

Wekiva River Buffer Conservation Area

**Land Management Plan
Governing Board Approved
February 2012**

Wekiva River Buffer Conservation Area Land Management Plan Summary

Management Area Size: 3,142 acres

Date of Acquisition: Acquisition of parcels within Wekiva River Buffer Conservation Area began in 1988.

Date of Plan: January 2012

Date of Previous Plan: August 2006

Basin: Wekiva River Basin

Basin Planning Unit: Middle Basin

Location: Wekiva River Buffer Conservation Area is located in Seminole County, approximately 1 mile west of the City of Longwood, along the Wekiva and Little Wekiva Rivers.

Funding Source: Wekiva River Buffer Conservation Area was received through mitigation donation.

Management Partners:

- The District is lead manager for the Wekiva River Buffer Conservation Area. An intergovernmental management agreement between the District and the Audubon Society of Florida designates the District as lead manager of Audubon-owned parcels within the conservation area.

Key Resource Issues:

Resource Management Issues:

- WATER RESOURCES – The majority of water resource protection was accomplished through acquisition.
- FIRE MANAGEMENT – The majority of the conservation area includes natural communities that are not fire adapted. Prescribed fire is not a component of the management plan for this property.
- FOREST MANAGEMENT – The District may conduct salvage harvest operations in response to wildfire, disease, or insect infestation.
- WILDLIFE – The conservation area provides habitat for numerous wildlife species including the state threatened Florida black bear (*Ursus americanus floridanus*) and several rare plants such as star anise (*Illicium parviflorum*) and needle palm (*Rhapidophyllum hystrix*).
- EXOTICS – Invasive exotic pest plant and animal species occur on the property at low to moderate levels of infestation. The District regularly monitors for the presence of invasive plants and animals and responds with appropriate control action.
- CULTURAL & ARCHEOLOGICAL RESOURCES – A review of the Department of State, Division of Historical Resources indicates there are two Florida master site locations within the boundaries of the conservation area.

Key Land Use/Recreation Issues: The conservation area is open to the public with recreational opportunities for hiking, biking, and wildlife viewing. While there is not public boat launch within the conservation area, canoeists and kayakers may access the Wekiva and Little Wekiva Rivers from nearby public boat ramps.

Land Use Management Issues:

- ACCESS – One public access point provides recreational access to the conservation area.
- RECREATION USE – The conservation area is open for public recreation. Access to canoeing, kayaking, and fishing on the Wekiva and Little Wekiva Rivers is available via adjacent public properties.
- SECURITY – Maintenance of fence lines, boundary posting, the public access point, gates, and locks is conducted as necessary. The District coordinates with local law enforcement, and a private security firm for security needs.

Administration:

- ACQUISITION – While there are no acquisitions planned in the foreseeable future, the District may consider purchasing parcels or easements near the WRBCA that become available and that will aid in the conservation of water resources within the Wekiva River basin. The District may pursue acquisition of small parcels and in holdings or property exchanges with neighbors to improve and/or provide additional access to the conservation area.
- COOPERATIVE AGREEMENTS, LEASES, EASEMENTS AND SPECIAL USE AUTHORIZATIONS (SUA) –
 - Agreements, leases, and SUAs relative to the conservation area include:
 - A management agreement with the Audubon Society of Florida.

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INTRODUCTION

This document provides guidelines for land management activities to be implemented at Wekiva River Buffer Conservation Area (WRBCA) over the next ten years. This is a revision of the land management plan approved in August of 2006.

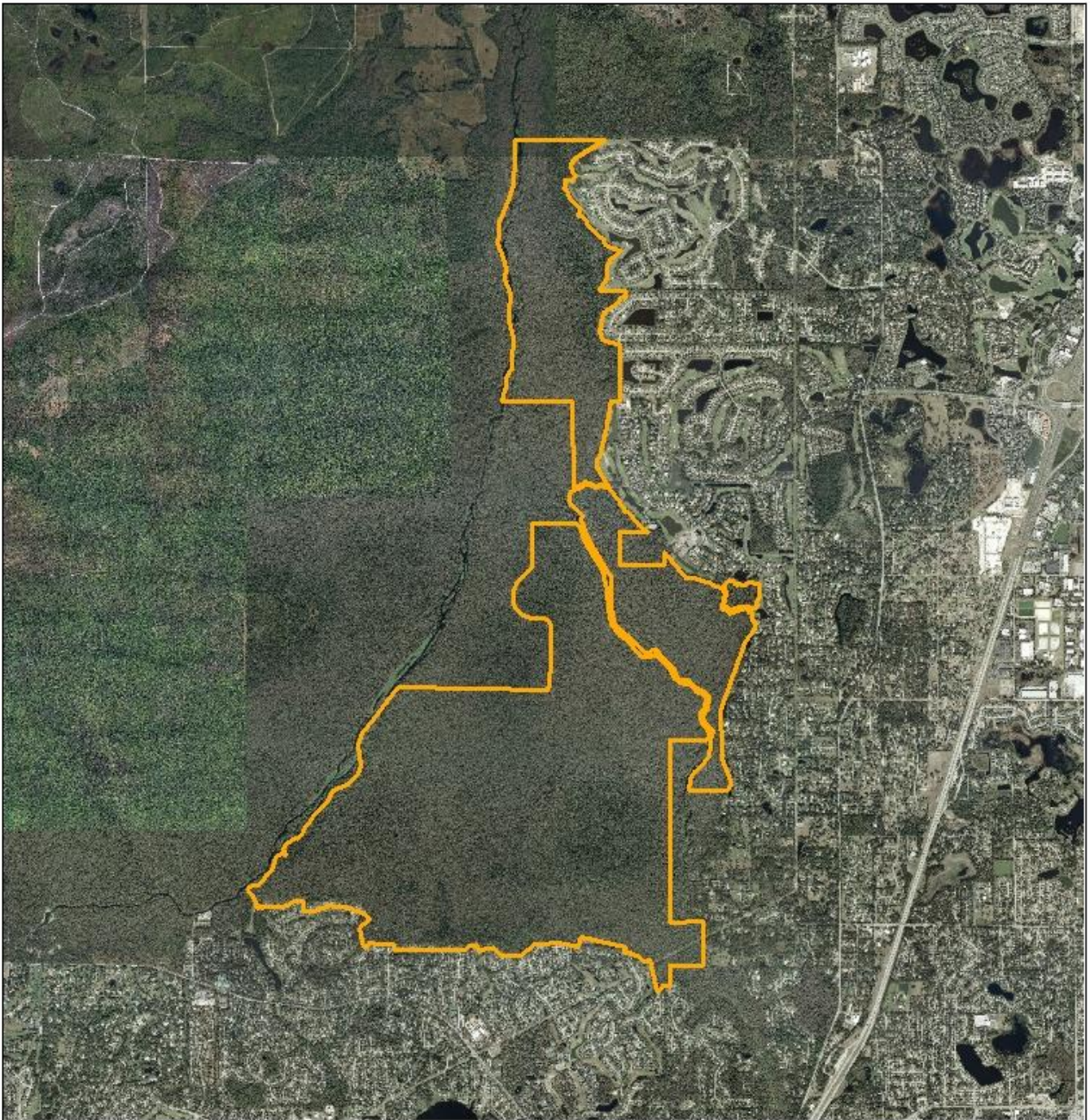
WRBCA includes approximately 3,142 acres within the Wekiva River Buffer Basin. The property is located in Seminole County, along the Little Wekiva and Wekiva Rivers. The conservation area provides protection for approximately 6.5 miles of the Little Wekiva and Wekiva River shorelines.

The conservation area is located west of the City of Longwood, Interstate 4, and Markham Woods Road. State Road 46 is located approximately 2.5 miles north of the property and Wekiva Springs Road is approximately .5 miles south of the property. The property is bound to the west, in part, by the Wekiva River.

The property is located within several Sections of Township 20 South and Range 29 East. Figure 1 is a 2009 aerial image of the property and Figure 2 depicts the location of the conservation area.

The acquisition of the parcels that comprise the WRBCA provide for the protection of important water resources and ecological functions. This acquisition is consistent with the goals of the Middle St. Johns River Basin projects set forth in the District's Land Acquisition and Management Five Year Plan, and the District's Water Management Plan, which were in place during the acquisition of the parcels within the conservation area. These goals are to:

- Preserve the natural floodplain for flood control and protection.
- Maintain natural hydrologic regimes and water quality.
- Restore, maintain, and protect native natural communities and diversity.
- Provide opportunities for recreation where compatible with the above listed goals.
- Protect archaeological and cultural resources.




