating revenue from consumptive uses or from activities that are not expressly related to resource management and conservation is not under consideration.

PURPOSE AND SIGNIFICANCE

Park Purpose

The purpose of Fort Cooper State Park is to provide Florida residents and visitors with resource-based public outdoor recreational and interpretive opportunities. The Lake Holathlikaha use area offers paddling, fishing, bird watching and picnicking, while the park's sandhills offer excellent hiking, wildlife viewing and nature study opportunities. A representation of the hastily constructed Fort Cooper and supporting informational kiosks interpret the historic battle campaign within the Cove of the Withlacoochee River, as well as the corresponding siege of U.S. Army troops at Fort Cooper during the Second Seminole War. Living history reenactments of these pivotal events are staged at the park annually.

Park Significance

- The park preserves and interprets Fort Cooper, the site of a Seminole War fort, where sick and wounded soldiers of the 1st Georgia Battalion of Volunteers survived 16 days of siege by the Seminole warriors fighting for their freedom.
- Some of the only high-quality sandhill in the area occurs within the park and borders the 50-acre clearwater Lake Holathlikaha and supports diverse wildlife.
- The park offers more than 5 miles of hiking trails with abundant opportunity for bird and wildlife viewing. A trail extension connects the park to the 46-mile multiuse paved Withlacoochee State Trail.

Central Park Theme

Fort Cooper State Park preserves the story of the Seminole and their fight for freedom within the watery wilderness they were forced to call home, the Cove of the Withlacoochee.

Fort Cooper State Park is classified as a state park in the DRP unit classification system. In the management of a state park, balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at the 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.

OTHER DESIGNATIONS

The unit is not within an Area of Critical State Concern as defined in section 380.05; Florida Statutes and is not presently under study for such designation. The park is a component of the Florida Greenways and Trails System, administered by the DEP 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 (suitable for fish consumption and recreation) by DEP. The park is not adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).

PARK ACCOMPLISHMENTS

- Continued feral hog removal to reduce area disturbance.
- Removed all sandhill and burnable zones from backlog.
- Planted 2,500 longleaf pine trees in 2020.
- Mechanically treated 30 acres of understory hardwoods to augment sandhill restoration in 2020.
- Reintroduced prescribed fire into zones with no burn history.

RESOURCE MANAGEMENT COMPONENT

Fort Cooper State Park Management Zones			
Management Zone	Acreage	Managed with Prescribed Fire	Contains Known Cultural Resources
FC-01	74.37	Y	Y
FC-02	22.48	Y	N
FC-03	63.14	Y	Y
FC-04	100.84	Y	Y
FC-05	151.20	Y	Y
FC-06	107.95	Y	N
FC-07	20.96	Y	N
FC-08	9.16	Y	Y
FC-09	29.10	Y	N
CK-2f	103.95	Y	N
CK-2g	12.80	Y	N
CK-2h	73.60	Y	N

TOPOGRAPHY

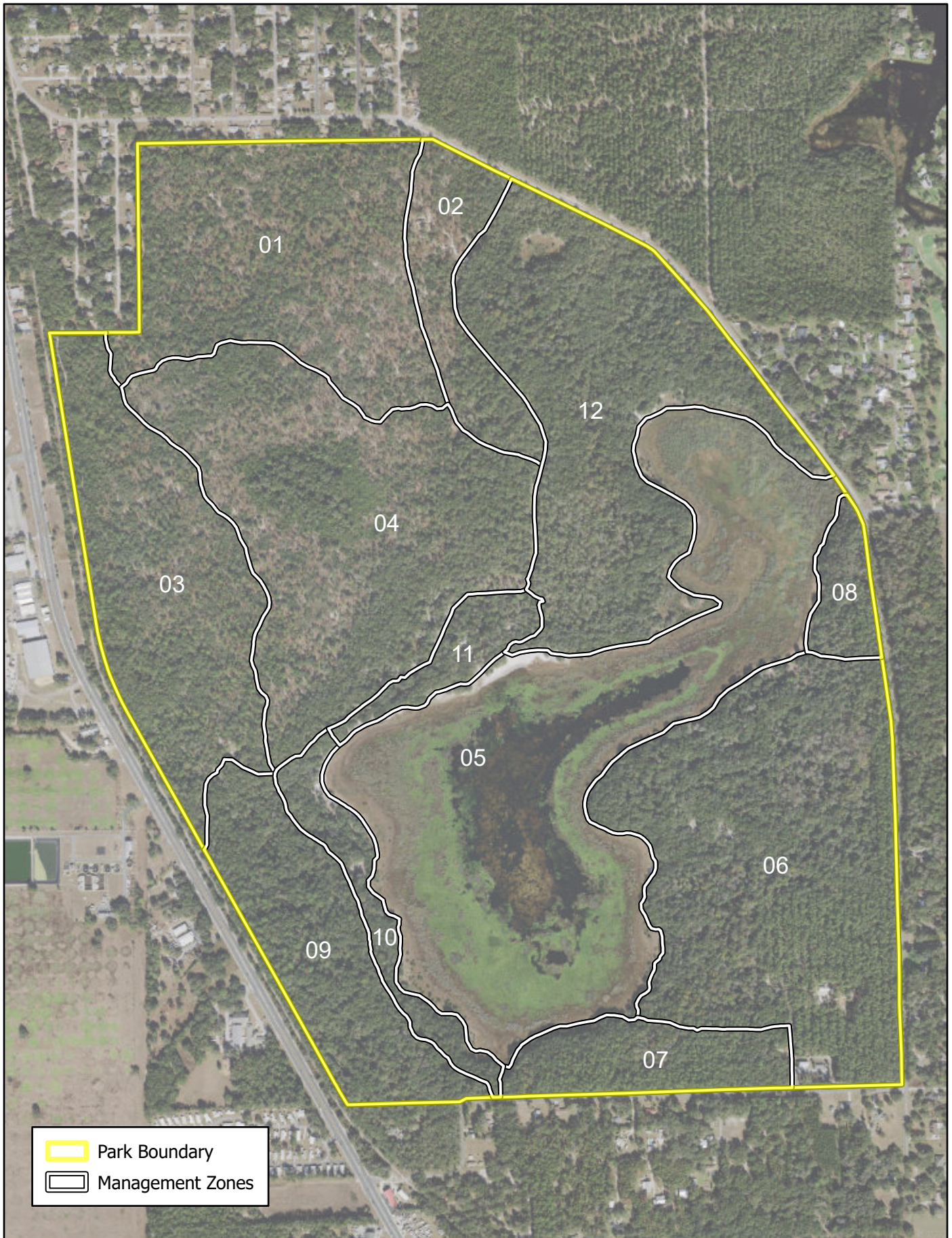
Fort Cooper State Park lies within the Tsala Apopka Plain Province of the Ocala Karst District. The area exhibits low relief and poor drainage and contains many swamps, including the Green Swamp 10 miles southeast of the park. The Tsala Apopka Plain is quite notable as a broad, relatively flat region of lower elevations. Its namesake, Tsala Apopka, is a mosaic of wetlands on the eastern edge of the southern Brooksville Ridge (White 1958; Attardi 1983). Other water bodies within the Tsala Apopka Plain include Lake Panasoffkee, Lake Holathlikaha (also known as Fort Cooper Lake), and numerous smaller lakes. These individual lakes, along with the Withlacoochee and Rainbow Rivers, are remnants of a once much larger, single body of water that existed in the geologic past (White 1958; Attardi 1983).

The Withlacoochee River constitutes the central lowland divide within the plain, and it is the primary drainage basin for the region (White 1958). The uplands that confine the Tsala Apopka Plain include the prominent Brooksville Ridge, situated along the western edge of the valley, and Ocala Karst Hills, located along the eastern side. Given that the Brooksville Ridge is located immediately west of Fort Cooper, the park has topographic attributes of both the Ridge and the Tsala Apopka Plain (White 1970).

Elevations within Fort Cooper State Park range from a high of about 82 feet above mean sea level (msl) in the sandhills on the west side of the park to a low of approximately 24 feet msl along the exposed shoreline of Lake Holathlikaha. Topographic alterations in the park include several small abandoned mine pits, 6 to 10 feet deep, that are holdovers from the historic phosphate era. The pits are scattered within management zone FC-12 north of the lake. There are no other known alterations of any significance.

SOILS

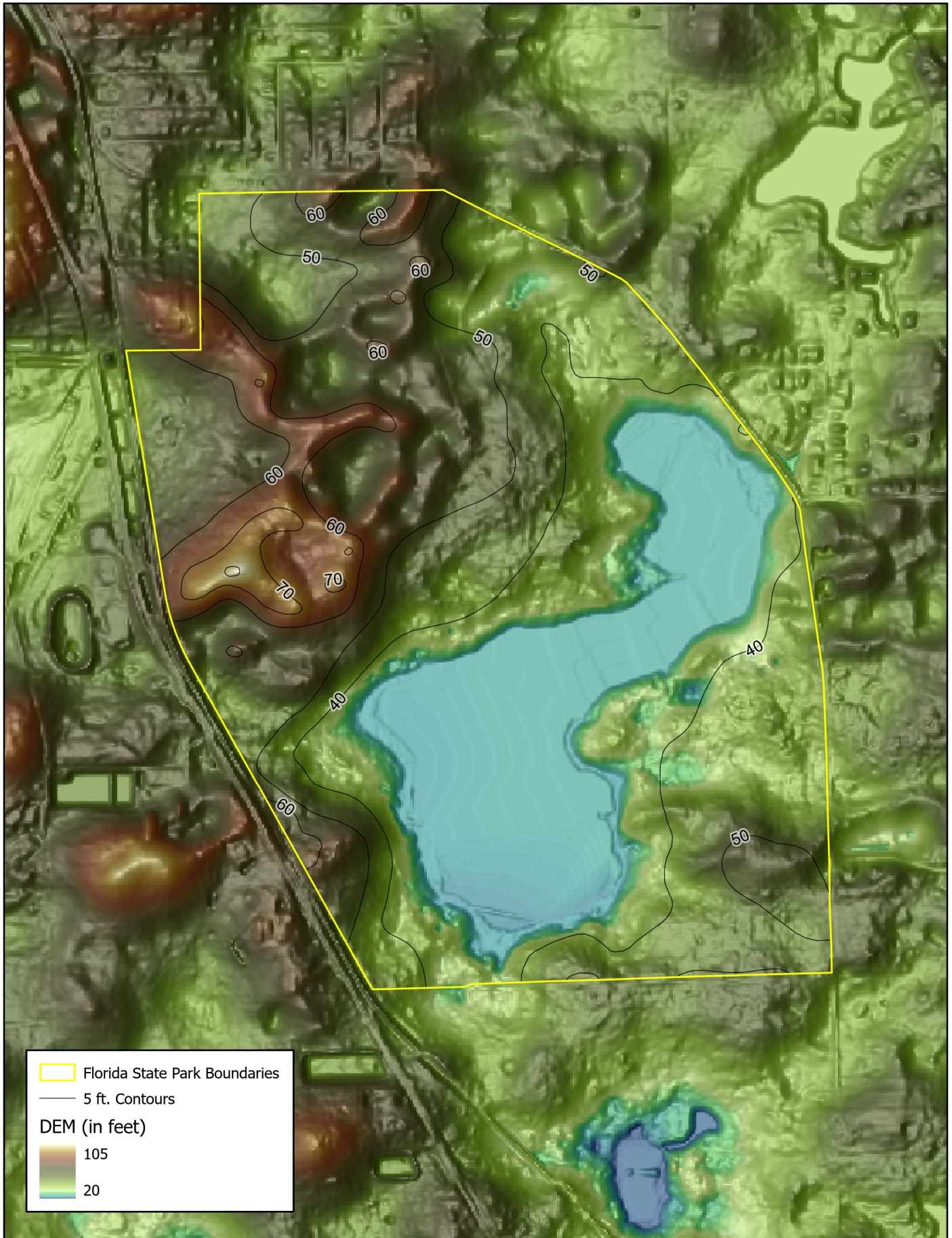
The Soil Survey of Citrus County, Florida has identified eleven soil types in the park (Pliny et al. 1988), including Adamsville fine sand, Arredondo fine sand, Basinger fine sand, Basinger fine sand-







