



# LAND MANAGEMENT PLAN

---

# CYPRESS CREEK PRESERVE

**SEPT. 28, 2021**

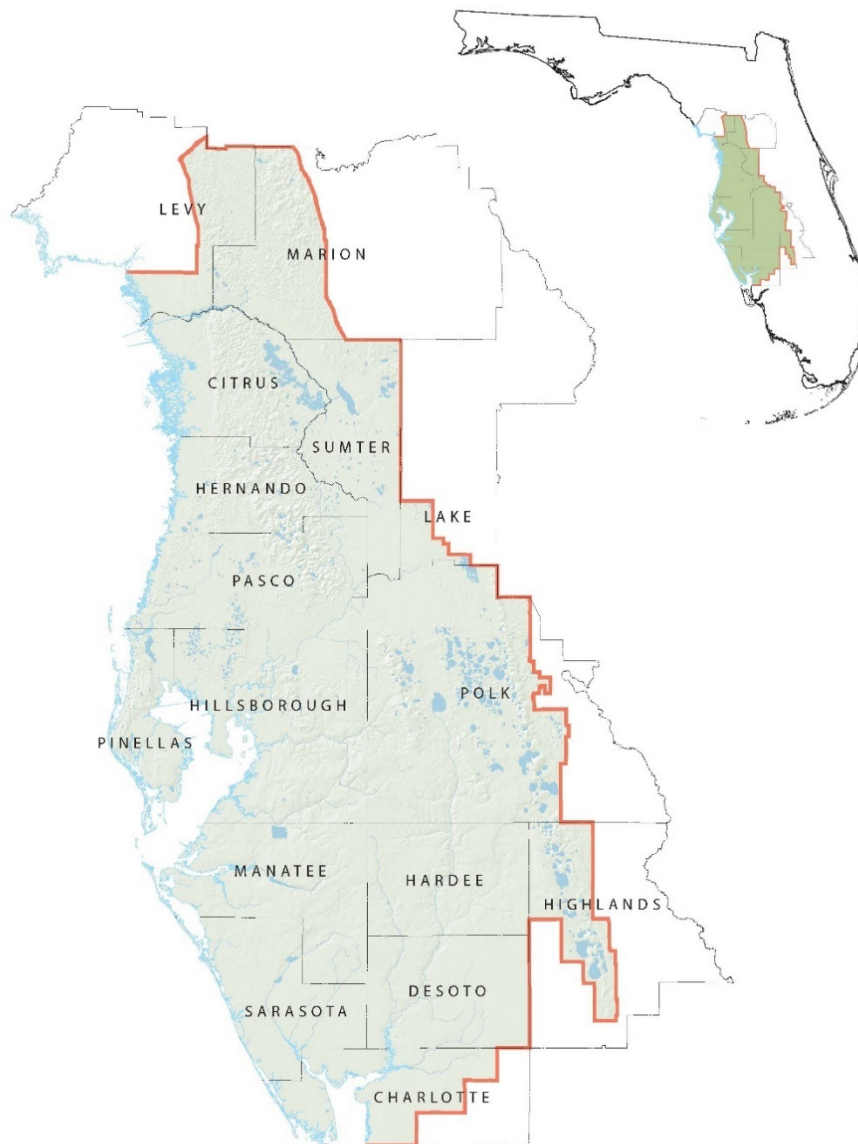
Southwest Florida  
*Water Management District*





The Southwest Florida Water Management District (District) is a science-based organization responsible for managing and protecting water resources in west-central Florida. The District's job is to ensure there are adequate water supplies to meet the needs of current and future users while protecting and restoring water and related natural resources.

The District encompasses all or part of 16 counties, from Levy County in the north to Charlotte County in the south. It extends from the Gulf of Mexico east to the highlands of central Florida. The District contains 97 local governments spread over approximately 10,000 square miles, with a total population estimated to be 5.4 million in 2020.