**Wekiva River Buffers
Conservation Area
Figure 1 - 2009 Aerial Imagery Map**

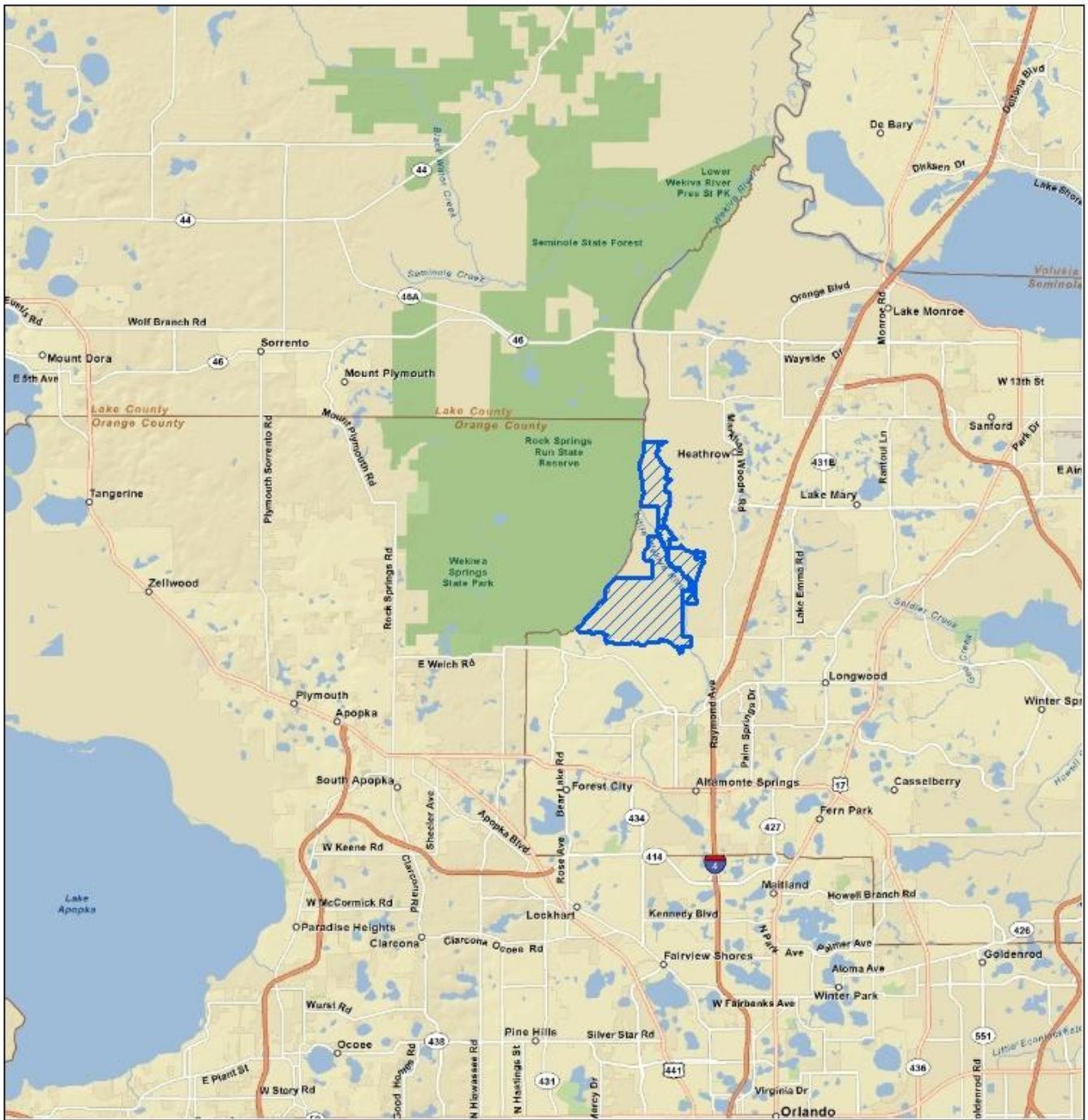


1
Miles
1 = 50000



 **Boundary**

The St. Johns River Water Management District prepares and uses this information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems Program Management, P.O. Box 1429, 4049 Reid Street, Palatka, Florida 32178-1429. Tel: (386) 329-4176.



**Wekiva River Buffers
Conservation Area
Figure 2 - Location Map**



1
Miles
1 = 200000



 **Conservation Area**

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CONSERVATION AREA OVERVIEW

Regional Significance

The WRBCA is a significant acquisition providing linkage between a broad network of publicly owned lands and conservation easements in Seminole County and surrounding areas and within the Wekiva River Protection Area. Figure 3 illustrates the regional significance of the conservation area. Public conservation lands that are contiguous or in close proximity to the WRBCA include:

- Wekiwa Springs State Park
- Rock Springs Run State Reserve
- Seminole State Forest

Acquisition History

The WRBCA is comprised of nine (9) parcels, totaling 3,142 acres (Figure 4.) The following properties were acquired using funding sources as indicated and were subsequently incorporated into the conservation area. Table (1) one summarizes the land acquisition accomplishments.

Heathrow Development – 197 acres – Land Acquisition Number 1989-012

This parcel was acquired by the District on May 24, 1989 through mitigation donation.

NTS Sabal Point – 1,550 acres - Land Acquisition number 1988-015

This parcel was acquired by the District on December 5, 1989 through mitigation donation.

Kenneth Leffler – 114 acres – Land Acquisition Number 1990-069

This parcel was acquired by the District on May 22, 1990 through mitigation donation.

Forest Oaks/A. Wayne Rich – 10 acres – Land Acquisition Number 1992-023

This parcel was acquired by the District on November 1, 1991 through mitigation donation.

Alaqua – 300 acres – Land Acquisition Number 1992-060

This parcel was acquired by the District on May 1, 1996 through mitigation donation.

Alaqua – 120 acres – Land Acquisition Number 1992-060

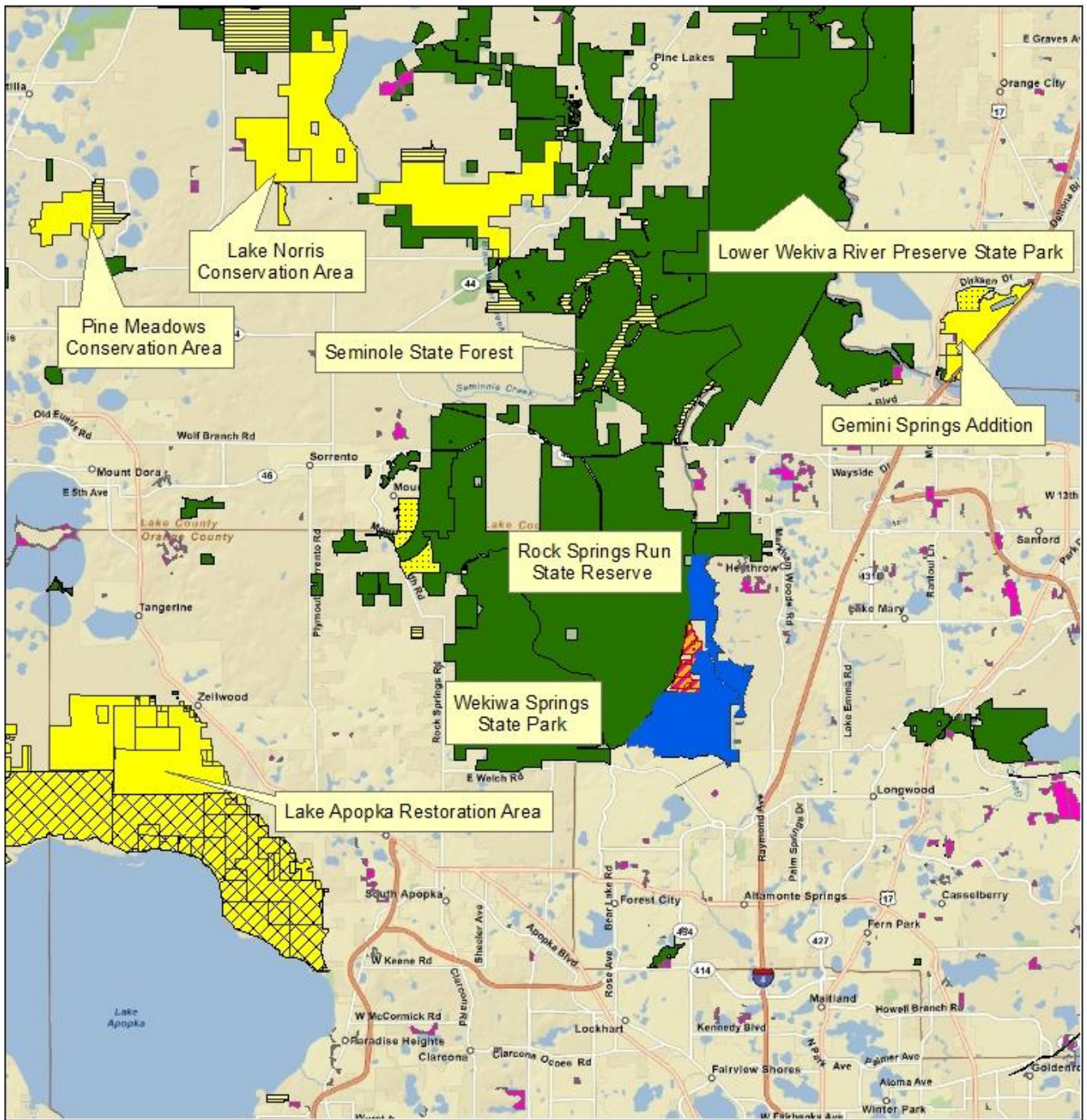
This parcel was acquired by the District on April 18, 1994 through mitigation donation.

Hartley – 40 acres – Land Acquisition Number 1994-017

This parcel was acquired by the District on October 21, 1997 through mitigation donation.

Centex Homes/Magnolia Plantation – 196 acres – Land Acquisition Number 1994-017

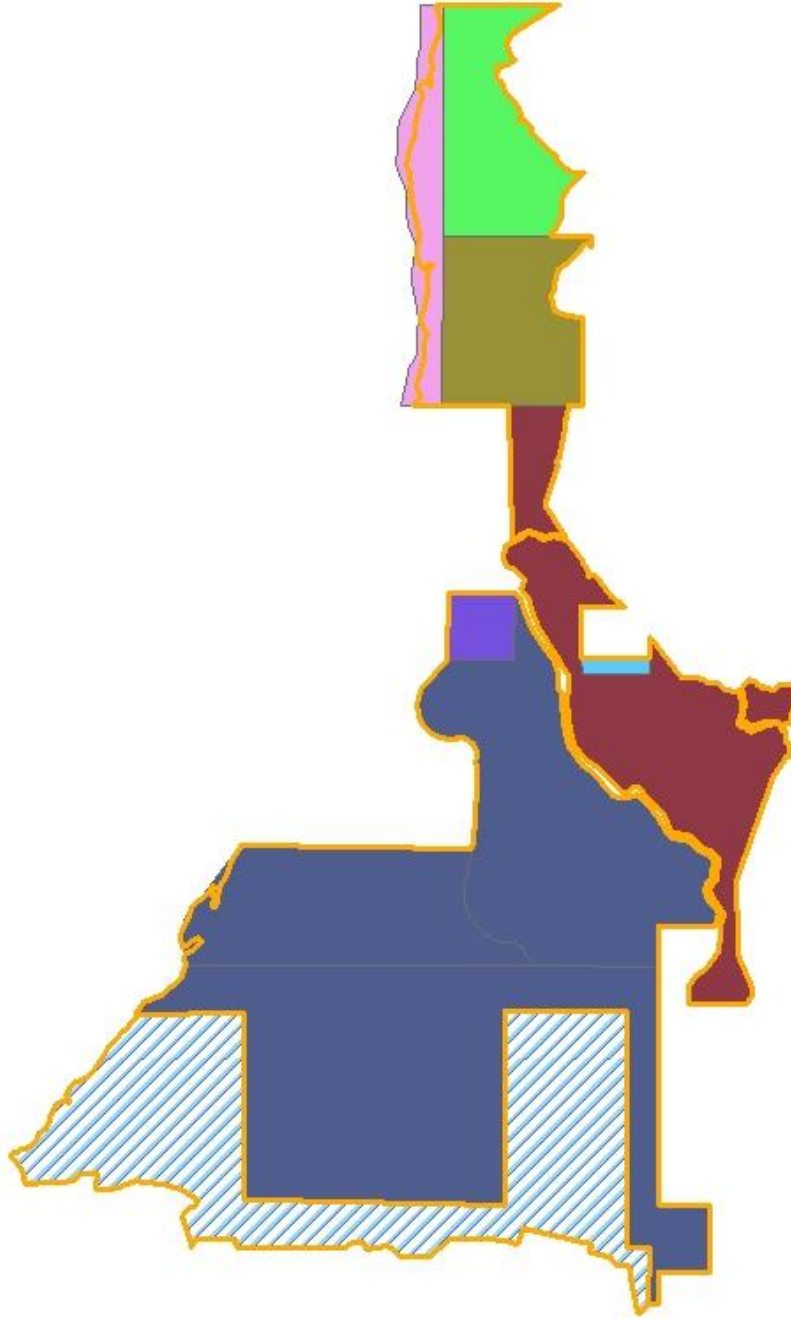
This parcel was acquired by the District on April 21, 1999 through mitigation donation.