FORT COOPER STATE PARK Management Zones



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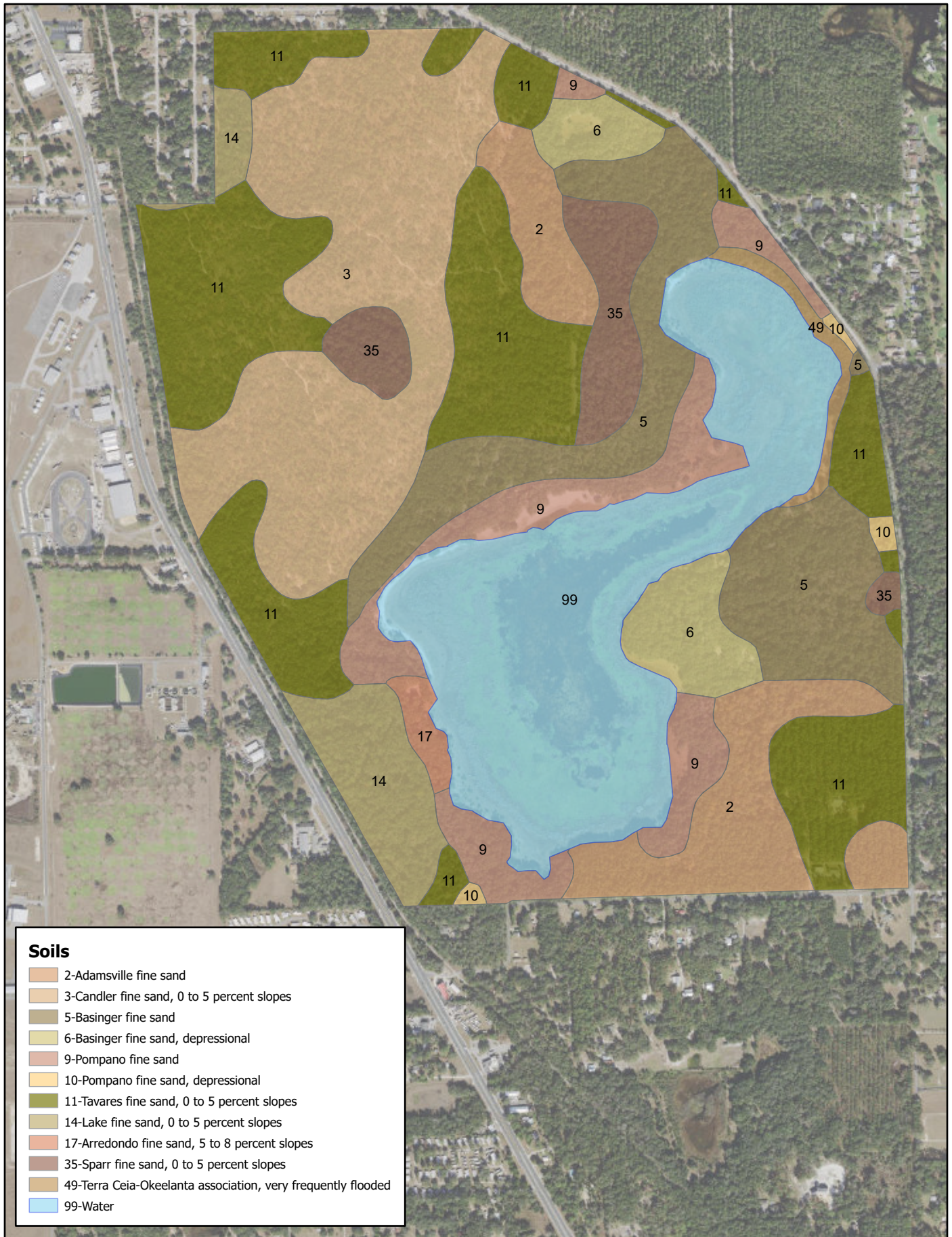
	Florida State Park Boundaries
	5 ft. Contours
DEM (in feet)	
	105
	20



FORT COOPER STATE PARK Topography



This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.



Soils

	2-Adamsville fine sand
	3-Candler fine sand, 0 to 5 percent slopes
	5-Basinger fine sand
	6-Basinger fine sand, depressional
	9-Pompano fine sand
	10-Pompano fine sand, depressional
	11-Tavares fine sand, 0 to 5 percent slopes
	14-Lake fine sand, 0 to 5 percent slopes
	17-Arredondo fine sand, 5 to 8 percent slopes
	35-Sparr fine sand, 0 to 5 percent slopes
	49-Terra Ceia-Okeelanta association, very frequently flooded
	99-Water



FORT COOPER STATE PARK

Soils

N

Feet
0 500 1,000

This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

depressional, Candler fine sand, Lake fine sand, Pompano fine sand, Pompano fine sand-depressional, Sparr fine sand, Tavares fine sand, and Terra Ceia-Okeelanta association. Addendum 4 contains detailed descriptions of these soils. There are no soil conservation or soil erosion issues at the park. Management activities will follow accepted best management practices to monitor and prevent any soil erosion and conserve soil resources on site.

HYDROLOGY

Lake Holathlikaha, which is completely contained within Fort Cooper State Park, is the most prominent hydrological feature in the park and its only major surface water body. It is located on the western boundary of the Tsala Apopka Chain of Lakes in eastern Citrus County. This chain of lakes, which is part of the Withlacoochee River basin, contains numerous interconnected wetlands that encompass an area of nearly 700 square miles (Southwest Florida Water Management District (SWFWMD) 2007). Open water in the Tsala Apopka chain, however, only accounts for 10% of the entire basin acreage, indicating that a much higher percentage consists of forested wetlands and marshes (Rutledge 1977).

The Tsala Apopka wetlands, including Lake Holathlikaha, are geologic relicts of a former ancestral river (White 1958). The Rainbow River was undoubtedly the head of that ancestral water body, which eventually flowed southward into Tampa Bay through what is currently the Hillsborough River. In fact, existing topographic elevations of the Holathlikaha lakebed clearly reveal a probable southern drainage corridor toward Floral City, as well as a northeastern one toward Davis Lake. However, based on analysis of existing aerial photography (U.S. Department of Agriculture 1944), no functioning surface water connection between these water bodies has existed over the past 75 years.

The Holathlikaha lakebed has experienced very little alteration over the years. One of the few disturbed areas in the lakebed is on the northern shoreline where the park manages a small swimming area. In contrast, water bodies in the Tsala Apopka Chain of Lakes have been extensively modified over the past 120 years with the construction of numerous canals and control structures that link a majority of the lakes in the system (Bradner 1988). These alterations have significantly increased water movement between the Withlacoochee River and the chain of lakes, dramatically affecting water levels and water chemistry in both systems. Placement of the control structures began in 1884 with the construction of the Orange State Canal that linked water bodies south of the park near Floral City (SWFWMD 2007). Historically, the structures provided local residents with reliable transportation routes and an abundant water supply for agricultural and mining activities, and they helped to decrease extreme water level fluctuations within the Tsala Apopka Chain of Lakes (Trommer et al. 2009).

Water Quantity

Citrus County forms the northern boundary of a unique karst area known as the Springs Coast basin (DEP 2008). The overconsumption of groundwater resources in this basin or in the Withlacoochee watershed could cause a lowering of water levels in Lake Holathlikaha. Those limits will need to be ecologically based and designed to reduce the likelihood that lake water levels will decline significantly or that the chemical characteristics of wetland ecosystems will be altered (Yobbi 1992; SWFWMD 1999; Neubauer et al. 2008).

Four major spring complexes, Crystal River, Homosassa, Chassahowitzka and Weeki Wachee, are located within the Springs Coast basin (Champion and Starks 2001). The combined discharge of these four spring groups is 900 million gallons per day. The groundwater basin that supports the spring groups extends

across all of Citrus County (Knochenmus and Yobbi 2001). Two major aquifer recharge areas in the county are the Brooksville Ridge and the expansive Tsala Apopka wetlands, including Lake Holathlikaha. These areas serve as important groundwater sources for the major coastal springs (Jones and Upchurch 1994).

In Citrus County, groundwater flows west from the Withlacoochee River region toward the Gulf of Mexico (Knochenmus and Yobbi 2001; Trommer et al. 2009). Lake Holathlikaha sits atop a portion of the Floridan aquifer that predominately recharges the Homosassa Springs group. However, the lake is also situated near a groundwater divide between that springshed and Crystal River springs group.

The Floridan aquifer is unconfined over much of Citrus County, including the Tsala Apopka Lake region where less permeable clay layers are lacking (Jones and Upchurch 1994). Since the majority of the county lacks an extensive confining layer, it makes sense that the surficial aquifer is also poorly defined throughout the region. However, where sandy clay layers in the Brooksville Ridge exist in a local semi-confined condition over the top of the Floridan aquifer, such as along the western shoreline of Lake Holathlikaha, a limited surficial aquifer may be present (Pliny et al. 1988). In fact, the relatively extreme topographic relief along the west shoreline of Lake Holathlikaha and additional karst evidence suggest that surficial seepage occurred there historically.

The Tsala Apopka Chain of Lakes, and thus Lake Holathlikaha, are directly connected to the Floridan aquifer. They not only receive water from the aquifer but at times also lose water to it (Faulkner 1973; Wolfe 1990; Jones and Upchurch 1994). The water surface elevation of Lake Holathlikaha in 1895 was 32 feet above median sea level (MSL) (U.S. Geological Survey (USGS) 1895), and in 1954 it was at 33 feet National Geodetic Vertical Datum (NGVD) (USGS 1954). At those surface elevations, Lake Holathlikaha would have had a wet perimeter extending outward nearly 186 acres (SWFWMD 2006a). From 2006 to 2011, however, lake levels decreased significantly, with an average NGVD of 25.6 feet and a wet perimeter of nearly 145 acres. This reduction in lake stage is equivalent to about a 25% decrease in surface area.

The documentation of Lake Holathlikaha water levels, recorded by park staff at an SWFWMD station (No. STA 826 3110), has been relatively continuous from April 2001 to the present. However, the SWFWMD has developed a model that allows water managers to estimate lake levels as far back as 1946 (SWFWMD 2006a). Based on this SWFWMD model, the highest lake level between 1946 and today was 33.1 feet NGVD in April 1960, and the lowest was 20.8 feet NGVD in July 1957. The highest and lowest lake levels recorded at No. STA 826 3110 were 32.9 feet NGVD in October 2003 and 22.2 feet NGVD in June 2001.

Interestingly, analysis of newly available satellite Light Detection and Ranging (LIDAR) data, as well as 1960-1967 aerial photography for Citrus County, has confirmed that at least some of the SWFWMD model estimates were accurate in that they corroborate the occurrence of a significant high-water event at Lake Holathlikaha in 1960 (USDA 1960). Judging from the aerial photographs, sustained high water levels in early 1960 apparently inundated the lakeshore up to at least the 35-foot contour, resulting in a large-scale die-off of hardwoods around the entire perimeter of the lake. During the 5-to-10-year period following the high-water event, continuous forest regeneration occurred throughout the affected area.

In 2006, a Low Guidance Level (LGL) was set at 26.7 feet NGVD for Lake Holathlikaha (SWFWMD 2006a). An LGL is defined as the elevation that a lake's water levels are expected to reach or exceed 90% of the time on a long-term basis. At the same time, a similarly applied minimum flow and level (MFL) elevation

was set for Tsala Apopka Lake. Both had the purpose of protecting these water bodies from significant harm as defined by state law (Section 373.042, Florida Statutes).

Many water management experts acknowledge that the current long-term drought and an increased consumptive use of groundwater have combined to cause a significant lowering of water tables and decreased spring flows all across Florida (Mirti 2001, Swihart 2011, Still 2010). As many as seven known springs within the Southwest Florida Water Management District no longer flow (Champion and Starks 2001). Additionally, water managers can now correlate specific regional drawdowns with shrinking springsheds and declining spring flows (Mirti 2001; Grubbs and Crandall 2007; Grubbs 2011). Given the projected water supply needs for the area, the U.S. Geological Survey predicts that groundwater levels throughout the state, including those in the Fort Cooper region, will continue to decline (Sepulveda 2002).

Water Quality

Surface water runoff originating outside Fort Cooper State Park is the main cause of decreased water quality in Lake Holathlikaha. Urban development surrounds the park, but the two areas that appear to contribute the greatest amount of contaminated surface water are Old Floral City Road northeast of the park and U.S. Highway 41 immediately west.

