



## Florida Department of Environmental Protection

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October 23, 2017

Steven Cutshaw  
Division of Recreation and Parks  
Department of Environmental Protection  
3900 Commonwealth Boulevard, MS 525  
Tallahassee, Florida 32399-3000

**RE: De Leon Springs State Park - Lease #3262**

Dear Mr. Cutshaw:

On **October 20, 2017**, the Acquisition and Restoration Council recommended approval of the **De Leon Springs State Park** management plan. Therefore, the Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the **De Leon Springs State Park** management plan. The next management plan update is due October 20, 2027.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Ray Spaulding", is written over the typed name.

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



# De Leon Springs State Park

## Approved Unit Management Plan

STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Recreation and Parks  
October 2017





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## INTRODUCTION

De Leon Springs State Park is located in Volusia County (see Vicinity Map). Access to the park is from I-4, take Exits 114 or 118 west to US 17 then north to the town of De Leon Springs. Turn left on Ponce de Leon Blvd. and proceed 3/4 mile to the entrance. From I-75, take SR 40 east to US 17 in Barberville then south 7 miles. Turn right on Ponce de Leon Blvd. (see Reference Map). The Vicinity Map also reflects significant land and water resources existing near the park.

De Leon Springs State Park was initially acquired on July 28, 1982 by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, the park comprises 624.72 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on January 26, 1983, the Trustees leased (Lease Number 3262) the property to DRP under a 50-year lease. The current lease will expire on January 25, 2033.

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

### **Purpose and Significance of the Park**

The purpose of De Leon Springs State Park is to preserve a landscape that has an extensive history of human habitation, dating back to the days of the Mayaca people. In addition to the preservation of this Native American history, the park protects the cultural legacies of the Spanish missionaries of the late 1500s, the 1800s-era settler plantations, and the 20<sup>th</sup> century winter resort destination while also encouraging present day outdoor recreation that highlights the park's beautiful features.

### **Park Significance**

- The park protects the headspring of Spring Garden Run. This headspring has long been the attraction for people throughout history and the subject of local folklore, including the tale that Juan Ponce de Leon discovered the spring in his quest to find the "Fountain of Youth."
- As evidenced by mounds of shell midden and the oldest dugout canoes in the western hemisphere that were once found in the spring, the park preserves the Native American history associated with their centuries of habitation in the area.
- In remembrance of its settler-era history, the park restored and conserves a 100-year old replica of an original 1830s sugar mill, which serves as both an interpretation centerpiece and popular restaurant for park visitors.
- The park protects natural communities such as hydric hammock and mesic flatwoods that provide scenic landscapes for park visitors and important habitat

for imperiled species. The imperiled yellow anise tree and a 600-year old bald cypress referred to as "Old Methuselah" thrives at the park.

- In addition to the rich interpretive opportunities available, the park also offers resource-based recreation in the form of hiking and wildlife viewing as a part of the Great Florida Birding Trail, along with swimming at the springhead and water-based access to the Lake Woodruff National Wildlife Refuge.

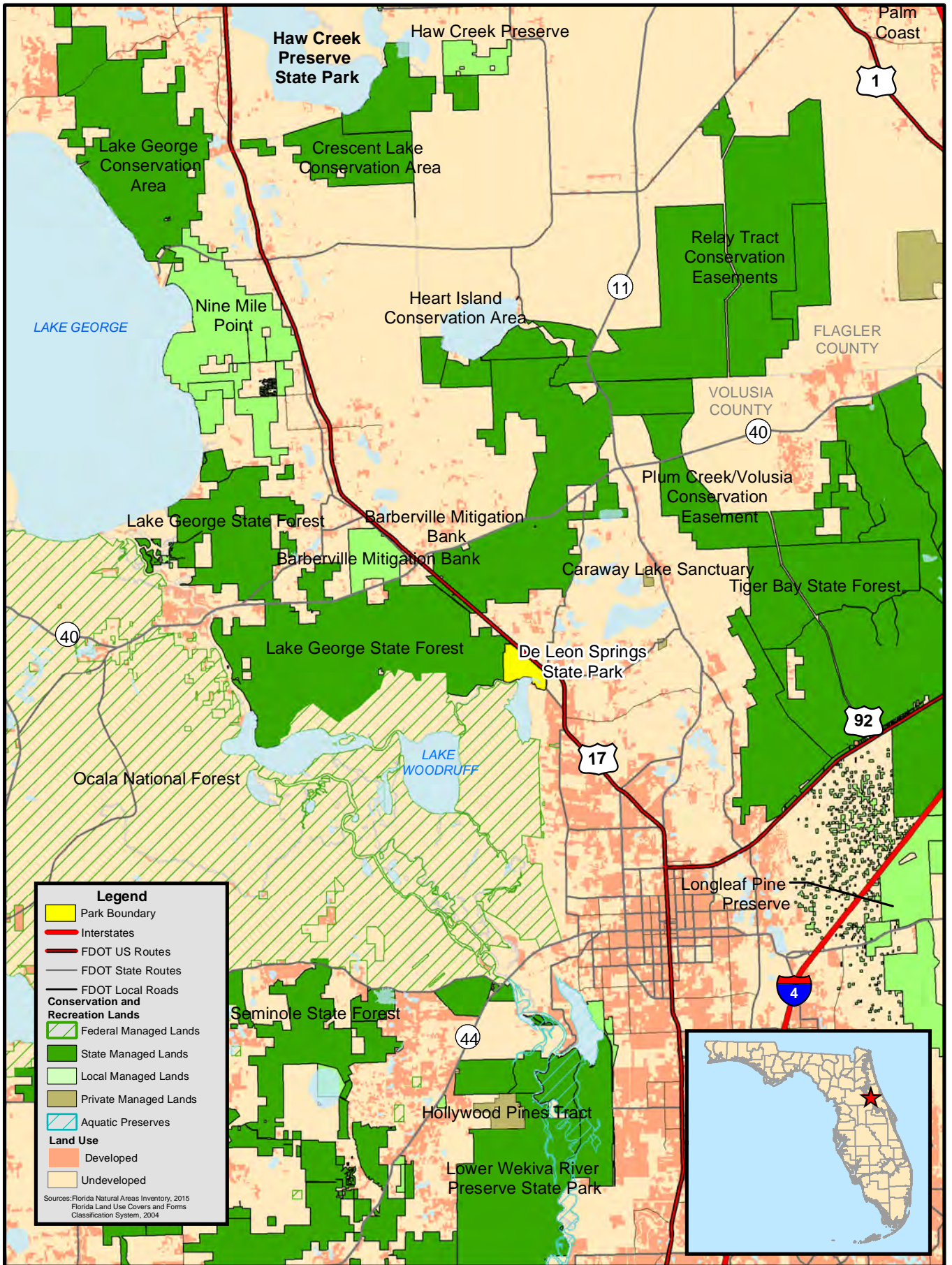
De Leon Springs State Park is classified as a State Recreation Area in the DRP's unit classification system. In the management of a state recreation area, major emphasis is placed on maximizing the recreational potential of the unit. However, preservation of the park's natural and cultural resources remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the park's recreational potential, the development of appropriate park facilities is undertaken with the goal to provide facilities that are accessible, convenient, and safe, to support public recreational use or appreciation of the park's natural, aesthetic, and educational attributes.

### **Purpose and Scope of the Plan**

This plan serves as the basic statement of policy and direction for the management of De Leon Springs State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 2006 approved plan.

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

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



**DE LEON SPRINGS  
TATE PARK**



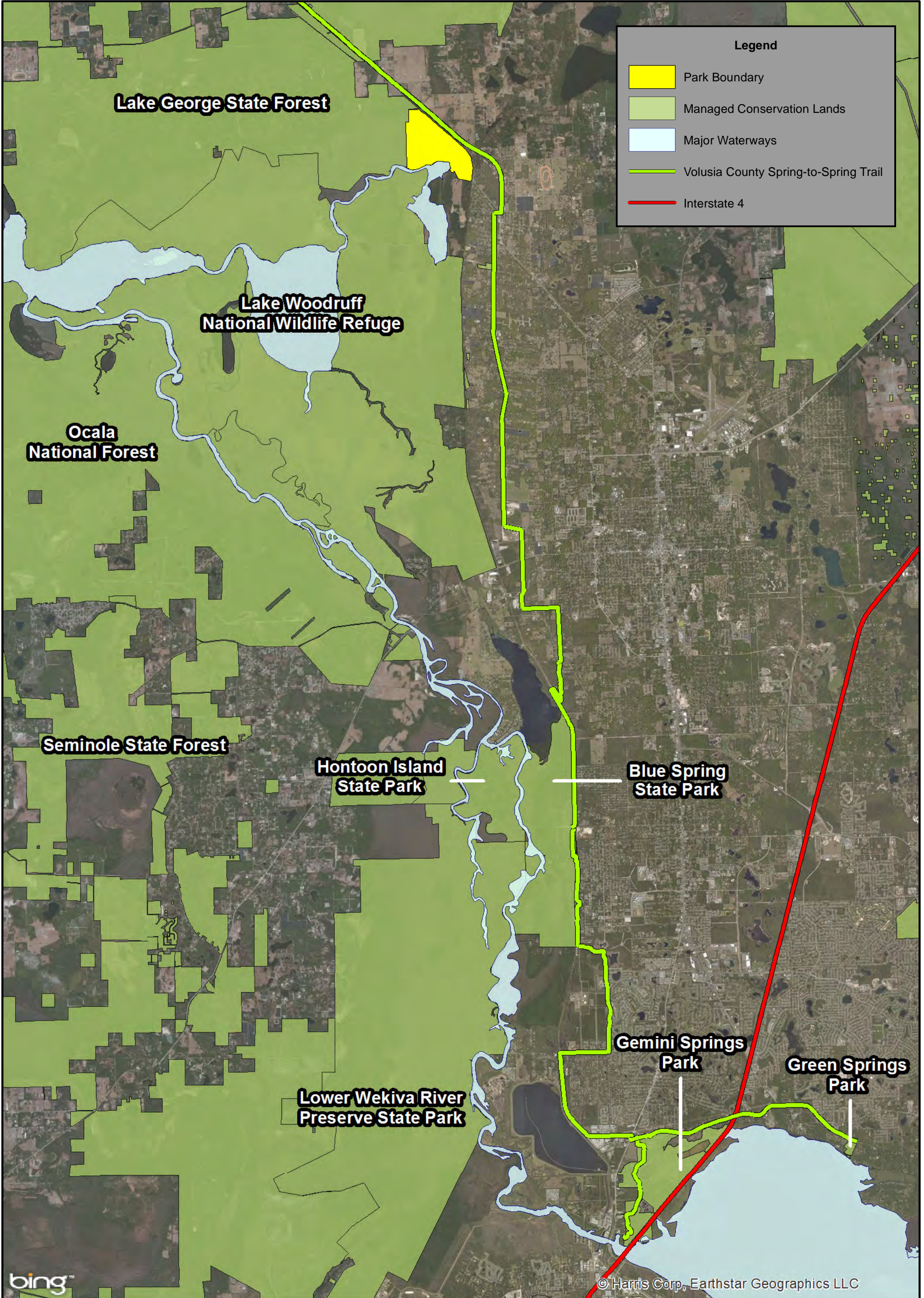
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Division of Recreation and Parks

**VICINITY  
MAP**









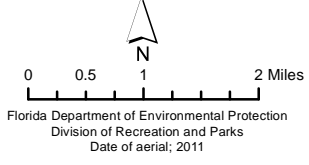
**Legend**

- Park Boundary
- Managed Conservation Lands
- Major Waterways
- Volusia County Spring-to-Spring Trail
- Interstate 4

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DE LEON SPRINGS STATE PARK



REFERENCE MAP





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

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

In accordance with section 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 the DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation.

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 forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

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

## **Management Program Overview**

### **Management Authority and Responsibility**

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

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

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

### **Park Management Goals**

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

- Provide administrative support for all park functions.
- Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.
- Restore and maintain the natural communities/habitats of the park.
- Maintain, improve, or restore imperiled species populations and habitats in the park.
- Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.
- Protect, preserve, and maintain the cultural resources of the park.
- Provide public access and recreational opportunities in the park.
- Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

### **Management Coordination**

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

The Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency



plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FWC aids DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites.

### **Public Participation**

DRP provided an opportunity for public input by conducting a public meeting and an advisory group meeting to present the draft management plan to the public. These meetings were held on May 9, 2017 and May 10, 2017, respectively. Meeting notices were published in the Florida Administrative Register on April 28, 2017 in Volume 43, Issue 83, included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the advisory group meeting is to provide the advisory group members an opportunity to discuss the draft management plan (see Addendum 2).

### **Other Designations**

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

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



## **RESOURCE MANAGEMENT COMPONENT**

### **Introduction**

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

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

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

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

The entire park is divided into management zones that delineate areas on the ground that are used to reference management activities (see Management Zones Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and natural fire breaks. It is important to note that all burn zones are management zones; however, not all management zones include fire-dependent natural communities. Table 1 reflects the management zones with the acres of each zone.

<b>Management Zone</b>	<b>Acreage</b>	<b>Managed with Prescribed Fire</b>	<b>Contains Known Cultural Resources</b>
DS-01	32.75	N	No
DS-02	20.89	N	Yes
DS-03	57.92	N	No
DS-04	36.70	N	No
DS-05	6.64	N	No
DS-06	22.75	N	Yes
DS-08	8.12	N	No
DS-09	12.73	N	Yes
DS-10	18.60	N	No
DS-11	12.80	N	No
DS-12	325.92	N	Yes
DS-13	13.51	N	Yes
DS-14	23.99	N	Yes
DS-15	17.08	N	Yes
DS-16	14.38	N	No

## **Resource Description and Assessment**

### **Natural Resources**

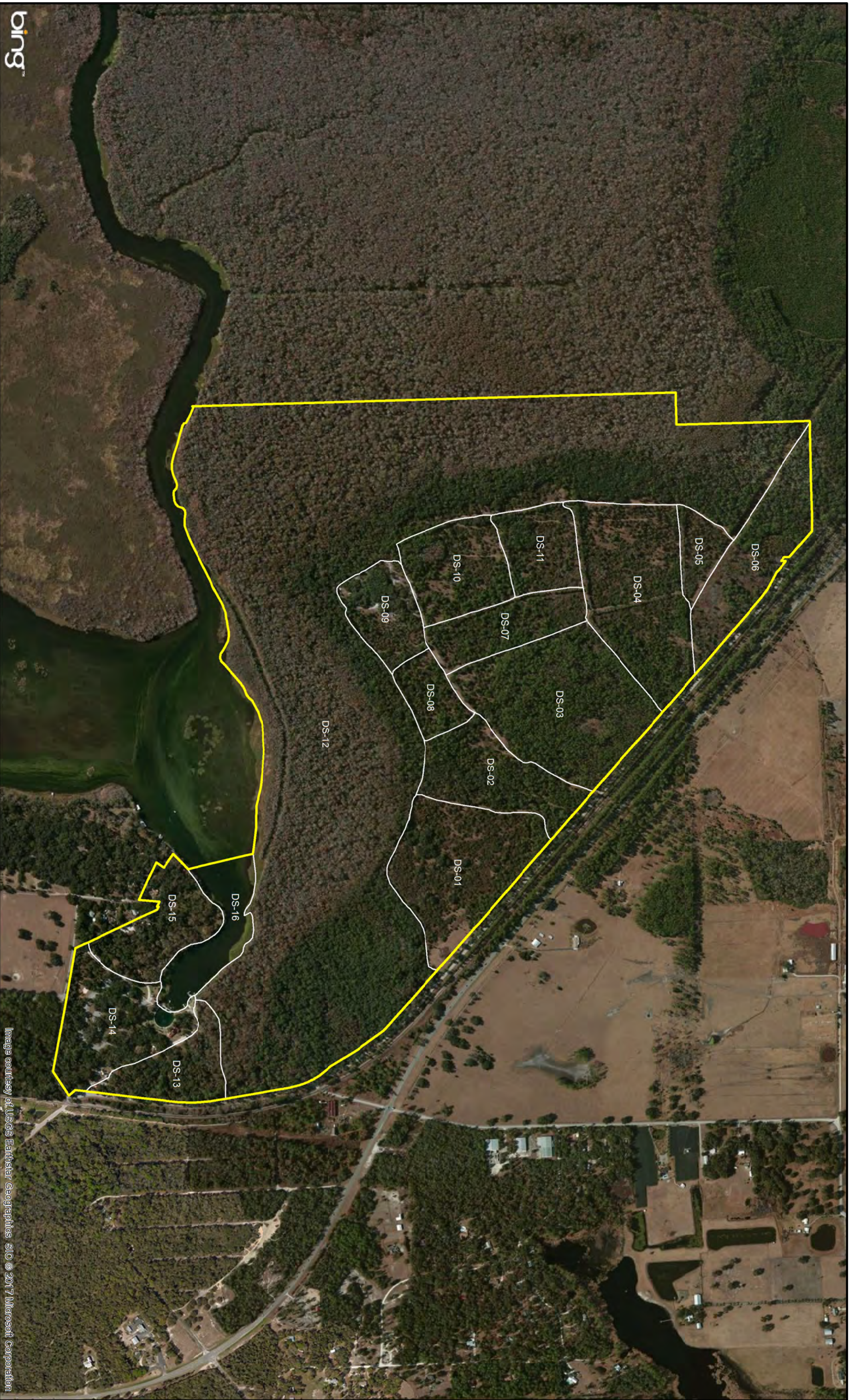
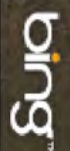
#### **Topography**

De Leon Springs State Park is located on the western edge of the DeLand Ridge, along the St. Johns River Offset of the Eastern Valley. This is a very ancient area of the St. Johns River Valley that is partially filled with Pleistocene estuarine deposits. These physiographic areas fall within the Central Lake District of the Atlantic Coastal Lowlands. The park is also situated on the Pamlico Terrace. Elevations range from 20 feet above mean sea level (MSL) to 2 feet above MSL at the spring run. The condition of the natural topography is generally poor. Evidence of human use is prevalent; tram roads, elevated earthen footpaths, drainage and paddleboat canals, remnants of Indian mounds, construction fill, and converted pastures have altered the topography considerably. A remnant earthen boat dock extends into the spring run from its south shore which has raised the topography.

#### **Geology**

De Leon Springs State Park lies at the western boundary of the DeLand Ridge, a karst formation of older marine terraces. The geologic material that characterizes the DeLeon Springs area can be divided into the two categories, which are summarized below.





DE LEON SPRINGS STATE PARK

MANAGEMENT ZONES MAP

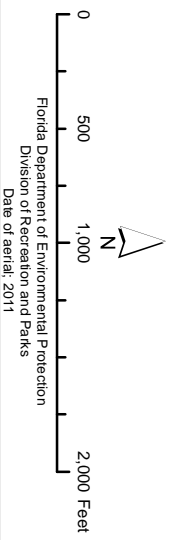


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Upper (clastic): The majority of the overlying landscape is characterized by clastic material formed principally during the Pleistocene age, but ranges from Miocene to Recent ages. These sediments vary in thickness, but are thinnest in the area around the spring. The thickness of the upper confining unit (a layer of impermeable or mostly impermeable sediment above the aquifer that binds it) for the Floridan aquifer system in this area is 50 feet.

Lower (carbonate rock): The Floridan aquifer is contained by underlying limestone and dolomite material that was formed during the middle and upper Eocene age. Within the park, the thickness of the Upper Floridan aquifer ranges between 300-400 feet, the Lower Floridan aquifer ranges between 700-800 feet. The headspring is a typical solution cavern which is created by limestone and dolomite dissolved over time by weakly acidic groundwater, consisting of a single chimney connected to the aquifer.

## **Soils**

There are eleven different soil types occurring in De Leon Springs State Park (see Soils Map) in the Soil Survey of Volusia County. This soil survey was compiled by the U.S. Department of Agriculture, Soil Conservation Science (SCS). Two of the main soil types found in the park are the Terra Ceia muck in the wetland areas and EauGallie fine sand in the flatwoods and ruderal areas. Management activities will follow generally accepted best management practices to prevent soil erosion and serve soil and water resources on site. Addendum 4 contains complete descriptions of the unit's soil types.

## **Minerals**

There are no known minerals with commercial value at DeLeon Springs State Park. It is uncertain that water from the "Fountain of Youth" was ever bottled commercially as an "Elixir of Life."

## **Hydrology**

De Leon Springs State Park is located in the northeastern quadrant of the middle St. Johns River Basin. Water in the surficial aquifer is generally unconfined; it is recharged primarily by rainfall. In the springshed, rainfall amounts to 56.02 inches per year. The flowing spring discharges from the regional aquifer. Water flows at an average of 26.06 cu. ft./second \* (16.8 million gallons/day, calculated from 1910-2016) westward through the spring run to Spring Garden Lake, lakes Woodruff and Dexter, and eventually to the St. Johns River.

Local commercial ferneries with deep irrigation wells and small artesian wells may decrease the rate of flow at the spring. St. Johns River Water Management District has observed a decrease in flow at the park on cold winter days when ferneries withdraw more water to prevent frost damage. The recharge area for the spring lies less than 1000 feet upslope, east of the park.

The general drainage of the park is from the outside perimeter in toward the spring run. Runoff from outside the park boundary, in the northern section along State Road 3A, is the only outside drainage influence. This water is channeled into canals in the northern section, and has little apparent influence on the park or spring run with respect to volume of water; the water quality of this runoff does have an impact on the park and its resources.

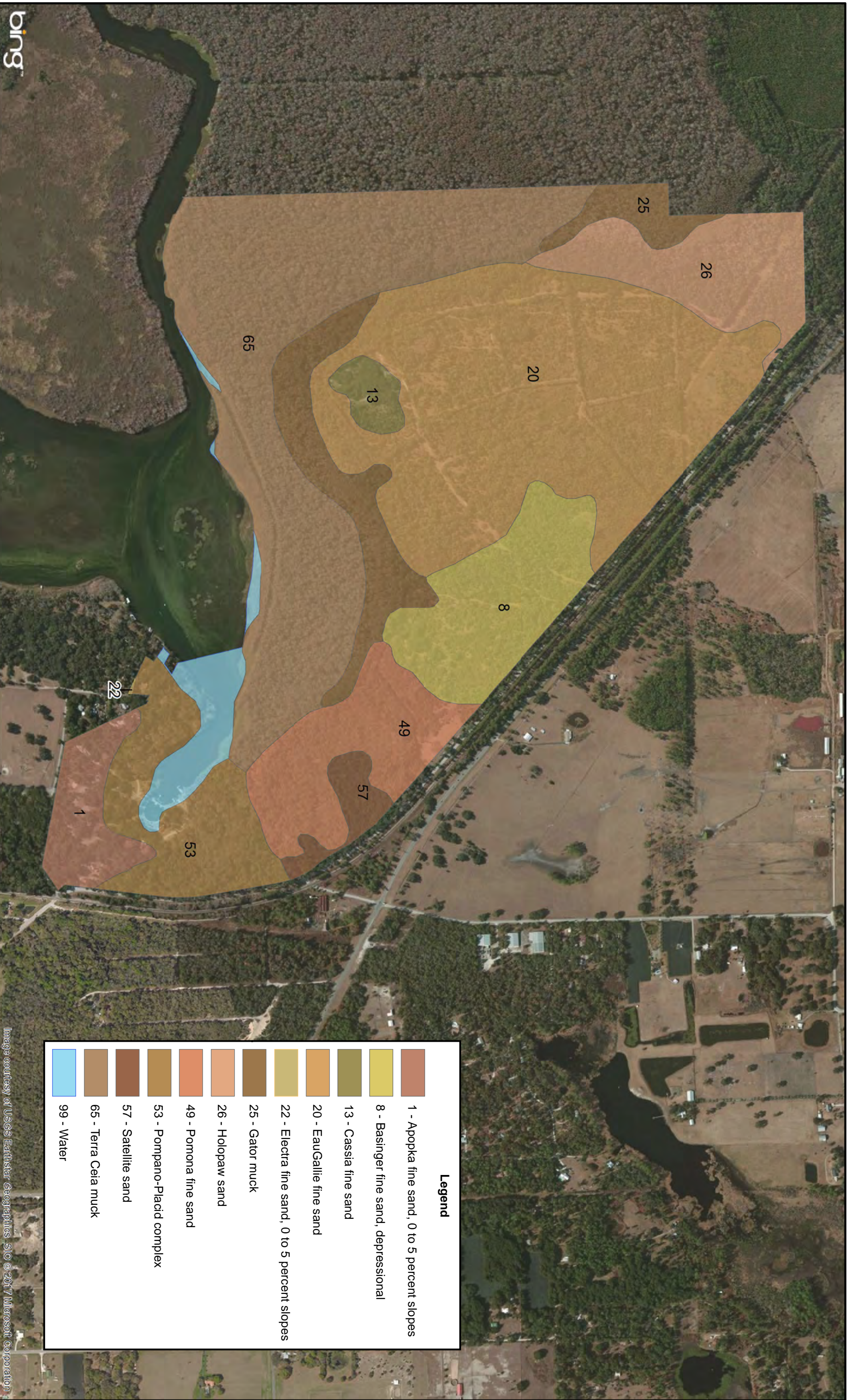
Surface water bodies include the spring pool and the part of the spring run located inside the park boundary. Water quality in both bodies of water is generally good, although nitrate levels have increased in the spring since the 1970s. This is most likely due to animal waste from nearby agricultural operations and seepage. DEP has declared a nitrogen threshold of 0.35 milligrams per liter for nitrogen in clear water streams. Nitrate-nitrite concentrations were found to be relatively high for spring systems in the state, around 0.80 mg/L, and is considered impaired under these new standards. Elevated nitrate-nitrite levels within this spring system are related to nitrogen loading in the recharge basin, mostly due to inorganic fertilizers applied to agricultural lands. There is evidence that the physiochemistry of the water source inside the cave has changed in recent years; the bacteria *Beggiatoa* sp. used to coat many of the surfaces inside the cave, but now appears to be healthy in only one location. One potential cause of contamination is the nine older septic tanks located in the park. The algal community was found to be of relatively low quality, with many of the periphyton taxa indicative of eutrophic conditions. The water in the spring run mixes somewhat with runoff water from the floodplain forest and swamp.