Wekiva River Buffer Conservation Area
Figure 3 - Regional Significance Map

	Conservation Area
	Mitigation Bank
	USDA-NRCS Easements
SJRWMD Title Interest	
	Full Fee
	Joint Fee
	Fee - Life Estate
	District Owned Conservation Easements
	Regulatory Easement
	Other Public Lands

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**Wekiva River Buffer
Conservation Area
Figure 4 - Acquisition Map**



1
Miles
1 = 40000

-  Boundary
-  Alaqua
-  Centex Homes/Magnolia Plantation
-  Forest Oaks/A. Wayne Rich
-  Hartley
-  Heathrow Development
-  Kenneth Leffler
-  NTS Sabal Point
-  Audubon of Florida Property

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Tel: (385) 329-4175.

Table 1 – Land Acquisition Summary

Parcel	LA Number	Acres	Total Purchase Price	Closing Date	District Funding Source
Heathrow Development	1989-012	197	Mitigation Donation	May 24, 1989	-----
NTS Sabal Point	1988-015	1,550	Mitigation Donation	December 5, 1989	-----
Kenneth Leffler	1990-069	114	Mitigation Donation	May 22, 1990	-----
Forest Oaks/A. Wayne Rich	1992-023	10	Mitigation Donation	November 1, 1991	-----
Alaqua	1992-060	300	Mitigation Donation	May 1, 1996	-----
Alaqua	1992-060	120	Mitigation Donation	April 18, 1994	-----
Hartley	1994-017	40	Mitigation Donation	October 21, 1997	-----
Centex Homes /Magnolia Plantation	1999-029	193	Mitigation Donation	April 21, 1999	-----
Subtotal		2524	-----	-----	-----
Audubon Owned Property*	-----	618	-----	-----	-----
TOTAL	-----	3142	-----	-----	-----

*Not acquired or owned by the District, but included in the total acreage for the conservation area as it is incorporated into the WRBCA via a management agreement between the District and the Audubon Society of Florida. The agreement designates the District as lead manager for the conservation area.

Local Government Land Use Designation

Seminole County

Seminole County Future Land Use Maps identify the WRBCA as conservation land. Future land use designations for the WRBCA and surrounding area include Conservation, Suburban Estates, Planned Development, and Recreation. The area is zoned A1, lots a minimum of 1-acre, or PUD (Planned Urban Development) of which lot sizes are determined by submitting a rezoning application, which must include a master plan.

- Conservation and Future Land Use

Conservation is a land use designation consisting of protected wetland and flood prone areas. The allowable zoning in this designation is A1, or minimum of one-acre units. All development within this designation must comply with certain land use requirements found in the Seminole County Comprehensive Plan regulations.

- Recreation Future Land Use

The Recreation designation allows for a future land use of recreation. The zoning in this area includes Public Land Institutions, Planned Unit Development, and A3, A5, and A10 or agriculture with minimum lot sizes of 3, 5, and 10 acres.

- Suburban Estates Future Land Use

The Suburban Estates future land use designation has a maximum of 1 dwelling unit per acre. Allowable zoning designations are agriculture, one acre country homes, Public Lands Institutions, planned unit development, and the designation of travel trailer park and campsites.

- Planned Development Future Land Use

The Planned Development land use designates areas where developments must have a master plan or a site plan and utilize a rezoning application for approval of lot densities.

NATURAL RESOURCES OVERVIEW

Topography and Hydrology

The Wekiva River Buffer Conservation Area is within the Little Wekiva and Wekiva River basins, sub basins of the Middle St. Johns River Basin. The Little Wekiva River basin receives drainage from an urbanized, 42-square-mile area west and northwest of Orlando. The river flows northward from Lake Lawne through Altamonte Springs in Seminole County. The river flows through one of the southern arms of the Wekiva swamp and to the confluence with the Wekiva River (Little Wekiva River, 2010).

The Wekiva River flow originates from a combination of surface drainage, small creeks and artesian spring flow from thirty springs. The headwaters of the river is Wekiwa Springs State park at Wekiwa Springs, a second-magnitude spring, which discharges an average of 42 million gallons of water per day. A short distance north of the spring, the Wekiva River forms at the confluence of Rock Springs Run and continues for 14 miles until it joins the St. Johns River at Lake Monore, receiving input from Blackwater Creek and the Little Wekiva River along the way. Although the Wekiva Basin area is heavily developed, water quality within the Wekiva River remains fair. The Wekiva River is designated as an Outstanding Florida Water, and Aquatic Preserve, and a Federal and State Wild and Scenic River.

Much of the land area within the Middle St. Johns River Basin was developed prior to stormwater management requirements, and subsequently, the Little Wekiva and Wekiva Rivers are impacted. Non point source pollutants from stormwater runoff and erosion that causes sediment accumulation on the riverbed are affecting water quality.

The conservation area is within the St. Johns Offset of the Central Lakes District. The Central Lakes District is a physiographic area where uplifted limestone from the Floridan Aquifer lies unconformably below surficial sands. This is a sand hill karst region of the most

active sinkhole development and is a principle recharge area. The St. Johns Offset is an ancient portion of the St. Johns River Valley with numerous springs.

Elevations within the conservation area range from 5 to 35 feet National Geodetic Vertical Datum (NGVD), with the highest elevations occurring on the southernmost extent of the property and the lowest elevations are found along the shore of Wekiva River. Figure 5 depicts the hydrologic features of the WRBCA and surrounding area.

Natural Communities

The 3,142 acres that comprise the WRBCA consist primarily of floodplain swamp (Figure 6). Table 2 details the percent coverage associated with each natural community documented within the conservation area. Information relative to the natural communities within the conservation area is derived from several sources including personal observations of District staff. Additionally, the general natural community descriptions are characterized using descriptions published in the Florida Natural Areas Inventory's (FNAI) *Guide to the Natural Communities of Florida*. Natural community and species ranking definitions are listed in Addendum 1.

Hydric Hammock (262 acres)

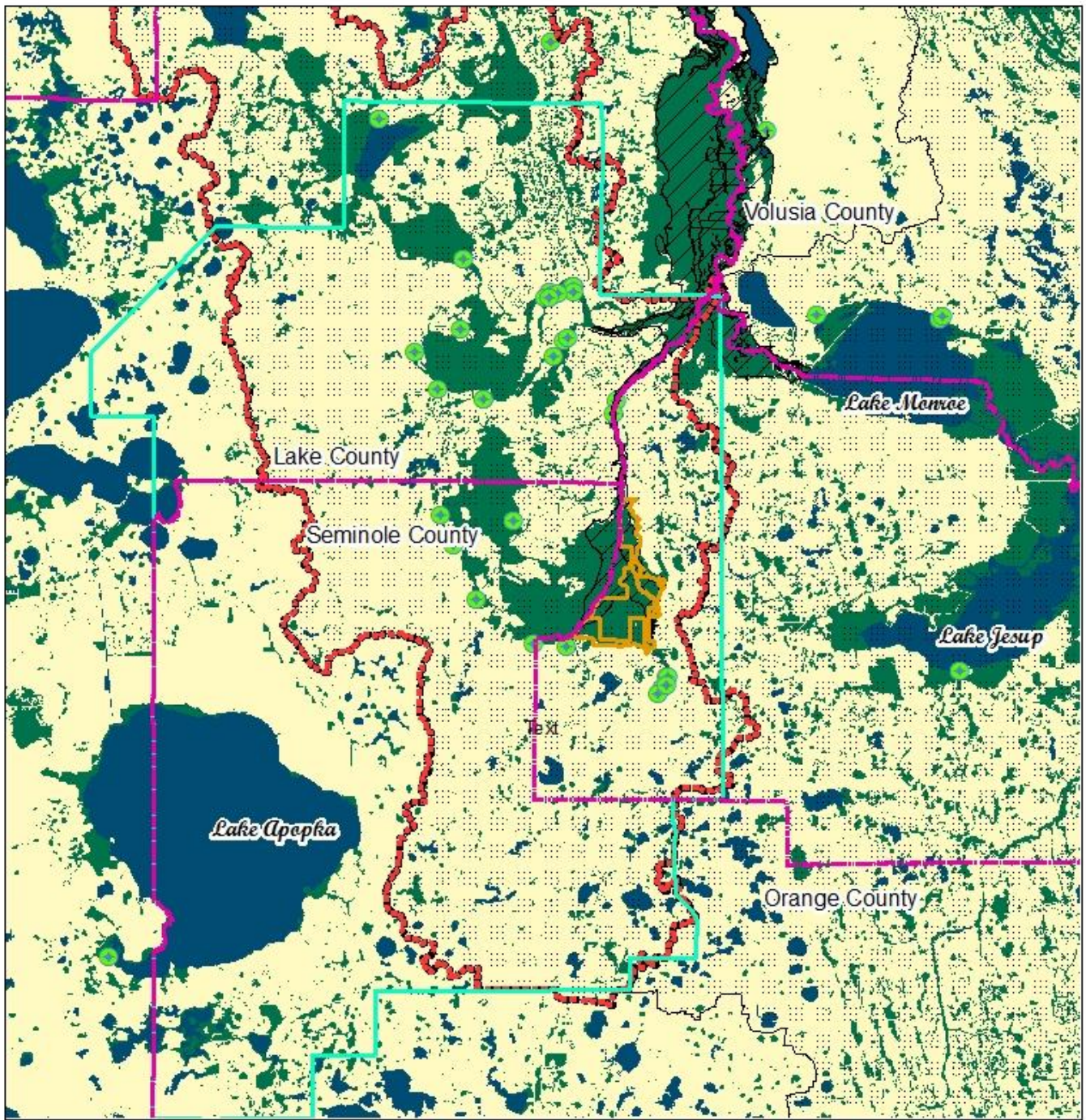
Soils that support hydric hammock communities are generally poorly drained and may be acidic to slightly alkaline, with little organic matter. Hydric hammocks are well-developed hardwood and/or palm forests with a variable understory. The closed canopy may include a variety of species, such as cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), water oak (*Q. nigra*), red cedar (*Juniperus virginiana*), and loblolly pine (*Pinus taeda*), all of which are present within the conservation area.