At one time, water quality at Lake Holathlikaha may have been similar to that of the Tsala Apopka Chain of Lakes (Attardi 1983). Lake Holathlikaha, however, has long been isolated from those lakes, so it has remained unaffected by water exchanges that may have taken place recently between the lakes and the Withlacoochee River. The one water quality study known to have taken place at Lake Holathlikaha (DEP 1994) documented that the lake was moderately impaired because of unidentified contamination sources. The first known instance of high nutrient contamination was in 1985, when the public swimming area was closed temporarily due to elevated bacterial counts (District 2 files). Continuous water quality monitoring in the public swimming area has occurred since that time, and there have been only a few additional closures. Apparently, water quality at Lake Holathlikaha may vary seasonally, with poorer characteristics appearing in the warmer summer months due to lower oxygen levels. Although lakes within this region tend to be naturally eutrophic, several factors point toward anthropogenic sources of contaminants that may produce eutrophic conditions as well (Jones and Upchurch 1994).

Since October 2002, the park, in cooperation with Florida LAKEWATCH, has been monitoring four basic water quality parameters (nitrogen, phosphorus, biological productivity, and water clarity) at Lake Holathlikaha (LAKEWATCH 2012). Over the 16-year period of record (since 1996), nitrate concentrations have ranged from 0.50 milligrams per liter in June 2006 to 2. milligrams per liter in January 1996, but the overall average is 1.05 milligrams per liter (N=219). A brief analysis of available water quality data suggests that the lake has exhibited mesotrophic as well as eutrophic nutrient properties over the past 16 years.

In 1996, DEP initiated a formal statewide monitoring program for surface water and groundwater (Maddox et al. 1992; DEP 2005). This program, called the Integrated Water Resource Monitoring Program of Florida's Water Resources, uses a comprehensive watershed approach based on natural hydrologic units. It also provides a framework for implementing Total Maximum Daily Load (TMDL) requirements to restore and protect water bodies that are determined to be impaired (Clark and DeBusk 2008). TMDL standards for Lake Holathlikaha have not yet been assigned, nor are there any current plans for establishing them.

Much of the important hydrological information collected, stored and managed by various agencies can now be accessed through a variety of web-based databases (DEP 2012a; DEP 2012b). Additionally, there is an extensive well monitoring database for the Springs Coast and Withlacoochee River basins. Numerous entities such as DEP, water management districts, environmental consulting firms and university researchers are all involved in the monitoring of wells throughout the region. Well monitoring for groundwater quality and background levels occurs at waste management facilities, drinking water contamination sites and private, residential and public areas. At least 165 wells located within 5 miles of the park are undergoing various levels of sampling. There are no Very Intense Study Area (VISA) wells within the immediate vicinity of the park. However, DEP is closely monitoring a known brownfield site (i.e., defunct industrial/commercial facility with significant contamination potential) located 5 miles northwest of the park.

Assessment of Needs

Objective: Assess the park's hydrological restoration needs.

Actions:

- Continue Florida LAKEWATCH sampling and coordination with other agencies and researchers regarding hydrological research and monitoring.
- Continue to monitor land-use or zoning changes in the region and offer comments as appropriate.
- Continue to cooperate with the SWFWMD to ensure MFLs for Lake Holathlikaha are monitored for compliance to maintain historic lake levels.

Lake Holathlikaha is the most significant hydrological feature at Fort Cooper State Park. Management of this important water body does not end at the park boundary. As described above, the Homosassa and Crystal rivers, two of the four major spring groups along the Springs Coast, depend on groundwater recharge in the Tsala Apopka Lake region, including Lake Holathlikaha and adjacent uplands, to provide a substantial proportion of their spring flows. Urban communities in the recharge area, including Inverness, Floral City and Beverly Hills, influence the quality and quantity of groundwater in the region. That groundwater in turn has a significant influence on discharges from these two spring groups. Successful protection of the Homosassa and Crystal River springsheds will require a regional effort that focuses on the sustainable consumptive use of groundwater and on limiting nutrient loading within the surface watershed. The following are hydrological assessment actions recommended for Fort Cooper State Park.

DRP will continue its tradition of close cooperation with state and federal agencies and independent researchers engaged in hydrological research and monitoring programs, both within the park and in the adjacent Tsala Apopka Chain of Lakes and the Homosassa groundwater basin. DRP will also encourage and facilitate additional research in those areas. DRP will rely upon agencies such as the SWFWMD, USGS and DEP to keep it informed about any declines in surface water quality or any suspected contamination of groundwater in the region. Additional cooperative efforts may include facilitating the review and approval of research permits and providing researchers with assistance in the field, including orientation to park resources. Recommendations derived from these monitoring and research activities will be essential to the decision-making process during management planning.

The park will continue to participate in the Florida LAKEWATCH program, which functions as an early warning system for detecting declines in water quality. DRP will continue its support of a continuous, long-term, water quality monitoring program at Lake Holathlikaha. DRP staff will seek to increase the frequency of monitoring of Lake Holathlikaha if changes in water quality or severe lake level fluctuations are noted.

Restoration

Objective: Restore natural hydrological conditions and functions to approximately 145 acres of sandhill upland lake natural community.

Actions:

- Develop and implement protocols to monitor and manage visitor access to Lake Holathlikaha.
- Continue to coordinate with and assist DEP, the SWFWMD and independent researchers regarding monitoring of water quality and quantity in Lake Holathlikaha.

DRP staff will address water quality or quantity issues that could cause degradation of the waters of Lake Holathlikaha. The following are hydrological restoration actions recommended for the park.

DRP staff will continue to work closely with the SWFWMD to ensure that MFLs developed in 2006 for Lake Holathlikaha are adequately protective of the resources. DRP will strive to achieve maximum protection for Lake Holathlikaha such that regional groundwater withdrawals do not increase to the point that the lake system suffers significant harm. DRP will also cooperate closely with the SWFWMD to ensure that there is conscientious implementation of MFLs developed for major springs west of the park that rely on groundwater recharge from the Fort Cooper area.

DRP staff will continue to monitor land-use or zoning changes within the landscape bordering the park. Major ground disturbances in that area, or the inadequate treatment of runoff from adjacent lands into the park, could cause serious degradation of the lake's water quality. As appropriate, DRP staff will provide comments to other agencies regarding proposed changes in land use or zoning on neighboring properties when such changes may negatively influence the hydrology of Lake Holathlikaha.

Within the park itself, DRP staff will respond aggressively to any water quality impacts that may stem from the design of park facilities and will mitigate such impacts using the best available options for remediation. In addition, staff will continue to inspect Lake Holathlikaha regularly for hydrilla and will promptly treat any infestations discovered.

NATURAL COMMUNITIES

The park contains six distinct natural communities as well as four different types of altered landscapes. A list of known plants and animals occurring in the park is contained in Addendum 5.

Mesic Flatwoods

A relatively limited area of mesic flatwoods lies along the main park drive between the sandhills and the mesic hammock that borders the northeastern portion of Lake Holathlikaha. Johnson (2001) refers to this area as a transition zone between those community types. The distribution of the mesic flatwoods in the park seems to coincide with that of Adamsville fine sand, a somewhat poorly drained soil that occurs at the base of lower slopes in the uplands (Pliny 1988). According to General Land Office (GLO)

Field Survey Notes from the 1849 survey conducted by A.H. McCormick, the lands along the current park drive existed as pinelands in 1849. However, the brief notes associated with the surveys did not always make a distinction between mesic flatwoods and sandhill.

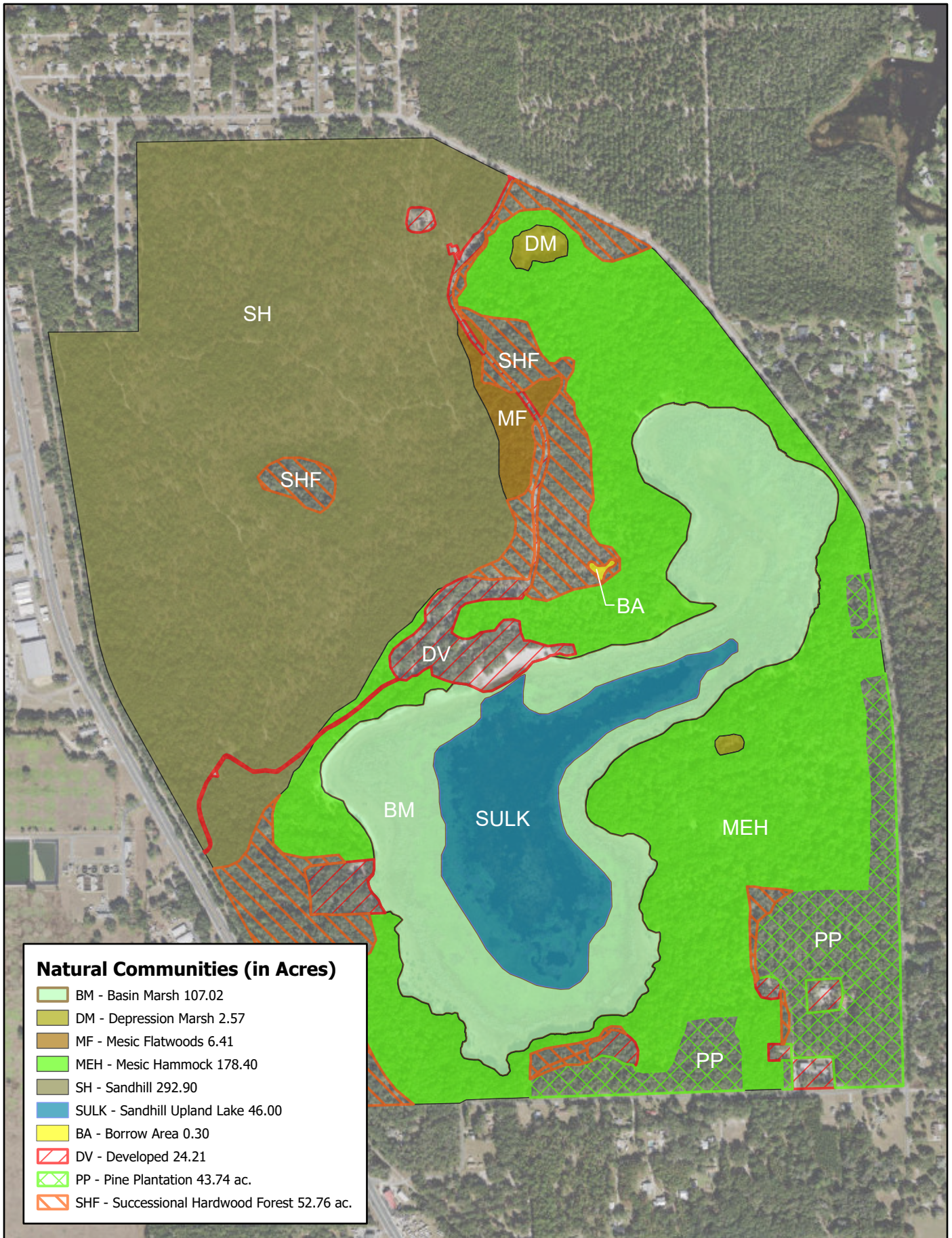
Large longleaf pines are still extant in this area, although there is now a nearly closed canopy of live oaks (*Quercus virginiana*) and laurel oaks (*Quercus laurifolia*) over a midstory of saw palmetto. Other remnant species include shiny blueberry, coastal plain staggerbush (*Lyonia fruticosa*) and wiregrass (*Aristida stricta* var. *beyrichiana*). Aerial photos from 1944 and 1951 show this area as being relatively open and lacking a closed canopy, so the takeover by oaks must have occurred between 1951 and 1970. Numerous lightered longleaf pine stumps are scattered within the area. Due to its advanced successional status and the lack of fire for many decades, the mesic flatwoods in the park is considered to be in poor condition. This community has changed so much that the Natural Communities Map depicts it as successional hardwood forest. The ecotone between the mesic flatwoods and the sandhill community to the west is indistinct due to off-site hardwood encroachment in both communities. As prescribed fires burn into the mesic flatwoods from the sandhills, the ecotone should become better defined.

The initial habitat improvement action in the mesic flatwoods should be the introduction of prescribed fire to localized spots around existing longleaf pines, particularly east of the park drive. The mesic flatwoods strip west of the park drive should be included in prescribed fires of adjacent sandhills in management zones FC-02 and FC-04. Additional management measures may include the selective removal of laurel oaks near existing longleaf pines, which should help fire to penetrate the mesic flatwoods community and improve its condition.