# Southwest Florida *Water Management District*



WATERMATTERS.ORG · 1-800-423-1476

The Southwest Florida Water Management District (District) does not discriminate on the basis of disability. This nondiscrimination policy involves every aspect of the District's functions, including access to and participation in the District's programs, services and activities. Anyone requiring reasonable accommodation, or who would like information as to the existence and location of accessible services, activities, and facilities, as provided for in the Americans with Disabilities Act, should contact the Human Resources Office Chief, at 2379 Broad St., Brooksville, FL 34604-6899; telephone (352) 796-7211 or 1-800-423-1476 (FL only), ext. 4747; or email [ADACoordinator@WaterMatters.org](mailto:ADACoordinator@WaterMatters.org). If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1-800-955-8771 (TDD) or 1-800-955-8770 (Voice). If requested, appropriate auxiliary aids and services will be provided at any public meeting, forum, or event of the District. In the event of a complaint, please follow the grievance procedure located at [WaterMatters.org/ADA](http://WaterMatters.org/ADA).

## Executive Summary

Acres: 8,515

Acquisition Dates: 1970-2020

Plan Term: 10 Years (2022-2031)

Primary Basin: Hillsborough River

Secondary Basin: Cypress Creek

Location: Pasco County

Funding Source: Water Management Lands Trust Fund, Save our Rivers, Preservation 2000, Donation

Partnerships: Tampa Bay Water (TBW)

**Natural Systems:** The Cypress Creek Preserve (Preserve) primarily consists of riverine swamp and other forested and non-forested wetlands associated with Cypress Creek. Uplands can be found imbedded and flanking the river swamp. These are predominately pine flatwoods, mesic hammock, and improved pasture occurring on former flatwoods.

**Water Resources:** Water management benefits associated with the property include non-structural and structural flood protection, water quality enhancement, and water supply; specifically, the wellfield operated by TBW.

**Land Management:** The District's land management practices applied on the Preserve result in functioning, natural systems. Management activities on the Preserve include prescribed fire, invasive plant management, feral hog population management, forest management, range management, and restoration and enhancement efforts.

**Cultural and Historical Resources:** Evidence of human activity within the Preserve dates back to the Archaic period. Four prehistoric sites have been identified, as well as several more modern sites, including the Ehren Cemetery inholding.

**Recreation:** The types of recreation offered at the Preserve include bicycling, inline skating, camping, horseback riding, fishing, birding, and hiking. There are approximately 19 miles of multi-use trails which are also designated as part of the Florida Greenways and Trails network.

**Special Use Authorization:** There are various special uses on the Preserve which require Special Use Authorization (SUA) approval from the District as set forth in Florida Administrative Code §40D-9. The typical special use types occurring on the Preserve can be categorized as recreation, research, law enforcement training, and construction activities.

**Access:** Public access to the property is provided by four separate walkthrough access points to allow the general public to partake in the available outdoor recreation opportunities.

**Real Estate:** The District will continue to consider opportunities to purchase lands adjacent to the Preserve with the goal of promoting the District's Mission of protecting the natural features of conservation lands for the benefit of flood protection, water quality, and water supply. In late 2020,



the District received a donation of an approximately 1,000-acre parcel that is adjacent to the Preserve along Ehren Cutoff (CR 583).

**Cooperative Agreements, Leases, and Easements:** The District is party to agreements with TBW for public water supply, in addition to agreements with a cattle lease and multiple apiary farmers. Furthermore, there are multiple easements granted to utility companies, such as Duke Energy, Withlacoochee River Electric, and Verizon Communications for linear facilities. The Preserve is subject to ingress and egress easements for private entities such as access to the Ehren Cemetery inholding, Circle 8 Angus Ranch, and other private entities to allow for stormwater pipe inspection and maintenance.