The hydric hammock communities within the conservation area are scattered across the property and are generally located in areas of slightly higher elevations than the surrounding floodplain swamps. These areas are largely in fair condition with the most significant disturbance being altered hydrology. Fire is not a primary mechanism of disturbance; however, these communities do occasionally burn.

Wet Flatwoods (25 acres)

Soils that support wet flatwoods are generally very poorly drained sandy soils that may have a mucky texture in the upper horizons. Wet flatwoods occur as ecotonal areas between the drier mesic flatwoods and wetter areas including swamps. They may also occur in broad, low flatlands embedded within these communities.

Well-maintained wet flatwoods exhibit a relatively open-canopy forest of scattered pine trees (longleaf, loblolly, slash, or pond) or cabbage palms (*Sabal palms*) with either a sparse or absent midstory and a dense groundcover of grasses, herbs, and low shrubs. Understory species of the sub canopy and shrub layers may include sweet bay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), and saw palmetto. The groundcover layer may include species such as wiregrass, blue maidencane (*Amphicarpum muhlenbergianum*), and numerous hydrophytic species. The variation in structure and

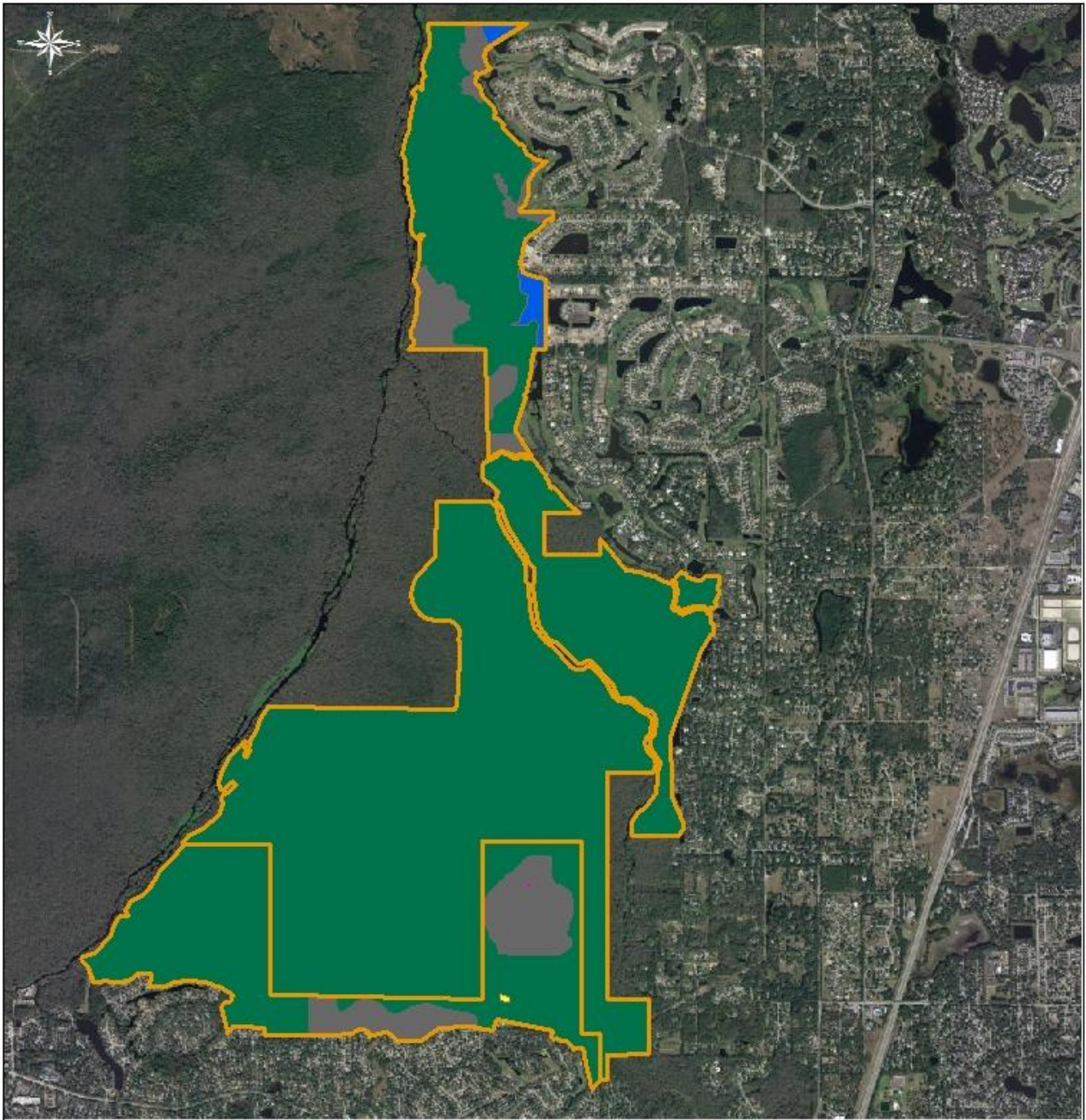


Wekiva River Buffer Conservation Area
Figure 5 - Hydrology Map

5 Miles
 1" = 275,000

- Boundary
- County Boundaries
- Middle St. Johns River Basin
- Wekiva River Basin
- Wekiva Recharge Protection Basin
- Wekiva River Aquatic Preserve
- Water
- Wetland
- Uplands
- Springs/Floridan Aquifer

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Wekiva River Buffer Conservation Area
Figure 6 - Natural Communities Map



1 Miles
 1 = 40000

-  Boundary
-  Borrow Pit
-  Floodplain Swamp
-  Hydric Hammock
-  Old Field
-  Wet Flatwoods

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Table 2 – Natural Community Coverages

Natural Community Type	Acreage	Percent Coverage	FNAI Ranking	FNAI Fire Return Interval*
Floodplain Swamp	2,854	91%	G4/S4	This is not a fire adapted community
Hydric Hammock	262	8%	G4/S4	This community rarely burns
Wet Flatwoods	25	<1%	G4/S4	2-4 years
Subtotal	3,141	-----		-----
Altered Land Types	Acreage	Percent Coverage		Fire Return Interval
Old Field	1	<11%	-----	1-3 years
Borrow Pit	<1	<1%	-----	-----
Subtotal	1	-----	-----	-----
Total	3,142	-----	-----	-----

*Stated FNAI fire return intervals are based on regional differences in communities and fuel loading. The District will target the lowest interval possible that will effectively carry fire.

The wet flatwoods within the conservation area were clearcut in 2003 as a result of a southern pine beetle infestation and subsequent mortality in the loblolly pine.

The wet flatwoods community is fire dependant with return intervals ranging from one to three years in grassy systems and five to seven years in shrubbier systems. The proximity of this natural community to homes, highways, and other smoke sensitive areas will likely preclude the use of prescribed fire as a management tool.

Floodplain Swamp (2,854 acres)

Floodplain swamp communities typically occur on flooded soils along stream channels and within river floodplains. The floodplain swamp communities within the conservation area are associated with Little Wekiva and Wekiva Rivers.

Soils that support floodplain swamp communities are variable, but may include a mixture of sand, organic, and alluvial material. Peat soils may be present in floodplain swamps associated with smaller streams and branches or in areas of low stream velocity. The most important physical factor associated with the shaping and maintenance of the floodplain swamp is the hydroperiod. Extended periods of inundation, which may last for most of the year, are common in the floodplain swamp environment. Alterations to the hydrology within the floodplain swamp, particularly a reduction in the duration of inundation periods may have damaging consequences to the system and associated flora and fauna. Since this community type is maintained by hydrologic regimes, it is not fire dependent.

The functionality of floodplain swamps across the WRBCA is largely intact. Notable physical alterations to this community include an historical logging road that leads from the south boundary to the Wekiva River. Typical of the floodplain swamp system, the examples of this community type within the conservation area include a closed-canopy

forest of hydrophytic, buttressed trees including bald cypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatica*).

Altered Land Types (1 acre)

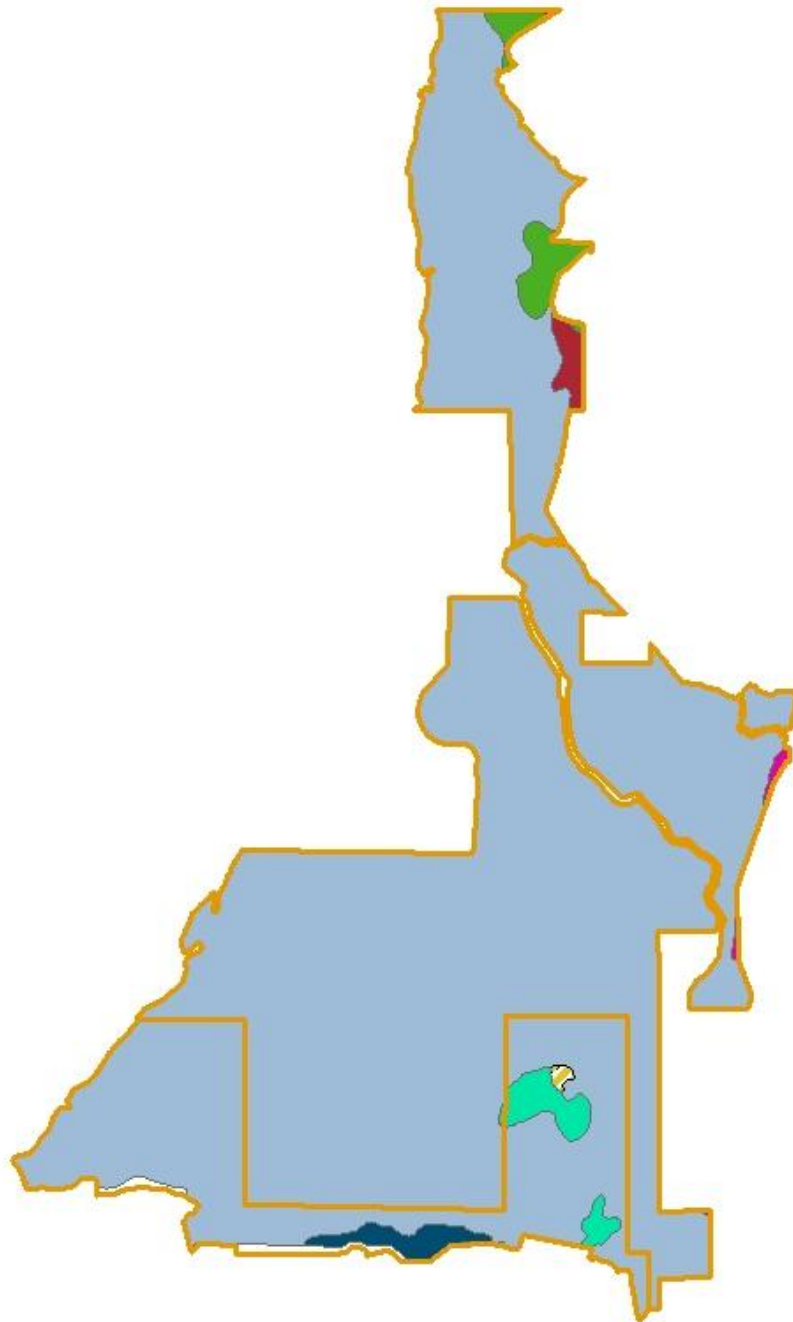
Altered land types within the conservation area include a clearing and a borrow pit.