Mesic Hammock

The mesic hammock in the park is found on slopes surrounding Lake Holathlikaha. This forest is typically dominated by live oaks, but at higher elevations, southern magnolia and pignut hickory may be predominant. Laurel oaks are also common, and red bays (*Persea borbonia*) were formerly frequent in the mesic hammock. However, beginning in 2011, laurel wilt disease devastated many mature red bays within the park, and it is likely that the red bay population as a whole will decline drastically over time. Mesic hammock at the park can be variable, with some areas having few live oaks and an open understory of red bay and sparkleberry with scattered palmetto, and other areas characterized by a live oak canopy over a dense shrub layer of hog plum and saw palmetto. Research based on the General Land Office (GLO) Field Survey Notes from the 1849 survey conducted by A.H. McCormick verifies the occurrence of hardwood hammock vegetation along the south rim and at the northeast end of Lake Holathlikaha. The hardwoods noted at the northeast end of the lake were actually referred to as “scrub” in the surveyors’ field notes, which is probably a reference to mesic hammock dominated by live oak and palmetto. The 1849 survey did not record any hammock along the northern rim of the western half of the lake, but the survey notes were brief, and a thin band of mesic hammock could well have been present there.

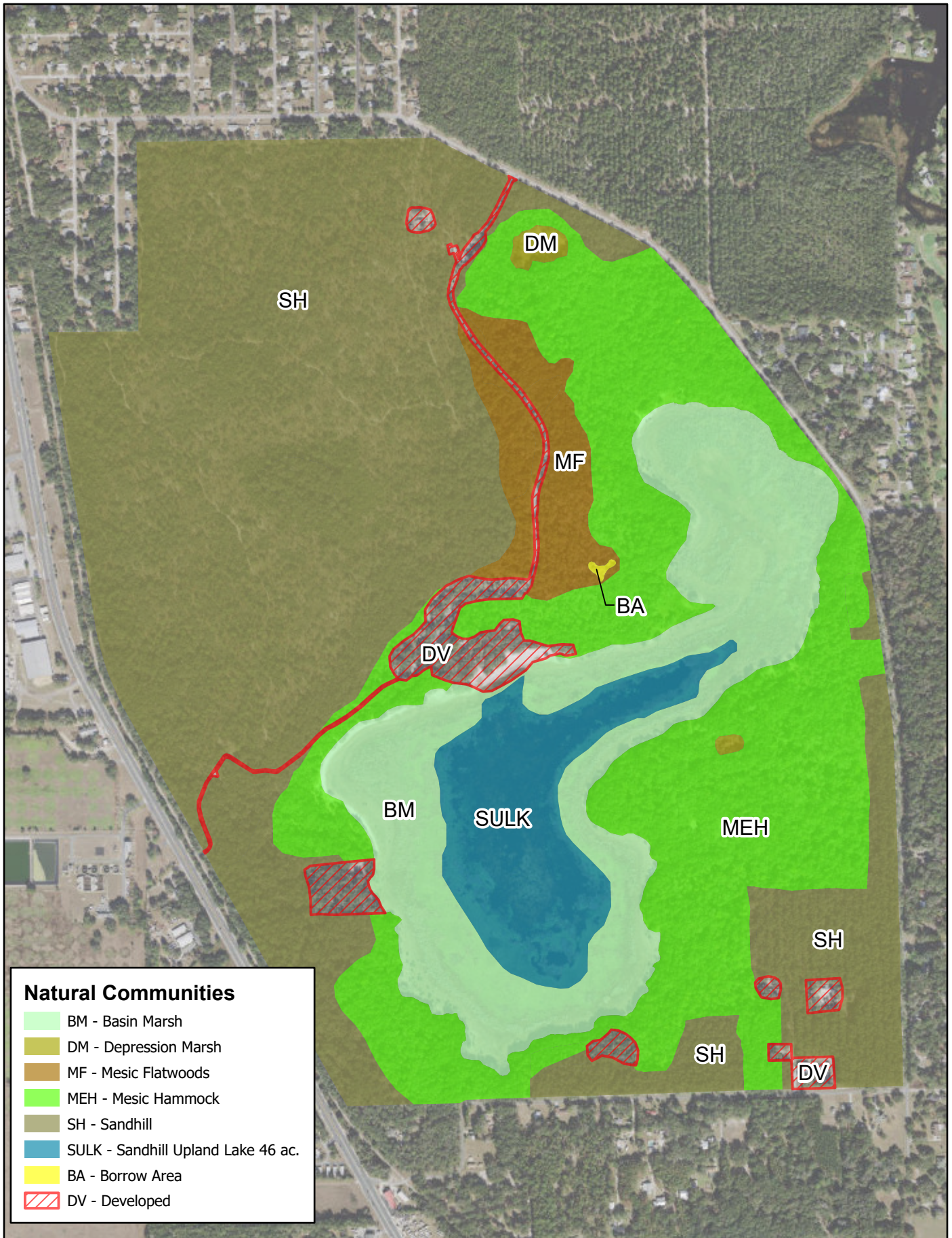
The mesic hammock currently stretches from the upper end of the lake north through a low trough that ends at a depression marsh. This extended live oak hammock was actually described in the 1849 survey notes and is even drawn on section survey maps. Mesic hammock also extends well to the east and southeast of the lake, roughly corresponding to the area below the 45-foot contour. Inspection of a series of historical aerial photographs shows a relatively closed canopy forest in 1944. During or after 1960, a disturbance event created large openings in the tree canopy. It appears that an extreme high-water event may have been responsible for the killing of many of the canopy trees around the lake



FORT COOPER STATE PARK Natural Communities - Existing Conditions



Sources: ESRI; Florida Department of Environmental Protection
This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.



Natural Communities

- BM - Basin Marsh
- DM - Depression Marsh
- MF - Mesic Flatwoods
- MEH - Mesic Hammock
- SH - Sandhill
- SULK - Sandhill Upland Lake 46 ac.
- BA - Borrow Area
- DV - Developed



FORT COOPER STATE PARK
 Natural Communities - Desired Future Conditions

N
 0 500 1,000
 Feet

Sources: ESRI; Florida Department of Environmental Protection
 This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.

below the 35-foot contour line. While most of the canopy has since recovered, some of the lower points within the hammock remain relatively open. In general, the mesic hammock is in good to excellent condition.

Typically, mesic hammocks require little active management. However, there are some significant threats to the mesic hammock at Fort Cooper State Park, including feral hogs (*Sus scrofa*) and invasive plants. The park is currently trapping feral hogs and will continue control efforts. The park is also mapping and treating invasive plants in the mesic hammock, including skunk vine (*Paederia foetida*) and cogongrass (*Imperata cylindrica*).

Sandhill

The distribution of sandhill in the park largely seems to coincide with that of the Candler fine sand and Tavares fine sand soil types. When the park was acquired in 1970, the sandhill community was in poor condition. The original longleaf pines had been cut and trees that had grown as replacements were relatively few in number. Fire had been absent for many years. Hardwood trees and shrubs had proliferated to the extent that they obscured the primeval vista of rolling terrain, which under normal circumstances would have been carpeted with a dense groundcover of grasses and herbaceous plants. Historical aerial photographs from 1944 and 1951 confirm that sandhill had once covered a much larger area of the park, but that, by the 1940s, hardwoods had already expanded well into the sandhill from the rim of Lake Holathlikaha.

After acquisition of the park, the Florida Park Service initiated restoration of the sandhill by instituting a program of regular prescribed fire, accompanied by the girdling of oak trees. Visibility increased, and regeneration of pines was evident with a variety of age classes present. However, areas of off-site hardwood species, mainly laurel oaks, began to increase significantly along the park perimeter and internal firebreaks due to the lower fire intensities characteristic of edges of management zones. Laurel oaks also created closed canopy patches in low areas within the sandhill. As a restoration measure, the park contracted out a hardwood removal project in the fall of 2006 to girdle and herbicide off-site hardwoods on a 35-acre tract of sandhill in management zones FC-01, FC-03 and FC-04. At the same time, the perimeter firebreaks along the north and west boundaries were doubled in width to increase security during prescribed fires. Using a combination of fire and supplemental hardwood control, the park has made substantial progress in re-creating the original structure of the sandhill forest, although much work remains to be done.

A current threat to the sandhill is cogongrass, which has invaded along the park perimeter. Recent control efforts have been very successful in reducing the coverage of this aggressive exotic. Two native species of trees also appear to be spreading within the sandhill, perhaps due to less intense fire regimes in the recent past. Cabbage palms, not ordinarily found in sandhill, are making an appearance. Nearly all of them are young trees, but they appear to be thriving. Encroachment by this species has been observed in sandhill communities in other state parks such as Wekiwa Springs State Park. The red bay tree is another native that has now become common in the sandhill. This species is intolerant of fire and is burned down by each prescribed fire, but it re-sprouts vigorously with multiple stems, giving it a bushy appearance. Most of the larger red bays in the sandhill have succumbed to laurel wilt disease.

Another impact on the sandhill is fire lines and hard firebreaks constructed in the past to suppress fire or to facilitate prescribed fire. Some of the hard breaks may parallel natural firebreaks such as hammock vegetation. Wherever possible, natural firebreaks should be used in the park instead of disked lines, particularly in ecotone areas.

Some areas of sandhill, in the absence of fire, have succeeded to successional hardwood forest, particularly in management zone FC-09. The southeastern edge of management zone FC-04 is still mapped as sandhill, but it has a dense infestation of off-site hardwoods. In these areas, laurel oak is usually dominant, but red bays and sand live oaks are also present. Longleaf pines and scattered patches of suppressed wiregrass, as well as other herbaceous remnants, often remain onsite (Johnson 2001). In shaded areas, the wiregrass generally is much reduced in size and is sparsely distributed, but it can be locally abundant. The remnant patches suggest that wiregrass can withstand prolonged periods of light deprivation. To facilitate the regeneration of sandhill vegetation in these areas, the park will need to rid the zones of second-growth invasive hardwoods.

The most important management measure for the park's sandhill community is to increase the frequency of prescribed fire. Most of the sandhill zones have been burned recently, but all will need additional prescribed fires on a frequent basis to reduce hardwood dominance and stimulate the growth of native groundcover species. Continued chemical and mechanical treatment of laurel oaks and other off-site hardwoods will also be necessary. Future oak removal projects should minimize the amount of large dead fuels left onsite near firebreaks. Additional management measures will be the continued survey and treatment of cogongrass in the sandhills, as well as the continued control of feral hogs.

Basin Marsh

As the open water area of Lake Holathlikaha has shrunk, the fringing marsh has steadily encroached, increasing the marsh acreage. Expansion of the basin marsh is greatest during drought periods when water levels in the lake recede. In the autumn of 2000, a "forest" of the giant annual herb southern amaranth (*Amaranthus australis*), greater than 3 meters tall, formed a 75-foot wide zone between the marsh and the lake proper. As of 2011, the northern end of the lake had no open water zone and became dominated by woody shrubs and weedy grasses and composites. Other common plants include longbeak beaksedge (*Rhynchospora scirpoides*) and pickerelweed. Past attempts to treat the basin marsh with prescribed fire have largely been unsuccessful.

Management needs of the basin marsh will be contingent on future water levels. Prescribed fires may be useful in thinning clumps of woody shrubs and in reducing the buildup of organic matter. During low water periods, feral hog damage in the basin marsh may increase and extra control measures may be necessary. Monitoring the basin marsh to ensure early detection of invasive plants such as Chinese tallow will also be important.

Depression Marsh

Two depression marshes are located in the park, one at the northern end of the mesic hammock in the northeast corner of the park and the other within the mesic hammock southeast of the lake. Unlike the much larger basin marsh, these small marshes are dry most of the year. More woody species are present, including willow and buttonbush, along with scattered wax myrtle and an occasional laurel oak. Dog fennel (*Eupatorium capillifolium*) and various weedy grasses are also present. Further reductions in the regional water table may lead to additional incursions by hardwoods and eventually cause succession of the depression marshes to mesic hammock.

Maintenance of the depression marshes in the park will depend greatly on regional water levels. Prescribed fire may be a useful management option for the northern depression marsh, which is on the fringes of the sandhill. Fire may also be used to manage the depression marsh southeast of the lake since it is contiguous with the grassy shorelines of the lake and basin marsh.