### **Natural Communities**













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

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas that are similar with respect to those factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, however, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs. Some physical influences, such as fire frequency, may vary from FNAI's descriptions for certain natural communities in this plan.



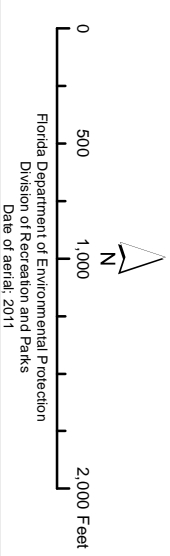


**Legend**

	1 - Apopka fine sand, 0 to 5 percent slopes
	8 - Basinger fine sand, depressional
	13 - Cassia fine sand
	20 - EauGallie fine sand
	22 - Electra fine sand, 0 to 5 percent slopes
	25 - Gator muck
	26 - Holopaw sand
	49 - Pomona fine sand
	53 - Pompano-Placid complex
	57 - Satellite sand
	65 - Terra Ceia muck
	99 - Water

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DE LEON SPRINGS STATE PARK



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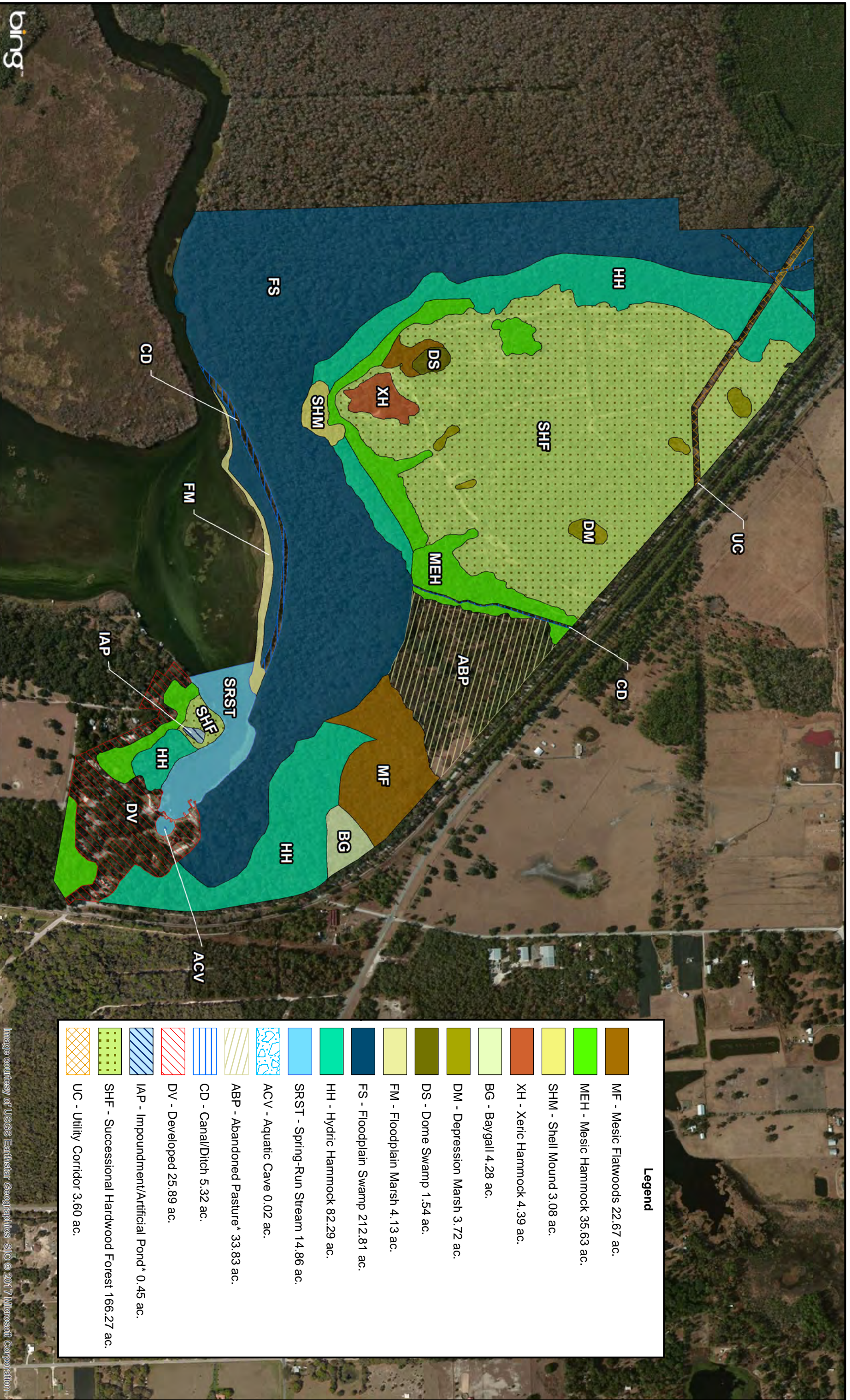
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SOILS MAP



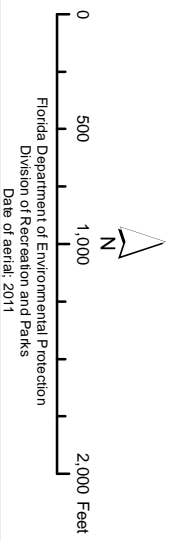






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DE LEON SPRINGS STATE PARK



**Legend**

	MF - Mesic Flatwoods 22.67 ac.
	MEH - Mesic Hammock 35.63 ac.
	SHM - Shell Mound 3.08 ac.
	XH - Xeric Hammock 4.39 ac.
	BG - Baygall 4.28 ac.
	DM - Depression Marsh 3.72 ac.
	DS - Dome Swamp 1.54 ac.
	FM - Floodplain Marsh 4.13 ac.
	FS - Floodplain Swamp 212.81 ac.
	HH - Hydric Hammock 82.29 ac.
	SRST - Spring-Run Stream 14.86 ac.
	ACV - Aquatic Cave 0.02 ac.
	ABP - Abandoned Pasture* 33.83 ac.
	CD - Canal/Ditch 5.32 ac.
	DV - Developed 25.89 ac.
	IAP - Impoundment/Artificial Pond* 0.45 ac.
	SHF - Successional Hardwood Forest 166.27 ac.
	UC - Utility Corridor 3.60 ac.

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NATURAL COMMUNITIES MAP

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Division of Recreation and Parks  
Date of aerial: 2011





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

The park contains 12 distinct natural communities as well as 6 altered landcover types (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Addendum 5.

### Mesic Flatwoods

*Desired future conditions:* This community will be characterized by an open canopy of longleaf pine (*Pinus palustris*) and a dense, low ground layer of low shrubs, grasses and forbes. Saw palmetto (*Serenoa repens*) will generally be present but not overly dominant. Other shrub species will include gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), runner oak (*Quercus elliotii*), dwarf live oak (*Quercus minima*), shiny blueberry (*Vaccinium myrsinites*), and dwarf huckleberry (*Gaylussacia dumosa*). The herbaceous layer will be primarily grasses, including wiregrass (*Aristida stricta* var. *beyrichiana*), dropseeds (*Sporobolus curtissii*, *S. floridanus*), panicgrasses (*Dicanthelium* spp.), and broomsedge (*Andropogon* spp.). This community will have minimal topographic relief and the soils will contain a hardpan layer within a few feet of the surface which impedes percolation. Due to these factors, water will saturate the sandy surface soils for extended periods during the wet season but lengthy droughts also commonly occur during the dry season. The Optimal Fire Return Interval for this community is 1-3 years.

*Description and assessment:* The majority of the mesic flatwoods in the park were converted to pasture by previous owners and have succeeded to a successional hardwood forest. One relatively small area totaling 2 acres of mesic flatwoods remains along the nature trail and is dominated by mature slash pines and dense saw palmetto (*Serenoa repens*). Loblolly bay (*Gordonia lasianthus*), wax myrtle (*Myrica cerifera*), and dwarf huckleberry (*Gaylussacia dumosa*) can be found in the understory along with a very small population of hooded pitcher plants.

*General management measures:* The mesic flatwoods are located in a difficult location of the park, surrounded by overgrown successional hardwood forest and a cypress dome. Due to the nearby highway, the lack of favorable wind direction and overgrown surrounding fuels do not make this area conducive for burning.

### Shell Mound

*Desired future conditions:* The diverse plant community will be maintained until erosion and ground disturbance becomes an issue. All significant archaeological

sites, historic structures and objects within the park that represent Florida's cultural periods, significant historic events or persons are preserved in perpetuity, protected from physical threats and interpreted to the public.

*Description and assessment:* This community supports a diverse plant community, with live oak (*Quercus virginiana*), American elm (*Ulmus americana*), cabbage palm (*Sabal palmetto*), southern red cedar (*Juniperus silicicola*), and southern magnolia in the overstory; sugarberry (*Celtis laevigata*), Jack-in-the pulpit (*Arisaema triphyllum*), greendragon (*Arisaema dracontium*), milkvine (*Matelea* sp.), wild petunia (*Ruellia caroliniana*), and smallflower pawpaw (*Asimina parviflora*) can be found in the understory. A large area of this community was mined in the past for road fill. With the exception of this impact, the community is in stable condition.

*General management measures:* Human disturbance is the main threat to this area. Surveys for ground disturbance will be conducted on a regular basis along with exotic plant surveys.

### Xeric Hammock

*Desired future conditions:* This community occurs in small isolated patches on well drained soils. Vegetation consists of a low closed canopy dominated by sand live oak (*Quercus geminata*) which provides shady conditions. Typical plant species include Chapman's oak (*Quercus chapmanii*) and laurel oak (*Quercus laurifolia*). Slash pine and longleaf pine are also present as a minor component. Understory species include saw palmetto, fetterbush, and myrtle oak (*Quercus myrtifolia*). A sparse groundcover layer of wiregrass and other herbaceous species may exist but will typically be absent. A continuous leaf litter layer may be present.

*Description and assessment:* One isolated area of xeric hammock occurs within the park in zone 09, just north of shell mound community in the southwest corner of the old pasture. The overstory consists of many live oaks with scattered slash pine and dispersed clumps of saw palmetto in the understory. The hammock contains historical resources and may not have been exposed to fire for a long time due to its location. A few gopher tortoise (*Gopher polyphemus*) burrows are found on this site.

*General management measures:* Monitoring for ground disturbance and exotic species as these are primary threats to this community.

### Mesic Hammock

*Desired Future Condition:* Mesic hammock is a well-developed evergreen hardwood and palm forest. The dense canopy is dominated by live oak with cabbage palm mixed into the understory. Southern magnolia (*Magnolia grandiflora*) and pignut hickory (*Carya glabra*) are common components in the subcanopy as well. The shrubby understory varies in sections from dense to open with saw palmetto, beautyberry (*Callicarpa americana*), American holly (*Ilex opaca*), gallberry, and sparkleberry (*Vaccinium arboreum*). The groundcover is sparse and patchy and

contains panicgrasses (*Panicum* spp.), switchgrass (*Panicum virgatum*), sedges, as well as various ferns and forbs. Abundant greenbrier and smilax vines as well as epiphytes occur on live oaks and cabbage palms and other subcanopy trees. These mesic hammocks are found on sandy soils with organic material and have a thick layer of leaf litter at the surface. They are occasionally inundated and is not considered to be fire-adapted communities.

*Description and assessment:* Most likely some of these hammocks onsite were once wet flatwoods drainages before the adjacent habitats and hydrology were modified. Ditches were cut through the property and the areas where the mesic hammock is found is along these ditched areas. These areas have scattered pines (pond pine (*Pinus serotina*) and slash pine) within them and an understory of saw palmetto. Most of the mesic hammock has moderate to extensive hardwood encroachment such as red maple (*Acer rubrum*), loblolly bay, sweetbay (*Magnolia virginiana*), and sweetgum stemming from fire exclusion and hydrologic alteration. Scattered yellow anise tree (*Illicium parviflorum*) also occurs in this community. Exotic plant control within these hammocks is an ongoing need to control coral ardisia (*Ardisia crenata*) and camphor trees. Extensive ground disturbance from feral hogs is a problem as well.

*General management measures:* This community would benefit from invasive exotic plant and animal control. The park will continue trap and remove hogs when necessary while removing exotic plants with workdays and contractors. DRP has partnered with FWC Aquatic Habitat Restoration and Enhancement (AHRE) subsection to determine if any of the ditches throughout the park can be filled or modified in order to restore the historic hydrology to these areas.

### Hydric Hammock

*Desired future conditions:* Hydric hammock is a closed canopy, evergreen hardwood and palm forest with a variable understory dominated by palms, with sparse to moderate ground cover of grasses and ferns. Typical canopy species include laurel oak, cabbage palm, live oak, sweetbay, swamp tupelo (*Nyssa sylvatica* var. *biflora*), American elm, red maple, and other hydrophytic tree species. Soils are poorly drained and only occasionally flood. Hydric hammock would occasionally burn by allowing fires to naturally cross ecotones from fires originating in adjacent upland natural communities.

*Description and assessment:* The hydric hammock in the park is found along the ecotone between the successional hardwood forest and floodplain swamp, along the spring run and north of the park entrance. The community has been modified by logging activities and other human disturbances. A berm structure was constructed through the hammock, north of the ranger station by the previous land owner who put a tram tour through the area as a part of an attraction. Some areas of this community suffer from hardwood encroachment due to the lack of periodic fire along the edges and altered hydrology. Canopy cover consists of live oak, slash pine (*Pinus elliottii*), loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), red maple, southern magnolia, water hickory (*Carya aquatica*) and

water oak (*Quercus nigra*). Greendragon, royal fern (*Osmunda regalis* var. *spectabilis*), swamp azalea (*Rhododendron viscosum*), cinnamon fern (*Osmunda cinnamomea*), and false indigobush (*Amorpha fruticosa*) are found in the understory. Ornamental exotic plants, such as azaleas (*Rhododendron* sp.) and various palms were planted along the tram road. In addition, exotic plant species such as white gingerlily (*Hedychium coronarium*) and wild taro (*Colocasia esculenta*) once were common in this area of the tram but have been treated heavily in the past by DRP staff and AmeriCorps members. Overall, however, the community is in good condition.

*General management measures:* The hydric hammock requires little direct management but would benefit from hydrologic restoration through the removal of adjacent ditches. Infrequent fire encroaching on the edges from the adjacent uplands may be beneficial. Coral ardisia, white gingerlily, and wild taro are found in a patchy distribution and should be treated annually. Surveys, treatment of exotics and monitoring for new infestations are required to keep the hydric hammock community in maintenance condition.

#### Depression Marsh

*Desired future conditions:* Depression marsh is characterized as containing low emergent herbaceous and shrub species which will be dominant over most of the area and include open vistas. Trees will be few and if present, will occur primarily in the deeper portions of the community. There will be little accumulation of dead grassy fuels due to frequent burning; one can often see the soil surface through the vegetation when the community is not inundated. Dominant vegetation may include maidencane (*Panicum hemitomom*), panicgrasses (*Panicum* spp.), cutgrass (*Leersia* sp.), common reed (*Phragmites australis*), pickerelweed (*Pontederia cordata*), arrowheads (*Sagittaria* sp.), buttonbush (*Cephalanthus occidentalis*), St. John's wort (*Hypericum fasciculatum*), and Carolina willow (*Salix caroliniana*). The Optimal Fire Return Interval for this community is 2-10 years depending on fire frequency of adjacent communities.

*Description and assessment:* Several small depression marshes are present in the park. Most have an understory of maidencane. As a result of fire exclusion, some woody species (e.g., red maple, wax myrtle and buttonbush) are invading into these marshes.

*General management measures:* These communities are in need of mechanical treatment and prescribed fire to eliminate hardwood encroachment if they were to be restored to their historic condition. However, since they are surrounded by non-fire type communities, reintroducing fire may not be possible due to extensive hardwood encroachment from the adjacent successional hardwood forests. Exotic species surveys and treatment will be ongoing to maintain current conditions in these communities.



## Dome Swamp

*Desired future conditions:* Dome swamp is an isolated, forested, depression wetland occurring within a fire maintained matrix such as mesic flatwoods. The characteristic dome appearance will be created by smaller trees that grow on the outer edge (shallower water and less peat) and larger trees that grow in the interior. Pond cypress (*Taxodium ascendens*) will typically dominate, but swamp tupelo may also form a pure stand or occur as a co-dominant. Other subcanopy species may include red maple, dahoon holly (*Ilex cassine*), swamp bay, sweetbay, and loblolly bay. Shrubs may be absent to moderate occurrence (a function of fire frequency) and can include Virginia willow (*Itea virginica*), fetterbush, buttonbush, and wax myrtle. An herbaceous component may range from absent to dense and include ferns, maidencane, sawgrass (*Cladium jamaicense*), sedges (*Carex* spp.), lizard's tail (*Saururus cernuus*), and sphagnum moss (*Sphagnum* spp.). Vines and epiphytes will be commonly found. Maintaining the appropriate hydrology and fire frequency is critical for preserving the structure and species composition of the community. Dome swamps should be allowed to burn on the same frequency as the adjacent fire type community, allowing fires to naturally burn across ecotones. Fires should be appropriately planned to avoid high severity fuel consumption within the dome swamp.

*Description and assessment:* The dome swamp community is restricted to one area found in management zone DC-10. This community is surrounded by the mesic flatwoods community. The overstory of the dome swamp has scattered bald cypress with various shrubs. A dense understory of maidencane, butterworts (*Pinguicula caerulea*), and sphagnum moss exists. The hooded pitcher plants (*Sarracenia minor*) are located on the edge of this community where it used to be mesic flatwoods but currently it is an overgrown edge of the dome. This community is good condition, although there is evidence of feral hog (*Sus scrofa*) activity. This area was burned in 2016 and the habitat responded favorably to the fire.

*General management measures:* Feral hog removal is necessary management measures to help protect this community and the fragile species that reside there. Constant surveillance for invasive exotic plant species will be ongoing. Prescribed fire will be conducted when possible to control fuel loads.

## Floodplain Swamp

*Desired future conditions:* Floodplain swamp is frequently or permanently flooded community in low lying areas along streams and rivers. Soils will consist of a mixture of sand, organics, and alluvial materials. The closed canopy will be dominated by bald cypress (*Taxodium distichum*) with mixed tupelo species (*Nyssa* spp.) as well as water hickory and red maple. Trees bases are typically buttressed. Understory and groundcover will typically be sparse.

*Description and assessment:* This natural community comprises the majority of the acreage of this park and is considered to be in good condition. It occurs along the entire western boundary of the park and the north side of the spring run. Numerous

canals were dredged, and an elevated tram system was constructed through this community before state ownership in the 1930 and 1940s. Water levels in the forest vary with the stage of adjacent water bodies. The diversity of canopy trees is high with most of the larger trees having buttressed bases (trees which widen at the bottom). Typical canopy species include bald cypress, swamp bay, swamp tupelo, red maple, Carolina ash (*Fraxinus caroliniana*), American elm, and swamp dogwood. The shrub layer was dominated by buttonbush, wax myrtle, Virginia willow (*Itea virginica*), swamp rose (*Rosa palustris*), and elderberry (*Sambucus canadensis*).

*General management measures:* Floodplain swamp requires little direct management. The hydroperiod is the major factor affecting the health of the system. Monitoring, both direct and indirect, should continue with a focus on changes in water quality, water levels, and water withdrawals. There are various exotic plant species that need removal, and removal of some canals and ditches should be considered where feasible.

### Floodplain Marsh

*Desired Future Condition:* Floodplain marsh is characterized as emergent low herbaceous and shrub species which are dominant over most of the area with an open vista. Trees are few if present, and occur primarily in the deeper portions of the community. There will be little accumulation of dead grassy fuels due to frequent burning; one can often see the soil surface through the vegetation when the community is not inundated. Dominant vegetation in floodplain marsh will include sand cordgrass (*Spartina bakeri*), sawgrass, maidencane, panicgrasses, cutgrass (*Leersia* sp.), pickerelweed, arrowheads (*Sagittaria* sp.), buttonbush, St. John's wort, and Carolina willow. The Optimal Fire Return Interval for this community is 2-10 years depending on fire frequency of adjacent communities.

*Description and assessment:* The floodplain marsh at the park is located north of the spring run stream, along the edge of an old canal and the floodplain swamp community. This community is considered to be in fair condition. Fire should be frequent but applying fire in this location will prove to be difficult. The hydrology is rainfall dependent. All marshes are being encroached by woody plants, due to drought and lack of fire.

*General Management Measures:* Floodplain marsh requires frequent fire, but due its size and location in the park, it is not feasible to apply fire to this community. Exotic plants are not currently an issue, but surveying and monitoring must continue in order to prevent new infestations.

### Baygall

*Desired Future Condition:* Baygall consists of a wet densely forested, peat filled depression typically near the base of a slope. Seepage from adjacent uplands maintains saturated conditions. Medium to tall trees will consist of sweetbay, loblolly bay, and/or swamp bay. Sparse pond pines will also exist. A thick understory will consist of gallberry, fetterbush, dahoon (*Ilex cassine*), and red

maple. Climbing vines such as greenbriar (*Smilax* spp.) and muscadine grape (*Vitis* spp.) will be abundant. The dominant baygall species are fire intolerant indicating an infrequent Optimal Fire Return Interval of 25-100 years.

*Description and Assessment:* The baygall at the park is located along the eastern boundary of the park, along a road right of way. It is in good condition but it has been altered because of the road. The baygall has been cut off from any fire that may have moved into or through the habitat when it was connected to fire type communities.

*General Management Measures:* The baygall community requires very little direct management and is considered to be in maintenance condition. Hydrology should be monitored to ensure that the area is receiving the upland drainage that it requires. Surveys, treatment of exotics and monitoring for new infestations are required to keep the baygall community in maintenance condition.

### Spring-Run Stream

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

*Description and assessment:* This community occurs within the main use area of the park and receives moderate recreational use, primarily by canoeists and anglers. Numerous exotic plant species, such as water hyacinth (*Eichhornia crassipes*) and wild taro occur in this community. Overall, it is in fair to good condition. The spring pool is completely enclosed with concrete bulkheads; the water level in the pool has been artificially raised by the construction of a dam between the spring head and run. The spring pool area receives heavy recreational use.

*General management measures:* There are various invasive exotic plants that need removal. DRP will work with FWC Invasive Plant Management and the US Army Corps of Engineers to treat invasive exotic aquatic vegetation along the spring run.

### Aquatic Cave

*Desired future conditions:* Aquatic and terrestrial caves are characterized as cavities below the ground surface in karst areas. A cave system may contain portions classified as terrestrial caves and portions classified as aquatic caves. The latter will vary from shallow pools which are highly susceptible to disturbance, to more stable completely submerged systems. Because all caves develop under aquatic

conditions, terrestrial caves can be considered essentially dry aquatic caves. Near the cave entrance, the vegetation may be typical of the surrounding natural community. Within the cave, illumination levels and therefore vegetation densities will drop rapidly. Species of mosses, algae, and liverworts may be present. Plants may be absent or limited to a few inconspicuous species of fungi that grow on guano or other organic debris. Cave systems are extremely fragile. Desired future conditions include protecting against alterations that may affect light penetration, air circulation, microclimate, or increase pollution in aquatic systems.

*Description and assessment:* The opening of the spring extends from the water surface to a depth of approximately 30 feet. At this point, it narrows to approximately 4 feet in width and turns toward the west-southwest. The cavern slopes slightly downward to a maximum depth of about 41 feet and continues horizontally to a total distance of approximately 170 feet. The cavern intersects the aquifer approximately 40 feet from the terminal end of the cave; metal bars are positioned here to prevent further penetration by SCUBA divers. At least one offset chamber of the cavern is heavily silted and has soft, penetrable walls. Two large boulders lie on the cavern floor, apparently broken off from the ceiling of the cavern. The accessible cavern appears to be generally stable.

*General management measures:* Continue monitoring water quality and species composition within the cave ecosystem.

## **Altered Land Cover Types**

These areas comprise approximately 38% of the park's total acreage. The six major types of altered landcover on the parcels that currently comprise the DeLeon Springs State Park are successional hardwood forest, abandoned pasture, impoundment/artificial pond, canal/ditch, utility corridor, and developed. Based on observations of adjacent lands and using historic aerials, most of the acreage was a combination of mesic and wet flatwoods with some scrubby flatwoods prior to conversion to pasture. Many ditches were installed throughout the property, therefore affecting the hydrology of the site. Through time, the pasture succeeded to a hardwood forest. Developed areas consist of part of the old attraction or current use areas.

### Successional Hardwood Forest and Abandoned Pasture

*Desired future conditions:* The future goals for these communities for the next 10 years is to maintain them in their current state in which they will provide habitat for native flora and fauna, free of category I and II invasive exotic plants, and area that people can recreate safely. These areas would be burned occasionally to reduce wildfire risk and to provide open areas for wildlife viewing and forage for wildlife.

*Description and Assessment:* The majority of the former mesic and wet flatwoods communities in the park are presently mapped as successional hardwood forest and abandoned field. All of these areas were ditched, cleared, and converted to pasture

dominated by bahiagrass (*Paspalum notatum*). Wax myrtle, sweetgum, red maple, laurel oak, water oak, and other woody species have spread throughout many of the old pastures, causing a closed canopy to occur. Management efforts such as roller chopping and prescribed burning have been employed in an effort to reduce coverage of woody species, but efforts have failed. Longleaf pine planting has begun in one section of zone DS-01 but with little success. A few camphor trees (*Cinnamomum camphora*) grow in a few areas, primarily along fencerows. Feral hog activity can occasionally be intense in these areas.