A clearing (1 acre) occurs in the southern reaches of the conservation area and includes a coverage of bahia grass with scattered pockets of various oaks. This area was likely utilized historically as a food plot.

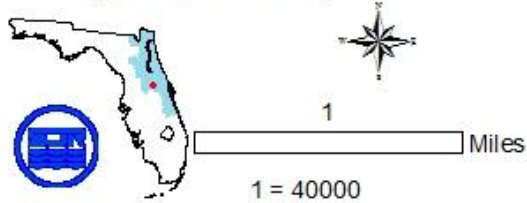
A borrow pit (<1 acre) occurs in the southern portion of the conservation area. Fill from this site was likely utilized to construct portions of the adjacent logging road.

Soils

According to data produced by the United States Department of Agriculture, Soil and Conservation Service, 12 different soil types are within the WRBCA. Figure 7 contains a soils map of the conservation area. The Seminole Soil Surveys provided information used to develop descriptions of the predominant soil series found within the WRBCA. The soil descriptions are located in Addendum 2.



**Wekiva Buffers
Conservation Area
Figure 7 - Soils Map**



- Boundary
- Soil Type**
- Arents
- Basinger and Delray fine sands
- Basinger and Smyrna fine sands
- Immokalee sand
- Malabar fine sand
- Myakka and Eau Gallie fine sands
- Nitlaw, Okeelanta, and Basinger soils
- Wabasso fine sand

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PAST MANAGEMENT SUMMARY

This section describes management strategies outlined in the 2006 land management plan and provides the status of each item.

Water Resources 2006 Plan Strategy	Status
Continue working with the Wekiva Parkway and Protection Act of 2004.	District staff work in compliance with the Wekiva Parkway Protection Act of 2004.
Continue working with the SWIM program.	District staff work within the bounds of the SWIM program.
Continue efforts of stormwater retrofitting, restoration efforts, and working with local governments for conservation.	District staff continue hydrologic restoration work/maintenance within the conservation area and in cooperation with local governments.

Forest Management 2006 Plan Strategy	Status
Monitor the property for additional pine beetle outbreak or other disease and insect infestation, for hurricane-downed trees, and other issues.	Since the writing of the last plan, no disease or insect infestation has been documented within the conservation area. District staff has conducted post-hurricane clean up to remove downed trees from the trail.

Wildlife 2006 Plan Strategy	Status
Continue to maintain and build upon species lists.	District staff document new species observations as required.

Exotic Species 2006 Plan Strategy	Status
Continue to monitor for invasive plant and animal species and treat as necessary.	Known populations of invasive plant species are treated; most are at maintenance control levels. Observation of feral hog damage is low and control measures have not been required.

Restoration 2006 Plan Strategy	Status
Continue monitoring hydrological restoration.	District staff regularly inspects water resource structures for maintenance and repair needs.

Cultural Resources 2006 Plan Strategy	Status
Identify and monitor sites for any disturbance.	No disturbance has been observed.
Coordinate land management efforts with the Florida Division of Historical Resources and take action to reduce any potential disturbance of any sites identified.	Management activities are conducted in a manner that minimizes the potential for disturbance to known sites.

Access 2006 Plan Strategy	Status
Continue to maintain trail for land management and multiuse.	The recreation trail is mowed several times each year and overhanging branches are pruned as necessary.
Continue regular maintenance on access areas.	The parking area is maintained as needed.
Maintain gate, signs and kiosk within the area.	The gates, signs, and kiosk are maintained and

	repaired as necessary.
Look into coordinating a second access area from a northern boundary state park into the Centex Homes property.	District staff has not established additional access. This strategy will be continued through the next planning horizon.

Recreation 2006 Plan Strategy

Status

Continue regular maintenance on the main trail.	The trail is mowed several times each year.
Maintain kiosks entrance.	The glass on the kiosk was replaced and the kiosk is maintained as needed.
Continue to coordinate the Central Recreational Public Meetings.	Central Recreation Public Meetings are conducted twice annually.

Environmental Education 2006 Plan Strategy

Status

Evaluate potential for developing environmental education opportunities on the property.	Due to budget constraints, additional educational/outreach programs have not been established on this property. Educational signage is located at key points along the trail.
Encourage environmental education opportunities as they arise.	District staff encourages environmental education as opportunities arise or requests are made. To date, no requests have been made regarding this property.

Security 2006 Plan Strategy

Status

Maintain fencing, gates, and boundary markers.	Fencing, gates, and boundaries are maintained as needed.
Continue coordinating with Audubon of Florida, local law enforcement and Plantation Security.	Security concerns are low and infrequent on this property; however, District staff coordinate with applicable law enforcement/security.

Acquisition 2006 Plan Strategy

Status

Continue to pursue parcels within the conservation area to purchase outright, to accept as mitigation/donation, to create conservation or regulatory easements.	No new acquisition opportunities have arisen since the writing of the last plan
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Cooperative Agreements 2006 Plan Strategy

Status

Continue to maintain management agreement with Audubon of Florida.	The management agreement with Audubon of Florida is current.
Continue to maintain agreement with Plantation Security.	The security contract is current.

IMPLEMENTATION

The following sections outline land management strategies for resource protection, land use, and administration on the conservation area for the next ten years.

RESOURCE PROTECTION AND MANAGEMENT

Water Resource Protection

While most water resource protection was accomplished through acquisition, portions of the wetlands and surface water within the conservation area are disturbed. Hydrologic disturbance within the conservation area include roads, historical logging roads, ditches, culverts, and a borrow pit. The water resource structures within the conservation area are detailed in Figure 8 under the roads section of the plan and Table 3 provides detail regarding those structures.

A road and associated ditches are located on the southern portion of the conservation area and provide access for land management activities and recreational opportunities. This road was constructed and historically utilized to facilitate logging. To mitigate flooding caused by this road, the NTS mitigation project consisting of culvert installation has reconnected the natural hydrologic flow. This area will be monitored to ensure the proper functioning and maintenance of the culverts.

The Wekiva River is an Outstanding Florida Water, an Aquatic Preserve, and a National Wild and Scenic River. The District's Water Resource and Resource Management Departments are currently working with local, regional, and state agencies and organizations to enforce the Wekiva Parkway and Protection Act of 2004. This act allows the development of a Wekiva Parkway in coordination with protection of regional waterways and preserving regional wildlife habitat. With this act, the District increased biological monitoring studies to determine Pollutant Load Reduction Goals (PLRGs) for Wekiva River and Rock Springs Run and has worked toward a coordinated land acquisition effort to purchase four predetermined sites for conservation. These efforts include water supply planning and comprehensive plan development to ensure springshed protection. Studies within the project include nitrogen source partitioning within springshed, vegetation, algae surveys, water quality monitoring, primary productivity and respiration measurements, nitrate toxicity, and coliform impairment assessment in the Wekiva River and Rock Springs Run. Results were compiled into a comprehensive report dated August 2006. Further the Florida Department of Environmental Protection has utilized the District; PLRG to develop and adopt a TMDL (April 2008) for the Wekiva River and Rock Springs Run, with the development of a Basin Management Action Plan (BMAP) currently underway for the watershed and springshed. The District established regulatory standards in 1988 for the Wekiva River Basin that include additional standards for surface water permit issuance for recharge, erosion and sediment controls, floodplain storage, limitation of groundwater drawdown, and the inclusion of a riparian habitat protection zone. The most recent Wekiva Parkway and Protection Act requires additions to the Wekiva surface water as well as the consumptive use standards for increase protection of the Wekiva system. Previous and still current efforts in the Wekiva River Subbasin include erosion control, stormwater retrofit and water quality improvement efforts, and other restoration efforts in coordination with agencies and local governments.

Table 3 – Water Resource Improvements

Structure ID	Type	Size/Material	Condition
97	Culvert	12 inch/Plastic	Good
98	Culvert	12 inch/Plastic	Good
99	Culvert	12 inch/Plastic	Good
100	Culvert	12 inch/Plastic	Good
101	Culvert	12 inch/Plastic	Good
102	Culvert	12 inch/Plastic	Good
103	Culvert	12 inch/Plastic	Good
104	Culvert	12 inch/Plastic	Good
105	Culvert	12 inch/Plastic	Good
106	Culvert	12 inch/Plastic	Good
107	Culvert	12 inch/Plastic	Good
108	Culvert	16 inch/Plastic	Good
109	Culvert	18 inch/Metal	Good
110	Culvert	24 inch/Metal	Good
111	Culvert	24 inch/Metal	Good
112	Culvert	24 inch/Metal	Good
113	Culvert	24 inch/Metal	Good

Water Resource Strategies

General Maintenance Activities

- Conduct maintenance and incidental or emergency repair of water resource structures as necessary.
- Maintain water resource structures database and incorporate maintenance, repair and any new structures.
- Continue work in compliance with the Wekiva Parkway and Protection Act of 2004.

Specific Strategies

Recurrent

- Visually inspect roads, trails, and culverts for erosion problems and maintenance and repair needs.

Flora and Fauna

The conservation area and adjacent state parks include a diverse assemblage of natural communities providing significant habitat for a variety of floral and faunal species.

The Florida black bear, listed by the State of Florida as a Threatened species, is documented within the WRBCA. In addition to habitat loss and fragmentation and a host of diseases and parasites, threats to the bear include human caused mortality and incompatible habitat management. Human caused mortality typically includes illegal killing, euthanasia performed on nuisance bears, and roadkill (Draft Black Bear Management Plan for Florida - *Ursus americanus floridanus*, 2008). The majority of the conservation area lies within the primary range for the Ocala subpopulation of the black bear and within secondary range of the St. Johns population. Bears are known to utilize the area and road killed animals have been documented on highways in close proximity

to the conservation area. To the extent that issues relate to District managed lands, District staff will coordinate as necessary with the FWC, the Florida Department of Transportation (FDOT), and other relevant parties regarding the management of bear habitat and the facilitation of movement across the landscape.