Sandhill Upland Lake

Based on aerial photography from the period of record (1944 through 2020), the open water area of Lake Holathlikaha has fluctuated greatly over time. Water levels of sandhill upland lakes are closely linked with local and regional water table levels. Long-term drought and increased groundwater withdrawals for residential and industrial uses are likely causes of water level declines in the lake. Frequent contractions of the lakeshore encourage the growth of terrestrial vegetation on the exposed lake bottom. When lake levels rise again, however, the terrestrial vegetation is flooded and dies, adding a considerable volume of biomass to the lake. Additionally, at low stage, the zone of emergent aquatic vegetation extends farther into the lake, only to die during periods of higher water. Consequently, over the years, organics have accumulated in the lake at a high rate. At times, one-fourth to one-third of the original lake surface is obscured by plant growth around the margins. A recent development is the appearance of numerous floating islands consisting of thick mats of organic matter, topped by plants growing to a height of 6 to 8 feet.

Lake Holathlikaha has no boat ramp, but visitors may rent park-owned canoes and paddle boats for use on the lake. Motorized boats have been excluded from the lake since the park was opened to the public in 1977, in part to reduce the chances of an unintentional introduction of invasive species such as hydrilla (*Hydrilla verticillata*) and water hyacinth (*Eichhornia crassipes*). This prohibition was successful for a number of years in preventing the establishment of invasive plants in the lake, as confirmed by a June 1991 assessment of the lake by personnel from the Bureau of Aquatic Plants detecting no invasive plants present. At some point after that, however, park staff discovered that hydrilla had appeared in the lake near the swimming area. The park has treated this hydrilla repeatedly and it is no longer apparent, at least during the current period of low water.

The dominant aquatic species in the lake are two submergents, southern or bushy naiad (*Najas guadalupensis*) and Illinois pondweed (*Potamogeton illinoensis*). Two other abundant plants are the floating-leaf species, spatterdock (*Nuphar lutea*) and fragrant white water lily (*Nymphaea odorata*). The sandhill upland lake is currently in good condition, although the regionally low water table, if it persists, can be expected to cause an eventual decline.

Continued control of hydrilla to prevent the infestation from expanding will be a primary management measure for the sandhill upland lake. Additional measures will be to continue to monitor lake levels regularly and to maintain close communications with the SWFWMD in regard to the issuance of water use permits in the region.

Altered Land Cover Types

Developed

The developed areas include staff residences, maintenance structures, paved roads and recreational facilities such as campgrounds and picnic areas. A complete list of all the developed areas may be found in the *Land Use Component*. Developed areas within the park will be managed in a manner that minimizes their effects on adjacent natural areas. Park staff will regularly check developed areas for the presence of priority invasive plants (Florida Invasive Species Council Category I and II species) and will remove any that are discovered. Other management measures will include the proper management of stormwater and the use of development guidelines that are compatible with prescribed fire management in adjacent natural areas.

Successional Hardwood Forest

The mesic flatwoods along the park drive and the sandhill west of the lake in management zone FC-09 are the two most significant areas of successional hardwood forest in the park. These areas are fire-adapted natural communities but have experienced an extended period of fire suppression.

Laurel oaks and other off-site hardwoods that have invaded over the past 60-plus years have overwhelmed both areas. Although adult longleaf pines remain in the canopy, the understory and herbaceous layers have all but disappeared due to shading by hardwoods. Smaller areas of successional hardwood forest occur along the edges of the pine plantations in the southeast part of the park and in the sandhills along the northeast boundary of the park.

The optimal fire return interval for the successional hardwood forest at Fort Cooper should be 2-5 years. The application of prescribed fire may not be successful, however, unless some hardwoods are removed first, particularly near existing stands of longleaf pines. The long-term desired future condition for successional hardwood forest is to restore this altered landcover type to its previous natural community type.

Pine Plantation

In 1966, about 45 acres of north Florida slash pines were planted in plantations on former agricultural fields along the southern and eastern boundaries of the park. The pines were thinned in 1989 and again in 2022. Most of the pine plantations were likely sandhill at one time, particularly those areas above the 45-foot contour. The optimal fire return interval for these areas should be 2-5 years. However, application of prescribed fire has been delayed until the mature slash pines have been thinned and off-site hardwoods removed to reduce fuel loading and ladder fuels. After thinning, longleaf pines may be reintroduced to the area, but complete groundcover restoration will remain a low priority due to the long history of agriculture and silviculture on the site. The long-term desired future condition for the pine plantation is to restore this altered landcover type to its previous natural community type.

Borrow Area

A small phosphate test pit is located near the nature trail in management zone FC-12. The pit and associated spoil piles likely date back to the time of the phosphate boom period in the late 1800s. Restoration of the pit is not a priority since it has been reclaimed by native vegetation and is considered at this point to be a cultural resource.

Prescribed Fire

Objective: Maintain 330 acres within the optimum fire return interval.

Actions:

- Develop/update annual prescribed fire plan.
- Conduct prescribed fire on 100-215 acres annually.

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

Prescribed Fire Management		
Natural Community	Acres	Optimal Fire Return Interval (Years)
Sandhill	247	2-3
Mesic Flatwoods	6	2-3
Basin Marsh	107	2-20
Depression Marsh	3	2-3
Pine Plantation	44	2-5
Successional Hardwood Forest	53	2
Annual Target Acreage	115 - 230	

Fire-adapted natural communities present at Fort Cooper State Park include sandhill, mesic flatwoods, depression marsh and basin marsh. To a limited extent, mesic hammock may be influenced by fire along ecotones. The area identified as mesic flatwoods in the park is currently mapped as successional hardwood forest due to extensive encroachment by off-site hardwoods. Some sections of former sandhill are also mapped as this altered landcover type. Several areas with planted slash pines, most likely former sandhill community, are currently classified as pine plantation. Now that the pines have been thinned a second time, they can more safely be managed with prescribed fire.

The park is divided into 12 contiguous burn zones. These zones are based on the original burn zone system at the park that only included areas planned for prescribed fires. The sandhill community in the park is primarily located in zones FC-01, FC-02, FC-03 and FC-04. These zones have the longest fire history in the park, with the first prescribed fires taking place in December 1977. A concerted effort to girdle hardwoods in these zones in the last two decades has opened up these areas and enhanced the ability of the sandhills to carry fire. Extensive improvements were made to the perimeter firebreaks in 2006 to increase safety during prescribed fires. Since a limited amount of intact sandhill is available in the region for wildlife use, it is recommended that the sandhill zones not all be burned during the same year. Recommended fire return intervals for sandhills and other fire-adapted communities in the park generally follow the Florida Natural Areas Inventory (FNAI) guidelines (FNAI 2010). The Fort Cooper State Park sandhills should be burned approximately every two to three years with the goal of reducing hardwood cover, particularly off-site hardwood species. Growing or lightning season fires are preferred unless fuel conditions or other concerns require an occasional dormant season fire.

The mesic flatwoods community that lies east of the sandhills along the park drive occurs within management zones FC-02, FC-04 and FC-12. This area has not traditionally been burned since most management efforts have focused on restoring the sandhills to the west. Although remnant longleaf pines and saw palmetto are scattered through this area, hardwoods dominate much of the community. Extreme care should be used when burning these areas to avoid damaging the roots of the longleaf pines that may have thick layers of duff accumulated around their bases. Initial fires should be winter burns under moderate weather conditions. Duff and heavy fuels should be raked and cut away from the bases of the adult longleaf pines well before burning in the mesic flatwoods. Initial fires should target the more open areas that have retained remnant wiregrass patches and longleaf pines. The annual target acreage for prescribed fire at Fort Cooper State Park is 115 to 230 acres. Unfortunately, the park lacks adequate equipment onsite to conduct prescribed fires on its own. However, equipment and qualified fire staff are available from other parts of District 2 to assist with prescribed fire at the park.

Wildlife species in the park that depend upon periodic fires include several imperiled species such as the gopher tortoise, gopher frog, short-tailed snake and eastern indigo snake. Most of the species found within the sandhills are adapted to fire, and fire is the primary management tool for sandhills and mesic flatwoods. In order to track fire management activities, DRP maintains a statewide prescribed fire 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, backlog zones, if burn objectives have been met and more. The database is also used for annual burn planning, which allows 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 toward meeting annual prescribed fire objectives.

Restoration

Objective: Conduct habitat/natural community restoration activities on 5 acres of sandhill community.

The park will undertake the restoration of a 5-acre area of successional hardwood forest in management zone FC-04 with the long-term goal of restoring this altered landcover type to sandhill, the natural community that historically existed there. This will be the highest priority restoration project for the park. Areas specifically targeted for restoration will be those that are adjacent to or surrounded by intact sandhill. Off-site invasive hardwoods such as laurel oaks will be removed through a combination of methods that may include chemical and mechanical treatments in addition to prescribed fire. Park staff will scout the restoration area for remnant groundcover species prior to and after treatments in order to determine the need for supplemental groundcover plantings.

Maintenance activities in the restoration area will primarily be chemical retreatment of off-site hardwood sprouts and the regular and frequent application of prescribed fire. Initially after chemical treatments, the fire frequency for the restoration area should be more frequent than the average maintenance fire return interval for sandhill to help control re-sprouting hardwoods.

Improvement

Objective: Conduct natural community/habitat improvement activities on 40 acres of sandhill community.

In management zones FC-03 and FC-04, certain areas of sandhill have increasing numbers of off-site oaks. About 15 acres of these sandhill areas are targeted for habitat improvements. Of particular concern are concentrations of hardwoods in zone FC-04 along a strip just west of the park drive and in zone FC-03 along the west boundary of the park. These areas need to have some off-site oaks removed by chemical or mechanical means. Treatment along the edges of these increasingly oak-dominated areas and around remnant longleaf pines will enable prescribed fires to penetrate further. Any mechanical treatment will need to include immediate chemical treatment of the hardwood stumps to prevent multiple re-sproutings from root systems. These areas should be treated with fire within six months to a year after treatment. Subsequent maintenance activities will include the retreatment of off-site hardwood sprouts and the regular application of prescribed fire.

A 22-acre area in management zone FC-09 around the Fort Cooper site (CI00090) that was originally sandhill still contains remnant longleaf pine trees. To return the area to a more historically accurate landscape, the park will remove off-site hardwoods from around the remaining longleaf pines. Initially,

only those off-site hardwoods that are adjacent to or impinging on the drip line of the longleaf pines will be removed. A combination of chemical and mechanical treatments may also be used. Follow-up maintenance activities will include continued retreatment of off-site hardwood sprouts.

Objective: Conduct natural community/habitat improvement activities on 15 acres of mesic flatwoods community.

Areas of mesic flatwoods along the park drive are becoming increasingly overgrown with off-site hardwoods like laurel oak and water oak. In areas west of the park drive, off-site hardwoods along the ecotone between sandhill and mesic flatwoods will be treated using a combination of chemical and mechanical means. The hardwood treatments will facilitate the spread of prescribed fire from the sandhills into the adjacent flatwoods. East of the park drive, natural community improvement will begin with treatment of off-site hardwoods around remnant longleaf pines, followed by the use of prescribed fire. Off-site hardwoods encroaching on any remnant patches of intact groundcover will be treated as well.

Objective: Conduct natural community/habitat improvement activities on 40 acres of pine plantation.

Pine plantations currently cover most of the southeastern portion of the park. Prior to the planting of slash pines, agricultural fields occupied the area. The plantations were thinned for a second time in 2022 and off-site hardwoods were removed. Post harvest, staff will treat the thinned sites with prescribed fire and underplant the remaining slash pines with longleaf pines. Follow-up activities will include chemical treatment of off-site hardwood sprouts.

IMPERILED SPECIES

Four species of imperiled plants and 16 species of imperiled animals have been identified at Fort Cooper State Park. *Garberia (Garberia heterophylla)* is common in the sandhills and has responded well to recent prescribed fires. It should require little management other than frequent prescribed fire. Likewise, the Florida milkvine (*Matelea floridana*) requires open sunny habitats like sandhills. The Florida crabgrass (*Digitaria floridana*) (ranked by FNAI as a G1, S1 species) was listed for the park in the previous management plan. However, the two specimen vouchers were subsequently identified by the University of South Florida Herbarium as the more common slender crabgrass (*Digitaria filiformis*), so there is no longer any documentation for Florida crabgrass at Fort Cooper State Park. Management of the two other imperiled plant species in the park will focus on protection from visitor impacts, since orchids and epiphytes tend to be attractive to plant collectors.