*General management measures:* Restoration is not recommended for these areas during this unit management cycle due to the expense and little return from the investment. The habitat has succeeded to a point to which the area would need to be timbered for fuelwood. Then, a complete groundcover restoration plan would need to be developed and put into place to control and eliminate the bahiagrass. DRP will continue to control invasive plant and animal species and burn areas for aesthetics and fuel reduction. DRP is working with FWC AHRE staff to determine the feasibility of plugging and filling ditches in order to restore the hydrology.

#### Impoundment/Artificial Pond

The small artificial pond was once a swimming pool that was dug out in the 1950s as a part of an old attraction called Burt's Park. The pond currently resembles more of a natural pond with various aquatic plants such as water lily. It may be possible to fill the pond and restore the area back to the historic hydric hammock that once was located in this area, but a feasibility study must first be developed. Exotic species and erosion control are the two main management issues in this area.

#### Canal/Ditch and Utility Corridor

The power line runs into the park from the eastern boundary and runs north and exits along the north end of the property. This area will remain a utility corridor for the power line and the area below will be mowed. There are several canals and ditches that are located throughout the property that may be able to be removed or plugged in order to restore the area while reestablishing a historic hydroperiod. DRP and FWC AHRE staff are determining if restoration is possible and developing a plan to address these areas throughout the park. Priority invasive plant species (FLEPPC Category I and II species) will be removed from all areas.

#### Developed

The developed areas within the park will be managed to minimize the effect of the developed areas on adjacent natural areas. Priority invasive plant species (FLEPPC Category I and II species) will be removed from all developed areas. Other management measures include proper stormwater management and development guidelines that are compatible with wildfire prevention in adjacent natural areas. The developed areas of this unit are limited to the main visitor use areas, the shop compound and the residences. Erosion has become an issue in some of the developed areas near the springhead. A stormwater project was conducted in 2012

to attempt to fix this problem and has proven to be effective.

## Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern.

Seven listed plant species are known to occur at the park. Yellow anise tree occurs in two main populations within the park: one along the nature trail, and another adjacent to burn zones one and two. Overall, the population appears to be sizable and in good to excellent condition.

The park supports one of 14 known occurrences of hooded pitcherplants in the state park system (Johnson 2001). At present, the population is small and is restricted to management zones DC-3 and DC-10. To ensure the survival of hooded pitcherplants at this unit, a more aggressive burn schedule needs to be implemented. The potential impacts of any of the ditches in these two zones on the pitcherplant populations should be assessed and hydrological restoration implemented to the greatest degree feasible.

There are 19 confirmed listed animal species are known to occur at DeLeon Springs State Park (Table 2). These include wading birds such as herons and egrets, as well as other species such as the gopher tortoise, Sherman's fox squirrel (*Sciurus niger shermani*), and West Indian manatees (*Trichechus manatus*).

West Indian manatees occasionally enter the spring run. About 12 acres of the park are designated Critical Habitat for this species by the U.S. Fish and Wildlife Service (USFWS). Per the Florida Manatee Recovery Plan (USFWS 1989), informational signage is posted at the boat ramp and on pilings in the waterway. Members of the park's citizen support organization submit detailed monitoring reports whenever a manatee is sighted. Occasionally, Florida black bear (*Ursus americanus floridanus*) use the park; no additional management measures are needed at this time.

The wetlands of the park provide foraging habitat for numerous wading birds that are listed as State Threatened species, including little blue heron (*Egretta caerulea*), reddish egret (*Egretta rufescens*), and tri-colored heron (*Egretta tricolor*). These wading birds utilize freshwater wetlands as foraging habitat. The major threat to these species is habitat destruction.

Table 2 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others, and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Addendum 6.

Table 2. Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
<b>PLANTS</b>						
Hooded pitcherplant <i>Sarracenia minor</i>			LT		1, 6, 10	Tier 1
Yellow anise tree <i>Illicium parviflorum</i>			LE	G2S2	2, 4	Tier 2
<b>AMPHIPODS</b>						
Hobbs' cave amphipod <i>Crangonyx hobbsi</i>				G2G3S2 S3	10	Tier 1
<b>REPTILES</b>						
American alligator <i>Alligator mississippiensis</i>		LT(S/A)		G5S4	10, 13	Tier 1
Eastern diamondback rattlesnake <i>Crotalus adamanteus</i>				G4S3	10, 13	Tier 1
Eastern indigo snake <i>Drymarchon corais cooperi</i>		LT		G3S3	10, 13	Tier 1
Gopher tortoise <i>Gopherus polyphemus</i>	LT	C		G3S3	1, 6, 7, 10, 13	Tier 3
<b>BIRDS</b>						
Great egret <i>Ardea alba</i>				G5S4	10	Tier 1
Little blue heron <i>Egretta caerulea</i>	LT			G5S4	10	Tier 1
Reddish egret <i>Egretta rufescens</i>	LT			G4S2	10	Tier 1
Tricolored heron <i>Egretta tricolor</i>	LT			G5S4	10	Tier 1
Swallow-tailed kite <i>Elanoides forficatus</i>				G5S2	10	Tier 1
Merlin <i>Falco columbarius</i>				G5S2	10	Tier 1
Florida sandhill crane <i>Grus canadensis pratensis</i>	LT			G5T2T3 S2S3	10	Tier 1

Table 2. Imperiled Species Inventory						
Common and Scientific Name	Imperiled Species Status				Management Actions	Monitoring Level
	FWC	USFWS	FDACS	FNAI		
Southern bald eagle <i>Haliaeetus leucocephalus</i>				G5S3	10	Tier 1
Wood stork <i>Mycteria americana</i>		LT		G4S2	10	Tier 1
American redstart <i>Setophaga ruticilla</i>				G5S2	10	Tier 1
<b>MAMMALS</b>						
Sherman's fox squirrel <i>Sciurus niger shermani</i>	SSC			G5T3S3	1, 6, 10, 13	Tier 1
Florida manatee <i>Trichechus manatus</i>		LT		G2S2	10, 13	Tier 1

**Management Actions:**

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

**Monitoring Level:**

- Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.
- Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.
- Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.
- Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.
- Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.



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

### **Exotic and Nuisance Species**

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

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

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

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

#### Plants

Bamboo (*Bambusa* sp.), camphortree, wild taro, elephant ear (*Xanthosoma sagittifolium*), tuberous sword fern (*Nephrolepis cordifolia*) and coral ardisia currently pose the greatest threat to the resources of this unit. Between August 2011 – June 2015, a total of 31.5 infested acres have been treated. Every management zone is currently in maintenance condition, and with continued treatment will remain.

Camphortree primarily occurs along former fencerows in the burn zones. Many of the other exotic plants, including wild taro and coral ardisia, are found in the area of the nature trail. On the McBride tract, small-leaf spiderwort (*Tradescantia fluminense*), arrowhead vine (*Syngonium podophyllum*), and common asparagus fern (*Asparagus setaceus*) are found, as well as other exotics such as air potato, elephant ear, and tuberous sword fern. Hydrilla is located inside the spring pool; volunteers have been frequently removing it by hand with the goal of eradication due to the confined nature of the system. *Ficus pumila* has become invasive in two

locations in the park, smothering trees and forming a continuous groundcover. While it is not on the FLEPPC list, it should be one of the priorities for removal as it is invading natural areas. Camellias (*Camellia japonica* and *Camellia sasanqua*) and azaleas grow throughout the main use area; pursuant to the Operations Policy Manual, Chapter 15, paragraph 6.131, selected non-invasive exotic plants such as azaleas and camellias may be planted or maintained. Exotics are removed both chemically (with approved herbicides) and by hand. The air potato beetle (*Lilioceris cheni*) was released in the park in 2013 and has considerably damaged the air potato population in the park. The neighboring county park and local residences contain many invasive exotics, and efforts should be made to start a partnership with local entities to remove those species.

### Animals

Feral hogs (*Sus scrofa*) pose the greatest threat at the park. They occur throughout the property and are detrimental in many areas. Increased removal efforts by staff will be necessary to protect the natural resources of the park. Since adjacent public lands also support hogs, removal will need to be ongoing. Nine-banded armadillos (*Dasypus novemcinctus*) and feral cats (*Felis catus*) also occur in the park. Cuban anoles (*Anolis sagrei*) are a common presence, and tilapia (*Oreochromis aureus*) are fished out of the spring run in large amounts every spring. Armored catfish (*Pterygoplichthys multiradiatus*) were a common presence in the spring run up until a large freeze in 2010; none have been seen since.

Table 3 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive, exotic plant species found within the park (FLEPPC, 2017). The table also identifies relative distribution for each species and the management zones in which they are known to occur. An explanation of the codes is provided following the table. For an inventory of all exotic species found within the park, see Addendum 5.

<b>Table 3. Inventory of FLEPPC Category I and II Exotic Plant Species</b>			
<b>Common and Scientific Name</b>	<b>FLEPPC Category</b>	<b>Distribution</b>	<b>Management Zone (s)</b>
<b>PLANTS</b>			
Coral ardisia <i>Ardisia crenata</i>	I	1	DS-01
		1	DS-12
		3	DS-13
		2	DS-14
Asparagus-fern <i>Asparagus aethiopicus</i>	I	1	DS-15
Wax begonia <i>Begonia cucullata</i>	II	2	DS-13
Camphor tree <i>Cinnamomum camphora</i>	I	2	DS-02
		2	DS-14
Wild taro <i>Colocasia esculenta</i>	I	2	DS-13
		2	DS-15

Air-potato <i>Dioscorea bulbifera</i>	I	2	DS-14
		2	DS-15
Water-hyacinth <i>Eichhornia crassipes</i>	I	2	DS-15
Hydrilla <i>Hydrilla verticillata</i>	I	2	DS-14
Lantana <i>Lantana camara</i>	I	1	DS-06
		1	DS-15
Japanese climbing fern <i>Lygodium japonicum</i>	I	2	DS-13
Sword fern <i>Nephrolepis cordifolia</i>	I	2	DS-13
		1	DS-14
Guinea grass <i>Panicum maximum</i>	II	1	DS-13
Torpedo grass <i>Panicum repens</i>	I	1	DS-03
		2	DS-13
Mexican petunia <i>Ruellia simplex</i>	I	2	DS-13
Tropical soda apple <i>Solanum viarum</i>	I	1	DS-14
Queen palm <i>Syagrus romanzoffiana</i>	II	2	DS-13
Arrowhead vine <i>Syngonium podophyllum</i>	I	1	DS-15
Small-leaf spiderwort <i>Tradescantia fluminensis</i>	I	2	DS-15
Caesar's weed <i>Urena lobata</i>	I	2	DS-02
		2	DS-13
		2	DS-14
		2	DS-15
Elephant ear <i>Xanthosoma sagittifolium</i>	II	2	DS-15

**Distribution Categories:**

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

## **Special Natural Features**

The most significant natural feature at the park is the flowing spring and underwater cavern. The cavern is approximately 170 feet in length with a maximum depth of approximately 41 feet. A large bald cypress tree, named "Old Methuselah" grows in the northern area of the park; its diameter at breast height measures 108 inches.

## **Cultural Resources**

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

## **Condition Assessment**

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

## **Level of Significance**

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. A cultural resource's significance derives from its historical, architectural, ethnographic or archaeological context. Evaluation of cultural resources will result in a designation

of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

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

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

#### Prehistoric and Historic Archaeological Sites

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

*Description:* The Florida Master Site File (FMSF) lists 8 archaeological sites within the park: 8VO00030 (DeLeon Springs), 8VO00031 (DeLeon Springs Mound), 8VO05276 (Scarborough Homestead), 8VO05277 (Ditch Site), 8VO05278 (Lamsens Site), 8VO05279 (Mined Mound), and 8VO08917 (Hotel Dump). 8VO09297 (Burt's Park) is listed as a Mixed District Resource Group, with archaeological sites and structures. Five of the eight sites contain pre-historic resources.

De Leon Springs State Park has a captivating and diverse history dating from the Archaic Period, about 6,000 years ago, through the 1960s attraction era. One common element has attracted people to this area—the spring. All subsequent human activity has been immediately adjacent to the spring, forming layers of history.

Two dugout canoes, the oldest found in the western hemisphere, were recovered from the spring. The first, found in 1985, was radiocarbon dated as 5140 +/-100 years old. The second, recovered in 1990, was radiocarbon dated as 6050 +/-60 years old. Both disintegrated during the conservation process. The most detailed research on the two canoes is contained in The Development of Watercraft in the Prehistoric Southeastern United States, by Mark Joseph Hartmann, in 1996.

Archaeological surveys of the pre-historic resources were conducted in 1995 (Ellis Archaeology), 2002 (SouthArc), and 2010 (Panamerican). In 2010, The University of South Florida produced an Archaeological Resource Sensitivity Model for the

park. The model predicted areas of high, medium and low probability of archaeological sites. The focus of the research was on locating De Leon Springs Mound.

In 2002, Ted Payne undertook an archaeological investigation of the 1830s-1860s sugar boiling facility known as the Sugar Train Ruins. This site, adjacent to the Sugar Mill Restaurant, is part of 8VO00030 (DeLeon Springs).

*Condition Assessment: De Leon Springs (8VO00030):* This site was recorded in 1980 and is described as a multi-component site with a shell/burial mound, shell midden and artifact scatters. These features contain evidence of Mount Taylor, Orange and St. Johns I and II habitation. The site also contains the remains of a sugar mill (brick sugar train) and two coquina structures (Fountain of Youth) with an unknown construction date but are visible in a 1943 photo.

During the 1994-95 archaeological survey of the park by Ellis Archaeology an excavation to locate the edge of the mound uncovered an articulated human burial. The site is eligible for the National Register.

The site has been heavily disturbed in the past, before acquisition by the state. The main mound has been the location of a large picnic pavilion in the late 1800s and two residences, the most recent construction in 1968 (Park Manager's residence), when the two-car garage was built into the mound. Shell middens extending around the north and south sides of the spring have been adversely affected by construction that started in 1832 with the first sugar mill, then subsequent disturbance through the 1960s.

In 2010, an archaeological survey was conducted on the south side of the spring, near the pavilions. Shovel tests to a depth of one meter resulted in the recovery of prehistoric materials, and intact shell midden deposits were documented. Artifacts consisted of lithic artifacts, prehistoric pottery, and vertebrate and invertebrate remains. This midden is protected from erosion by stabilized development. Additional subsurface testing of any resources within the site is not recommended unless it is a non-invasive process such as ground penetrating radar.

Adverse impacts from human activities over the past 180 years have affected the integrity of the site; however, the slopes of the main mound are stabilized with vegetation and the site is protected from burrowing animals. Looting/digging is not an issue.

The sugar train (brick masonry) has deteriorated from the elements and hardwood encroachment over the years. The ruins, surrounded by a fence, were stabilized by park staff in 2011, 2013 and 2014. The site is eligible for the National Register.

The condition of the mound site and Fountain of Youth structures is good and the sugar train is fair.

**De Leon Springs Mound (8VO00031):** This site was first identified by C. B.

Moore, a wealthy amateur archaeologist, in 1894 during his excavation of mound sites in central Florida. The FMSF lists only Moore's description,

*"The mound is located in the pine woods three-quarters of a mile to the north of the spring. During the entire excavation, with the exception of one superficial burial, neither human remains, pottery, nor implements of any sort were found, though small bits of charcoal were abundant...is a sand mound in the form of a truncated dome. Its height is 9 feet, its circumference 450 feet. It is unstratified and is composed entirely of white sand, with the exception of pockets of shell, mostly Unionidae, found along the base, and of a shell ridge in the center having a height of 4 feet."*

This location of this site has not been identified. A general location has been included on the park's cultural resources map based only on Moore's description. It is possible that the site is not within the park boundary.

**Scarborough Homestead (8VO05276):** According to oral history, this location was the site of the Scarborough House, which was moved in the early 1900s to the town of De Leon Springs. A cistern, well casing and a cypress water trough are associated with this site. Material evidence includes a small amount of historic glass and an unidentifiable bone. The site is not eligible for the National Register and its significance is low. The condition assessment is good.

**Ditch Site (8VO05277):** An unspecified prehistoric site, this site has been heavily disturbed by historic and modern land use. Subsurface testing revealed only one turtle bone and small quantities of shell. It is possible that shell material was brought in as fill. Because the site lacks integrity and significance, it is not eligible for the National Register. The condition assessment is fair.

**Lamsens Site (8VO05278):** An unspecified prehistoric site, possibly a small temporary campsite affiliated with the shell midden (Mined Mound) to the south. Material evidence includes a burnt turtle bone and lithic debitage. The site has been disturbed by historic and modern land use. The site is not eligible for the National Register at this time. The condition assessment is good.

**Mined Mound (8VO05279):** This site is a mined shell midden, the remains of which date to the Orange and St. Johns periods. The site is somewhat heart-shaped and extends a couple of hundred feet along the margin of the spring run. Various animal bones and ceramics (crude Orange, St. Johns Plain, Dunns Creek Red, and St. Johns Two checkstamped) are consistent with the principal site (DeLeon Springs). The site has been heavily disturbed by historic and modern land use, with most of it having been removed for road fill. Eligibility for National Register status is unknown at this time. The condition assessment is good.

**Hotel Dump (8VO08917):** Identified and listed in 2008, this site contains an assemblage of artifacts, mainly bottles, that appear to be associated with the hotel, which operated from the 1920s to the 1960s—liquor, condiments, medicine, soda,



cleaners. Park staff covered the site with clean fill in 2009 to protect the artifacts from looters. The site is not eligible for the National Register. The condition assessment is good.

**Burt's Park (8VO09297):** Burt's Park, listed as a Mixed District Resource Group (archaeological sites and structures) operated as a private recreational park from the 1930s to the 1960s. The structures included a swimming pool, bathhouse, concession, observation tower, and playground. A segregated area contained a wading pool and small pavilions with grills. The extant structures are the main pool and the segregated wading pool. More research through oral histories should be conducted on the segregated site. This site has been disturbed by the construction of a residence in 1970 by private land owners. The masonry remnants of the wading pools should be monitored for deterioration and stabilized as needed. The site is not eligible for the National Register at this time. The condition assessment is fair.

*Level of Significance:* **De Leon Springs (8VO00030):** This site contains human remains from the Mount Taylor Period, 4,000 to 5,000 years ago, as identified in the 1995 archaeological survey. The intact mound at the level of the burials, evidenced by an articulated human burial and no prehistoric ceramics (Mount Taylor is a pre-ceramic culture), confirms the time period. The site is listed as National Register Eligible in the Florida Master Site File. A National Register Nomination for the site was submitted in 2015.

Ted Payne's research in 2002 concluded that the sugar train was a Jamaica train form boiling system and the only water-powered mill known in the state. It also has architectural characteristics which are unique to the area and possibly Florida. The presence of both British common and Liverpool brick bonding styles is not found anywhere else in the state. Another unique feature is the rounded and rough brick surface treatment on the north wall. A National Register Nomination for the site was submitted in 2015.

**Mined Mound (8VO05279):** Further research is needed to determine its significance and connection to DeLeon Springs.

**De Leon Springs Mound (8VO00031):** This site contains a single human burial, and if located, is possibly eligible for the National Register.

*General Management Measures:* All management measures follow the Secretary of the Interior Standards and Guidelines for Preservation, Rehabilitation, Restoration and Reconstruction, the park's Cultural Resource Management Plan (includes cyclical maintenance plan), and the Operations Manual, Chapter 11—Cultural Resource Management.

**De Leon Springs (8VO00030):** This site should be monitored quarterly for erosion and animal burrowing. Additional construction and tree planting should not be allowed on the mound. Hardwoods should be monitored with diseased trees

removed to prevent mount damage from fallen trees' root balls. The treatment is preservation (which refers to stabilization, maintenance, and repairs).

The sugar train and Fountain of Youth structures should be monitored regularly for vandalism, vegetation growing on the masonry, and deterioration. The treatment is continued Stabilization following National Park Service Preservation Brief 2: Repointing Mortar Joints in Historic Masonry Buildings.

**De Leon Springs Mound (8VO00031):** This site has not been located.

**Scarborough Homestead (8VO05276):** Scarborough Homestead should be monitored quarterly for encroaching vegetation, erosion, animal burrowing, and vandalism, and any future park development should avoid the area. The cypress water trough and cistern lid should continue to be documented, as they are deteriorating. The treatment is Preservation.

**Ditch Site (8VO05277):** The site should be monitored quarterly for erosion, animal burrowing, and vandalism; and any future park development should not occur in the area. The location of this site needs to be identified in prescribed burn plans to protect it from fire plows. The treatment is preservation.

**Lamsens Site (8VO05278):** This site should be monitored quarterly for erosion, encroaching vegetation, animal burrowing, and vandalism, and any future park development should avoid the area. The treatment is preservation.

**Mined Mound (8VO05279):** Mined Mound should be monitored quarterly for erosion, animal burrowing, and vandalism; and any future park development should not occur around the site. The treatment is preservation.

**Hotel Dump (8VO08917):** This site should be monitored quarterly for erosion, encroaching vegetation, animal burrowing, and vandalism; and any future park development should not occur in the area. The treatment is preservation.

**Burt's Park (8VO09297):** This area should be monitored quarterly for erosion, encroaching vegetation, animal burrowing, and vandalism, and any future park development should avoid the segregated picnic area, with the concrete remains of the wading pool. The treatment is Preservation.

### Historic Structures

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

*Description:* The Florida Master Site File (FMSF) lists 6 historic structures within the park: 8VO09441 (De Leon Springs Ranger Station), 8VO09442 (De Leon Springs Park Entrance), 8VO09443 (De Leon Springs Billboard), 8VO09444 (Caretaker's

Residence), 8VO09445 (Sugar Mill Building), and 8VO09446 (Visitor Center, Restrooms, Pavilions). The structures represent the plantation era, hotel period, attractions era, and the transition between the property being a private recreational area and it becoming a state park. Dates of construction range from 1900 to 1970.

Adjacent to the Sugar Mill building are artifacts from the sugar mill complex, consisting of a water wheel hub, boiling kettles, and various metal machinery related to the cane grinding operation.

*Condition Assessment:* **De Leon Springs Ranger Station (8VO09441):** This masonry vernacular building was constructed in 1952 as the restroom for the Ponce de Leon Springs attraction, which operated from 1953 to the mid-1960s. Alterations include the installation of aluminum windows, metal roof to replace clay tiles, and a small addition constructed on the north side of the building by the state in 1982 for collecting entrance fees. The distinguishing feature of this building is the painted relief mural of Florida located on the front side of the building. The building also has an eclectic mix of architectural elements—Spanish arches and Greek columns. The structure is not eligible for the National Register at this time. The condition assessment is good.

**De Leon Springs Park Entrance (8VO09442):** The entrance consists of a 0.4-mile long, eight-foot-high masonry wall, an entrance gate with light fixtures, decorative ironwork, and urn-like finials on the gate columns, and two gate houses/ticket booths, one on each side of the entrance. The structures were constructed in 1952 as part of the Ponce de Leon Springs attraction. The structures have had no significant alterations. A repair to the wall north of the park entrance include installation of an I-beam to bridge tree roots that had damaged the wall. The structure is not eligible for the National Register at this time. The condition assessment is good.

**De Leon Springs Billboard (8VO09443):** The masonry billboard, built in 1952, is one of fifty or more constructed in north and central Florida to attract visitors to the Ponce de Leon Springs attraction. Because of their sturdy construction, they were referred to as the *Signs of Tomorrow*. Its distinguishing features are the four curvilinear buttresses and the two urn-like finials. Of the few existing billboards, this is the only one with the block wall extending to the ground. A replica of an original advertisement from 1953 was painted on the billboard in 2009. The structure is not eligible for the National Register at this time. The condition assessment is good.

**Caretaker's Residence (8VO09444):** This frame vernacular building has had two functions. Photographs of the building found in 2015 identify it as the *Hotel Clubhouse*, which means the construction date could pre-date the 1940s estimate. It is currently used as a residence. Modifications include some aluminum windows (most of the original casement windows remain), glass sliding door, skylight, stained glass windows, and screened porch. The interior has a mix of elements including a large brick fireplace, hardwood floors, open ceiling, rice paper sliding window shades, and arches separating rooms. The structure is not eligible for the

National Register at this time. The condition assessment is good.

**Sugar Mill Building (8VO09445):** This building is a frame vernacular reconstruction built on the original footprint of the 1830s sugar mill. The year of construction, based on photographs, is c1900. Modifications include a kitchen (date unknown), porch and fireplace in the 1960s, and kitchen addition in the 1980s. The mill wheel was reconstructed in the 1990s with the original wheel hub placed on display. The building functions as a restaurant. The structure is not eligible for the National Register at this time. The condition assessment is good.

**Visitor Center, Restrooms, Pavilions (8VO09446):** Constructed in 1970, two combination buildings used as pavilions, meeting rooms, a visitor center and restrooms sit on the footprint of the hotel. The sidewalk in front, chimney (c1925) and semi-circular steps from the hotel have been incorporated into the structures. Spanish architectural elements from the hotel and attractions era include arches, breezeway, and alcoves. The structure is not eligible for the National Register at this time. The condition assessment is good.

*Level of Significance:* **De Leon Springs Ranger Station (8VO09441), De Leon Springs Park Entrance (8VO09442), and De Leon Springs Billboard (8VO09443):** These sites could conceivably be eligible for the National Register in the future as part of a multi-component nomination that would include other state parks with historic structures from the attractions era. They are remnants of the post-World War II economic boom and are part of the foundation of today's tourist industry.