The conservation area lies within the core foraging area for two nesting colonies of the federally endangered wood stork (*Mycteria americana*). These rookeries are documented approximately 14 miles of the property (Wood Storks, 2010) and the property is within the foraging area radii limits established for north Florida wood stork rookeries. The District will adhere to the guidelines established in the January 1990 (or any subsequent revision) U.S. Fish and Wildlife Service (FWS) *Habitat Management Guidelines for the Wood Stork in the Southeast Region*.

There are no known Bald Eagle (*Haliaeetus leucocephalus*) nesting sites within the conservation area. As of the writing of this plan, the nearest known nests sites are located approximately 1 mile to the north of the property on other publicly owned lands and approximately 1 mile to the south of the property within a subdivision. Should nest sites be identified within the conservation area, GPS locations will be recorded and incorporated into the District Bald Eagle database. The District will adhere to the guidelines established in the May 2007 U.S. Fish and Wildlife Service (FWS) *National Bald Eagle Management Guidelines*. This document is effective following the delisting of the species from the Endangered Species list. The bald eagle continues to receive protection through the Bald and Golden Eagle Protection Act and the [Migratory Bird Treaty Act](#).

Floral and Faunal Strategies

General Maintenance and Management Strategies

- Collect species occurrence data and incorporate into the land management biological database.
- Adhere to the Wood Stork habitat management guidelines established by USFWS.
- Adhere to the USFWS National Bald Eagle Management Guidelines.

Specific Strategies

Short-term Planning Horizon (1-5 years)

- Coordinate with local Native Plant Society chapter(s) and other organizations to conduct diversity surveys targeting rare and listed species.

Fire Management

Fire is a vital factor in managing the character and composition of vegetation in many of the natural communities in Florida. The District's primary use of fire is to mimic natural fire regimes to encourage the amelioration of native pyric plant communities and dependant wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires. The WRBCA has a limited amount of fire-adapted natural communities. The predominance of non-pyrogenic forested wetlands within the conservation area and the close proximity of the property to highly developed and smoke sensitive areas preclude the use of fire as a management tool within the conservation area. Fire suppression activities are coordinated through the Florida Forest Service.

Forest Management and Restoration/Enhancement

Chapter 253.036, Florida Statutes requires the lead agency of state lands to prepare a forest resource analysis, "...which shall contain a component or section...which assesses the feasibility of managing timber resources on the parcel for resource conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices if the lead management agency determines that the timber resource management is not in conflict with the primary management objectives of the parcel." The management objectives of this property may require pine and hardwood harvesting.

Due to the predominance of forested wetlands within the conservation area, forest management activities will be limited to those necessary as a response to disease, insect infestation or wind damage. District staff will monitor the property biannually for southern pine beetle evidence during spring and fall dispersal times. Additionally, District staff will monitor the property for disease, other insect infestation, and fallen trees along boundnries and the trail.

Forest Management and Restoration Strategies

General Maintenance Activities

- Conduct visual monitoring and forest management activities as necessary in response to disease, insect infestation, or wind damage.

Specific Strategies

Recurrent

- Conduct biannual monitoring for evidence of southern pine beetle infestation.

Exotic Species

Several exotic pest plants occur within the conservation area including:

- Camphor tree (*Cinnamomum camphora*)
- Chinese tallow (*Sapium sebiferum*)
- Caesar weed (*Urena lobata*)
- Air potato (*Discorea bulbifera*)
- Cogongrass (*Imperata cylindrica*)
- Britton's wild petunia (*Ruellia simplex*)
- Japanese climbing fern (*Lygodium japonicum*)

The WRBCA is part of the District's invasive plant management program. Exotic species control is necessary to inhibit the continued proliferation of exotic plants and integral in the maintenance and restoration of natural plant communities. While it is unlikely that the District will entirely eradicate invasive plants within the conservation area, achieving maintenance control of such species is targeted within the scope of this plan. At this level, the property is regularly monitored and treated as necessary.

In an effort to better quantify the level of infestations within the conservation area and to better track the success of treatments, District staff will begin mapping infestations of exotic plant species. Mapping efforts will focus on those species listed by the Florida Exotic Pest Plant Council (FLEPPC) as Category 1 species, which are those invasive exotics that are altering native plant communities by displacing native species. These species have the potential to change natural community structure and functions.

Exotic wildlife species known to occur within the conservation area include feral hogs (*Sus scrofa*), brown anoles (*Anolis sagrei*), and nine-banded armadillos (*Dasypos novemcinctus*).

Feral hog damage is minimally observed. Should hog populations or damage increase, the District may initiate control actions through a contract with The United States Department of Agriculture or the services of a feral hog removal agent.

Laurel wilt, a disease of red bays (*Persea borbonia*) and other trees in the laurel family has been observed in red bay populations in areas near the conservation area. The disease has not been specifically observed within the WRBCA. Caused by a fungus, laurel wilt is carried and transmitted by the non-native red bay ambrosia beetle (*Xyleborus glabratus*.) The beetles generally attack healthy mature trees and the subsequent fungal infection causes the flow of water to be restricted to the leaves and branches, eventually causing mortality. Laurel wilt is devastating to infected populations and there are currently no established methods for controlling the laurel wilt disease in wild populations of *Persea*.

This disease has the potential to have detrimental effects on wildlife populations, including the palamedes swallowtail butterfly (*Papilio palamedes*). The palamedes is relatively common in Florida. Larval host plants for the palamedes swallowtail butterfly include species of *Persea*, but are primarily red bay.

Additional information on laurel wilt disease and the red bay ambrosia beetle can be found at http://www.fl-dof.com/publications/fh_pdfs/Laurel_Wilt.pdf and <http://edis.ifas.ufl.edu/HS391>.

Exotic Species Strategies

General Maintenance and Management Strategies

- Document and report observations of exotic species.
- If necessary, coordinate with USDA hog removal agent.

Specific Strategies

Short-term Planning Horizon (1-5 years)

- Locate and map infestations of FLEPPC Category 1 species, focusing on locating new populations in previously unsurveyed areas within the floodplain swamp.
- Upload infestation data into land management database.

Long-term Planning Horizon (5-10 years)

- Inspect and map treated infestations of invasive exotics to measure success of treatments and assess additional needs.

Cultural Resources Protection

A review of the Department of State, Division of Historical Resources (DHR) indicates two registered Florida Master Site File locations within the conservation area. If additional sites are located, District staff will document and report sites to the DHR. District land management activities that may affect or impact these resources will be evaluated and modified to reduce the potential for disturbance of the identified sites. Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. Due to the District and State policy, the location of any sites will not be identified on public maps.

Cultural Resource Protection Strategies

General Maintenance and Management Strategies

- Identify and report any new sites.

LAND USE MANAGEMENT

Access

A single public parking area is located on the conservation area. The parking area is fenced and has a walkthrough providing for recreational access. An informational kiosk is located near the parking area trailhead.

There are currently 2 gates providing management access to and across the property. These gates are monitored regularly for maintenance and/or repair needs from normal wear and tear and vandalism. In an effort to expedite emergency responses and to assist law enforcement and fire rescue in locating individuals in the event of an emergency, a 911 address has been issued for the parking area. Table 4 includes the 911 address for the conservation area.

Table 4 – 911 Address

911 Address	Location/Description
325 Wilderness Drive, Longwood 32779	Parking Area/Public Access

A single interior management road traverses a portion of the southern end of the conservation area, and is incorporated into the multiuse trail system. This road appears to traverse private property prior to its terminus at the river and as such, recreational use of this road as a trail is not extended to the river. The delineated public trail ends at the private property boundary. Since the exact route of the road and its intersection with private property boundaries is unclear, District staff will survey the road and boundaries. Once the survey is complete, a determination of the next course of action regarding trail routes will be made.

In order to manage road maintenance, District roads are classified according to anticipated maintenance needs. All roads within District conservation areas are classified by the District as either Type A, B, C, D, or E. Table 5 details the extent of the single, Type E road within the conservation area.

Type D roads are roads with limited stabilization and are typically 12-feet wide. Maintenance is primarily limited to mowing to prevent vegetative encroachment. Many of the Type D roads also serve as recreational trails.

Table 5 – Roads

Road Classification Type	Miles
Type D	3.4
Total	3.4

The road will be regularly inspected and receive maintenance and repair as necessary and may be subject to closure during these times. Figure 8 depicts the location of the parking areas and roads on the property.

Access Strategies

General Maintenance and Management Strategies

- Maintain parking areas, signs, gates, road, and trail.