Residential development in the region has greatly limited the ability of wildlife to immigrate into the park from other areas. Some imperiled species, such as the eastern indigo snake (*Drymarchon couperi*), Florida pine snake (*Pituophis melanoleucus mugitus*) and short-tailed snake (*Lampropeltis extenuatum*), lead such secretive lives that it is difficult to estimate population trends. Many of the imperiled bird species do not depend solely upon habitats within the park and may range outside the park.

An imperiled species of special interest to park management is the gopher tortoise (*Gopherus polyphemus*), which is a component of the sandhill community and an indicator of the health of that community. The Florida gopher frog, eastern indigo snake, Florida pine snake and short-tailed snake all depend on a healthy sandhill community. In the absence of fire, hardwood trees will invade the sandhill community, shading out plants required by the tortoise for forage. Gopher tortoise burrows provide

shelter for a number of other animals. A 1990 population survey by McCoy and Mushinsky, using transects, estimated that there were 1,453 active and inactive tortoise burrows in management zones FC-01, FC-03 and FC-04. Zone FC-02 was estimated to contain 143 active and inactive burrows. Subsequent, more complete, surveys by a DRP biologist (Hingtgen 1994, 1995) counted 442 active and inactive tortoise burrows in management zones FC-01, FC-03 and FC-04. It is unlikely that the gopher tortoise population declined by 70% over four or five years, particularly since burrows persist long after tortoises cease using them. The 23 transects used in zones FC-01, FC-03 and FC-04 by McCoy and Mushinsky covered approximately 5.3% of those zones, whereas the Hingtgen surveys covered the entire zones. It is likely that the high variance in the earlier study contributed to an overestimate of the actual burrow numbers. As discussed by both studies, conversion of burrow counts to estimates of tortoise populations is based on debatable assumptions. New methodologies have recently been developed using line transect distance sampling, which may likely provide more accurate and statistically valid estimates of gopher tortoise populations (Smith et al. 2009). The Florida Fish and Wildlife Conservation Commission (FWC) Survey Prioritization Blueprint lists Fort Cooper State Park as a 10th-tier priority (FWC 2018).

Fort Cooper State Park was also one of the study sites used by the University of Florida in research on the upper respiratory tract disease afflicting gopher tortoises. For many years the park was considered to be free of *Mycoplasma agassizii*, which is considered to be a causative factor in the disease. *Mycoplasma agassizii* was first detected in a tortoise at Fort Cooper State Park in 2005, and by 2006 it had spread within the population (Brown 2007). A concurrent increase in the number of empty shells was noted in 2006. Similar outbreaks have occurred in other state parks, including Mike Roess Gold Head Branch and Ichetucknee Springs state parks. While significant mortality can occur, tortoise populations do seem to be able to survive.

Using herp arrays and field notes, DRP biologists have established a database believed to be inclusive for the vertebrate population of the park. For several years, nest boxes were monitored to determine if southeastern kestrels were present. None were observed.

Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
PLANTS						
Garberia <i>Garberia heterophylla</i>			LT		1,6	Tier 1
Florida milkvine <i>Matelea floridana</i>			LE	G2,S2	1,6	Tier 1
Giant air plant <i>Tillandsia utriculata</i>			LE		10	Tier 1
Threebirds orchid <i>Triphora trianthophoros</i>			LT		10	Tier 1

Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
AMPHIBIANS						
Florida gopher frog <i>Lithobates capito</i>		UR		G2,G3, S3	1,6	Tier 1
REPTILES						
American alligator <i>Alligator mississippiensis</i>	FT(S/A)	T(S/A)		G5,S4	4,13	Tier 1
Eastern indigo snake <i>Drymarchon couperi</i>	FT	LT		G3,S2	1,6	Tier 1
Gopher tortoise <i>Gopherus polyphemus</i>	ST			G3,S3	1,6,13	Tier 3
Florida pine snake <i>Pituophis melanoleucus mugitus</i>	ST	UR		G4,S3	1,6	Tier 1
Short-tailed snake <i>Lampropeltis extenuata</i>	ST	UR		G3,S3	1,6	Tier 1
BIRDS						
Little blue heron <i>Egretta caerulea</i>	ST			G5,S4	4,10	Tier 1
Tricolored heron <i>Egretta tricolor</i>	ST			G5,S4	4,10	Tier 1
Swallow-tailed kite <i>Elanoides forficatus</i>				G5,S2	10	Tier 1
Magnificent frigatebird <i>Fregata magnificens</i>				G5,S1		Tier 1
Florida sandhill crane <i>Antigone canadensis pratensis</i>	ST			G5T2,S2	4,10	Tier 1
Wood stork <i>Mycteria americana</i>	FT	LT		G4,S2	4,10	Tier 1
Least tern <i>Sterna antillarum</i>	ST			G4,S3	4	Tier 1
MAMMALS						
Rafinesque's Big-eared Bat <i>Corynorhinus rafinesquii</i>				G3,G4,S 1	1,6	Tier 1

Management Actions:

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

Monitoring Level:

Tier 1.

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

Tier 2.

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

Tier 3.

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

Tier 4.

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

Tier 5.

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

Inventory

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

An extensive plant survey was conducted by DRP staff in the recent past. Surveys for imperiled animal species at Fort Cooper State Park have focused primarily on vertebrates. Surveys for potential imperiled invertebrate species are needed to ensure that all imperiled species are documented. DRP will enlist the assistance of academic researchers and staff from other agencies during development of species occurrence inventory lists, especially where necessary for certain taxonomic groups.

Fauna

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

Previous surveys have provided some baseline population estimates for gopher tortoises within the sandhill of the park. Additional surveys using the FWC statewide protocol for monitoring gopher tortoises would be useful to document the current status of the population, especially since exposure to *Mycoplasma agassizii* was documented in 2005. This protocol uses the line transect distance sampling method developed by Smith et. al. (2009).

The eastern indigo snake is of particular concern, not only due to its threatened status, but also due to the limited amount of habitat available at Fort Cooper State Park. The roadways that completely ring the park may present a hazard, since eastern indigo snakes have large home ranges and are likely to cross roads during their wanderings. Park staff will continue to report sightings or roadkills of eastern indigo snakes within or adjacent to the park.

Flora

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

DRP staff will monitor populations of the giant air plant and three birds orchid. Park operations could potentially affect both of these species. Mapping of extant populations using GPS will be necessary to allow periodic rechecks to verify the status of these species within the park.

INVASIVE SPECIES

The invasive plant species of primary concern at Fort Cooper State Park are cogongrass, natal grass, skunkvine and monk orchid (*Oeceoclades maculata*). Staff has identified all the invasive exotic plant species known to occur in the park, mapped the infestation sites and entered them into the statewide invasive exotic plant database maintained by DRP. The park is surveyed regularly to update the invasive plant location data. Infestations are treated at least annually. FWC has funded some contract invasive removal, and DRP staff has treated invasives in the park as well. Chinese tallow (*Sapium sebiferum*) is present in the park but is located primarily in the sandhill where it does not thrive. Park staff has been vigilant in identifying and eliminating other species of invasive plants as they appear.

Perhaps the most difficult aspect of controlling invasive plants at Fort Cooper State Park is the need to treat cogongrass without destroying the native sandhill groundcover. In some places, the cogongrass grows intermingled with wiregrass and other sandhill groundcover species. Because native groundcover is the most difficult part of the sandhill to restore, cogongrass should be sprayed in as precise a manner as possible so that overspray does not kill the wiregrass and other desirable species. Carefully following this procedure can be very difficult and time-consuming. Cogongrass should be treated twice annually.

Monk orchid is a recently discovered invasive orchid in the park. It currently covers at least 12.9 acres in zone 12 and 6.5 acres in zone 11. Unfortunately, it is currently growing where the state threatened three birds orchid also occurs in the park.

Invasive Plant Species			
Species Name Scientific Name - Common Name	FISC Category	Distribution	Zone ID
<i>Albizia julibrissin</i> - Mimosa	I	Single Plant or Clump, Scattered Plants or Clumps	FC-06, FC-07
<i>Ardisia crenata</i> - Coral ardisia	I	Scattered Plants or Clumps, Scattered Dense Patches	FC-09, FC-12, FC-06
<i>Cinnamomum camphora</i> - Camphor-tree	I	Scattered Plants or Clumps	FC-07, FC-09, FC-10
<i>Imperata cylindrica</i> - Cogon grass	I	Scattered Plants or Clumps, Scattered Dense Patches	FC-02, FC-08, FC-01, FC-03, FC-04
<i>Melinis repens</i> - Natal grass	I	Scattered Plants or Clumps	FC-03
<i>Nephrolepis cordifolia</i> - Tuberous sword fern	I	Scattered Plants or Clumps	FC-10, FC-11
<i>Paederia foetida</i> - Skunk vine	I	Scattered Plants or Clumps, Scattered Dense Patches	FC-06, FC-07, FC-08, FC-09, FC-11, FC-10, FC-12

Invasive Plant Species			
Species Name Scientific Name - Common Name	FISC Category	Distribution	Zone ID
<i>Sapium sebiferum</i> - Chinese tallow tree	I	Scattered Plants or Clumps	FC-01, FC-03, FC-04, FC-08
<i>Urena lobata</i> - Caesar's weed	I	Scattered Plants or Clumps	FC-08

Invasive Plant Treatment

Objective: Annually treat 22 acres of invasive plant species.

The park will treat 22 gross acres of cogongrass, natal grass, skunkvine, monk orchid and other invasive species at least annually. For maximum effectiveness, cogongrass should be treated in the fall before the first frost and again in the spring. If possible, skunkvine should be treated before it fruits.

Control of the monk orchid should be hand removal at this time until effective herbicides are determined. Park staff should first focus on the area where the three birds orchids are known to occur and then work outward from these populations. The plants are most visible during the winter months.

Ardisia crenata also appears in the park. The park should identify through surveys all zones infested with ardisia to determine if contract treatment is needed.

Invasive Plant Preventative Measures

Objective: Develop and implement measures to prevent the accidental introduction or further spread of invasive plants in the park.

Invasive plants often invade an area accidentally through preventable methods of entry. To limit accidental introduction and movement of invasive species, park staff will need to develop and practice preventative measures, including a protocol for equipment inspection and decontamination. Activities such as mowing, landscaping debris disposal, logging, fire line preparation and road building can introduce or redistribute invasives through contaminated equipment. Fill dirt, lime rock, potted horticultural plants and mulch are all potentially contaminated by invasives even if they are not readily visible at the time of entry into the park. Some new infestations of invasives may be preventable by ensuring that contractors clean their equipment before entering the park. The further spread of invasives already established in the park may be avoided by making sure that staff and contractors do not move equipment, landscaping debris or soil from a contaminated area to an invasive-free area. Any equipment that is moved from a contaminated area to an invasive-free area should be cleaned prior to moving it.

The invasive plants of particular concern for accidental spread at Fort Cooper State Park are cogongrass and natal grass. Equipment can easily carry rhizomes of cogongrass into non-infested areas and create new infestations. Natal grass is even more easily spread by mowers and tractors. Mowing should not occur in areas of the sandhill where natal grass is known to occur. When the park prepares fire lines or

mows an area, any equipment used should be cleaned before leaving an infested area and entering a non-infested area.

Invasive and Nuisance Animal Control

Objective: Implement control measures on one invasive animal species in the park.

The park will continue to remove feral hogs as they are encountered. Prompt removal of hogs will improve protection of sensitive habitats and species.

CULTURAL RESOURCES

Prehistoric and Historic Archaeological Sites

There are six archaeological sites and one linear resource group recorded with the Florida Master Site File (FMSF) and one unrecorded archaeological site in the park. The ages of the sites range from prehistoric through early 20th century. There are two prehistoric sites, Positively Debitage (CI01231) and Fort Cooper (CI00090). The latter is multicomponent and includes prehistoric unspecified Archaic and Ceramic periods, as well as a Second Seminole War-period fort (Baker 1976). Park staff recently made an important discovery of an unrecorded site that appears to be the Fort Cooper latrine. This site needs to be recorded with the FMSF as a new site.

Three sites are from the late 1800s or early 1900s. Lake Holathlikaha Historic Scatter (CI01365) contains scattered concrete block and other structural material. It may be the remains of a citrus crate factory purported to operate in the area in the 1920s. The Lake Holathlikaha Foundation (CI01374) contains what may be step or other structural remains of a house. Nothing is really known about this site. The Fort Cooper phosphate pit (CI01373) was probably dug after 1893. Phosphate deposits (and types) were identified on the 1893 Map of the phosphate fields of Florida (U.S. Department of Labor, Tucker 1893). The pit is small enough that it appears to be a test pit for exploring phosphate rather than a mine.