*General Management Measures:* All management measures follow Best Management Practices for cultural resource management, the park's Cultural Resource Management Plan (includes cyclical maintenance plan), and the Operations Manual, Chapter 11—Cultural Resource Management.

**De Leon Springs Ranger Station (8VO09441):** The ranger station should be inspected quarterly for vegetation encroachment (limbs, vines, roots), wood rot in the soffit and rafter ends, deterioration of the masonry (stucco, columns, and mural) and paint, and roof leaks. The treatment is Preservation.

**De Leon Springs Park Entrance (8VO09442):** This site (wall, entrance gate with light fixtures, decorative ironwork, gate houses/ticket booths) should be inspected quarterly for vegetation encroachment (limbs, vines, roots), deterioration of the masonry (concrete, blocks, mortar) and paint, any movement and/or settling, and corrosion/damage of ironwork and light fixtures. Additionally, the gate houses/ticket booths should be checked for wood rot (soffit, rafter ends, decorative exterior trim) and roof leaks. The treatment is preservation.

**De Leon Springs Billboard (8VO09443):** The billboard should be inspected quarterly for vegetation encroachment (limbs, vines, roots), deterioration of the masonry (concrete, blocks, mortar) and paint, and any movement and/or settling. An inspection of the billboard by a preservation architect in 2015 showed that the

curvilinear buttresses on the west end are undergoing differential settling that is within normal parameters. The gaps between the buttresses and wall and the missing mortar between concrete blocks were filled with epoxy grout. The treatment is preservation.

**Caretaker's Residence (8VO09444):** This building should be inspected quarterly for vegetation encroachment (limbs, vines, roots), wood rot on the casement windows and siding, deterioration of the paint, roof leaks (especially the skylight), and wood-boring insects. The treatment is preservation.

**Sugar Mill Building (8VO09445):** This building should be inspected quarterly for vegetation encroachment (limbs, vines, roots), wood rot on the windows and siding, roof leaks, and wood-boring insects. Inspections of the original chimney need to include condition of the bricks and mortar, vegetation growing on masonry, and the condition of the 1980s metal support bands. The treatment is preservation.

**Visitor Center, Restrooms, Pavilions (8VO09446):** These sites should be inspected quarterly for vegetation encroachment (limbs, vines, roots), deterioration of the masonry (concrete, blocks, mortar, stucco) and paint, roof leaks, and any movement and/or settling, with particular attention to the 1920s chimney. The treatment is preservation.

### Collections

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

*Description:* The park has a Scope of Collection Statement with the following Purpose:

*"Historical and archaeological research has documented the presence of people here for over 6,000 years, including native people called the Mayaca, plantations in the 1800s, a resort in the early 1900s, and an attraction in the 1950s-1960s. Artifacts and archival materials must have direct relevance to these time periods and represent people and activities on the property that is now the park. The collection will be used for interpretive programs, display, and research."*

The park's collection consists of natural and cultural history objects, including: alligator, mammoth, deer, turtle parts, prehistoric projectile points, bone and stone tools, pottery, historic bottles and currency, artwork, Civil War artifacts, artifacts from the hotel era, and replica Seminole War period US Army uniforms and Seminole clothing. Archives consist of photographs, documents, publications, maps—paper and digital—mostly representing the park's cultural history from the late 1800s to present and park activities since 1982, when the park opened. The archives' volume is approximately 4 cubic feet.



The collection is in three parts: on display in the Visitor Center, used for interpretive programs, or in storage for research/future display. Unprovenanced pre-historic artifacts (bones and pottery) make up the bulk of the informal collection. Many of these artifacts were found at the park pre-1982 and were donated from personal collections. Almost all of the natural history objects and about 20% of the archival collections have been cataloged. Fourteen prehistoric and historic artifacts are on loan from the Bureau of Archaeological Research; they are displayed in the Visitor Center.

Sixteen historic objects are on display in exterior locations throughout the park. They are a Mill Wheel from the 1800s sugar making operation, eleven Mill Gears, Crusher Wheels, Pulley, and Kettle, a 1900 Horse-Drawn Road Grader, "401 B.C. Wishing Well" from the 1950s attractions era a Concrete Urn from the Burt's Park era, and a Bronze Plaque that was placed on the Sugar Mill chimney in 1931 by the Daughters of the American Revolution.

*Condition Assessment:* The general condition of the collection (objects and archives) is good. No repairs or conservation is needed. Archival materials and significant prehistoric and historic objects are stored in a climate-controlled environment (Ranger Station) with an Integrated Pest Management system (IPM). About 75% of the archival materials need to be transferred to archival quality storage envelopes/folders/boxes, and all of the archives should be in fire-resistant containers. A dedicated storage area needs to be established. Prehistoric and historic artifacts are displayed in locked cases in the Visitor Center, which has limited climate control. Natural history objects are on display in the Visitor Center, with the interpretive related objects stored in an interpretive room.

*Level of Significance:* The collection (objects and archives) follows the Scope of Collection Statement Purpose and represents the park's cultural resources and history. It is important for interpretive programs, display, and research. Donations and loans of objects are appropriate for the collection.

*General Management Measures:* The park's Scope of Collection Statement guides the acquisition, uses, restrictions, and management of the objects and archives, following the Operations Manual, Chapter 12—Collection Management. The Scope of Collection Statement is up-to-date.

Visitor Center exhibit cases displaying natural and cultural objects are inspected regularly for insects, dust, mold, and any evidence of objects' deterioration. Cleaning is performed as needed, usually semi-annually. Natural history objects used for programs are inspected periodically, as are the archives.

Care of the collection should follow Best Management Practices for museum collections. This includes following established standards for storage, humidity, light, temperature, cleaning, and pest control. A housekeeping manual with a routine schedule of basic cleaning and an IPM need to be developed for the entire

collection. In addition to transferring the archives to proper storage containers, these materials need to be reviewed and cataloged, as do the digital archives. The sixteen historic objects on exterior display should be inspected quarterly for corrosion, deterioration, and vandalism. Supports holding the mill wheel and road grader also need to be inspected for structural integrity.

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

<b>Table 4. Cultural Sites Listed in the Florida Master Site File</b>					
<b>Site Name and FMSF #</b>	<b>Culture/Period</b>	<b>Description</b>	<b>Significance</b>	<b>Condition</b>	<b>Treatment</b>
VO00030 De Leon Springs	Prehistoric—Archaic	Archaeological Site	NR	G	P
VO00031 De Leon Springs Mound	Prehistoric/Unspecified	Archaeological Site	NE	NE	P
VO05276 Scarborough Homestead	Historic—1800s	Archaeological Site	NE	G	P
VO05277 Ditch Site	Prehistoric/Unspecified	Archaeological Site	NE	F	P
VO05278 Lamsens Site	Prehistoric/Archaic	Archaeological Site	NE	G	P
VO05279 Mined Mound	Prehistoric--Archaic	Archaeological Site	NE	G	P
VO08917 Hotel Dump	Historic—1900s	Archaeological Site	NE	G	P
VO09297 Burt’s Park	Historic—1900s	Resource Group	NE	F	P
VO09441 De Leon Springs Ranger Station	Historic—1900s	Structure	NE	G	P
VO09442 De Leon Springs Park Entrance	Historic—1900s	Structure	NE	G	P

<b>Table 4. Cultural Sites Listed in the Florida Master Site File</b>					
<b>Site Name and FMSF #</b>	<b>Culture/Period</b>	<b>Description</b>	<b>Significance</b>	<b>Condition</b>	<b>Treatment</b>
VO09443 De Leon Springs Billboard	Historic—1900s	Structure	NE	G	P
VO09444 Caretaker's Residence	Historic—1900s	Structure	NE	G	P
VO09445 Sugar Mill Building	Historic—1900s	Structure	NE	G	P
VO09446 Visitor Center, Restrooms, Pavilion	Historic—1900s	Structure	NE	G	P

**Significance:**

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

**Condition**

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

**Recommended**

**Treatment:**

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

**Resource Management Program**

**Management Goals, Objectives and Actions**

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

While the DRP utilizes the ten-year management plan to serve as the basic statement of policy and future direction for each park, a number of annual work plans provide more specific guidance for DRP staff to accomplish many of the resource management goals and objectives of the park. Where such detailed planning is appropriate to the character and scale of the park's natural resources, annual work plans are developed for prescribed fire management, exotic plant management and imperiled species management. Annual or longer- term work plans are developed for natural community restoration and hydrological restoration.

The work plans provide the DRP with crucial flexibility in its efforts to generate and implement adaptive resource management practices in the state park system.

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

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

## **Natural Resource Management**

### **Hydrological Management**

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

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

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

- Action 1      Develop a hydrological restoration strategy
- Action 2      MFL Development
- Action 3      Stay informed on springshed issues

There is a network of ditches that drain the northern portion of the park. A few of the ditches drain water from the west side of County Road 3 (CR3) and a few even drain water from beyond CR3 via culverts under the road. Any hydrological restoration/alteration downstream within the park needs to take into consideration potential upstream impacts beyond the park boundary. Access must also be

considered since the site is already very wet during most of the year.

The St. Johns River Water Management District (SJRWMD) is currently preparing the Determination of Minimum Flows and Levels (MFLs) for DeLeon Spring, which is required for the spring per Section 373.042, *Florida Statutes*, as it is categorized as an Outstanding Florida Spring. FPS staff should stay apprised of their progress and support them when appropriate.

***Objective B: Restore natural hydrological conditions and functions to approximately 220 acres of formerly flatwoods natural community***

Action 1      Begin blocking drainage ditches as appropriate.

Once a hydrological restoration plan has been developed, the park can begin blocking drainage ditches in areas that will enhance water quality and reduce offsite impacts. As hydrological restoration occurs, and community composition changes, further restoration activities can be planned.

***Objective C: Improve water quality and prevent potential contamination issues.***

Action 1      Remove or upgrade septic tanks

Action 2      Develop a stormwater management plan for the park

There are currently nine septic tanks located inside the park and contribute to the contamination of the spring. If a sewer system is extended close enough to park boundaries, the septic tanks should be removed and the park connected to city sewer. Otherwise, the septic tanks should be retrofitted to reduce contamination.

Stormwater currently runs off CR3 straight through the park to the spring run. Stormwater treatment around the property boundary off CR3 would slow down the flow of water from the road to the floodplain swamp and improve water quality.

## **Natural Communities Management**

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

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

#### Prescribed Fire Management

Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystem. Prescribed burning increases the abundance and health of many wildlife species. A large number of Florida's imperiled species of plants and animals are dependent on periodic fire for their continued existence. Fire-dependent natural communities gradually



accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels.

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

***Objective A: Maintain 42.8 acres of the park within zone DS-03 with fire for wildfire mitigation and aesthetics purposes.***

- Action 1      Develop/update annual burn plan, including mechanical pre-treatments where necessary.
- Action 2      Apply fire to manage zones when fuel loads are at an acceptable level to receive fire.
- Action 3      Mechanically treat up to 5 acres of cabbage palms along fire lines and trails within 10 years.

There are only 5.7 acres of fire adapted natural communities within the park which includes 2 acres of mesic flatwoods and 3.7 acres of depression marsh, which is currently encroached by hardwoods and cabbage palm. Due to the small amount of fire type natural communities and difficulty in finding appropriate burn conditions, only zone DS-03 is likely to be maintained with fire and mechanical treatments for aesthetic purposes. Wind speed and direction is the most challenging factor to burning at the park, since US Highway 17 is immediately northeast of the property. The smoke and debris which occurs from burning would be dangerous for drivers on US Highway 17. An annual targeted burn acreage for the park will not be set since there are no intact fire dependent natural communities present within manageable units.

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

Natural Community Improvement

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

***Objective B: Conduct natural community/habitat improvement activities on 220 acres of primarily successional hardwood forest natural communities.***

- Action 1      Conduct hardwood removal where feasible

Depression marshes and *Sarracenia minor* will require hardwood removal if prescribed fire is not possible. Pursue crooked-wood, fuel-wood, and/or other timber harvest activities on this site if the opportunity arises. Fuel loading will be reduced, site conditions will be opened up to allow better penetration of prescribed fire, ecological succession will be delayed, and some revenue may be generated to fund further restoration work.

## **Imperiled Species Management**

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

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

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

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

#### ***Objective A: Develop/Update baseline imperiled species occurrence inventory lists for plants and animals.***

DRP will continue to survey, document and record species as they are discovered and report imperiled species to FNAI.

***Objective B: Monitor and document 3 selected imperiled animal species in the park.***

Gopher tortoises can be found in the somewhat moist to drier areas of the park. When found, tortoise burrows will be marked and GPS coordinates will be recorded in order to map the current distribution of this species in the park. This data will be valuable during community restoration processes in order to plan appropriately for the project. If tortoises need to be relocated onsite or offsite, an FWC Authorized Agent must conduct the translocation and determine where to move the tortoises.

DRP will continue to work with FWC and mitigation consultants to find the best way to protect gopher tortoises at the park.

Eastern diamondback rattlesnakes have occasionally been observed at the park but their overall abundance and habitat utilization is unknown. When a snake is found, GPS coordinates will be recorded and a site form will be submitted to FNAI for documentation purposes.

Eastern indigo snakes have also been observed onsite but their overall abundance and habitat utilization is unknown. When a snake is found, GPS coordinates will be recorded and a site form will be submitted to FNAI for documentation purposes.

***Objective C: Monitor and document 2 selected imperiled plant species in the park.***

The state-endangered yellow anise tree has been documented in the wet flatwoods community within the park, where the population appears to be stable. Monitoring of the size of the population should continue but can also expand out to include adjacent mesic and hydric communities.

The state-threatened Hooded pitcherplant has two documented locations within the park. Monitoring of both areas should continue, and habitat enhancement, such as hardwood removal or prescribed fire, should also be conducted when appropriate.

**Exotic Species Management**

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

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

**Objective A: Annually treat 1-2 acres of exotic plant species in the park.**

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

All exotic and invasive plant species are currently in maintenance condition. Surveys should be conducted regularly and ongoing chemical treatment of infestations should continue as well. The air potato beetle should be re-released as necessary to control air potato populations. The infested acreage is very low, less than 2 acres, and efforts should be made to treat all infestations annually.

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

Action 1      Trap and remove as many feral hogs as possible annually.

At least one staff member should be trained and authorized to carry out invasive hog removal with firearms from the park property. The presence of hogs on adjacent conservation properties will mean that continual removal is necessary.

**Cultural Resource Management**

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

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

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

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

- Action 1 Conduct an archaeological survey using comprehensive coring and additional research on VO05278 (Lamsens Site) and VO05279 (Mined Mound) to determine the possible connection to VO00030 (De Leon Springs) and National Register significance.
- Action 2 Conduct additional archaeological research to determine the location of VO00031 (De Leon Springs Mound).
- Action 3 Conduct a non-invasive archaeological survey of VO00030 (De Leon Springs) to determine the extent of the human burials.
- Action 4 Conduct subsurface archaeological testing beneath the Sugar Mill restaurant to locate the remains of the sugar train chimney, roller mountings, and the structure housing this equipment.
- Action 5 Conduct oral history interviews of De Leon Springs and Burt's Park employees and visitors from the 1950s and 1960s.

**Objective B: Enhance the Visitor Center exhibits.**

- Action 1 Add new exhibits: Burt's Park, temporary exhibit cases, and an interactive (touch screen) on the park's history.

**Special Management Considerations**

**Timber Management Analysis**

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

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

**Arthropod Control Plan**

All DRP lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, the DRP works with the local mosquito control district to achieve consensus. By policy of DEP since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck



spraying in public use areas) is typically allowed. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation.

The park does not have an approved arthropod control plan in place.

### **Resource Management Schedule**

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is located in the Implementation Component of this management plan.

### **Land Management Review**

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

De Leon Springs State Park has not yet been subject to a land management review.



## **LAND USE COMPONENT**

### **Introduction**

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

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

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

### **External Conditions**

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

De Leon Springs State Park is located within Volusia County, about 50 miles east of Ocala, 30 miles west of Daytona Beach, and 50 miles north of Orlando in the east central part of the state. Approximately 847,600 people live within 30 miles of the state park.

According to the U.S. Census Data (2014), approximately 15% of residents in Volusia County identify as black, Hispanic or Latino, or another minority group. 42% of residents in Volusia County can be described as youth or seniors (U.S. Census 2010). 62% of the population in Volusia County are of working age (16

to 65) (U.S. Census Bureau 2010). Volusia County's per capita personal income was \$36,052 in 2014 (U.S. Bureau of Economic Analysis 2014).

The table below identifies significant resource-based recreation opportunities within 15 miles of De Leon Springs State Park.

<b>Table 5. Resource-Based Recreational Opportunities Near De Leon Springs State Park</b>									
Name	Biking	Boating/Paddling	Camping	Fishing	Hiking	Horseback Riding	Seasonal Hunting	Swimming	Wildlife Viewing
Haw Creek Preserve State Park (FDEP)		✓							✓
Lower Wekiva River Preserve State Park (FDEP)	✓	✓			✓	✓			✓
Lake George Conservation Area (SJRWMD)	✓		✓	✓	✓	✓	✓		✓
Crescent Lake Conservation Area (SJRWMD)	✓				✓				
Heart Island Conservation Area (SJRWMD)	✓				✓	✓	✓		
Haw Creek Preserve (SJRWMD)		✓	✓	✓		✓			
Lake George State Forest (FFS)	✓	✓	✓	✓	✓	✓	✓		✓
Seminole State Forest (FFS)	✓	✓	✓	✓	✓	✓	✓		✓
Tiger Bay State Forest (FFS)	✓	✓	✓	✓	✓	✓	✓		✓
Ocala National Forest (USFS)	✓	✓	✓	✓	✓	✓	✓	✓	
Longleaf Pine Preserve (Volusia County)	✓		✓	✓	✓	✓			✓

The park is located in the Central East Vacation Region, which includes Brevard, Indian River, Martin, Okeechobee, St. Lucie, and Volusia counties (Visit Florida 2014). According to the 2014 Florida Visitor Survey, approximately 7.5% of

domestic visitors to Florida visited this region. Roughly 92% visitors to the region traveled to the Central East for leisure purposes. The top activities for domestic visitors were beach/waterfront, visiting friends or relatives, and culinary experiences. Spring was the most popular travel season, but visitation was very similar in the summer months. Most visitors traveled by non-air (77%), reporting an average of 4.1 nights and spending an average of \$141 per person per day (Visit Florida 2014).

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

### **Existing Use of Adjacent Lands**

Volusia County has several different zoning ordinances surrounding the park boundary. To the west of the park, is an area zoned resource corridor. This classification provides protected natural corridors which connect environmentally sensitive lands. Single family dwellings, however, are permitted. To the southwest is a large area zoned for conservation. This included the park boundaries. Conservation is defined as land owned or controlled by a government agency the purpose is to protect environmental and recreation areas as well as important cultural and historical resources. To the northeast is a large swath of prime agriculture. This zoning ordinance protects agricultural land for intensive agriculture from incompatible uses. To the east is a mix including light industrial, transitional agriculture which is mostly small farms, medium-low residential, medium residential, and small areas of general commercial, high density multi-family residential, and neighborhood commercial. To the south is a mix including a commercial marina area located within the southern park boundary, a small area of transitional agriculture along the boundary, an area for rural estate living, and a large area of public land (Zoning Ordinance of Volusia County).

### **Planned Use of Adjacent Lands**

The Volusia County Comprehensive Plan designates and defines future land use to guide development and protect resources. Areas to the northwest and southwest of the park are designated as conservation land. Conservation is defined as land areas that have been acquired for the preservation and protection of natural resources. Northeast of the park is designated as agricultural resources. This large area bordering the park is intended for lands well-suited for intensive cultivation, ranching, aquaculture, and timber farming. Along the southeastern border of the park is a large rural community area. Rural communities are a small concentration of permanent residents, sometimes over 1000 people. These communities are the focal point for a



neighborhood. Rural communities allow some neighborhood commercial uses and residential lots are generally less than one acre in size. To the south of the park is a rural area, which is a mixture of agriculture and low density residential development. Part of this designation falls within the park boundary. In addition, an area designated recreation is also located south of the park. Recreation lands are public or private recreation facilities, park lands, and open space preservation areas.

The Florida Department of Transportation has a roadway project slated for roads surrounding the park. US 17 will widen from two to four lanes along a 6.8-mile stretch from Ponce Deleon Blvd to SR 40 alongside the eastern boundary of the park. Included in the project is a shared use path to be located along the right side of the roadway and drainage improvements (FDOT 2016).

### **Florida Greenways and Trails System**

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

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

De Leon Springs State Park is along the route of the St. Johns River-to-Sea Loop regional trail. This regional trail is being developed by local municipalities in coordination with the Office of Greenways and Trails (OGT). When completed, the trail will form a 260 mile-loop that extends from St. Augustine to East Palatka on the eastern side of the St. Johns River, then down through Deland and Deltona before turning east and returning north to St. Augustine along the Atlantic Coast through Daytona Beach.

Currently, Volusia County has partially completed a section of paved trail to be included in the St. Johns River-to-Sea Loop. This segment is known as the Spring-to-Spring Trail. Portions of the Spring-to-Spring Trail are scheduled to be completed in future phases. In total, this trail will run along the northern and eastern boundary of De Leon Spring State Park and will extend south passing adjacent to Blue Spring State Park on its way to a set of Volusia County parks, Gemini Springs Park and Green Springs Park (see Reference Map).

As a part of the Florida Greenways and Trails System Plan, OGT has identified paddling trail opportunities. According to the plan, the St. Johns River is a priority corridor, and the Lake Woodruff to De Leon Springs Paddling Trail has been identified as an opportunity corridor. This corridor extends from the St. Johns River through Lake Dexter and the Lake Woodruff National Wildlife Refuge before reaching the paddling launch at De Leon Springs State Park. In order to become an official blueway, a managing entity is required to accept responsibility for managing and maintaining the blueway.

### **Property Analysis**

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

#### **Recreational Resource Elements**

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

#### **Land Area**

De Leon Springs State Park offers ample land-based recreation activities in addition to the popular springhead. Trails wind through a variety of beautiful natural communities. Hikers and bikers alike can enjoy forests of red maples, sweet gums, magnolias, the endangered yellow anise tree, and relish the sounds of songbirds and woodpeckers.

#### **Water Area**

The park's namesake spring is the largest draw of visitors to the park. De Leon Springs offers visitors a variety of recreation activities relating to the many habitats produced by the spring. While canoeing or kayaking, visitors may glimpse alligators, otters, and manatees as well as wading birds hoping to catch prey in the surrounding waters. Wildlife viewing opportunities are ample on and around Spring Garden Lake and Spring Garden Creek, as is fishing and paddling opportunities. However, swimming at the springhead is the biggest attraction at the park. The water, which remains at 72 degrees year-around is perfect for a hot summer's day.

## **Natural Scenery**

De Leon Springs State Park offers beautiful vistas over several natural communities. The swimming area hosts wonderful views of the springhead and geologic formations below in clear blue waters. Beyond the springhead into the Spring Garden Lake and Spring Garden Creek, visitors get a glimpse of natural Florida with open waters as well as experience the relationship between the water and the land-based natural communities. Along the trails, visitors experience magnificent vistas of old trees and wildlife in their natural habitats.

## **Significant Habitat**

The park is home to an abundance of imperiled yellow anise trees. The park is also home to a bald cypress, named "Old Methuselah" which is more than 600 years old. These exceptional features provide visitors with unique experiences as they explore the native habitats.

## **Natural Features**

De Leon Springs State Park is host to an abundance of natural features. Most notable is De Leon Springs which is a popular attraction. The park also hosts multiple natural communities such as hydric hammock, mesic flatwoods, floodplain forest, and upland mixed hammock. Trails weave through these diverse communities providing visitors with a spectrum as they hike.

## **Archaeological and Historical Features**

Two dugout canoes were discovered in the spring. These canoes date back 5,000-6,000 years and are the oldest discovered dugout canoes in the western hemisphere. This rare treasure provides fantastic interpretive opportunities for park visitors. In addition, the park has a rich Spanish and native American history which provides ample interpretive learning possibilities. Lastly, the park operates the Old Spanish Sugar Mill Restaurant which features breads and cook-your-own pancakes made from stone-ground flowers. This restaurant, which is a 100-year old replica of the original 1830s Sugar Mill is unique to the park and offers wonderful interpretive interaction and is a popular restaurant attraction for park visitors.

## **Assessment of Use**

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

## **Past Uses**

De Leon Springs has a rich history extending thousands of years before the arrival of Europeans. De Leon Springs State Park has been occupied since pre-

historic times, evident in the burial mound and shell middens. The late 1770s mark the beginning of continual European occupation with the 500-acre Spanish land grant to Panton, Leslie and Company, and the Williams (later Woodruff), and Rees plantations. This period also saw the construction of a sugar mill utilizing the power from the spring. During the Second Seminole War, the Seminole Indians held this area for several years and the sugar mill was destroyed, until it was seized by General Zachary Taylor. In the aftermath of the Second Seminole War and Florida's statehood, the Rees and Woodruff plantations were bought, and rebuilt, by Thomas Starke. During the Civil War, the Starke plantation provided grains, and produce to the Confederate Army. The plantation and the reconstructed sugar mill was destroyed in 1864 by Union troops.

The late 1870s, when the mill was rebuilt for a third time, mark the beginning of the resort period. It was during this period that a pavilion and bathhouse were developed at the spring. In the 1920s, the spring was dammed for use as a power source, and several structures were added to the property, including the De Leon Springs Inn. In the early 1950s, theme attractions, including gardens, jungle cruises and a water circus were added. After several ownership changes, the State of Florida acquired the property in 1982.