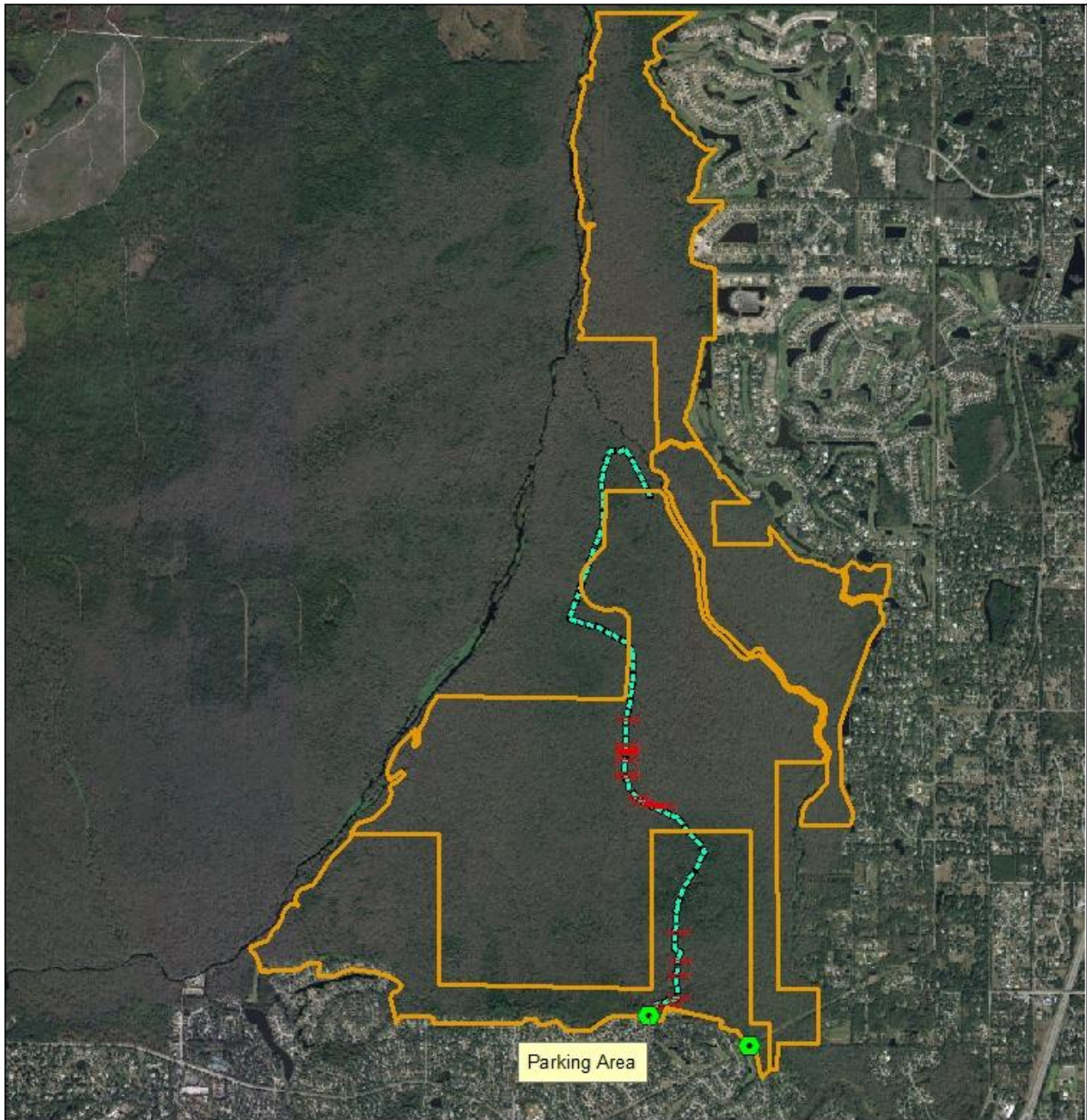
Specific Strategies

Recurrent

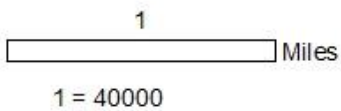
- Update roads, gates, and firelines in the land management database as maintenance, repair, or creation of new roads or trails occurs.

Short-term Planning Horizon (1-5 years)

- Survey interior road/private boundary to determine extent of District management responsibility.




**Wekiva Buffers
Conservation Area
Figure 8 - Roads Map**



 Boundary

 Roads

 Gates

 Culverts

The St. Johns River Water Management District prepares and uses this information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems Program Management, P.O. Box 1429, 4049 Reid Street, Palmetto, Florida 32178-1429. Tel: (386) 329-4176.

Recreation

The primary objective of the Recreation Management Program is to facilitate resource-based recreational activities on District lands. An aspect in developing the SJRWMD Recreation Program is not to compete with other local recreational opportunities, but rather to complement what they may already have in place by filling an outdoor recreation niche through dispersed recreation opportunities. Dispersed recreation activities generally require large tracts of land with some level of isolation. This type of recreation blends well with District conservation areas, providing numerous opportunities for passive recreation, which also provides solitude and challenge.

Recreational opportunities within the WRBCA are geared toward dispersed resource-based activities. The conservation area includes a trailhead with designated parking areas, information kiosk, and access to the land using a trail that also serves and is maintained as the access/management road.

The WRBCA supports numerous public recreational opportunities. The opportunities include hiking, biking, and wildlife viewing. Approximately 3 miles of marked trails are available for recreation within the conservation area.

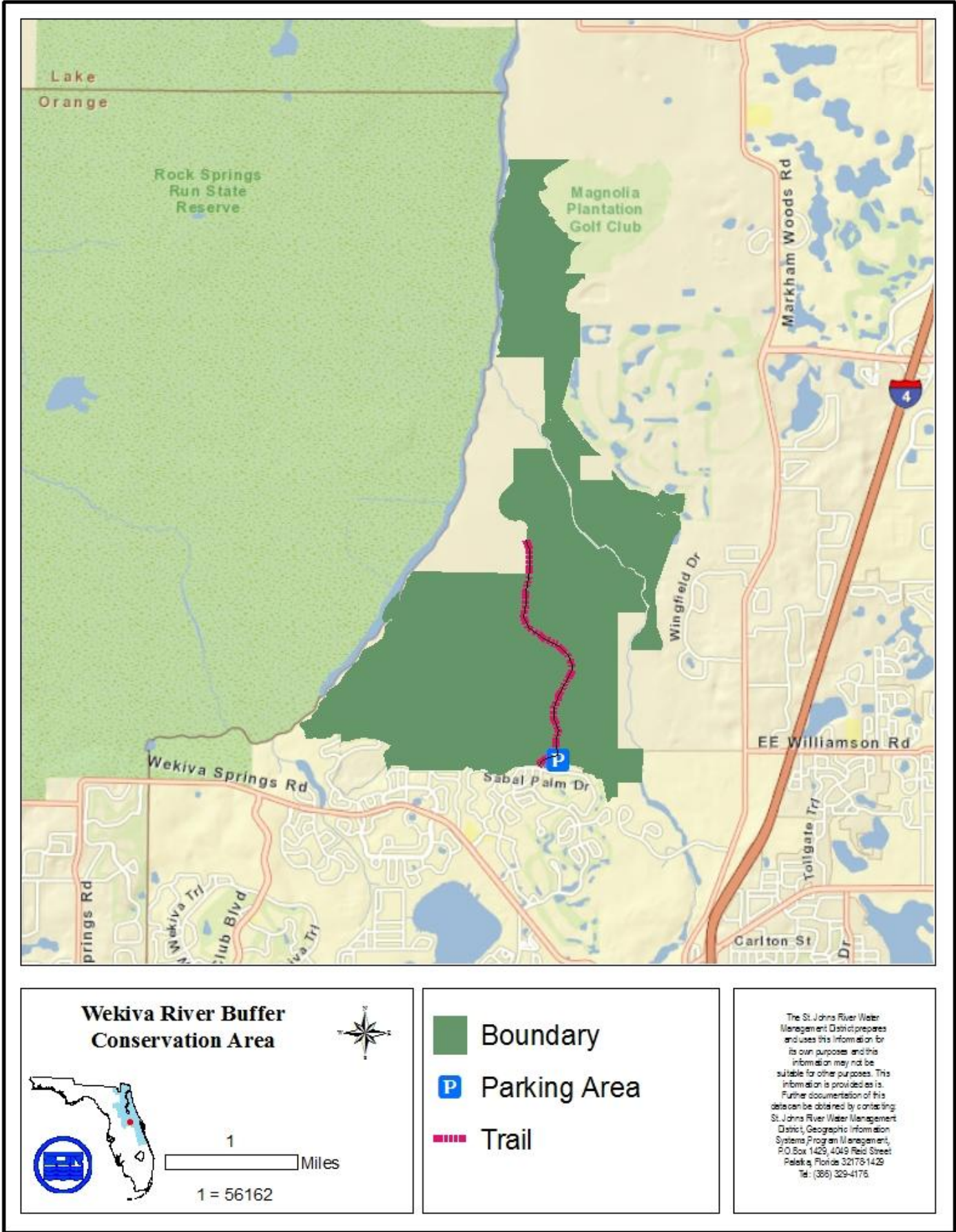
The Wekiva and Little Wekiva Rivers are popular water bodies for canoeing, kayaking, and fishing. While the existing trail does not extend to the river and as such there is no water access or boat launch located within the conservation area, kayaks and canoes may be launched at other nearby public lands.

Historically, District trails and trailheads were maintained through a trail maintenance contract. Budget constraints have caused this responsibility to be shifted to District staff. District staff will target maintenance levels achieved through previous contracts; however, it is possible that other management responsibilities will result in less frequent maintenance. The targeted maintenance schedule includes:

- Mowing grassy trails and road edges four (4) times yearly.
- Trail blazing and trimming of overhanging branches as needed.
- Trail and trailhead maintenance as needed.

Figure 9 is the recreation trail guide for the conservation area.

The entire conservation area is open to the public for passive recreation and is included in the District's [*Recreation Guide to District Lands*](#), which can be viewed online at floridaswater.com.



Recreation Strategies

General Maintenance and Management Strategies

- Maintain parking area, kiosks, and trail.
- Maintain current information in recreation guide, trail guides, kiosk, and District website.

Specific Strategies

Recurrent

- Mow recreational trails four times each year.
- Conduct trail blazing and trimming maintenance.

Environmental Education

The District has historically looked for opportunities to collaborate with local schools and organizations to encourage the use of District lands for environmental education. While the District is still open to such opportunities, during Fiscal Year 2011 the District funding and positions allocated for environmental education were eliminated due to budget reductions.

Environmental Education Strategies

General Maintenance Strategies

- Continue to offer environmental education opportunities subject to staff and budget availabilities.

Security

Security concerns within the conservation area include illegal motorized vehicle access, dumping, vandalism of gates, fences, facilities, and poaching. The District, primarily through a contract security firm as well as coordination with FWC and local law enforcement, administers law enforcement for the property.

District staff has identified areas within the conservation area that may require fencing to mitigate undesirable activities such as illegal vehicular access and dumping. Many of these areas will require the removal of vegetation to facilitate the construction of a fence line. During the scope of this plan, District staff will identify, map, and prioritize all areas requiring fencing. Pending budget availability for such projects, fencing will be constructed in highest priority areas first. Construction of new fence and replacement of existing fence will be subject to budget availability.

Security Strategies

General Maintenance and Management Strategies

- Coordinate with local law enforcement and FWC for security needs.
- Maintain contract with private security firm.
- Conduct biennial boundary posting maintenance.

Specific Strategies

Recurrent

- Develop monthly, prioritized security needs and provide to contracted security firm.

Short-term Planning Horizon (1-5 years)

- Identify, map, and prioritize locations of fencing needs.

ADMINISTRATION

Land Acquisition

There are no anticipated acquisitions associated with the Wekiva River Buffer Conservation area in the next ten years. The District may pursue acquisition of small parcels or easements that may improve access for management purposes.

The extent of boundaries and parcels acquired that combine to form the WRBCA and subsequent database information will be refined to ensure accurate accounting of all acquired acres.

Land Acquisition Strategies

General Maintenance and Management Strategies

- Evaluate adjacent properties and in holdings for potential acquisition.
- Evaluate the potential to acquire an access easement across private land to extend recreational trail to the river.

Short-term Planning Horizon (1-5 years)

- Refine boundary and parcel data information and map layers.

Cooperative Agreements, Leases, Easements, and Special Use Authorization

In accordance with District Policy #90-16, the District promotes entering into agreements with other agencies and private parties for cooperation and coordination of management of the District’s lands. These cooperative agreements serve to protect the District’s water management interests and to enhance the management and public value of the land.

Table 6 details the agreements and SUAs in effect during the writing of this plan.