Two of the sites, Fort Cooper (CI00090) and Old Military Wagon Trail (CI01366), contain material from the Second Seminole War period. It is possible that the recently discovered CI01676 is also from this period. The Fort Cooper site also contains aboriginal pre-Columbian material (Baker 1976). Fort Cooper was built between April 2 and April 18, 1836, by the 1st Georgia Battalion of Volunteers. Its commander was Major Mark Anthony Cooper. During this time, the fort was continuously under attack by Native Americans. Under orders from General Duncan Lamont Clinch, Colonel James Bankhead arrived at the fort to support Maj. Cooper. After driving off the attack group, the troops evacuated the fort and united with Gen. Clinch. Subsequently, the fort was used from 1836 to 1841 as a scout post and stopover and for additional federal campaigns from 1841-1842 (FMSF CI00090). The Old Military Wagon Trail (CI01366) is recorded as a resource group. It extends north and south outside the park boundary. Only the portion within the park has been recorded. It currently functions as a hiking trail and the park keeps it clear of vegetation.

The discovery and protection of Fort Cooper (CI00090) was initiated by John H. Eden, Jr., who owned the property, researched the location of the fort and was instrumental in state acquisition of the fort to further its protection. During the initial professional archaeological excavation in 1971, he assisted with equipment, labor and lodging (Fryman, 1972; Mike Wisenbaker, personal communication).

A predictive model was completed for the park. The results indicate that the Old Military Wagon Trail (CI01366) connected Fort Cooper with Fort Drane to the north (currently Marion County) and Fort Dade to the south (currently Pasco County). This is according to an 1837 map (United States, Hans and Macomb 1837) (Collins et al. 2011).

Condition Assessment

The current condition of all the sites is good. Sites should be protected from ground disturbance. Fort Cooper (CI00090) and the Old Military Wagon Trail (CI01366) are open areas exposed to mowing and trail maintenance. Extra care should be used to avoid ground disturbance when maintaining these areas. Mowers should be set at a height that does not disturb soil during mowing. All sites should be protected from looting and other disturbances.

Fort Cooper State Park contains Fort Cooper (CI00090), a Second Seminole War fort that is listed on the National Register of Historic Places. The site is significant for its association with an armed conflict that expanded the southern frontiers of the United States and led to the forced removal of most Native Americans from Florida, as well as for its archaeological evidence of period fort design and construction. Additional research may reveal that the trail segment in the park (CI01366) is associated with a military road that is significant for the role it played in troop and supply movements between Fort Drane and Fort Dade during the Second Seminole War.

All cultural sites in the park will be preserved. The Fort Cooper site and the Old Military Wagon Trail could be particularly vulnerable to impacts from tree fall tip-ups. Avoiding tip-ups to the extent possible should be part of the management measures for both sites. The park should mow these areas in such a way as to avoid soil disturbance as much as possible. In order to protect underground features, the park should strive to prevent woody plants from encroaching on the site. The new, unrecorded, possible latrine site should be recorded with the FMSF as a new site. If it is the fort latrine, it should be a contributing factor to the National Register listing.

Staff should attend the Division of Historic Resources' Archaeological Resource Management (ARM) training when the opportunity arises.

Historic Structures

Fort Cooper State Park currently has no historic structures. However, the park's ranger station, residence and bathrooms built during the original park development are approaching 50 years of age.

Park staff should determine the age of these structures and record them with the FMSF when they reach 50 years of age.

Collections

Fort Cooper State Park has a very small collection. The most significant item in the collection is an oil painting by Mark Dixon Dodd titled "Osceola's Knife Treaty." This is a preliminary study for a painting by Dodd that he exhibited at the 1930 Chicago World Fair. The painting was donated to Fort Cooper State Park by Dr. Braden Quicksall and was held in custody for the park by John H. Eden until the park facilities were developed.

The park collection contains photographs and newspaper clippings pertaining to the park from the 1970s to the present. There are also some Herty pots and metal turpentine cups, railroad spikes and modern tin plates. These items are used for interpretive purposes.

The park’s archival collection of articles and photographs occupies about 6 cubic feet, and the painting is approximately 2 feet by 3 feet. The painting and most of the archival material are stored in climate-controlled conditions.

The park collection is in good condition. The biggest potential threat to the collection would be a loss of climate control. The park should continue to store the paintings, photographs and paper items under constant climate-controlled conditions. The painting is kept in a locked area when staff members are not present. It was archivally cleaned about 10 years ago. During the life of this plan, the painting should be evaluated professionally to ensure that it is in good condition and as a preventative maintenance measure.

All of the items relate to the history of the park. Fort Cooper was a Second Seminole War fort. The painting depicts Osceola during the Second Seminole War. Turpentine occurred in the park, and the photographs and newspaper clippings record the history of the park. The collection items are significant to interpretation of the park’s resources.

The park needs a written Scope of Collections Statement. This will serve to guide the park if additional items are considered for the collection. Items should only be accepted for the collection if they fit within the goals of the Scope of Collection Statement and the park’s interpretive themes. The park also needs an inventory of its collection items. The Dodd painting may need a professional evaluation to determine any maintenance needs. A photograph of the painting should be documented in Past Perfect museum software.

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
CI00090 Fort Cooper	Historic 1835-1842 Pre-Columbian	Archaeological Site	NRL	G	P
CI01231 Positively Debitage	Prehistoric/Historic	Archaeological Site	NS	G	P
CI01365 Lake Holathlikaha Historic Scatter	Historic late 19 th to mid-20 th Century	Archaeological Site	NE	G	P
CI01366 Old Military Wagon Trail	Historic 1835-1842	Resource Group	NE	G	P
CI01373 Fort Cooper Phosphate Pit 1	Historic late 1800s to mid-20 th Century	Archaeological Site	NE	G	P

Cultural Sites Listed in the Florida Master Site File					
Site Name and FMSF #	Culture/Period	Description	Significance	Condition	Treatment
CI01374 Lake Holathlikaha Foundation	Historic Unknown	Archaeological Site	NE	G	P
CI01676 Metal Wheel	Historic Unknown	Archaeological Site	NE	G	P

Significance:

NRL- National Register Listed
 NRE- 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

Condition Assessment

Objective: Assess/evaluate eight of eight cultural resources in the park.

Park staff will annually monitor the seven recorded cultural sites and the newly discovered latrine site to ensure that they remain undisturbed. In particular, staff will check the Fort Cooper site (CI00090) annually to make sure there is no disturbance, looting or erosion. The park will take appropriate action to prevent woody growth from overtaking the site and disturbing the underground features. At the same time, staff will ensure that they do not mow the site too closely or drive over it. The park will check the site's boundary markers annually to verify that their locations are still accurate. The park will annually check the Old Military Wagon Trail (CI01366) and Lake Holathlikaha Historic Scatter (CI1365) for evidence of soil disturbance and looting.

Record the fort latrine as a cultural site or include it in an update of the fort site file.

Record the park structures with the FMSF when they reach 50 years old. There is no need for the park to prepare any Historic Structures Reports.

Documentation of Recorded Sites

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

A predictive model was completed for the park. The new archaeological site associated with the fort will be documented and submitted to the FMSF. Based on results of the predictive model, DRP should consult DHR to determine if an archaeological reconnaissance survey is needed around the fort and old military road sites.

While the state of Florida has conducted two excavations of the Fort Cooper site, there has been no systematic survey of the park. Now that a predictive model has been completed for the park, future

testing can focus on areas most likely to contain sites. Baker (1976) noted that additional testing could shed light on prehistoric occupation of the lake area, as well as historic Seminole campsites.

The park needs to submit an update of Fort Cooper CI00090 to the FMSF so that the prehistoric component is clearly indicated in the site file records. It also needs to determine if the latrine associated with the fort is located outside the fort walls, in which case it too should be recorded separately with the FMSF. Excavations of the fort thus far have failed to locate the historically documented blockhouse. The park should compile additional historic data about Fort Cooper and the Old Military Wagon Trail if it becomes available to determine how they relate to other central Florida forts of the Seminole War era and to the Native Americans that inhabited the area. This information would be valuable in developing an interpretive plan for the park. An important component of document compilation and interpretation is obtaining information on how present-day Seminoles view the site. That information should be an integral part of the park's interpretive plan. The park needs to develop and adopt a Statement of Collections that includes a description of the park's interpretive themes.

Baker (1976) mentions a pile of limestone that may represent the hearth of a late 19th century structure. Additional information should be compiled on this, and, if the stones can be located again, the site should be recorded with the FMSF.

Preservation Measures

Objective: Bring one of six recorded cultural resources into good condition.

All of the cultural sites at Fort Cooper State Park are currently in good condition. To keep the fort and military trail sites in good condition, the park will continue to prevent hardwoods and other woody growth from encroaching on the sites. Mowing and other methods will help keep root growth from damaging the underground features of the fort.

The park needs to describe and adopt a cyclical maintenance program for its collection items, particularly the paper ephemera and the painting by Mark Dixon Dodd. Paper documents can degrade depending on storage conditions and paper quality. The painting may need professional assessment for curating.

The park should continue to implement a regular schedule of visitation to all of its cultural sites to ensure their continued protection. There are no stabilization needs for the park's cultural resources at this time. The landscape around the fort should be evaluated for the possibility of restoring it to the natural community that existed there at the time it was built and in use. Restoration could provide visitors to the fort with a more realistic concept of the historic landscape of the period.

SPECIAL MANAGEMENT CONSIDERATIONS

Arthropod Control Plan

Mosquito control plans (i.e., Arthropod Control Plans) are typically proposed by county mosquito control districts when they desire to treat on public lands that are protected by Ch. 388.4111 (CCMCD 2012; FDACS 2012).

The current plan for Fort Cooper State Park was finalized in 2016 and is available in the Northeast District Arthropod Control Plan Appendix.

LAND USE COMPONENT

VISITATION

Fort Cooper State Park comprises just over 700 acres of natural areas including sandhill, pine flatwoods and a sizable lake that provide important wildlife habitat in a rapidly developing area of central Florida. The park interprets the U.S. Army's Seminole Indian War campaign into the Cove of the Withlacoochee in pursuit of the Seminole Tribe. The unit is named in honor of Maj. Mark Anthony Cooper, who constructed the war fort in 1836 on the high ground above the western shoreline of Lake Holathlikaha. Each spring the park hosts Fort Cooper Days, when volunteers reenact a battle between the soldiers of the 1st Georgia Battalion of Volunteers and the Seminoles. Interpretive signage is displayed in several areas of the park, taking visitors inside the events leading up to the battle and beyond. On June 13, 1972, Fort Cooper State Park was added to the National Register of Historic Places. The park officially opened to the public in 1977.

Recreational opportunities at the park center around Lake Holathlikaha and include hiking, bird watching, paddling, fishing, picnicking and nature study. Swimming was once popular prior to a long trending decline in lake level. Paddling and fishing have decreased accordingly. The park does still offer canoe rentals for those who wish to paddle the lake, although accessing open water and returning to the shoreline through the surrounding marsh vegetation can be challenging.

There are nearly 5 miles of nature trails available for hiking and biking, including a paved half-mile section that connects to the Withlacoochee State Trail. The Withlacoochee State Trail is a 46-mile paved rail trail, with Fort Cooper situated at the halfway point. Fort Cooper State Park is a designated stop along the western section of the Great Florida Birding Trail, providing opportunities to see the Bachman's sparrow and great crested flycatcher, among many other birds.

A small wedding venue with a gazebo is also available near Lake Holathlikaha at the recreation hall. Additionally, the park offers a primitive group camp for organized groups. The three sites can accommodate up to 25 and a smaller site for up to eight.

Trends

Fort Cooper State Park visitation remains relatively low throughout the year, influenced in recent years by the water level of Lake Holathlikaha. The staff at Fort Cooper State Park conducts a wide variety of ranger-led programs throughout the year, which are proving to be very popular. One such event is the monthly bat viewing walk during the warm summer months. The park is home to some 5,000 bats and their nightly emergence from natural roosting sites within the park is a sight to behold.

Economic Impacts

Fort Cooper State Park recorded 45,380 visitors in FY 2022/2023. By DRP estimates, the FY 2022/2023 visitors contributed \$5,710,695 in direct economic impact, the equivalent of adding 80 jobs to the local economy (FDEP 2023).