### **Future Land Use and Zoning**

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

The Volusia County Comprehensive Plan designates park property for conservation. Conservation, in the plan, is defined as public and private lands that have been acquired or reserved for the preservation and protection of Volusia County's natural resources. Such lands that are appropriate with this designation are stream and river banks, drainageways, beaches, shorelines, wetlands, uplands, groundwater recharge area, and flood plains. This designation is also applicable to lands set aside for park and open space uses (Volusia County Comprehensive Plan). This future land use designation may have some effect on future park operations as the designation does not specify allowable uses. However, current park zoning is also designated conservation, so park effects should be minimal.

### **Current Recreational Use and Visitor Programs**

De Leon Springs State Park offers a variety of resource-based recreational activities for park visitors. These activities include birding, wildlife viewing, hiking, and bicycling on beautiful trails through multiple natural communities. Boating, paddling, fishing, and boat tours on Spring Garden Creek and Spring Garden Lake. Diving, snorkeling, and swimming at the springhead are among the most popular activities.

The park offers multiple interpretive opportunities associated with its rich history and Old Sugar Mill Restaurant. The park also hosts a Civil War Reenactment Encampment special event and an annual reenactment of an 1835 Second Seminole War skirmish.

Notable issues associated with De Leon Springs is the park entrance during peak visitation. Once the park is at capacity during busy summer months, cars are backed up from the park entrance. To avoid forcing cars to block traffic along Ponce de Leon Blvd, cars are wrapped around the park entrance sign and directed down Burts Park Road. This method is informal and must be addressed.

De Leon Springs State Park recorded 229,184 visitors in FY 2015/2016. By DRP estimates, the FY 2015/2016 visitors contributed \$20,304,917 million in direct economic impact, the equivalent of adding 325 jobs to the local economy (FDEP 2016).

### **Protected Zones**

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

At De Leon Springs State Park all wetlands and floodplain as well as mesic flatwoods, shell mound, xeric hammock, mesic hammock, hydric hammock, depression marsh, dome swamp, floodplain swamp, floodplain marsh, baygall, spring-run stream, aquatic cave, and known imperiled species habitat have been designated as protected zones. The park's current protected zone is delineated on the Conceptual Land Use Plan.

### **Existing Facilities**

The vast majority of park facilities are in the extreme southeastern portion of the park. The primary day use is around the springhead which contains pavilions, a picnic area, restrooms, a playground, Old Sugar Mill Restaurant, the Visitor Center, boat ramps, and a boat house, as well as the swimming area. Trails extend throughout park property.

Support facilities are scattered around the southeastern portion of the park. There are multiple residences around this area, as well as shops and storages. There is no central support location, but all support facilities are near the springhead and Burt's Park except a pole barn in the north central area of the park. (See Base Map)





**Legend**

	Park Boundary
	County Road
	Park Road Paved
	Park Road Stabilized
	Park Road Unstabilized
	Walkways
	Hiking
	Nature
	Structures
	Parking Lots



DE LEON SPRINGS STATE PARK

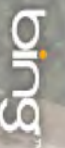
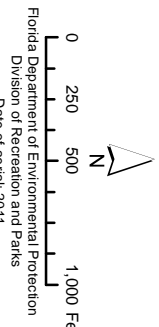


Image courtesy of USGS Earth

Image courtesy of USGS Earthstar Geographics, SIO © 2017, Microsoft Corporation

Microsoft Corporation



BASE MAP

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





## Recreation Facilities

### Springhead Day Use Area

Swimming Site  
Pavilions (5)  
Restrooms (2)  
Picnic Area  
Visitor Center  
Boat Ramp  
Restaurant

Playground  
Interpretive Exhibits (2)  
Pier  
Docks (2)  
Boat House  
Nature Trails  
Kayak and Canoe Launch

### Other Areas

Hiking Trails

## Support Facilities

### Support Facilities

Residences (3)  
Volunteer Sites  
Shop Building  
Storage Buildings (2)  
Life Estate  
Pole Barn (2)  
Base Map

## Conceptual Land Use Plan

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

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

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

## **Potential Uses**

### **Public Access and Recreational Opportunities**

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

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

***Objective: Maintain the park's current recreational carrying capacity of 3,090 users per day.***

The recreational opportunities currently available at De Leon Springs State Park are appropriate and should continue. Activities such as hiking, boating, and swimming hold something for everyone. However, there should be a balance between providing outdoor recreation and protecting the valuable natural and cultural resources at the park.

***Objective: Expand the park's recreational carrying capacity by 128 users per day.***

This plan proposed to expand and improve hiking and picnicking opportunities as well as an equestrian trail connection and primitive campsites within the De Leon Springs State Park.

***Objective: Continue to provide the current repertoire of 13 interpretive, educational and recreational programs on a regular basis.***

Interpretive programs enhance the visitors' experience by providing information about the park's history and its natural and cultural resources. Interpretation also promotes stewardship and safety awareness.

The current programs include: Critters of the Spring Run, De Leon Springs State Park Junior Ranger, Value of Dead Wood, Alligators in the Park, Florida Black Bears and You, Learning History through Archaeology, Freshwater Turtles

in the Park Guided Nature Trail Walk, 6,000 Years of Park History, Primitive Technology of the Mayaca People, Bird Identification on the Spring Run, Protecting the Gopher Tortoise, and Florida's Springs.

Park staff should continue to conduct outreach programs for schools and organizations. The topics are primarily park information and history.

***Objective: Develop 1 new interpretive and 1 new educational program.***

An interpretive program and an educational program should be developed to educate visitors and students about invasive, non-native plants and animals—origin, threats to wildlife and people, and removal.

## **Proposed Facilities**

### **Capital Facilities and Infrastructure**

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

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of the recreational opportunities, to improve the protection of park resources, and to streamline the efficiency of park operations. The following is a summary of improved and/or new facilities needed to implement the conceptual land use plan for De Leon Springs State Park:

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

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

***Objective: Improve/repair 4 existing facilities.***

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

### **Trails**

North of the boat ramp and fishing pier, an observation deck should be constructed to provide hikers with an uninterrupted vista of the spring run and the wildlife which inhabit the area. The nature trail should be expanded to

include an arm that runs to the shore of the spring run and connects the observation deck to the nature trail.

### Springhead Day Use Area

Several renovations and improvements are needed to this area. This is the most widely used area of the park as it contains the springhead, paved trail, Sugar Mill Restaurant, and the boat ramp. Improvements to this area include renovating the Sugar Mill Restaurant restrooms to be compliant with ADA. The kayak and canoe launch should be improved for better access and erosion reduction. The parking lot should be reconfigured to better accommodate boat trailers and should be more organized for parking during heavy usage. In addition to reconfiguring the parking lot, a pedestrian walkway should be constructed, and the nature trail should be expanded to create a closed loop. Lastly, the playground at the springhead should be upgraded. During this upgrade, the incorporation of an outdoor fitness circuit into the playground area should be explored.

### Burt's Park Use Area

This area of the park is underutilized and additions to the area including a fishing platform and picnic opportunities can help relieve the pressure on the springhead day use area during peak usage. A small restroom, a medium picnic pavilion, and a fishing platform are proposed to provide an alternative day use area for visitors to explore. A recreation-hall type facility should also be considered for this use area. This type of facility could include a dining area and kitchen and could be reserved for large events such as family reunions or weddings. In addition, interpretive exhibits should be installed to educate visitors on the history of this use area. This area of the park is similar to Paradise Park at Silver Springs State Park in Ocala and represents the history of segregation in Florida. A boardwalk will need to be constructed to reach this area from the existing springhead day use area.

### Entrance Area

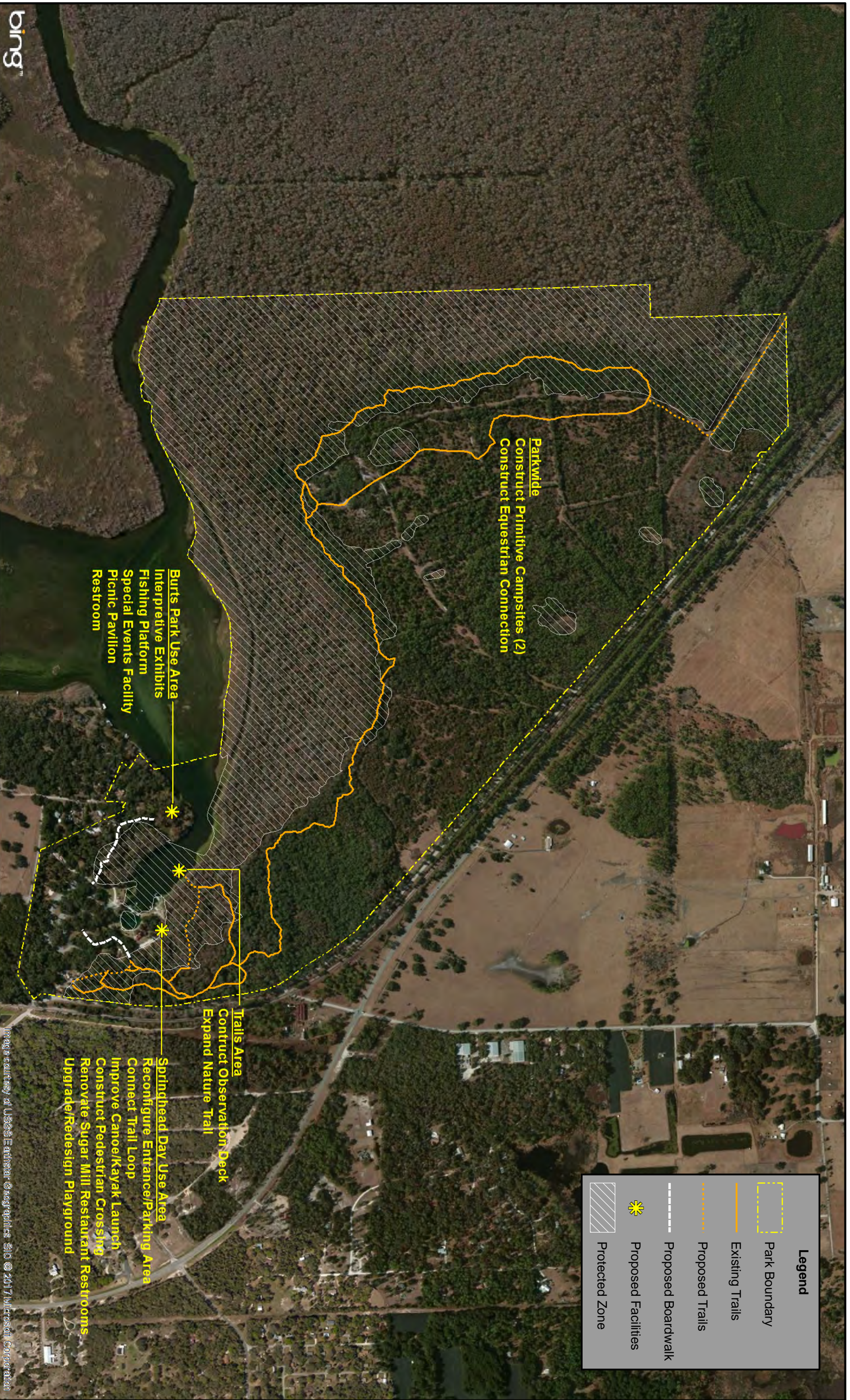
The park entrance and parking area should be improved to better facilitate high volumes of visitors trying to enter the park. The current entrance area procedures are informal and should be evaluated for better solutions.

***Objective: Construct 1 new facility.***

### Parkwide

A primitive camping area containing up to 2 sites or one group camp site should be constructed in the northwest area of the park along the existing trail loop. Additionally, an equestrian connection to the Lake George State Forest should be constructed in the northwest area of the park. An equestrian bridge will need to be constructed over the canal.





Legend	
	Park Boundary
	Existing Trails
	Proposed Trails
	Proposed Boardwalk
	Proposed Facilities
	Protected Zone

**Parkwide**  
 Construct Primitive Campsites (2)  
 Construct Equestrian Connection

**Burts Park Use Area**  
 Interpretive Exhibits  
 Fishing Platform  
 Special Events Facility  
 Picnic Pavilion  
 Restroom

**Trails Area**  
 Construct Observation Deck  
 Expand Nature Trail

**Springhead Day Use Area**  
 Reconfigure Entrance/Parking Area  
 Connect Trail Loop  
 Improve Canoe/Kayak Launch  
 Construct Pedestrian Crossing  
 Renovate Sugar Mill Restaurant Restrooms  
 Upgrade/Redesign Playground

bing™

DE LEON SPRINGS STATE PARK

CONCEPTUAL LAND USE PLAN

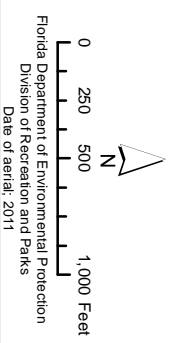


Image courtesy of USGS Earthstar @sagittariae S10 © 2017 Intelresoft Corporation





## **Facilities Development**

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Implementation Schedule and Cost Estimates (Table 7) located in the Implementation Component of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist DRP in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes. New facilities and improvements to existing facilities recommended by the plan include:

### **Recreation Facilities**

#### Springhead Day Use Area

Trail loop connection  
Restaurant restroom renovations  
Paddling launch improvements  
Pedestrian crossing  
Playground update/redesign

#### Burt's Park Area

Interpretive exhibits  
Fishing platform  
Restrooms  
Special event facility  
Picnic pavilion

#### Trail Area

Observation deck  
Trail loop connection

#### Parkwide Area

Primitive campsite (2)  
Equestrian connection

### **Support Facilities**

#### Entrance Area

Park entrance redesign  
Parking area improvements

## **Recreational Carrying Capacity**

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 6).

The recreational carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 6.

<b>Activity/Facility</b>	<b>Existing Capacity*</b>		<b>Additional Capacity</b>		<b>Recreational Capacity</b>	
	<b>One Time</b>	<b>Daily</b>	<b>One Time</b>	<b>Daily</b>	<b>One Time</b>	<b>Daily</b>
Trails						
Shared Use	10	40	9	36	19	76
Equestrian Trail			6	12	6	12
Natural Trail	168	672			168	672
Picnicking	140	280	24	48	164	328
Museum/Visitor Center	150	610			150	610
Swimming	300	600			300	600
Fishing						
Shoreline	19	38			19	38
Pier	4	8	4	8	4	8
Boating						
Canoeing/Kayaking	86	86			86	86
Kayak Rentals	25	50			25	50
Boating	220	220			220	220
Camping						
Primitive			24	24	24	24
<b>TOTAL</b>	<b>1122</b>	<b>2604</b>	<b>67</b>	<b>128</b>	<b>1185</b>	<b>2724</b>

\* Existing capacity revised from approved plan according to DRP guidelines.

### **Optimum Boundary**

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

At this time, no additional property is needed to support the resources or operations of the park. There are no lands considered surplus.

## **IMPLEMENTATION COMPONENT**

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

### **Management Progress**

Since the approval of the last management plan for De Leon Springs State Park in 2006, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within three of the five general categories that encompass the mission of the park and the DRP.

#### **Acquisition**

- An Additions and Inholdings parcel with a residence was added to the park in 2011. This parcel contained 0.27 acres.

#### **Park Administration and Operations**

- The park's Citizen Support Organization (CSO), Friends of De Leon Springs State Park, Inc., has provided the park with:
  - Funding for interpretation and publications
  - Specialized equipment for park operations, including one golf cart
  - Funding for many park improvements, including two structures
  - Funding for a National Register of Historic Places nomination
- The CSO has also held numerous special events at the park to raise funds for the items listed above as well as educate the public on the park. Additionally, they also participated in several off-site events annually.
- The park supplemented volunteer staff with up to three employees simultaneously from Experience Works.

#### **Resource Management**

##### **Natural Resources**

- Completed an erosion control project in the picnic area.
- Planted live oak saplings to replace aging oaks and maintain historic landscape.

- Park surveyed for exotic plants.
- Met 100% of exotic plant removal goals.
- Completed a longleaf pine restoration project.
- Continued spring monitoring and testing by several organizations.

### **Cultural Resources**

- Six historic structures, one resource group, and one archaeological site were added to the Florida Master Site File.
- Stabilization work was completed on the 1850s Sugar Train masonry, VO00030; 1950s Billboard, VO09443; 1920s Caretaker's Residence, VO09444; and the 1950s Park Entrance Wall, VO09442.
- Archaeological Resource Sensitivity Modeling was conducted by the University of South Florida.
- An archaeological survey of prehistoric resources near the pavilions was conducted by Panamerican Consultants.
- A Cultural Resource Management Manual and a Cultural Resource Inspection Checklist were developed for park staff to monitor, assess, stabilize, and repair historic structures, archaeological sites, and outdoor artifacts.
- A National Register Nomination for the Sugar Train, VO00030, was submitted to the Division of Historical Resources for review.
- Research was conducted to determine the approximate age of the Sugar Mill Building, VO09445.
- A circa 1900 horse-drawn grader found in the park's woods was restored and placed on display.
- Research was conducted to identify the segregated picnic and bathing area from the Burt's Park era.
- Scope of Collection Statement completed.
- Historic artifacts were cataloged.
- Research was completed to provide a comprehensive park history, dating back 6,000 years.
- Preliminary research was conducted to locate VO0031—burial mound.
- Encroaching trees on historic wall were removed.



## **Recreation and Visitor Services**

- The concessionaire continued to provide food, merchandise, and rental services for the enjoyment of park visitors.
- The Fountain of Youth Eco/History Tours continued to provide interpretive boat tours on Spring Garden Lake and spring run.
- The Visitor Center, renovated in 2007, provides information about the 6,000 years of park history.
- A variety of Ranger interpretive programs were presented from October to March, with outreach programs conducted year-round.
- The St. Johns River Clean Up was held at the park twice a year.
- The park is listed as a site on the Great Florida Birding Trail.
- Several interpretive panels were added throughout the park to educate visitors about the park's history.
- Oral history interviews were conducted to document the attractions era and Burt's Park.

## **Park Facilities**

- Replaced roofs on seven buildings.
- Upgraded plumbing fixtures in main picnic area restroom.
- Installed swimmer lift and upgraded at spring swimming area.
- Installed sidewalks to improve accessibility.
- Completed paving repairs on nature trail.
- New well tank and pump installed.
- Replaced and repaired foot bridges on hiking trail.
- Received funding for adding Aerobic Treatment Units to park septic tanks.
- Completed all projects on accessible walkways and ramps.
- Two park host sites were added.
- A new Asst. Park Manager residence was constructed.
- Park Manager and Ranger residences were renovated.
- Boat ramp reconstructed by FWC.
- Tour boat dock replaced.
- New pavilion constructed on north side adjacent to existing pavilion.

## **Management Plan Implementation**

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

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

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the DRP's annual legislative budget requests. When preparing these annual requests, the DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers, and partnerships with other entities. The DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target schedules and estimated costs identified in Table 7 may need to be adjusted during the ten-year management planning cycle.

Table 7  
De Leon Springs State Park  
Ten-Year Implementation Schedule and Cost Estimates  
Page 79

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

		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
<b>Goal I : Provide administrative support for all park functions.</b>				
<b>Objective A</b>	Continue day-to-day administrative support at current levels.	Administrative support ongoing	C	\$52,673
<b>Objective B</b>	Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.	Administrative support expanded	C	\$54,719
<b>Goal II : Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.</b>				
		<b>Measure</b>	<b>Planning Period</b>	<b>Estimated Manpower and Expense Cost* (10-years)</b>
<b>Objective A</b>	<b>Conduct/obtain an assessment of the park's hydrological needs.</b>	Assessment conducted	ST or LT	\$30,000
	Action 1 Develop a hydrological restoration strategy	Strategy developed		\$24,000
	Action 2 MFL Development	MFL approved		\$3,000
	Action 3 Stay informed on springshed issues			\$3,000
<b>Objective B</b>	<b>Restore natural hydrological conditions and function to approximately 220 acres of formerly flatwoods natural community(ies) by blocking drainage ditches as appropriate</b>	220 acres restored or underway	UFN	\$75,000
<b>Objective C</b>	<b>Improve water quality and prevent potential contamination issues</b>		<b>ST, LT</b>	<b>\$65,000</b>
	Action 1 Remove or upgrade septic tanks	Septic tank improvements underway	ST or LT	\$65,000

\* 2017 Dollars

ST = actions within 2 years

LT = actions within 10 years

C = long term or short term actions that are continuous or cyclical

UFN = currently unfunded need



**Table 7**  
**De Leon Springs State Park**  
 Ten-Year Implementation Schedule and Cost Estimates  
 Page 80

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

		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
<b>Goal III: Restore and maintain the natural communities/habitats of the park.</b>				
<b>Objective A</b>	<b>Maintain 42.8 acres of the park within zone DC-03 with fire for wildfire mitigation and aesthetics purposes</b>	# Acres within fire return interval target	LT	<b>\$21,500</b>
	Action 1 Develop/update annual burn plan.	Plan updated	C	\$1,000
	Action 2 Apply fire to manage zones when fuel loads are at an acceptable level to receive fire	42.8 acres burned at least once over 10 years	C	\$19,000
	Action 3 Mechanically treat up to 5 acres of cabbage palms along fire lines and trails within 10 years	5 acres treated	ST or LT	\$1,500
<b>Objective B</b>	<b>Conduct habitat/natural community improvement activities on 220 acres of primarily successional hardwood forest community(ies) by conducting hardwood removal where feasible</b>	220 acres restored or with restoration underway	ST or LT	<b>\$5,000</b>
<b>Goal IV: Maintain, improve or restore imperiled species populations and habitats in the park.</b>				
		<b>Measure</b>	<b>Planning Period</b>	<b>Estimated Manpower and Expense Cost* (10-years)</b>
<b>Objective A</b>	<b>Update baseline imperiled species occurrence inventory lists for plants and animals, as needed.</b>	List updated	C	<b>\$10,000</b>
<b>Objective B</b>	<b>Monitor and document 3 selected imperiled animal species in the park: gopher tortoises, eastern diamondback rattlesnakes and eastern indigo snakes.</b>	3 Species monitored	C	<b>\$4,000</b>
<b>Objective C</b>	<b>Monitor and document 1 selected imperiled plant species in the park: yellow anisetree</b>	1 Species monitored	C	<b>\$4,000</b>
<b>Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.</b>				
		<b>Measure</b>	<b>Planning Period</b>	<b>Estimated Manpower and Expense Cost* (10-years)</b>
<b>Objective A</b>	<b>Annually treat 1-2 acres of exotic plant species in the park.</b>	1-2 Acres treated	C	<b>\$60,000</b>
	Action 1 Annually develop/update exotic plant management work plan.	Plan developed/updated	C	\$10,000
	Action 2 Implement annual work plan by treating 1-2 acres in park, annually, and continuing maintenance and follow-up treatments, as needed.	Plan implemented		\$50,000
<b>Objective B</b>	<b>Implement control measures on 1 exotic animal species in the park.</b>	1 Species for which control measures implemented	C	<b>\$20,000</b>

\* 2017 Dollars  
 ST = actions within 2 years  
 LT = actions within 10 years  
 C = long term or short term actions that are continuous or cyclical  
 UFN = currently unfunded need





Table 7  
De Leon Springs State Park  
Ten-Year Implementation Schedule and Cost Estimates  
Page 81

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

		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
<b>Goal VI : Protect, preserve and maintain the cultural resources of the park.</b>				
<b>Objective A</b>	<b>Assess and evaluate 4 of 14 recorded cultural resources in the park.</b>	Documentation complete	LT	<b>\$5,000</b>
Action 1	Complete 2 Historic Structures Reports (HSR's) for historic buildings and cultural landscape. Prioritize stabilization, restoration and rehabilitation projects.	Reports and priority lists completed	LT	\$5,000
<b>Objective B</b>	<b>Compile reliable documentation for all recorded historic and archaeological sites.</b>		ST/LT	<b>\$105,000</b>
Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.	# Sites recorded or	ST	\$0
Action 2	Conduct additional archaeological surveying of V005278 and V005279, prehistoric sites	Survey completed	LT	\$25,000
Action 3	Conduct additional archaeological research to determine the location of the burial mound, V000031	Survey completed	LT	\$30,000
Action 4	Conduct a non-invasive archaeological survey of V000030 to determine the extent of human	Survey completed	LT	\$25,000
Action 5	Conduct subsurface archaeological testing beneath the Sugar Mill restaurant to located the remains	Survey completed	LT	\$25,000
Action 6	Continue conducting oral history interviews and acquiring historic photos and documents	Interviews and acquisition complete	C	\$0
<b>Objective C</b>	<b>Bring 2 of 14 recorded cultural resources into good condition.</b>	# Sites in good condition	LT/C	<b>\$2,000</b>
Action 1	Design and implement regular monitoring programs for 14 cultural sites	# Sites monitored	C	\$0
Action 2	Create and implement a cyclical maintenance program for each cultural resource.	Programs implemented	C	\$0
Action 3	Continue stabilization of the sugar train, V000030	Projects completed	C	<b>\$1,000</b>
Action 4	Conduct stabilization of segregated bathing area at Burt's Park	Projects completed	ST	\$1,000
<b>Estimated Manpower and Expense Cost* (10-years)</b>				
<b>Goal VII : Provide public access and recreational opportunities in the park.</b>				
<b>Objective A</b>	<b>Maintain the park's current recreational carrying capacity of 3090 users per day.</b>	# Recreation/visitor	C	<b>\$2,422,960</b>
<b>Objective B</b>	<b>Expand the park's recreational carrying capacity by 128 users per day.</b>	# Recreation/visitor	ST or LT	<b>\$2,517,056</b>
<b>Objective C</b>	<b>Continue to provide the current repertoire of 13 interpretive, educational and recreational programs on a regular basis.</b>	# Interpretive/education programs	C	<b>\$65,000</b>
<b>Objective D</b>	<b>Develop 2 new interpretive, educational and recreational programs.</b>	# Interpretive/education programs	ST or LT	<b>\$14,000</b>

\* 2017 Dollars

ST = actions within 2 years

LT = actions within 10 years

C = long term or short term actions that are continuous or cyclical

UFN = currently unfunded need



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

Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.		Measure	Planning Period	Estimated Manpower and Expense Cost* (10-years)
Objective A	Maintain all public and support facilities in the park.	Facilities maintained	C	\$2,264,941
Objective B	Continue to implement the park's transition plan to ensure facilities are accessible in accordance with the American with Disabilities Act of 1990.	Plan implemented	ST or LT	\$75,000
Objective C	Improve and/or repair 4 existing facilities as identified in the Land Use Component.	# Facilities/Miles of Trail/Miles of Road	LT	\$1,015,713
Objective D	Construct 1 new facilities as identified in the Land Use Component.	# Facilities/Miles of Trail/Miles of Road	LT	\$2,515,375
Objective E	Expand maintenance activities as existing facilities are improved and new facilities are developed.	Facilities maintained	C	\$2,352,900

\* 2017 Dollars

ST = actions within 2 years

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UFN = currently unfunded need



Table 7  
**De Leon Springs State Park**  
 Ten-Year Implementation Schedule and Cost Estimates  
 Page 83

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

**Summary of Estimated Costs**

Management Categories	Total Estimated Manpower and Expense Cost* (10-years)
Resource Management	\$406,500
Administration and Support	\$107,392
Capital Improvements	\$5,883,988
Recreation Visitor Services	\$4,940,016
Law Enforcement Activities	Note: Law enforcement activities in Florida State Parks are conducted by the FWC Division of Law Enforcement and by local law enforcement agencies.