Table 6 – Agreements, Easements, and SUA Table

Agreement Number	Type	Agreement Name	Term
254	Management Agreement	Audubon Society and Wekiva River Buffer Conservation Area Management Agreement	Automatic Renewal

Cooperative Agreements, Leases, Easements, and Special Use Authorizations Strategies

General Maintenance and Management Strategies

- Administer easements, agreements, leases, and SUAs.

IMPLEMENTATION CHART

Wekiva River Buffer Conservation Area Implementation Chart

TASK	RECURRENT	1-5 YEARS	5-10 YEARS	LEAD (COOPERATOR)
RESOURCE PROTECTION AND MANAGEMENT				
Water Resources				
<i>General Maintenance</i>				
Conduct maintenance and incidental or emergency repair of water resource structures as necessary.	---	---	---	BOS
Maintain water resource structures database and incorporate maintenance, repair, and any new structures.	---	---	---	BOS (BRS)
Continue work in compliance with the Wekiva Parkway and Protection Act of 2004.	---	---	---	BWRI
<i>Recurrent</i>				
Visually inspect roads, trails, low water crossings, bridges, and culverts for erosion problems and maintenance and repair needs.	Annually		-----	BOS
Floral and Faunal				
<i>General Maintenance</i>				
Collect species occurrence data and incorporate into the land management biological database.	---	---	---	BOS
Adhere to the Wood Stork habitat management guidelines established by USFWS.	---	---	---	BOS
Adhere to the USFWS National Bald Eagle Management Guidelines.	---	---	---	BOS
Forest Management				
<i>General Maintenance</i>				
Conduct visual monitoring and forest management activities as necessary in response to disease, insect infestation, or wind damage.	---	---	---	BOS
<i>Recurrent</i>				

Conduct biannual monitoring for evidence of southern pine beetle infestation.	Annually	-----	-----	BOS
Exotic Species				
<i>General Maintenance</i>				
Document and report observations of exotic species.	---	---	---	BOS
If necessary, Coordinate with USDA hog removal agents.	----	----	----	BOS
<i>Short-term Planning Horizon</i>				
Locate and map infestations of FLEPPC Category I species.	-----	2013	-----	BOS
Upload infestation data into land management database.	-----	2014	-----	BOS BRS
<i>Long-term Planning Horizon</i>				
Inspect and map treated infestations of invasive exotics to measure success of treatments and assess additional needs.	-----	-----	2018	(BOS) (BRS)
Cultural Resource Protection				
<i>General Maintenance</i>				
Identify and report any new sites.	---	---	---	BON (DHR)
Access				
<i>General Maintenance</i>				
Maintain parking area, signs, gates, road, and trail.	---	---	---	BOS
<i>Recurrent</i>				
Update roads and firelines in the land management database as maintenance, repair or creation of new roads or trails occurs.	Annually by September 30th	-----	----	BOS BRS
<i>Short-term Planning Horizon</i>				
Survey interior road/private boundary to determine extent of District management responsibility.	-----	2013	-----	BOS (BRS, BON)
Recreation				
<i>General Maintenance</i>				
Maintain parking area, kiosk, and trail.	---	---	---	BOS (BON)

Maintain current information in recreation guide, trail guides, kiosk, and District website.	---	---	---	BOS (BON, DRS, OC)
<i>Recurrent</i>				
Mow recreational trails.	Quarterly			BOS
Conduct trail blazing and trimming maintenance.	Annually by December 31 st .	-----	-----	BOS
Environmental Education				
<i>General Maintenance</i>				
Continue to offer educational opportunities if possible and subject to staff and budget availability.	-----	-----	-----	OC (BOS)
Security				
<i>General Maintenance</i>				
Coordinate with local law enforcement and FWC for security needs.	---	---	---	BOS (FWC) (SC)
Maintain contract with private security firm.	---	---	---	BON
<i>Recurrent</i>				
Develop monthly, prioritized security needs and provide to contracted security firm.	Monthly	-----	-----	BOS (BON)
Conduct biennial boundary posting maintenance.	2012, 2014, 2016, 2018, 2020	-----	-----	BOS
<i>Short-term Planning Horizon</i>				
Identify, map, and prioritize locations of fencing.	-----	2012	-----	BOS
Land Acquisition				
<i>General Maintenance</i>				
Evaluate adjacent properties and in-holdings for potential acquisition.	---	---	---	BRS (BOS)
Evaluate the potential to acquire an access easement across private land to extend recreational trail to the river.	---	2017	---	BRS (BOS)
<i>Short-term Planning Horizon</i>				
Refine boundary and parcel data information and map		2012		BRS

layers.				
Cooperative Agreements, Leases, Easements, and Special Use Authorizations				
<i>General Maintenance</i>				
Administer easements, agreements, leases, and SUAs	-----	-----	-----	BOS (BRS)
<i>Recurrent</i>				

IMPLEMENTATION CHART KEY

BON	Bureau of Operations North
BOS	Bureau of Operations South
BRS	Bureau of Real Estate Services
BWRI	Bureau of Water Resources Information
FFS	Florida Forest Service
FDHR	Florida Division of Historical Resources
OC	Office of Communications and Intergovernmental Affairs
SC	Seminole County

Addendum 1 Listing Status/Ranking Definitions

FNAI GLOBAL RANKING

- G1** = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- G2** = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3** = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
- G4** = Apparently secure globally (may be rare in parts of range).
- G5** = Demonstrably secure globally.

FNAI STATE RANKING

- S1** = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- S2** = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- S3** = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
- S4** = Apparently secure in Florida (may be rare in parts of range).
- S5** = Demonstrably secure in Florida.

STATE LEGAL STATUS

- LE** Endangered: species, subspecies, or isolated population so few or depleted in number or so restricted in range that it is in imminent danger of extinction.
- LT** Threatened: species, subspecies, or isolated population facing a very high risk of extinction in the future.
- LS** Species of Special Concern is a species, subspecies, or isolated population which is facing a moderate risk of extinction in the future.
- PE** Proposed for listing as Endangered.
- PT** Proposed for listing as Threatened.
- PS** Proposed for listing as Species of Special Concern.
- N** Not currently listed, nor currently being considered for listing.

FEDERAL LEGAL STATUS

- LE** Endangered: species in danger of extinction throughout all or a significant portion of its range.
- LT** Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
- LT,PDL** Species currently listed threatened but has been proposed for delisting.
- LT,PE** Species currently listed Threatened but has been proposed for listing as Endangered.
- PE** Proposed for listing as Endangered species.
- PT** Proposed for listing as Threatened species.
- C** Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
- XN** Non-essential experimental population.
- SC** Not currently listed, but considered a “species of concern” to USFWS.
- N** Not currently listed, nor currently being considered for listing as Endangered or Threatened.

Addendum 2 Soils

Arents

The Basinger series consists of very deep, poorly drained and very poorly drained, rapidly permeable soils in sloughs, depressions, low flats, and poorly defined drainage ways. They formed in sandy marine sediments. The natural vegetation may consist of wax myrtle, St. Johns wort, maidencane, pineland threeawn, cypress, slash pine, longleaf pine, pond pine, and other water tolerant plants.

Delray soils consist of very deep, very poorly drained, moderately permeable soils on broad flats, floodplains, and depressions in the lower coastal plain. Slopes in these areas range from 0-2%. These soils were formed in sandy and loamy marine sediments. Natural vegetation in these soils includes southern bayberry, pickerelweed, sedges, reeds, water tolerant grasses, and cypress, bay, tupelo, and other water tolerant trees.

The EauGallie series consists of deep or very deep, poorly or very poorly drained, slowly permeable soils in flats, sloughs and depressional areas. They formed in sandy and loamy marine sediments in Peninsula Florida. Natural vegetation may consist of longleaf pine, South Florida slash pine, and saw palmetto, with understory vegetation possibly including inkberry, southern bayberry, and pineland threeawn.

The Immokalee series consists of deep to very deep and poorly drained to very poorly drained soils that formed in sandy marine sediments. They occur on flatwoods and in depressions of Peninsular Florida. Slopes tend to be 0 – 2%, but may range to 5%. Principle vegetation is longleaf and slash pine with undergrowth of saw palmetto, gallberry, wax myrtle, and pineland threeawn. In depressions, water tolerant plants such as cypress, loblolly bay, gorodonia, red maple, sweetbay, maidencane, bluestem, sand cordgrass, and blue joint panicum are more common. Most areas with Immokalee soils are in rangeland and forests.

Malabar soils are very deep, poorly to very poorly drained soils in sloughs, shallow depressions, and along flood plains. Formed in sandy and loamy marine sediments. Slopes in areas where these soils are found range from 0-2%. Native vegetation consists of scattered slash pine, cypress, wax myrtle, cabbage palm, pineland threeawn, and maidencane. In depressions, the vegetation is dominantly St. Johns Wort or maidencane.

The Myakka series consists of deep and very deep, poorly to very poorly drained soils formed in sandy marine deposits. These soils are on flatwoods, high tidal areas, flood plains, depressions, and gently sloping to barrier islands. Slopes in areas where these soils are found range from 0-8%. Native vegetation includes longleaf and slash pines with an undergrowth of saw palmetto, running oak, inkberry, wax myrtle, huckleberry, chalky bluestem, pineland threeawn, and scattered fetterbush.

The Nittaw series consists of very poorly drained, slowly permeable soils that formed in thick deposits of clayey sediments of marine origin. These soils are in well defined drainageways, broad, nearly level swamps, and marshes of central and southern peninsular Florida. They are subject to flooding and water standing above the soil surface for 6 months or more in most years during late spring, summer and fall. Native vegetation is mixed hardwoods of bald cypress, red maple, sweetgum, and hickory with an understory of wax myrtle, greenbrier, wild grape, cabbage palm, and few shade and water tolerant forbes and grasses.

The Okeelanta series consists of very deep, very poorly drained, rapidly permeable soils in large fresh water marshes and small depressional areas. They formed in decomposed hydrophytic non-woody organic material overlying sand. Native vegetation consists of sawgrass, lilies, sedges, and other water tolerant plants. Willow, southern bayberry, and melaleuca are common tree species.

The Wabasso series consists of deep or very deep, very poorly drained, very slowly and slowly permeable soils on flatwoods, floodplains, and depressions in Peninsular Florida. They formed in sandy and loamy marine sediments. Slopes range from 0-2% in areas where these soils are found. Natural vegetation consists of longleaf pine, slash pine, cabbage palm, and live oak with an understory of saw palmetto, laurel oak, wax myrtle, chalky bluestem, and pineland threeawn.

The Smyrna series consists of very deep, poorly to very poorly drained soils formed in thick deposits of sandy marine materials. Natural vegetation consists of longleaf and slash pines with an undergrowth of saw palmetto, running oak, gallberry, wax myrtle, and pineland three awn.

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