EXISTING FACILITIES AND INFRASTRUCTURE

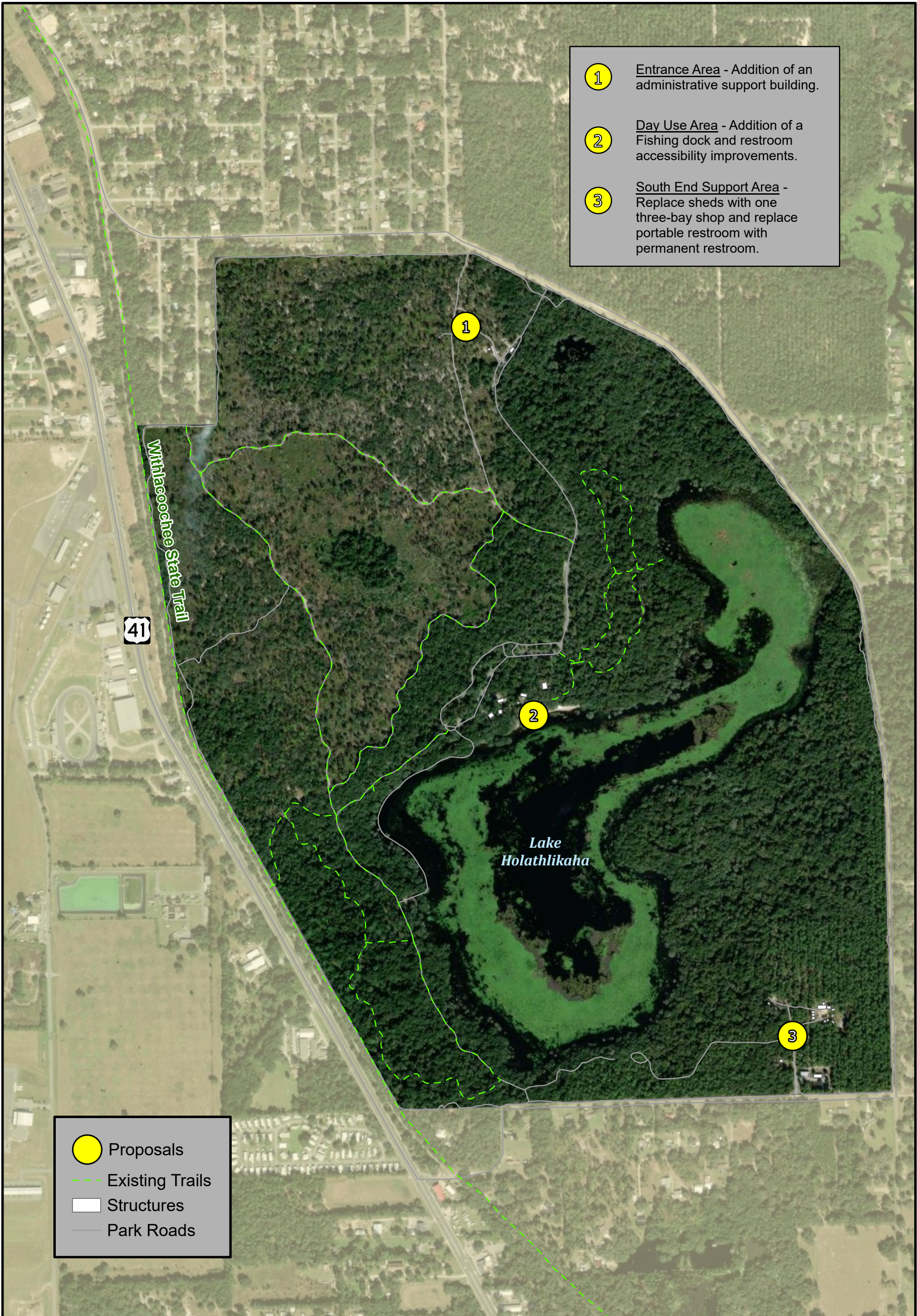
Existing facilities at the park are generally grouped into three separate areas. The day-use area near Lake Holathlikaha contains all the recreational facilities. It features a picnic pavilion with a covered barbecue grill, a gazebo, a playground and two restroom facilities. Additionally, there is a 750-square-foot indoor recreation hall that is available for rental and includes a full kitchen. The recreation hall can accommodate small weddings and receptions, as well as provide meeting space. Interpretive kiosks are spread throughout the area to explain the history and significance of the site.

The north end of the park contains support facilities including the entrance station, which also serves as the park office. A staff residence, several small storage buildings and a pump house are also located here.

There is another support area located at the southern end of the park. FWC occupies a field office for its invasive plant management research team, including one large four-bay enclosed storage shed. The park's shop complex is just north of the FWC office, which includes a four-bay shop, several storage sheds, carports, and a pole barn. There is also a primitive camping area at the south end support area, with three larger sites and one small site. The park also contains a campground host site with RV hookups that accommodates three RVs.

Facilities Inventory

<i>Entrance</i>	
Entrance station/Park Office	1
Residence	1
Carport	1
Storage Shed	2
Pumphouse	1
Small Paved Parking Area	2
<i>Recreation Area (Lake Holathlikaha)</i>	
Recreation Hall w/ Kitchen	1
Restroom	2
Gazebo	1
Barbeque Pit	1
Pavilion	1
Playground	1
Pumphouse	1
Paved Parking Area (131 spaces)	1
Interpretive Kiosks	4
<i>Support Area</i>	
FWC Invasive Plant Office	1
FWC 4-Bay Storage Shed	1
4-Bay Shop	1
3-Bay Pole Barn	1
Storage Carport	5
Support Shed	5
Campground Host Site	1
Primitive Group Camp	1
Pumphouse	1



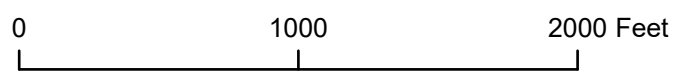
- ① **Entrance Area** - Addition of an administrative support building.
- ② **Day Use Area** - Addition of a Fishing dock and restroom accessibility improvements.
- ③ **South End Support Area** - Replace sheds with one three-bay shop and replace portable restroom with permanent restroom.

- Proposals
- - - Existing Trails
- Structures
- Park Roads



Fort Cooper State Park

Conceptual Land Use Plan



<i>Trails</i>	
Fort Site Trail	1.5 (mi.)
Sandhill Loop Trail	1.8 (mi.)
Dogwood Trail	1.0 (mi.)
Withlacoochee State Trail Connector (paved)	0.5 (mi.)
<i>Roads</i>	
Paved	6.09 (mi.)
Unpaved	8.8 (mi.)

CONCEPTUAL LAND USE PLAN

Entrance Area

Objective: Improve park congestion and advance park amenities.

Actions:

- *Add an administrative support building.*
- *Add storage.*

The entrance station also serves as the park office. This often causes traffic congestion issues. The addition of an administrative support building, adjacent to the entrance station in the south end support area, would help solve these issues. To improve organization and storage, a three-bay garage or pole barn would be beneficial.

Day-Use Area/Lake Holathlikaha

Objective: Increase lake access.

Actions:

- *Add a fishing dock.*
- *Improve restroom accessibility.*

While swimming as a recreational activity hasn't occurred in many years, fishing is still feasible, even with lower lake levels. The addition of a fishing dock would increase the appeal and accessibility of the lake for anglers. There is still a need for restroom accessibility improvements, including a door entrance that should be widened for accessibility improvement.

South End Support Area

Objective: Enhance effectiveness of park infrastructure.

Actions:

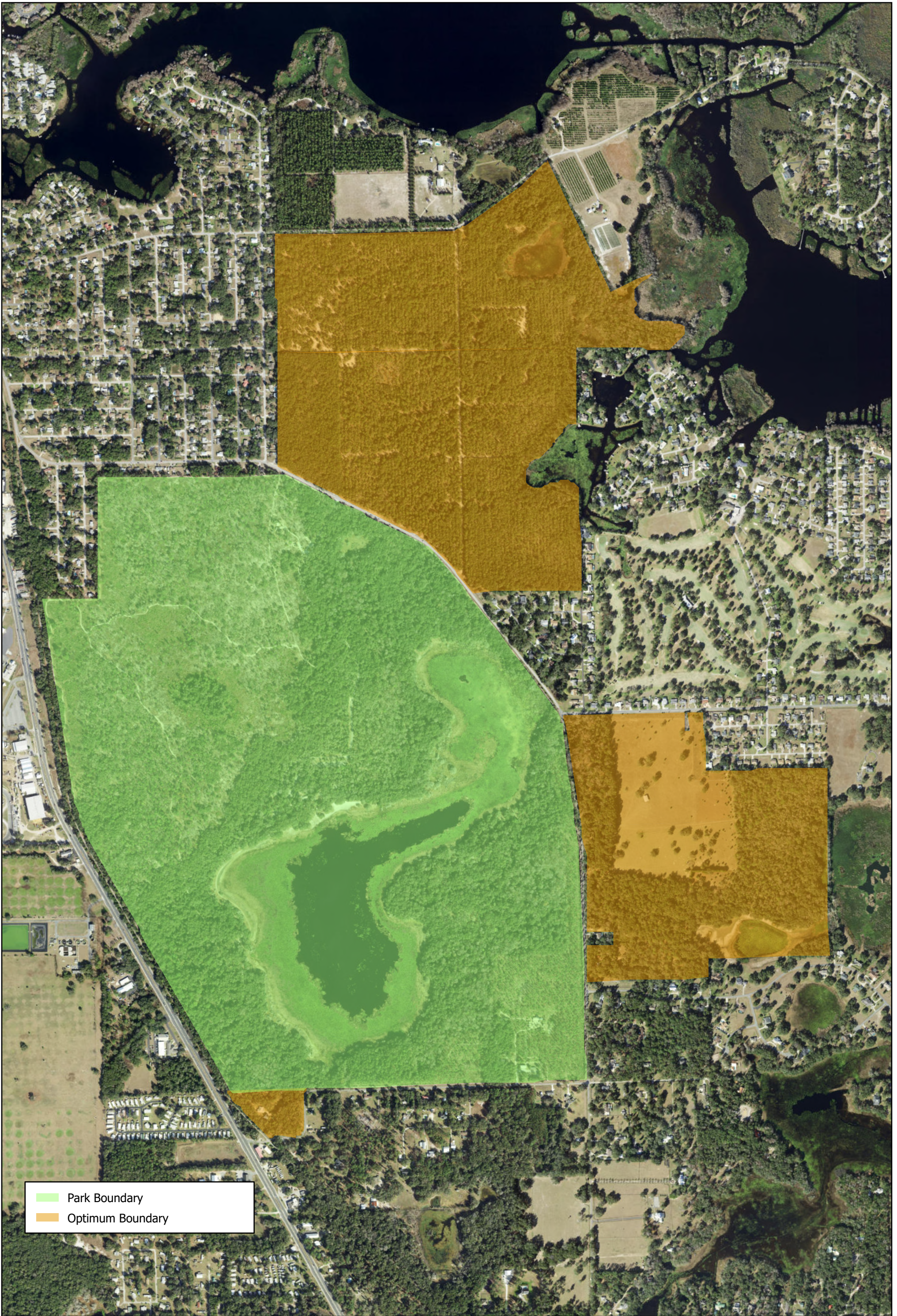
- *Replace sheds with one three-bay shop.*
- *Replace portable restroom at the primitive campground with a permanent restroom.*

Consolidation of the many storage sheds in this area should be a consideration. The addition of a three-bay garage would aid with equipment storage and protection. The elimination of the disjunct storage

sheds would improve visual appeal. The primitive campground needs a permanent restroom facility. Existing water lines lend to the feasibility of this proposal. A fixed structure will cut down on both maintenance costs and sanitation concerns.

OPTIMUM BOUNDARY

Fort Cooper State Park encompasses a lake and other environmentally sensitive areas. Several additional parcels adjacent to the park are of interest to support watershed protection and expand imperiled species habitat protection. Specifically, two adjacent parcels to the north of the park would help protect the link between Lake Holathlikaha and the Tsala Apopka Chain of Lakes. The addition of these parcels would also create a buffer between the park and encroaching development. A few parcels to the east and south would expand habitat for imperiled species and serve as possible habitat restoration projects.




■ Park Boundary
■ Optimum Boundary



FORT COOPER STATE PARK

Optimum Boundary


 0 750 1,500 Feet
 This graphical representation is provided for informational purposes and should not be considered authoritative for navigational, engineering, legal, and other uses.