\* 2017 Dollars  
 ST = actions within 2 years  
 LT = actions within 10 years  
 C = long term or short term actions that are continuous or cyclical  
 UFN = currently unfunded need





## **Addendum 1—Acquisition History**



## De Leon Springs State Park Acquisition History

LAND ACQUISITION HISTORY REPORT					
Park Name	De Leon Springs State Park				
Date Updated	1/21/2016				
County	Volusia County, Florida				
Trustees Lease Number	3262				
Current Park Size	624.72 acres				
Purpose of Acquisition	Not given.				
Acquisition History					
Parcel Name or Parcel DM-ID	Date Acquired	Initial Seller	Initial Purchaser	Size in acres	Instrument Type
MDID 4011	3/3/1989	Volusia County, Florida	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees)	460.969	County Deed
MDID 14012	10/22/1987	Volusia County, Florida	Trustees	81.18	Warranty Deed
MDID 4013	7/28/1982	Volusia County, Florida	Trustees	71.438	County Deed
Management Lease					
Parcel Name or Lease Number	Date Leased	Initial Lessor	Initial Lessee	Current Term	Expiration Date
Lease No. 3262	1/26/1983	The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida.	State of Florida Department of Natural Resources for the use and benefit of the Division of Recreation and parks	50 years	1/25/2033
Outstanding Issue	Type of Instrument	Brief Description of the Outstanding Issue		Term of the Outstanding Issue	
There is no known deed-related issue that affects the use of De Leon Springs State Park.					



## **Addendum 2—Advisory Group Members and Report**





**De Leon Springs State Park  
Advisory Group Members**

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**Local Government Representative**

The Honorable Ed Kelley, Chair  
Volusia County Board of  
County Commissioners

**Agency Representatives**

Brian Polk, Park Manager  
Division of Recreation and Parks  
De Leon Springs State Park

KelleeJo Ferrari  
Volusia County Soil and Water  
Conservation District

Cathy Lowenstein  
Florida Forest Service

Cindy Venuti  
Florida Fish and Wildlife  
Conservation Commission

Candice Stevenson, Refuge Manager  
U.S. Fish and Wildlife Service  
Lake Woodruff National Wildlife Refuge

Mike Wisenbaker, Archaeologist  
Florida Department of State  
Division of Historical Resources

Tim Baylie, Director  
Volusia County  
Parks, Recreation, and Culture

**Environmental and Conservation  
Group Representative**

Arnette Sherman, President  
West Volusia Audubon Society

**Local Private Property Owners**

Craig and Lola Spencer  
Local Residents

**Local Community Organization  
Representative**

Tammy Schuler, Treasurer  
De Leon Springs Community  
Association

**Cultural and Historical Group  
Representative**

Frank Johnson, Executive Director  
West Volusia Historical Society

**Recreational User Group  
Representatives**

Ruth Lawler, Chair  
Florida Trail Association, Black Bear  
Chapter

Jill Lingard, President  
Florida Paddling Trails Association

**Park Concessionaires**

Patty Schwarze, Owner  
Schwarze Enterprises

Frank Wiltse, Owner  
Fountain of Youth Eco/History  
Boat Tours

**Tourism and Economic  
Development Representative**

Pat Patterson, Chair  
Volusia County Tourist Development  
Council

**Citizen Support Organization**

Karen K. Clark, President  
Friends of De Leon Springs State Park

## **De Leon Springs State Park Advisory Group Summary Report**

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The advisory group meeting to review the proposed unit management plan (UMP) for De Leon Springs State Park was held at the De Leon Springs Methodist Church on May 10, 2017 at 9:00 am.

Bobbie and Taz Witt represented Tammy Schuler. Dick Schuler represented Ruth Lawler. Lawrence Wuest represented Jill Lingard. Ed Kelley, Candice Stevenson, Frank Johnson, and Pat Patterson were not in attendance. All other appointed advisory group members were present, as well as Janice Russak, Karen Russi, Kim Schmidt, and Courtney Schmidt. Attending staff were Brian Polk, Alice Bard, and Tyler Maldonado.

Mr. Maldonado began the meeting by explaining the purpose of the advisory group and reviewing the meeting agenda. He provided a brief overview of the Division of Recreation and Parks' (DRP) planning process, and Mr. Polk summarized public comments received during the previous evening's public workshop. Mr. Maldonado then asked each member of the advisory group to express his or her comments on the plan.

### **Summary of Advisory Group Comments**

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**Tim Baylie** (Volusia County Parks, Recreation, and Culture) commented on the St. Johns River to Sea Loop trail and its relation to De Leon Springs State Park. He stated that the Florida Department of Transportation is implementing the agency's Shared-Use Nonmotorized (SUN) Trails program, and segments of the St. Johns River to Sea Loop are scheduled to be developed adjacent to the park boundary. He suggested that the DRP should incorporate a trail connection with appropriate wayfinding signage and develop cyclist-friendly amenities at the park. He mentioned a trail connection could be incorporated into the proposed entrance redesign. He recommended including language in the management plan on the St. Johns River to Sea Loop and the Spring to Spring segment of the trail that will connect De Leon Springs State Park and Blue Spring State Park.

**Kellee Jo Ferrori** (Volusia County Soil and Water Conservation District) stated that she did not have any comments on the management plan.

**Cathy Lowenstein** (Florida Forest Service) provided comments on specific pages of the management plan. She stated that although the mesic flatwoods found at the park are located in an area that makes it difficult for park staff to conduct prescribed burning, this natural community should be targeted for prescribed burning and restoration over the 10-year time horizon of the management plan. She pointed out that the successional hardwoods at the park are also not scheduled for restoration activities other than determining the feasibility of plugging and filling ditches to restore hydrology. She stated prescribing burning of the successional hardwood natural community should be considered using adaptive management techniques. She suggested referencing the management zones map in the natural resource management goals and objectives section. She provided corrections to Table 5 (Resource-Based Recreational Opportunities near De Leon Springs State Park) in the Land Use Component.

## De Leon Springs State Park Advisory Group Summary Report

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**Cindy Venuti** (Florida Fish and Wildlife Conservation Commission) complimented the DRP on the resource management program, stating the goals and objectives are achievable. She asked why a land management review was not included with the management plan. It was stated that since the park is less than 1,000 acres, a land management review is not required to be included with the management plan. She also inquired about how the species list is developed, and it was explained the species included in Addendum 5 have been observed within the park boundary.

**Bobbie Witt** (De Leon Springs Community Association) recommended reconsidering the primitive campsite location. She proposed establishing the primitive campsites at the Burt's Park use area, as opposed to in the northern portion of the park. She stated that there is demand for a community center in De Leon Springs, and the Burt's Park use area could be a potential location for a recreation hall-type facility.

**Taz Witt** (De Leon Springs Community Association) commented on the traffic issues at the park entrance that can be experienced on busy days. He stated that his house is near the park entrance, and people consistently park in front of his house instead of waiting in the long lines that form to get into the park. He urged the DRP to implement the proposed entrance area redesign in order to alleviate traffic and congestion issues.

**Karen K. Clark** (Friends of De Leon Springs State Park) suggested that it would be useful to include graphics and a discussion of the footprint of proposed developments in the management plan. She proposed the development of an adult disability playground, similar to an outdoor fitness station, where park visitors can stimulate their muscles and minds. She also inquired about the procedures for the removal of feral hogs from the park property. It was stated that a private contractor is contacted to trap and remove feral hogs.

**Lawrence Wuest** (Florida Paddling Trails Association) recommended establishing a paddling blueway that extends from De Leon Springs State Park to the St. Johns River, traveling through Spring Garden Lake and nearby Lake Woodruff. He commented that an established blueway can be used as a marketing tool when guide books are created and distributed to promote the blueway and the destinations along the route. He stated that paddlers prefer soft sand launching facilities that are ADA-accessible.

**Patty Schwarze** (Schwarze Enterprises) expressed her concern with the structural integrity of the springhead swimming area's retaining wall. She suggested conducting an engineering study to determine the level of the repair needed. She commented that expanding the Sugar Mill Restaurant would have minimal impact and could increase park attendance. She stated there is a demand for event space at De Leon Springs State Park, and the Burt's Park use area could be developed to include a recreational hall-type facility to accommodate special events and gatherings. She was concerned with the minimum flows and levels (MFLs) for De Leon Springs, citing the MFLs connection to the protection of the Florida manatee.

## **De Leon Springs State Park Advisory Group Summary Report**

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She recommended expanding the existing restrooms at the springhead area, as opposed to constructing new facilities. She also stated the DRP should consider establishing electric car charging stations at the park, which would allow the park to become a destination for people with electric cars.

**Arnette Sherman** (West Volusia Audubon Society) stated the DRP should avoid disturbing historic structures. She suggested modernizing and expanding existing facilities, such as the restroom near the spring swimming area, as opposed to renovating the Sugar Mill Restaurant to incorporate ADA-accessible restrooms. She shared the positive sentiment expressed by the other advisory group members and thanked the DRP for providing a forum for stakeholder engagement.

**Dick Schuler** (Florida Trails Association, Black Bear Chapter) commented that he was a part of the team that originally developed the Wild Persimmon trail at De Leon Springs State Park. He stated that a separated equestrian trail is needed if the park wants to allow equestrian access from the proposed northern connection with Lake George State Forest. He recommended considering a group camping area in the northern portion of the park, instead of the proposed hike-in primitive campsites.

### **Summary of Written Comments from Advisory Group Members**

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**Mike Wisenbaker** (Florida Department of State – Division of Historical Resources) applauded the DRP on the excellent recording and discussion of the cultural resources in the De Leon Springs State Park management plan. He stated the management plan accurately corresponds with the Florida Master Site File. He encouraged the DRP to submit the park's historic structures to the National Register of Historic Places as soon as possible. He complimented the management plan on its cultural resource management goals and objectives. The written comments submitted can be read in full starting on page A 2 - 6.

### **Summary of Public Comments**

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**Karen Russi** (Friends of De Leon Springs State Park) asked about exotic plant species at the park. She stated that the management plan discusses the acreage that has been treated for exotic species, but does not describe the total acreage of exotic species infestation. She thought it would be useful if the management plan also included the total acreage of exotic plant species in each management zone.

### **Staff Recommendations**

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The staff recommends approval of the proposed management plans for De Leon Springs State Park as presented, with the following significant changes:

- A Florida Greenways and Trails System section will be added to the Land Use Component of the management plan. This section will discuss the St. Johns River to Sea Loop, as well as the Spring to Spring segment.

## De Leon Springs State Park Advisory Group Summary Report

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- The Lake Woodruff to De Leon Springs blueway identified by DRP's Office of Greenways and Trails as a paddling trail opportunity corridor will also be discussed in the Florida Greenways and Trails System section.
- The Conceptual Land Use Plan section of the Land Use Component will be revised. These revisions will include a more detailed description of the Burt's Park proposed development. A playground redesign will also be added to the Proposed Facilities section. This redesign will include routine replacement of the existing playground equipment and will allow for the development of an outdoor fitness circuit.

### **Notes on Composition of the Advisory Group**

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

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

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

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## De Leon Springs State Park Advisory Group Written Comments

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Good morning, Tyler

Thank you for giving us the opportunity to comment as part of the Advisory Group process for the development of the management plan for De Leon Springs State Park in Volusia. In that we will not be attending the near site meeting for the plan, our comments will serve as the DHR comments for this particular plan:

- 1) Overall, the Florida Park Service has done an excellent job in identifying, protecting, preserving and managing all of its known archaeological and historical resources at De Leon Springs. We were especially pleased to discover that our GIS analysis of sites listed within the Florida Master Site File coincided precisely with the parks inventory of sites as revealed in the plan. While this may seem to be a minor accomplishment, lately one of our most glaring problems with plans from the Florida Park Service has been discrepancies between our site file inventories and those presented in the park management plans.
- 2) On page 38, our site file analysis shows seven archaeological sites and one resource group listed for De Leon Springs State Park. This is in complete agreement with the park's inventory.
- 3) In various parts of the plan, it indicates that several of the archaeological sites as well as three of the park's historic structures are eligible for listing in the National Register of Historic Places. We would encourage the park service to attempt to get as many of these archaeological and historical resources listed in the National Register as soon as possible. Please do not hesitate to contact us should you need any help with the nominations.
- 4) On page 43, our site file analysis shows six historic structures listed for the park. The parks current inventory is in total agreement with ours.
- 5) On page 55, the park's Goal A and five related actions look to be very well designed and thought out. We especially encourage the park to follow through with Action 2 to make serious efforts to locate VO31 (the De Leon Spring's mound). It appears that the park already has begun doing this. The park service might consider using LIDAR to help locate, if they already have not done so, this mound.
- 6) On page 56, although we are aware that the Park falls below the normal threshold of 1000 or more acres for a land management review, perhaps Mr. Aric Larson (who is the LMR coordinator in OES in the DEP's Division of State Lands) might consider conducting at LMR here at some time in the future in that on occasion smaller properties are subjected to land management reviews. It is our opinion that such a review would benefit De Leon Springs State Park.
- 7) We strongly encourage De Leon Springs State Park to interpret the two old dugout canoes that were found in the spring. Even though they have disintegrated, these are very significant and unique findings that the public should be made aware of. We would encourage the park to contact Ms. Julie Duggins who works in our Public Lands Archaeology program for assistance and ideas as to the wording of this interpretation. One of her current research interests is Florida's dugout canoes.

Please let us know if you have any questions or concerns regarding our comments.

Regards,

Mike Wisenbaker  
Public Lands Archaeology  
Division of Historical Resources



### **Addendum 3—References Cited**



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## **Addendum 4—Soil Descriptions**





## De Leon Springs State Park Soil Descriptions

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**(4) Arents, nearly level** - Arents consist of nearly level, heterogeneous soil material. This material has been excavated, reworked, and reshaped by earthmoving equipment. Arents are near urban centers, phosphate-mining operations, major highways and sanitary landfills.

Arents do not have an orderly sequence of soil layers. This map unit is not associated with or confined to a particular kind of soil. Arents are variable and contain discontinuous lenses, pockets, or streaks of black, gray, grayish brown, brown, or yellowish brown sandy or loamy fill material. The thickness of the fill material ranges from 30 to 80 inches or more

Included in this map unit are areas used as sanitary landfills. Refuse consists of concrete, glass, metal, plastic, wood, and other materials and ranges in thickness from 2 to 10 feet. It is generally stratified with layers of soil material that were used as daily cover. These areas are identified on soil maps by the words "sanitary landfill." Also included are small areas of soil that has slope that ranges from 0 to 5 percent.

Most soil properties are variable. The depth to the seasonal high water table varies with the amount of fill material and artificial drainage. Permeability and the available water capacity vary widely from one area to another.

**(5) Basinger, Holopaw and Samsula soils, depressional** - The soils in this map unit are nearly level and very poorly drained. They are in swamps and depressions on the flatwoods. Generally, Basinger soil is along the exterior of swamps or in shallow depressions. Holopaw and Samsula soils are in the interior areas of the swamps or in deeper depressions. Undrained areas are frequently ponded for very long periods.

In 90 percent of the areas of this map unit, Basinger, Holopaw and Samsula soils, depressional, and similar soils make up 78 to 96 percent of the mapped areas, and dissimilar soils make up about 4 to 22 percent of the mapped areas. Generally, the mapped areas consist of about 35 percent Basinger soil and similar soils, 31 percent Holopaw soil and similar soils, and 18 percent Samsula soil and similar soils. The individual soils are generally in large enough areas to be mapped may be suited to the production of cypress and hardwoods through natural regeneration.

If these soils are used for building site development or for onsite waste disposal, ponding is the main limitation. Drainage is needed to lower the water table, and fill material is needed in most areas. While surface drainage helps to control ponding, the seasonal high water table is continuing limitation.

The soils in this map unit are in capability subclass VIIW. Basinger and Holopaw soils are in woodland group 2W. Samsula soil has not been assigned to a woodland group. This soils in this map unit are in the Freshwater Marshes and Ponds range.

## De Leon Springs State Park Soil Descriptions

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**(7) Candler fine sand, 0 to 5 percent slopes** - This soil is nearly level to gently sloping and excessively drained. It is on the uplands.

In 95 percent of the areas mapped as Candler fine sand, 0 to 5 percent slopes, the Candler soil and similar soils make up 82 to 96 percent of the mapped areas. Dissimilar soils make up 4 to 18 percent of the mapped areas.

Typically, this soil has a surface layer of dark gray fine sand about 6 inches thick. The upper part of the subsurface layer, to a depth of about 35 inches, is light yellowish brown fine sand. The middle part, to a depth of about 72 inches, is very pale brown fine sand. The lower part to a depth of about 80 inches is a mixture of very pale brown fine sand and strong brown loamy sand lamellae that are about one-sixteenth to one-quarter of an inch thick and 2 to 6 inches long. In some places, similar soils included in the mapped areas do not have lamellae in the lower part of the subsurface layer. Other similar soils, in some areas, have a subsurface layer that consists of 5 to 10 percent silt and clay; and some similar soils also included in mapping, in some of the lower parts of the landscape, are well drained.

Dissimilar soils included in mapping are Kendrick and Millhopper soils in small areas. Kendrick soils are well drained, and Millhopper soils are moderately well drained. Also included are areas of unnamed soils on upper side slopes that are well drained and have a sandy clay loam subsoil within 40 to 80 inches of the surface.

A seasonal high water table is at a depth of more than 80 inches. Permeability is rapid. The available water capacity is very low.

The natural vegetation consists of bluejack oak, Chapman oak, scrub live oak, and turkey oak. The understory includes indiagrass, hairy panicum, panicum, and running oak. In most areas, this Candler soil is used for citrus crops. In a few areas, it is used for pasture or for homesite or urban development.

**(12) Chobee sandy loam, frequently flooded** - The soil is nearly level and very poorly drained. It is on bottom lands mainly along the Hillsborough River and Blackwater Creek. This soil is flooded for very long periods following prolonged intense rain. The slope is dominantly less than 1 percent.

In 90 percent of the areas mapped as Chobee sandy loam, frequently flooded, the Chobee soil and similar soils make up 78 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 22 percent of the mapped areas.

Typically, this soil has a surface layer of clack sandy loam about 15 inches thick. The subsoil extends to a depth of about 60 inches. The upper part is very dark gray, mottled sandy clay loam. The lower part is gray mottled sandy clay loam. The substratum to a depth of about 80 inches is light gray, mottled loamy sand. In some areas, similar soils included in mapping have a surface layer of mucky fine sand, fine sand, or loamy fine sand. Other similar soils have a thinner surface layer than Chobee soil, and in places, some similar soils have thin, discontinuous strata of limestone in the underlying material.

## De Leon Springs State Park Soil Descriptions

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Dissimilar soils included in mapping are Felda and Wabasso soils in small areas. These soils are poorly drained.

A seasonal high water table fluctuates from the soil surface to a depth of about 1 inches. Permeability is moderately rapid in the surface layer, slow or very slow in the subsoil, and very slow to moderately rapid in the substratum. The available water capacity is high.

In most areas, this Chobee soil has been left in the natural vegetation. In a few areas, it is used for pasture. The natural vegetation consists of baldcypress, Coastal Plain willow, red maple, cabbage palm, and sweetgum. The understory includes buttonbush, maidencane, sawgrass, smartweed, and sedges.

In its natural state, this soil is generally not suited to cultivated crops. If a water control system, such as dikes, ditches, and pumps, is established and maintained, this soil is suited to cultivated crops, citrus crops, and pasture. This soil is generally not suited to the production of pine trees because of flooding or extended wetness. It may be suited to the production of cypress and hardwoods through natural regeneration.

If this soil is used for building site development or for onsite waste disposal, flooding is the main hazard. Major flood control structures and extensive local drainage systems are needed to control flooding.

This Chobee soil is in capability subclass VW, in woodland group 6W, and in the Freshwater marshes and Ponds range site.

**(15) Felda fine sand** - This soil is nearly level and poorly drained. It is on broad sloughs on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of the areas mapped as Felda fine sand, the Felda soil and similar soils make up 90 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 10 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 5 inches thick. The upper part of the subsurface layer, to a depth of about 18 inches, is dark gray, mottled fine sand. The lower part, to a depth of about 22 inches, is dark grayish brown, mottled fine sand. The subsoil to a depth of about 45 inches, is light brownish gray, mottled sandy clay loam. The substratum to a depth of about 80 inches is light gray loamy sand that contains many shell fragments. Similar soils included in mapping have a subsoil at a depth of more than 40 inches of the surface.

Dissimilar soils included in mapping are Pinellas and Wabasso soils in small areas. Pinellas soils are calcareous in the upper part of the subsoil. Wabasso soils have a sandy subsoil above a loamy subsoil.

## De Leon Springs State Park Soil Descriptions

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A seasonal high water table fluctuates from the soil surface to a depth of about 10 inches for 2 to 6 months in most years. Permeability is rapid in the surface and subsurface layers and is moderate in the subsoil. The available water capacity is moderate.

In most areas, this Felda soil is used for pasture. In a few areas, it is used for cultivated crops or for homesite or urban development or it has been left idle in natural vegetation. The natural vegetation consists of cabbage palm and slash pine. The understory includes saw palmetto, pineland threeawn, and waxmyrtle.

If a water control system is established and maintained and soil-improving measures applied, this soil will be well suited to most cultivated crops. If suitable outlets are available, lateral ditches and tile drains can be used to lower the water table. Returning all crop residue to the soils and using a cropping system that includes grasses, legumes, or a grass-legume mixture helps to maintain fertility.

This soil is suited to pasture. Wetness limits the choice of plants that can be grown and restricts grazing during rotation, and timely deferment of grazing helps keep the pasture in good condition.

The potential of this soil for the production of slash pines is moderately high. The main management concern for producing and harvesting timber is seedling mortality. Water-tolerant trees should be planted. Planting and harvesting operations should be scheduled during dry periods. Bedding of rows helps to minimize the excessive wetness limitation.

If this soil is used for building site development, the main management concern is excessive wetness. Population growth has resulted in increased construction of houses on this soil. Drainage is needed to lower the high water table, and fill material is needed in most areas. Septic tank absorption fields need to be moved in most areas.

This Felda soil is in capability subclass, IIIW, in woodland group 10W, and in the Slough range site.

**(21) Immokalee fine sand** - This soil is nearly level and poorly drained. It is on broad plains on the flatwoods. The slope is 0 to 2 percent.

In 80 percent of the areas mapped as Immokalee fine sand, the Immokalee soil and similar soils make up 77 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 23 percent of the mapped areas.

## De Leon Springs State Park Soil Descriptions

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Typically, this soil has a surface layer of very dark gray fine sand about 8 inches thick. The subsurface layer, to a depth of 36 inches, is light gray fine sand. The upper part of the subsoil, to a depth of about 46 inches, is black fine sand. The middle part, to a depth of about 52 inches, is dark reddish brown fine sand. The lower part to a depth of about 80 inches is dark brown fine sand. Similar soils included in mapping have a subsoil that is at a depth of more than 50 inches. Other similar soils, in some areas, have a subsoil within 30 inches of the surface. Also, some included similar soils, in places, have a subsoil that is brown or dark brown.

Dissimilar soils included in mapping are Ona and Wabasso soils in small areas. Ona soils do not have a subsurface layer. Wabasso soils have a sandy subsoil above a loamy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of 10 inches for more than 2 months and recedes to a depth of 10 to 40 inches for 8 months or more. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is low.

The natural vegetation consists of longleaf pine and slash pine. The understory includes creeping bluestem, chalky bluestem, lopsided indiagrass, saw palmetto, pineland threeawn, and waxmyrtle. In most areas, this Immokalee soil is used for native pasture. In a few areas, it is used for cultivated crops, improved pasture, or citrus crops or for homesite or urban development.

**(29) Myakka fine sand** - This soil is nearly level and poorly drained. It is on broad plains on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of the areas mapped as Myakka fine sand, the Myakka soil and similar soils make up 84 to 93 percent of the mapped areas. Dissimilar soils make up 7 to 16 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 5 inches thick. The subsurface layer, to a depth of about 20 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 25 inches, is black fine sand. The middle part, to a depth of 30 inches, is dark reddish brown fine sand. The lower part to a depth of about 38 inches, is brownish yellow fine sand. The upper part of the substratum, to a depth of about 55 inches, is very pale brown sand. The lower part to depth of about 80 inches is dark grayish brown fine sand. Similar soils included in mapping, in some areas, have a surface layer that is more than 8 inches thick. Other similar soils, in some places, have a subsoil within 20 inches of the surface, and some included similar soils have a subsoil at a depth of more than 30 inches or have a brown or dark brown subsoil, or both.

Dissimilar soils included in mapping are Basinger and Wabasso soils in small areas. Basinger soils are very poorly drained. Wabasso soils have a loamy subsoil below a sandy subsoil.

## De Leon Springs State Park Soil Descriptions

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In most years a seasonal high water table fluctuates from the soil surface to a depth of 10 inches for 1 to 4 months and recedes to a depth of 40 inches during prolonged dry periods. Permeability is rapid in the surface and subsurface layers, moderate or moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is low.

In most areas, this Myakka soil is used for native pasture or cultivated crops. In a few areas, it is used for improved pasture or citrus crops, or it is used for homesite or urban development. The natural vegetation consists of longleaf pine and slash pine. The understory includes gallberry, running oak, saw palmetto, pineland threeawn, and waxmyrtle.

If a water control system is established and maintained and soil-improving measures applied, this soil is suited to most cultivated crops, citrus crops, and pasture. Proper arrangement and bedding of tree rows, lateral ditches or tile drains, and well-constructed outlets will help lower the water table. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility. Frequent applications of fertilizer and lime are generally needed to improve soil quality.

If a water control system is established and maintained, this soil is well suited to pasture. Wetness limits the choice of plants that can be grown and restricts grazing during periods of excessive wetness. Proper stocking, pasture rotation, and restricted grazing during wet periods help keep the pasture and the soil in good condition. Fertilizer and lime are needed for optimum growth of grasses and legumes.

The potential of this soil for the production of slash pines is moderate. The main management concerns for producing and harvesting timber are the equipment use limitations and seedling mortality. Equipment use limitations are a concern if the soil is not properly drained. Water-tolerant trees should be planted. Planting and harvesting operations should be scheduled during dry periods. Bedding of rows helps to minimize the excessive wetness limitation.

If this soil is used for building site development, the main management concerns are excessive wetness, possible contamination of the ground water, and instability of cutbanks. Population growth has resulted in increased construction of houses on this soil. Drainage is needed to lower the high water table, and fill material is needed in most areas. Septic tank absorption fields need to be mounded in most areas. If the density of housing is moderate to high, a community sewage system can help to prevent contamination of water supplies by seepage. Cutbanks are not stable and are subject to slumping.

This Myakka soil is in capability subclass IVW, in woodland group 8W, and in the South Florida Flatwoods range site.

**(53) Tavares-Millhopper fine sands, 0 to 5 percent slopes** - The soils in this map unit are nearly level to gently sloping and moderately well drained. They are in low-lying areas on the uplands and on low ridges on the flatwoods.

## De Leon Springs State Park Soil Descriptions

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In 95 percent of the areas of this map unit, Tavares-Millhopper fine sands, 0 to 5 percent slopes, and similar soils make up 87 to 99 percent of the mapped area, and dissimilar soils make up 1 to 13 percent of the mapped areas. Generally, the mapped areas consist of about 63 percent Tavares soil and similar soils and 26 percent Millhopper soil and similar soils.

Typically, the surface layer of the Tavares soil is dark grayish brown fine sand about 6 inches thick. The upper part of the underlying material, to a depth of about 32 inches, is pale brown fine sand. The middle part, to a depth of about 40 inches, is very pale brown fine sand. The lower part to a depth of about 80 inches is light gray fine sand. Similar soils included in mapping, in some areas, have a brown or dark brown layer in the lower part of the underlying material. Other similar soils, in some of the lower parts of the landscape, are somewhat poorly drained.

Typically, the surface layer of the Millhopper soil is dark gray fine sand about 4 inches thick. The upper part of the subsurface layer, to a depth of about 9 inches, is brown fine sand. The next layer, to a depth of about 25 inches, is light yellowish brown fine sand. The next layer, to a depth of about 48 inches, is light gray, mottled fine sand. The lower part, to a depth of about 57 inches, is light gray fine sand. The upper part of the subsoil, to a depth of about 62 inches, is very pale brown, mottled sandy clay loam. The lower part to a depth of about 80 inches is gray, mottled sandy clay loam. Similar soils included in mapping, in some areas, have a dark surface layer more than 10 inches thick.

Dissimilar soils which are included in this map unit are Candler, Myakka, and Smyrna soils in small areas. Candler soils are excessively drained. Myakka and Smyrna soils are poorly drained.

Tavares soil has a seasonal high water table at a depth of 40 to 80 inches for more than 6 months, and it recedes to a depth of more than 80 inches during prolonged dry periods. Millhopper soil has a seasonal high water table at a depth of 40 to 60 inches for 1 to 4 months, and it recedes to a depth of 60 to 72 inches for 2 to 4 months. Permeability of Tavares soil is rapid. Permeability of Millhopper soil is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is very low in Tavares soil and low in Millhopper soil.

The natural vegetation consists of bluejack oak, turkey oak, live oak, and longleaf pine. The understory includes creeping bluestem, lopsided indiagrass, panicum, and pineland threeawn. In most areas, the soils in this map unit are used for pastures associated with homesites and urban development. In a few areas, they are used for cultivated crops or citrus crops or are left in natural vegetation.

**(57) Wabasso fine sand** - This soil is nearly level and poorly drained. It is on plains on the flatwoods. The slope is 0 to 2 percent.



## De Leon Springs State Park Soil Descriptions

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In 95 percent of the areas mapped as Wabasso fine sand, the Wabasso soil and similar soils make up 85 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 15 percent of the mapped areas.

Typically, the soil has a surface layer of very dark gray fine sand about 7 inches thick. The subsurface layer, to a depth of about 29 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 32 inches, is black fine sand. The next layer, to a depth of about 38 inches, is dark brown fine sand. The next layer, to a depth of about 46 inches, is light gray sandy clay loam. The lower part, to a depth of about 60 inches, is light greenish gray, mottled sandy clay loam. The substratum to a depth of about 80 inches is gray loamy sand. Similar soils included in mapping, in some areas, have a subsoil at a depth of more than 30 inches. Other similar soils, in some places, have a subsoil at a depth of more than 40 inches, or have a very strong acid subsoil, or have both. Other similar soils, in some areas, have subsoil that is brown or dark yellowish brown; and in some places, the similar soils have thin discontinuous strata of limestone fragments in the underlying material.

Dissimilar soils included in mapping are Myakka and Pinellas soils in small areas. Myakka soils do not have a loamy subsoil below the sandy subsoil. Pinellas soils have a calcareous layer above the subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of 10 inches for 2 months and recedes to a depth of 40 inches during prolonged dry periods. Permeability is rapid in the surface and subsurface layers. It is moderate in the upper part of the subsoil and slow in the lower parts, and it is rapid in the substratum. The available water capacity is low or moderate.

In most areas, this Wabasso soil is used as native pasture. In a few areas, it is used for cultivated crops, improved pasture, citrus crops, or homesite or urban development. The natural vegetation consists of longleaf pine and slash pine. The understory includes lopsided indiagrass, gallberry, saw palmetto, pineland threeawn, and waxmyrtle.

If a water control system is established and maintained and soil-improving measures applied, this soil is well suited to most cultivated crops and pasture. If drained, this soil is moderately suited to citrus crops in areas, that are relatively free of freezing temperatures. Proper arrangement and bedding of tree rows, lateral ditches or tile drains, and well constructed outlets will remove excess surface water and will help lower the water table. Droughtiness, a result of the low to moderate available water capacity, is a management concern, especially during extended dry periods. This soil is suited to most irrigation systems. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility. Frequent applications of fertilizer and lime are generally needed to improve crop production.

## De Leon Springs State Park Soil Descriptions

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If a water control system is established and maintained, this soil is well suited to pasture. Wetness limits the choice of plants that can be grown and restricts grazing during periods of excessive wetness. Proper stocking, pasture rotation, and restricted grazing during wet periods help to keep the pasture and the soil in good condition. Fertilizer and lime are needed for optimum growth of grasses and legumes.

The potential of this soil for the production of slash pines is moderately high. Equipment use limitations and seedling mortality are the main limitations. Equipment use limitation is a concern if the soil is not properly drained. Water-tolerant trees should be planted. Planting and harvesting operations should be scheduled during dry periods. Bedding or rows helps to minimize the excessive wetness limitations.

If this soil is used for building site development, the main management concerns are excessive wetness and slow permeability of the lower subsoil. Population growth has resulted in increased construction of houses on this soil. Drainage is needed to lower the high water table, and fill material is needed in most areas. The slow permeability of lower subsoil and the high water table increase the possibility that the septic tank absorption fields will not function properly. The slow permeability limitation can be minimized by increasing the size of the absorption field.

This Wabasso soil is in capability subclass IIIW, in woodland group 10W, and in South Florida Flatwoods range site.

**(59) Winder fine sand** - This soil is nearly level and poorly drained. It is on broad, low-lying sloughs on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of the areas, mapped as Winder fine sand, the Winder soil and similar soils make up 88 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 12 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 4 inches thick. The subsurface layer, to a depth of about 10 inches, is grayish brown fine sand. The upper part of the subsoil, to a depth of about 14 inches, is dark grayish brown, mottled sandy loam and gray fine sand. The lower part of the subsoil, to a depth of about 30 inches, is gray sandy clay loam. The upper part of the substratum, to a depth of about 58 inches, is light gray, mottled sandy clay loam. The lower part to a depth of about 80 inches is gray sandy loam. Similar soils included in mapping, in some areas, have subsoil at a depth of more than 20 inches. Other similar soils, in some areas, have a thin discontinuous strata of fragmented limestone in the upper part of the subsoil.

Dissimilar soils included in mapping are Basinger, Myakka, and Wabasso soils in small areas. Basinger soils are very poorly drained. Myakka soils have a dark color sandy subsoil Wabasso soils have a dark color sandy subsoil above a loamy subsoil.

## De Leon Springs State Park Soil Descriptions

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In most years, a seasonal high water table fluctuates from the soil surface to a depth of about 10 inches for 2 to 6 months. Permeability is rapid in the surface and subsurface layers. It is slow or very slow in the subsoil and in the substratum. The available water capacity is moderate.

In most areas, this Winder soil is used as pasture. In a few areas, it is used for cultivated crops or for homesite or urban development. The natural vegetation consists of live oak, cabbage palm, and slash pine. The understory includes saw palmetto, pineland threeawn, and waxmyrtle.

If a water control system is established and maintained and soil-improving measures applied, this soil is well suited to most cultivated crops. If suitable outlets are available, lateral ditches and tile drains can be used to lower the water table. Returning all crop residue to the soil and using a cropping system that includes grasses, legumes, or a grass-legume mixture help to maintain fertility. Frequent applications of fertilizer and lime are generally needed to improve crop production.

This soil is suited to pasture. Wetness limits the choice of plants that can be grown and restricts grazing during periods of excessive wetness. Proper stocking, pasture rotation, and timely deferment of grazing help keep the pasture in good condition.

The potential of this soil for the production of slash pines is high. This soil has few limitations for woodland use and management. Equipment use limitation is a concern if the soil is not properly drained. Water-tolerant trees should be planted. Planting and harvesting operations should be scheduled during dry periods.

If this soil is used for building site development, the main management concerns are excessive wetness and slow to very slow permeability of the subsoil and substratum. Population growth has resulted in increased construction of homes on this soil. The slow or very slow permeability of the subsoil and substratum and the high water table increase the possibility that the septic tank absorption fields will not function properly. The slow or very slow permeability limitation can be minimized by increasing the size of the absorption field. Drainage is needed to lower the high water table, and fill material is needed in most areas.

This Winder soil is in capability subclass IIIW, in woodland group 11W, and in the Cabbage Palm Hammocks range site.

## **Addendum 5—Plant and Animal List**



## De Leon Springs State Park Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (For Imperiled Species)
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### LICHENS

Christmas lichen .....	<i>Cryptothecia rubrocincta</i>	
Old-man's beard .....	<i>Usnea</i> sp.	

### PTERIDOPHYTES

Brittle maidenhair .....	<i>Adiantum tenerum</i>	
Toothed midsorus fern.....	<i>Blechnum serrulatum</i>	
Southern wood fern.....	<i>Dryopteris ludoviciana</i>	
Marianna maiden fern.....	<i>Macrothelypteris torresiana</i>	
Tuberous sword fern* .....	<i>Nephrolepis cordifolia</i>	
Sword fern .....	<i>Nephrolepis exaltata</i>	
Cinnamon fern.....	<i>Osmunda cinnamomea</i>	
Royal fern .....	<i>Osmunda regalis</i> var. <i>spectabilis</i>	
Resurrection fern .....	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	
Bracken fern.....	<i>Pteridium aquilinum</i>	
Leatherleaf fern* .....	<i>Rumohra adiantiformis</i>	
Marsh fern .....	<i>Thelypteris palustris</i> var. <i>pubescens</i>	
Shoestring fern.....	<i>Vittaria lineata</i>	
Netted chain fern .....	<i>Woodwardia areolata</i>	

### GYMNOSPERMS

Australian-pine* .....	<i>Casuarina equisetifolia</i>	
Red cedar .....	<i>Juniperus virginiana</i>	
Slash pine .....	<i>Pinus elliottii</i>	
Longleaf pine.....	<i>Pinus palustris</i>	
Loblolly pine.....	<i>Pinus taeda</i>	
Pond-cypress.....	<i>Taxodium ascendens</i>	
Bald-cypress .....	<i>Taxodium distichum</i>	
Florida arrowroot .....	<i>Zamia pumila</i>	

### ANGIOSPERMS

Boxelder .....	<i>Acer negundo</i>	
Red maple.....	<i>Acer rubrum</i>	
Garlic .....	<i>Allium</i> sp.	
Alligatorweed* .....	<i>Alternanthera philoxeroides</i>	
Bastard indigobush.....	<i>Amorpha fruticosa</i>	
Peppervine .....	<i>Ampelopsis arborea</i>	
Chalky bluestem .....	<i>Andropogon virginicus</i> var. <i>glaucus</i>	
Broomsedge bluestem .....	<i>Andropogon virginicus</i> var. <i>virginicus</i>	
Nodding Nixie .....	<i>Apteria aphylla</i>	
Devil's walkingstick .....	<i>Aralia spinosa</i>	
Scratchthroat* .....	<i>Ardisia crenata</i>	
Greendragon .....	<i>Arisaema dracontium</i>	
Jack-in-the-pulpit.....	<i>Arisaema triphyllum</i>	
Wiregrass.....	<i>Aristida beyrichiana</i>	
Switchcane.....	<i>Arundinaria gigantea</i>	
Smallflower pawpaw.....	<i>Asimina parviflora</i>	

\* Non-native Species

## De Leon Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (For Imperiled Species)
Netted pawpaw.....	<i>Asimina reticulata</i>	
Common asparagus-fern.....	<i>Asparagus setaceus</i>	
Ebony spleenwort.....	<i>Asplenium platyneuron</i>	
Elliott's aster .....	<i>Aster elliotii</i>	
Carolina mosquito fern.....	<i>Azolla caroliniana</i>	
Groundsel tree.....	<i>Baccharis halimifolia</i>	
Lemon bacopa .....	<i>Bacopa caroliniana</i>	
Bamboo* .....	<i>Bambusa</i> sp.	
Alabama supplejack .....	<i>Berchemia scandens</i>	
Beggarticks .....	<i>Bidens alba</i>	
Smallfruit beggarticks.....	<i>Bidens mitis</i>	
Crossvine.....	<i>Bigonias capreolata</i>	
Toothed midsorus fern.....	<i>Blechnum serrulatum</i>	
False nettle .....	<i>Boehmeria cylindrica</i>	
Pindo palm* .....	<i>Butia capitata</i>	
American beautyberry .....	<i>Callicarpa americana</i>	
Common camellia* .....	<i>Camellia japonica</i>	
Sasanqua camellia .....	<i>Camellia sasanqua</i>	
Trumpet creeper .....	<i>Campsis radicans</i>	
American hornbeam .....	<i>Carpinus caroliniana</i>	
Mockernut hickory.....	<i>Carya alba</i>	
Water hickory.....	<i>Carya aquatica</i>	
Pignut hickory .....	<i>Carya glabra</i>	
Pecan* .....	<i>Carya illinoensis</i>	
Southern catalpa.....	<i>Catalpa bignonioides</i>	
Madagascar periwinkle* .....	<i>Catharanthus roseus</i>	
Sugarberry.....	<i>Celtis laevigata</i>	
Sandbur.....	<i>Cenchrus</i> sp.	
Spadeleaf.....	<i>Centella asiatica</i>	
Common buttonbush .....	<i>Cephalanthus occidentalis</i>	
Woodoats.....	<i>Chasmanthium</i> sp.	
Camphortree* .....	<i>Cinnamomum camphora</i>	
Thistle .....	<i>Cirsium</i> sp.	
Calamondin orange* .....	<i>Citrus</i> sp.	
Citrus* .....	<i>Citrus</i> spp.	
Jamaica swamp sawgrass.....	<i>Cladium jamaicense</i>	
Wild taro* .....	<i>Colocasia esculenta</i>	
Whitemouth dayflower.....	<i>Commelina erecta</i>	
American squawroot.....	<i>Conopholis americana</i>	
Spring coralroot.....	<i>Corallorhiza wisteriana</i>	
Leavenworth's tickseed .....	<i>Coreopsis leavenworthii</i>	
Swamp dogwood.....	<i>Cornus foemina</i>	
Hawthorn.....	<i>Crataegus</i> sp.	
Seven-sisters; String lily .....	<i>Crinum americanum</i>	
Bermudagrass* .....	<i>Cynodon dactylon</i>	
Flatsedge.....	<i>Cyperus</i> sp.	
Manyspike flatsedge .....	<i>Cyperus polystachyos</i>	

\* Non-native Species



De Leon Springs State Park Plants

Common Name	Scientific Name	Primary Habitat Codes (For Imperiled Species)
Witchgrass .....	<i>Dichanthelium</i> sp.	
Carolina ponyfoot .....	<i>Dichondra caroliniesis</i>	
Crabgrass .....	<i>Digitaria</i> sp.	
Air-potato* .....	<i>Dioscorea bulbifera</i>	
Common persimmon .....	<i>Diospyros virginiana</i>	
Brazilian waterweed* .....	<i>Egeria densa</i>	
Common water-hyacinth* .....	<i>Eichhornia crassipes</i>	
Elephantsfoot .....	<i>Elephantopus</i> sp.	
Florida butterfly orchid.....	<i>Encyclia tampensis</i>	
Greenfly orchid .....	<i>Epidendrum conopseum</i>	
Golden Pothos .....	<i>Epipremnum pinnatum</i>	
American burnweed.....	<i>Erechtites hieracifolia</i>	
Fleabane .....	<i>Erigeron</i> sp.	
Loquat* .....	<i>Eriobotrya japonica</i>	
Button rattlesnakemaster.....	<i>Eryngium yuccifolium</i>	
Coralbean .....	<i>Erythrina herbacea</i>	
American strawberrybush.....	<i>Euonymus americanus</i>	
Dogfennel .....	<i>Eupatorium capillifolium</i>	
Joepyeweed .....	<i>Eupatorium fistulosum</i>	
Thoroughwort.....	<i>Eupatorium</i> sp.	
Flattop goldenrod.....	<i>Euthamia graminifolia</i> var. <i>hirtipes</i>	
Climbing Fig* .....	<i>Ficus pumila</i>	
Carolina ash .....	<i>Fraxinus caroliniana</i>	
Eastern milkpea .....	<i>Galactia regularis</i>	
Downy milkpea .....	<i>Galactia volubilis</i>	
MilkPea.....	<i>Galactia</i> sp.	
Bedstraw .....	<i>Galium</i> sp.	
Dwarf Huckleberry .....	<i>Gaylussacia dumosa</i>	
Yellow jessamine .....	<i>Gelsemium sempervirens</i>	
Sweet everlasting .....	<i>Gnaphalium obtusifolium</i>	
Loblolly bay.....	<i>Gordonia lasianthus</i>	
Toothpetal false reinorchid .....	<i>Habenaria floribunda</i>	
White gingerlily* .....	<i>Hedychium coronarium</i>	
Scarlet rosemallow .....	<i>Hibiscus coccineus</i>	
Swamp rosemallow .....	<i>Hibiscus grandiflorus</i>	
Marshpennywort .....	<i>Hydrocotyle</i> sp.	
Coastalplain spiderlily .....	<i>Hymenocallis crassifolia</i>	
St. John's-wort .....	<i>Hypericum</i> sp.	
Dahoon holly .....	<i>Ilex cassine</i>	
Inkberry .....	<i>Ilex glabra</i>	
Yellow anisetree.....	<i>Illicium parviflorum</i> .....	HH
Rockland morning-glory.....	<i>Ipomoea tenuissima</i>	
Dixie Iris; Prairie Iris .....	<i>Irix hexagona</i>	
Star Jasmine* .....	<i>Jasminum multiflorum</i>	
Soft rush.....	<i>Juncus effuses</i> ssp. <i>Solutus</i>	
Needle rush; Needlegrass rush .	<i>Juncus roemerianus</i>	
Duckweed .....	<i>Lemna</i> sp.	

\* Non-native Species

## De Leon Springs State Park Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (For Imperiled Species)
Virginia pepperweed.....	<i>Lepidium virginicum</i>	
Doghobble .....	<i>Leucothoe</i> sp.	
Glossy privet* .....	<i>Ligustrum lucidum</i>	
Canada toadflax.....	<i>Linaria canadensis</i>	
Sweetgum.....	<i>Liquidambar styraciflua</i>	
Monkey grass* .....	<i>Liriope spicata</i>	
Southern magnolia .....	<i>Magnolia grandiflora</i>	
Sweetbay.....	<i>Magnolia virginiana</i>	
Texas waxmallow* .....	<i>Malvaviscus arboreus</i>	
Florida milkvine .....	<i>Matelea floridana</i>	
Creeping cucumber .....	<i>Melothria pendula</i>	
Climbing hempvine.....	<i>Mikania scandens</i>	
Partridgeberry .....	<i>Mitchella repens</i>	
Southern bayberry .....	<i>Myrica cerifera</i>	
Oleander* .....	<i>Nerium oleander</i>	
Crowpoison; False garlic .....	<i>Nothoscordum bivalve</i>	
Pondlily.....	<i>Nuphar lutea</i>	
Swamp tupelo .....	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Ground orchid* .....	<i>Oeceoclades maculata</i>	
Burmam's basketgrass.....	<i>Oplismenus burmanii</i>	
Woodsgrass.....	<i>Oplismenus hirtellus</i>	
Pricklypear .....	<i>Opuntia humifusa</i>	
Pink woodsorrel * .....	<i>Oxalis debilis</i>	
Maidencane.....	<i>Panicum hemitomon</i>	
Panic grass.....	<i>Panicum</i> spp.	
Virginia creeper .....	<i>Parthenocissus quinquefolia</i>	
Bahiagrass* .....	<i>Paspalum notatum</i>	
Purple passionflower.....	<i>Passiflora incarnata</i>	
Plume polyploidy .....	<i>Pecluma plumula</i>	
Swamp bay .....	<i>Persea palustris</i>	
Golden polyplody .....	<i>Phlebodium aureum</i>	
Date palm* .....	<i>Phoenix dactylifera</i>	
Fogfruit.....	<i>Phyla nodiflora</i>	
Leafflower .....	<i>Phyllanthus</i> sp.	
American pokeweed .....	<i>Phytolacca americana</i>	
Artillery plant .....	<i>Pilea microphylla</i>	
Canadian clearweed .....	<i>Pilea pumila</i>	
Blueflower butterwort .....	<i>Pinguicula caerulea</i>	
Blackseed needlegrass.....	<i>Piptochaetium avenacium</i>	
Water-lettuce* .....	<i>Pistia stratiotes</i>	
Japanese cheesewood*.....	<i>Pittosporum pentandrum</i>	
Zigzag silkgrass/Fl. Goldenaster	<i>Pityopsis flexuosa</i>	
Narrowleaf silkgrass .....	<i>Pityopsis graminifolia</i>	
Crested yellow orchid .....	<i>Platanthera cristata</i>	
Yew podocarpus* .....	<i>Podocarpus macrophyllus</i>	
Paintedleaf .....	<i>Poinsettia cyathophora</i>	
Orange milkwort .....	<i>Polygala lutea</i>	

\* Non-native Species

## De Leon Springs State Park Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (For Imperiled Species)
Smartweed .....	<i>Polygonum sp.</i>	
Hairy leafcup .....	<i>Polymnia uvedalia</i>	
Pickernelweed .....	<i>Pontederia cordata</i>	
American plum .....	<i>Prunus americana</i>	
Carolina laurelcherry .....	<i>Prunus caroliniana</i>	
Rabbit Tobacco .....	<i>Pseudognaphalium obtusifolium</i>	
Blackroot .....	<i>Pterocaulon pycnostachyum</i>	
Giant Orchid .....	<i>Pteroglossapsis ecristata</i>	
Turkey oak .....	<i>Quercus laevis</i>	
Laurel oak .....	<i>Quercus laurifolia</i>	
Water oak .....	<i>Quercus nigra</i>	
Virginia live oak .....	<i>Quercus virginiana</i>	
Pale meadowbeauty .....	<i>Rhexia mariana</i>	
Azalea* .....	<i>Rhododendron sp.</i>	
Swamp azalea .....	<i>Rhododendron viscosum</i>	
Winged sumac .....	<i>Rhus copallinum</i>	
Beaksedge .....	<i>Rhynchospora sp.</i>	
Sawtooth blackberry.....	<i>Rubus argutus</i>	
Blackberry.....	<i>Rubus sp.</i>	
Britton's wild petunia* .....	<i>Ruellia brittoniana</i>	
Carolina wild petunia .....	<i>Ruellia caroliniensis</i>	
Cabbage palm .....	<i>Sabal palmetto</i>	
Carolina willow .....	<i>Salix caroliniana</i>	
Lyreleaf sage.....	<i>Salvia lyrata</i>	
Water spangles.....	<i>Salvinia minima</i>	
American elderberry; Elderberry	<i>Sambucus nigra spp. canadensis</i>	
Hooded pitcherplant .....	<i>Sarracenia minor</i>	
Lizard's tail.....	<i>Saururus cernuus</i>	
Bulrush.....	<i>Scirpus sp.</i>	
Saw palmetto .....	<i>Serenoa repens</i>	
Rattlebox* .....	<i>Sesbania punicea</i>	
Bladderpod.....	<i>Sesbania vesicaria</i>	
Common wireweed.....	<i>Sida acuta</i>	
Hairy leafcup .....	<i>Smilax uvedalia</i>	
Saw greenbrier .....	<i>Smilax bona-nox</i>	
Sarsaparilla vine .....	<i>Smilax pumila</i>	
Greenbrier .....	<i>Smilax spp.</i>	
Carolina horsenettle .....	<i>Solanum carolinense</i>	
Tropical soda apple* .....	<i>Solanum viarum</i>	
Goldenrod .....	<i>Solidago sp.</i>	
Sand cordgrass.....	<i>Spartina bakeri</i>	
Sphagnum .....	<i>Sphagnum sp.</i>	
Ladiestresses.....	<i>Spiranthes sp.</i>	
Smutgrass .....	<i>Sporobolus indicus</i>	
Florida hedgenettle .....	<i>Stachys floridana</i>	
Common chickweed* .....	<i>Stellaria media</i>	
St. Augustinegrass* .....	<i>Stenotaphrum secundatum</i>	

\* Non-native Species

## De Leon Springs State Park Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (For Imperiled Species)
Queen palm*	<i>Syagrus romanzoffiana</i>	
American evergreen	<i>Syngonium angustatum</i>	
Common dandelion*	<i>Taraxacum officinale</i>	
Alligator flag; fireflag	<i>Thalia geniculata</i>	
Airplant	<i>Tillandsia</i> spp.	
Spanish moss	<i>Tillandsia usneoides</i>	
Eastern poison ivy	<i>Toxicodendron radicans</i>	
Small-leaf spiderwort*	<i>Tradescantia fluminensis</i>	
Bluejacket	<i>Tradescantia ohiensis</i>	
Clasping Venus's lookingglass ...	<i>Triodanis perfoliata</i>	
Cattail	<i>Typha</i> sp.	
American elm	<i>Ulmus Americana</i>	
Winged Elm	<i>Ulmus alata</i>	
Caesarweed	<i>Urena lobate</i>	
Old man's beard	<i>Usnea</i> sp.	
Sparkleberry	<i>Vaccinium arboreum</i>	
Darrow's blueberry	<i>Vaccinium darrowii</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Deerberry	<i>Vaccinium stamineum</i>	
Tapegrass	<i>Vallisneria americana</i>	
Crownbeard	<i>Verbesina</i> sp.	
White crownbeard	<i>Verbesina virginica</i>	
Giant ironweed	<i>Vernonia gigantean</i>	
Ironweed	<i>Vernonia</i> sp.	
Bog white violet	<i>Viola lanceolata</i>	
Common blue violet	<i>Viola sororia</i>	
Summer grape	<i>Vitis aestivalis</i>	
Muscadine	<i>Vitis rotundifolia</i>	
Grape	<i>Vitis</i> sp.	
Arrowleaf elephant ear *	<i>Xanthosoma sagittifolium</i>	
Oriental false hawksbeard*	<i>Youngia japonica</i>	

\* Non-native Species

## De Leon Springs State Park Animals

<b>Common Name</b>	<b>Scientific Name</b>	<b>Primary Habitat Codes (For Imperiled Species)</b>
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### INVERTEBRATES

#### TICKS

Lone star tick ..... *Amblyomma americanum*

#### GRASSHOPPERS

Eastern lubber ..... *Romalea microptera*

#### DRAGONFLIES

Eastern pondhawk..... *Erythemis simplicicollis*

#### ARACHNIDS

Crab-like spiny orb weavers ..... *Gasterancantha elipsoides*

#### BEETLES

Small whirligig beetle ..... *Gyrinus sp.*

#### BEE'S, WASPS AND HORNETS

Giant water scavenger bee ..... *Hydrophilus sp.*

#### MOTHS

American Dagger moth ..... *Acronicta americana*

Luna moth ..... *Actias luna*

#### BUTTERFLIES

Giant swallowtail ..... *Papilio cresphontes*

Eastern tiger swallowtail ..... *Papilio glaucus australis*

Black swallowtail ..... *Papilio polyxenes*

Spicebush swallowtail ..... *Papilio troilus*

Zebra long wing ..... *Heliconius charitonius tuckeri*

Red admiral..... *Vanessa atalanta rubria*

#### ISOPODS

Unknown sp. .... *Caecidotea hobbsi*

Unknown sp. .... *Caecidotea racovitzai austral*

#### AMPHIPODS

Hobbs' cave crangonyctid ..... *Crangonyx hobbsi*

#### DECAPOD

Eastern grass shrimp ... *Palaemonetes paludosus*

Crayfish ... *Procambarus sp.*

#### GASTROPOD

Ram's Horn Snail ..... *Planorbella sp.*

Florida Applesnail ..... *Pomacea paludosa*

#### MISC. INSECTS

\* Non-native Species

## De Leon Springs State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (For Imperiled Species)
Bryozoan .....	<i>Pectinitella sp.</i>	
Creeping water bug .....	<i>Pelocoris sp.</i>	
Water Scorpion .....	<i>Ranatra fuscus</i>	
Roma		
<b>AMPHIBIANS</b>		
Flatwoods salamander .....	<i>Ambystoma cingulatum</i>	
Marbled salamander .....	<i>Ambystoma opacum</i>	
Oak toad.....	<i>Bufo quercicus</i>	
Southern Toad.....	<i>Bufo terrestris</i>	
Southern Green treefrog.....	<i>Hyla cinerea</i>	
Squirrel treefrog .....	<i>Hyla squirella</i>	
Southern Spring Peeper .....	<i>Pseudacris crucifer</i>	
Florida chorus frog .....	<i>Pseudacris nigrita verrucosa</i>	
Bullfrog.....	<i>Rana catesbeiana</i>	
Pig frog.....	<i>Rana grylio</i>	
Florida leopard frog .....	<i>Rana utricularia sphenoccephala</i>	
Eastern spadefoot .....	<i>Scaphiopus holbrookii</i>	
Greater Siren .....	<i>Siren lacertina</i>	
<b>REPTILES</b>		
Eastern Cottonmouth.....	<i>Agkistrodon piscivorus</i>	
American alligator .....	<i>Alligator mississippiensis</i> .....	HH,SRST
Green anole .....	<i>Anolis carolinensis carolinensis</i>	
Brown anole* .....	<i>Anolis sagrei</i>	
Florida softshell .....	<i>Apalone ferox</i>	
Northern scarlet snake.....	<i>Cemophora coccinea copei</i>	
Florida snapping turtle.....	<i>Chelydra serpentina Osceola</i>	
Six-lined racerunner .....	<i>Cnemidophorus sexlineatus sexlineatus</i>	
Southern black racer .....	<i>Coluber constrictor Priapus</i>	
Eastern diamondback rattlesnake .....	<i>Crotalus adamanteus</i> .....	ABP,MF,XH
Southern ringneck snake .....	<i>Diadophis punctatus punctatus</i>	
Eastern indigo snake .....	<i>Drymarchon corais couperi</i> .....	ABP,MF,XH
Corn snake.....	<i>Elaphe guttata guttata</i>	
Yellow rat snake .....	<i>Elaphe obsoleta quadrivittata</i>	
Southeastern five-lined skink ...	<i>Eumeces inexpectatus</i>	
Broad-headed skink .....	<i>Eumeces laticeps</i>	
Gopher tortoise.....	<i>Gopherus Polyphemus</i> .....	ABP,MF,XH
Striped mud turtle.....	<i>Kinosternon bauri</i>	
Scarlet kingsnake.....	<i>Lampropeltis triangulum elapsoides</i>	
Eastern coral snake .....	<i>Micrurus fulvius fulvius</i>	
Florida banded water snake.....	<i>Nerodia fasciata</i>	
Banded water snake .....	<i>Nerodia fasciata fasciata</i>	
Florida water snake .....	<i>Nerodia fasciata pictiventris</i>	
Brown water snake.....	<i>Nerodia taxispilota</i>	
Rough green snake .....	<i>Opheodrys aestivus</i>	
Eastern glass lizard .....	<i>Ophisaurus ventralis</i>	

\* Non-native Species

## De Leon Springs State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (For Imperiled Species)
Florida cooter .....	<i>Pseudemys floridana floridana</i>	
Peninsula cooter .....	<i>Pseudemys floridana peninsularis</i>	
Florida redbelly turtle .....	<i>Pseudemys nelson</i>	
Striped crayfish snake .....	<i>Regina alleni</i>	
Pine woods snake.....	<i>Rhadinaea flavilata</i>	
Ground skink.....	<i>Scincella laterale</i>	
Dusky pigmy rattlesnake.....	<i>Sistrurus miliarius barbouri</i>	
Loggerhead musk turtle .....	<i>Sternotherus minor minor</i>	
Central Florida crowned snake ..	<i>Tantilla relicta neilli</i>	
Florida box turtle .....	<i>Terrepene carolina bauri</i>	
Peninsula ribbon snake .....	<i>Thamnophis sauritus sackeni</i>	
Eastern garter snake .....	<i>Thamnophis sirtalis sirtalis</i>	

### BIRDS

Cooper's Hawk.....	<i>Accipiter cooperii</i>	
Sharp-shinned hawk.....	<i>Accipiter striatus</i>	
Red-winged blackbird .....	<i>Agelaius phoeniceus</i>	
Wood duck .....	<i>Aix sponsa</i>	
Northern Pintail .....	<i>Anas acuta</i>	
American wigeon .....	<i>Anas americana</i>	
Northern shoveler .....	<i>Anas clypeata</i>	
Green-winged Teal .....	<i>Anas crecca</i>	
Blue-winged Teal .....	<i>Anas discors</i>	
Anhinga .....	<i>Anhinga anhinga</i>	
Limpkin .....	<i>Aramus guarauna</i> .....	HH,SRST
Ruby-throated hummingbird.....	<i>Archilochus colubris</i>	
Great egret .....	<i>Ardea alba</i> .....	HH,SRST
Great Blue Heron .....	<i>Ardea herodias</i>	
Lesser scaup .....	<i>Aythya affinis</i>	
Redhead .....	<i>Aythya americana</i>	
Ring-necked duck .....	<i>Aythya collaris</i>	
Tufted titmouse .....	<i>Baeolophus bicolor</i>	
Cedar waxwing .....	<i>Bombycilla cedrorum</i>	
American bittern .....	<i>Botaurus lentiginosus</i>	
Great horned owl .....	<i>Bubo virginianus</i>	
Cattle egret* .....	<i>Bubulcus ibis</i>	
Red-tailed hawk.....	<i>Buteo jamaicensis</i>	
Red-shouldered hawk .....	<i>Buteo lineatus</i>	
Green heron .....	<i>Butorides virescens</i>	
Chuck-will's-widow .....	<i>Caprimulgus carolinensis</i>	
Northern cardinal .....	<i>Cardinalis cardinalis</i>	
American goldfinch.....	<i>Carduelis tristis</i>	
Turkey vulture .....	<i>Cathartes aura</i>	
Hermit thrush.....	<i>Catharus guttatus</i>	
Swainson's thrush.....	<i>Catharus ustulatus</i>	
Belted kingfisher .....	<i>Ceryle alcyon</i>	
Chimney Swift .....	<i>Chaetura pelagica</i>	

\* Non-native Species



## De Leon Springs State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (For Imperiled Species)
Killdeer .....	<i>Charadrius vociferus</i>	
Common nighthawk .....	<i>Chordeiles minor</i>	
Northern Harrier .....	<i>Circus cyaneus</i>	
Marsh wren .....	<i>Cistothorus palustris</i>	
Yellow-billed cuckoo .....	<i>Coccyzus americanus</i>	
Northern flicker.....	<i>Colaptes auratus</i>	
Northern bobwhite .....	<i>Colinus virginianus</i>	
Common ground dove .....	<i>Columbina passerina</i>	
Black vulture .....	<i>Coragyps atratus</i>	
American Crow .....	<i>Corvus brachyrhynchos</i>	
Fish crow .....	<i>Corvus ossifragus</i>	
Blue jay .....	<i>Cyanocitta cristata</i>	
Pileated woodpecker.....	<i>Dryocopus pileatus</i>	
Gray catbird .....	<i>Dumetella carolinensis</i>	
Little blue heron.....	<i>Egretta caerulea</i> .....	HH, SRST
Reddish egret .....	<i>Egretta rufescens</i> .....	HH, SRST
Snowy egret .....	<i>Egretta thula</i> .....	HH, SRST
Tricolored Heron .....	<i>Egretta tricolor</i> .....	HH, SRST
Swallow-tailed kite .....	<i>Elanoides forficatus</i> .....	MF, DS, Ru
White ibis.....	<i>Eudocimus albus</i>	
Merlin .....	<i>Falco columbarius</i> .....	MF, Ru
American kestrel .....	<i>Falco sparverius</i>	
American coot .....	<i>Fulica americana</i>	
Wilson's snipe.....	<i>Gallinago delicata</i>	
Common moorhen .....	<i>Gallinula chloropus</i>	
Common loon.....	<i>Gavia immer</i>	
Common yellowthroat.....	<i>Geothlypis trichas</i>	
Sandhill crane.....	<i>Grus canadensis</i>	
Blue grosbeak.....	<i>Guiraca caerulea</i>	
Bald eagle .....	<i>Haliaeetus leucocephalus</i> .....	HH, SRST
Worm-eating warbler .....	<i>Helmitheros vermivorus</i>	
Barn swallow .....	<i>Hirundo rustica</i>	
Caspian tern.....	<i>Hyprogne caspia</i>	
Baltimore Oriole .....	<i>Icterus galbula</i>	
Loggerhead shrike.....	<i>Lanius ludovicianus</i>	
Ring-billed gull .....	<i>Larus delawarensis</i>	
Laughing gull.....	<i>Leucophaeus atricilla</i>	
Hooded merganser.....	<i>Lophodytes cucullatus</i>	
Belted Kingfisher.....	<i>Megaceryle alcyon</i>	
Eastern-screech owl .....	<i>Megascops asio</i>	
Red-bellied woodpecker .....	<i>Melanerpes carolinus</i>	
Red-headed woodpecker .....	<i>Melanerpes erythrocephalus</i>	
Wild turkey .....	<i>Meleagris gallopavo</i>	
Swamp sparrow.....	<i>Melospiza georgiana</i>	
Red-breasted merganser.....	<i>Mergus serrator</i>	
Northern mockingbird.....	<i>Mimus polyglottos</i>	
Black-and-white warbler .....	<i>Mniotilta varia</i>	

\* Non-native Species

## De Leon Springs State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (For Imperiled Species)
Brown-headed cowbird .....	<i>Molothrus ater</i>	
Wood stork .....	<i>Mycteria americana</i> .....	HH, DS
Great crested flycatcher .....	<i>Myiarchus crinitus</i>	
Yellow-crowned night herring ...	<i>Nyctanassa violaceus</i>	
Black-crowned night-heron.....	<i>Nycticorax nycticorax</i>	
Eastern screech-owl .....	<i>Otus asia</i>	
Osprey .....	<i>Pandion haliaetus</i> .....	SRST, HH
Northern parula .....	<i>Parula americana</i>	
Carolina chickadee .....	<i>Parus carolinensis</i>	
Savannah Sparrow .....	<i>Passerculus sandwichensis</i>	
Painted bunting .....	<i>Passerina ciris</i>	
Indigo bunting .....	<i>Passerina cyanea</i>	
Brown Pelican.....	<i>Pelecanus occidentalis</i>	
Double-crested Cormorant .....	<i>Phalacrocorax auritus</i>	
Rose-breasted Grosbeak .....	<i>Pheucticus ludovician</i>	
Downy woodpecker .....	<i>Picoides pubescens</i>	
Scarlet Tanager .....	<i>Piranga olivacea</i>	
Summer Tanager .....	<i>Piranga rubra</i>	
Pied-billed grebe .....	<i>Podilymbus podiceps</i>	
Blue-gray gnatcatcher .....	<i>Polioptila caerulea</i>	
Sora.....	<i>Porzana carolina</i>	
Purple martin .....	<i>Progne subis</i>	
Prothonotary Warbler .....	<i>Protonotaria citrea</i>	
Boat-tailed grackle .....	<i>Quiscalus major</i>	
Common grackle .....	<i>Quiscalus quiscula</i>	
Ruby-crowned kinglet.....	<i>Regulus calendula</i>	
Eastern phoebe.....	<i>Sayornis phoebe</i>	
Ovenbird.....	<i>Seiurus aurocapillus</i>	
Northern waterthrush .....	<i>Seiurus noveboracensis</i>	
Black-throated Blue warbler .....	<i>Setophaga caerulescens</i>	
Yellow-rumped warbler .....	<i>Setophaga coronata</i>	
Prairie warbler .....	<i>Setophaga discolor</i>	
Yellow-throated warbler .....	<i>Setophaga dominica</i>	
Palm warbler .....	<i>Setophaga palmarum</i>	
Pine warbler .....	<i>Setophaga pinus</i>	
American redstart .....	<i>Setophaga ruticilla</i> .....	HH, MF, UMW
Black pole warbler.....	<i>Setophaga striata</i>	
Cape May Warbler.....	<i>Setophaga tigrina</i>	
Yellow-bellied sapsucker .....	<i>Sphyrapicus varius</i>	
Chipping Sparrow.....	<i>Spizella passerina</i>	
Forster's Tern.....	<i>Sterna forsteri</i>	
Barred owl .....	<i>Strix varia</i>	
European starling* .....	<i>Sturnus vulgaris</i>	
Tree swallow .....	<i>Tachycineta bicolor</i>	
Carolina wren .....	<i>Thryothorus ludovicianus</i>	
Brown thrasher .....	<i>Toxostoma rufum</i>	
House wren.....	<i>Troglodytes aedon</i>	

\* Non-native Species

## De Leon Springs State Park Animals

Common Name	Scientific Name	Primary Habitat Codes (For Imperiled Species)
American robin .....	<i>Turdus migratorius</i>	
Orange-crowned warbler .....	<i>Vermivora celata</i>	
Yellow-throated vireo .....	<i>Vireo flavifrons</i>	
White-eyed vireo .....	<i>Vireo griseus</i>	
Red-eyed vireo .....	<i>Vireo olivaceus</i>	
Blue-headed vireo .....	<i>Vireo solitarius</i>	
Hooded Warbler .....	<i>Wilsonia citrina</i>	
Mourning dove .....	<i>Zenaida macroura</i>	
<b>MAMMALS</b>		
Coyote* .....	<i>Canis latrans</i>	
Nine-banded armadillo* .....	<i>Dasypus novemcinctus</i>	
Virginia opossum .....	<i>Didelphis virginiana</i>	
Feral Cat* .....	<i>Felis catus</i>	
Bobcat .....	<i>Felis rufus</i>	
Southern flying squirrel .....	<i>Glaucomys volans</i>	
River otter .....	<i>Lutra canadensis</i>	
Rhesus Monkey .....	<i>Macaca mulatta</i>	
Eastern woodrat .....	<i>Neotoma floridana</i>	
Golden Mouse .....	<i>Ochrotomys nuttalli</i>	
White-tailed deer .....	<i>Odocoileus virginianus</i>	
Eastern pipistrelle .....	<i>Pipistrellus subflavus</i>	
Raccoon .....	<i>Procyon lotor</i>	
Florida Panther .....	<i>Puma concolor coryi</i>	
Gray squirrel .....	<i>Sciurus carolinensis</i>	
Sherman's fox squirrel .....	<i>Sciurus niger shermani</i> .....	MF, Ru
Wild pig* .....	<i>Sus scrofa</i>	
Eastern cottontail .....	<i>Sylvilagus floridanus</i>	
West Indian manatee .....	<i>Trichechus manatus latirostris</i> .....	SRST
Gray fox .....	<i>Urocyon cinereoargenteus</i>	
Florida black bear .....	<i>Ursus americanus floridanus</i> .....	MF, HH
Red Fox .....	<i>Vulpes vulpe</i>	

\* Non-native Species

## Primary Habitat Codes

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### TERRESTRIAL

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

### PALUSTRINE

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

## Primary Habitat Codes

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Wet Prairie ..... WP

### LACUSTRINE

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

### RIVERINE

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

### SUBTERRANEAN

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

### ESTUARINE

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

### MARINE

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

## Primary Habitat Codes

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### ALTERED LANDCOVER TYPES

Abandoned field .....	ABF
Abandoned pasture .....	ABP
Agriculture .....	AG
Canal/ditch .....	CD
Clearcut pine plantation .....	CPP
Clearing .....	CL
Developed .....	DV
Impoundment/artificial pond .....	IAP
Invasive exotic monoculture .....	IEM
Pasture - improved .....	PI
Pasture - semi-improved .....	PSI
Pine plantation .....	PP
Road .....	RD
Spoil area .....	SA
Successional hardwood forest .....	SHF
Utility corridor .....	UC

### MISCELLANEOUS

Many Types of Communities .....	MTC
Overflying .....	O





## **Addendum 6—Imperiled Species Ranking Definitions**



## **Imperiled Species Ranking Definitions**

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

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

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

### **FNAI GLOBAL RANK DEFINITIONS**

- G1 ..... Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or fabricated factor.
- G2 ..... Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3 ..... Either very rare or local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- G4 ..... apparently secure globally (may be rare in parts of range)
- G5 ..... demonstrably secure globally
- GH ..... of historical occurrence throughout its range may be rediscovered (e.g., ivory-billed woodpecker)
- GX ..... believed to be extinct throughout range
- GXC ..... extirpated from the wild but still known from captivity or cultivation
- G#? ..... Tentative rank (e.g., G2?)
- G#G# ..... range of rank; insufficient data to assign specific global rank (e.g., G2G3)

## Imperiled Species Ranking Definitions

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- G#T# ..... rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
- G#Q..... rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
- G#T#Q..... same as above, but validity as subspecies or variety is questioned.
- GU ..... due to lack of information, no rank or range can be assigned (e.g., GUT2).
- G?..... Not yet ranked (temporary)
- S1..... Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- S2..... Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
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- S4..... apparently secure in Florida (may be rare in parts of range)
- S5..... demonstrably secure in Florida
- SH ..... of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- SX..... believed to be extinct throughout range
- SA..... accidental in Florida, i.e., not part of the established biota
- SE..... an exotic species established in Florida may be native elsewhere in North America
- SN ..... regularly occurring but widely and unreliably distributed; sites for conservation hard to determine
- SU ..... due to lack of information, no rank or range can be assigned (e.g., SUT2).
- S?..... Not yet ranked (temporary)
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## Imperiled Species Ranking Definitions

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### LEGAL STATUS

#### **FEDERAL**

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

- LE ..... Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
- PE ..... Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
- LT ..... Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.
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- E(S/A) ..... Endangered due to similarity of appearance.
- T(S/A) ..... Threatened due to similarity of appearance.
- EXPE, XE..... Experimental essential population. A species listed as experimental and essential.
- EXPN, XN.... Experimental non-essential population. A species listed as experimental and non-essential. Experimental, nonessential populations of endangered species are treated as threatened species on public land, for consultation purposes.

#### **STATE**

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

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

## **Imperiled Species Ranking Definitions**

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

### **PLANTS .... (Listed by the Florida Department of Agriculture and Consumer Services - FDACS)**

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

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

## **Addendum 6—Imperiled Species Ranking Definitions**





## **Imperiled Species Ranking Definitions**

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## **Addendum 7—Cultural Information**



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

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

### **A. General Discussion**

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

### **B. Agency Responsibilities**

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

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

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

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

### **C. Statutory Authority**

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

### **D. Management Implementation**

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

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

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

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

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

**E. Minimum Review Documentation Requirements**

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at:

[http://www.flheritage.com/preservation/compliance/docs/minimum\\_review\\_documentation\\_requirements.pdf](http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf) .

\* \* \*

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

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

Phone: (850) 245-6425  
Toll Free: (800) 847-7278  
Fax: (850) 245-6435



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

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

- 1) Districts, sites, buildings, structures, and objects may be considered to have significance in American history, architecture, archaeology, engineering, and/or culture if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
  - a) are associated with events that have made a significant contribution to the broad patterns of our history; and/or
  - b) are associated with the lives of persons significant in our past; and/or
  - c) embody the distinctive characteristics of type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
  - d) have yielded, or may be likely to yield, information important in prehistory or history.
  
- 2) Ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance within the past 50 years shall not be considered eligible for the *National Register*. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:
  - a) a religious property deriving its primary significance from architectural or artistic distinction or historical importance; or
  - b) a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
  - c) a birthplace or grave of an historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or
  - d) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, distinctive design features, or association with historic events; or a reconstructed building, when it is accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and no other building or structure with the same association has survived; or a property primarily commemorative in intent, if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or
  - e) a property achieving significance within the past 50 years, if it is of exceptional importance.

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

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

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

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

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