## Table of Contents

<b>Executive Summary .....</b>	<b>iv</b>
<b>Introduction and General Information.....</b>	<b>1</b>
Management Plan Purpose .....	1
Management Authority .....	2
Location.....	2
Acquisition .....	5
Current Land Use .....	9
Local Government Land Use Designation .....	9
Adjacent Land Uses .....	9
Management Challenges .....	9
<b>Water Resources and Natural Systems.....</b>	<b>11</b>
Water Quality .....	11
Water Supply.....	13
Flood Protection .....	13
Natural Systems.....	16
Soils and Topography.....	20
<b>Historical Land Use and Cultural Resources.....</b>	<b>24</b>
Historical Land Use.....	24
Cultural and Archaeological Resources .....	24
<b>Land Management and Land Use .....</b>	<b>25</b>
Land Management.....	25
Recreation.....	33
Land Use Administration .....	36
Land Maintenance and Operations.....	38
<b>Goals and Objectives .....</b>	<b>40</b>
Overview .....	40
Resource Protection and Management.....	40
Administration.....	42
Significant Management Accomplishments.....	44
<b>References .....</b>	<b>45</b>
<b>Appendix A.....</b>	<b>47</b>

## List of Figures

Figure 1. General Location .....	3
Figure 2. Aerial Overview .....	4
Figure 3. Regional Conservation Network .....	7
Figure 4. Water Resources at Cypress Creek Preserve.....	12
Figure 5. Floodplain Map .....	15
Figure 6. Natural Communities- FNAI.....	19
Figure 7. Soil Types at Cypress Creek Preserve.....	22
Figure 8. Digital Elevation Model of Cypress Creek Preserve.....	23
Figure 9. Management Units at Cypress Creek Preserve .....	27
Figure 10. Timber Management Zones at Cypress Creek Preserve.....	28
Figure 11. Recreation Trails at Cypress Creek Preserve .....	34

## List of Tables

Table 1. Conservation Lands within the Vicinity .....	8
Table 2. Natural Community Type Summary.....	16
Table 3. Invasive Plants for Cypress Creek Preserve .....	30
Table 4. Imperiled Wildlife Species Known or Likely to Occur at Cypress Creek Preserve.....	32



# **Introduction and General Information**

## **Management Plan Purpose**

The purpose of this Management Plan is to set forth the District's management strategy for the Preserve for the next 10 years. The creation, updating, and implementation of this Management Plan is governed by the District's Governing Board Land Use and Management Policy (District Policy) and the District's Executive Director Procedure titled Land Use and Management Planning (Procedure), which outlines the use and management of District-owned conservation lands. District conservation lands are managed for the protection of water resources and natural systems through the application of effective and efficient land management practices. This Management Plan provides an overview of the property, a summary of past achievements, and an outline of goals and objectives for the next 10-year planning period.

## **District Planning Philosophy**

The District's planning philosophy is intended to identify the method in which Management Plans are developed and implemented with input from both internal and external stakeholders. Management Plans are designed to guide the use and management of District conservation lands and incorporate input from stakeholders as to the use and management.

Management Plans are developed following an extensive process of planning, coordination, data review, field review, and creation of strategic goals and objectives. Through this process, a draft Management Plan is created and reviewed by key stakeholders, including District staff, subject matter experts, state agencies, local governments, partners, non-governmental organizations, and other interest groups.

Following review of the draft Management Plan by the key stakeholders identified above, a public workshop is held to solicit public input as to the draft Management Plan. The workshop is advertised in local newspapers, on the District's website, and via social media outlets, and is held in the region the property is located. Additionally, the public has an opportunity to provide input via the District's website for a period both preceding and following the workshop. Once the public comment period has expired, a final draft of the Management Plan that considers public input received is prepared and ultimately presented to the District's Governing Board for approval at a regular Governing Board meeting.

## **Public Involvement**

In addition to the input solicited through public workshops during the development of the Management Plan, the District also provides the opportunity for stakeholders to provide input during the Land Management Review process. This process occurs every five years as a way to inform the public and hold the District accountable for the management of the property. This process assures the District is managing the land in accordance with the Management Plan and is consistent with purpose for which the property was acquired. The Land Management Review team is comprised of team members from various state agencies, cooperative partners, private land managers, and other entities involved in land management. The focus is on management activities and includes a thorough review of the property, followed by an evaluation which is reviewed by the District.

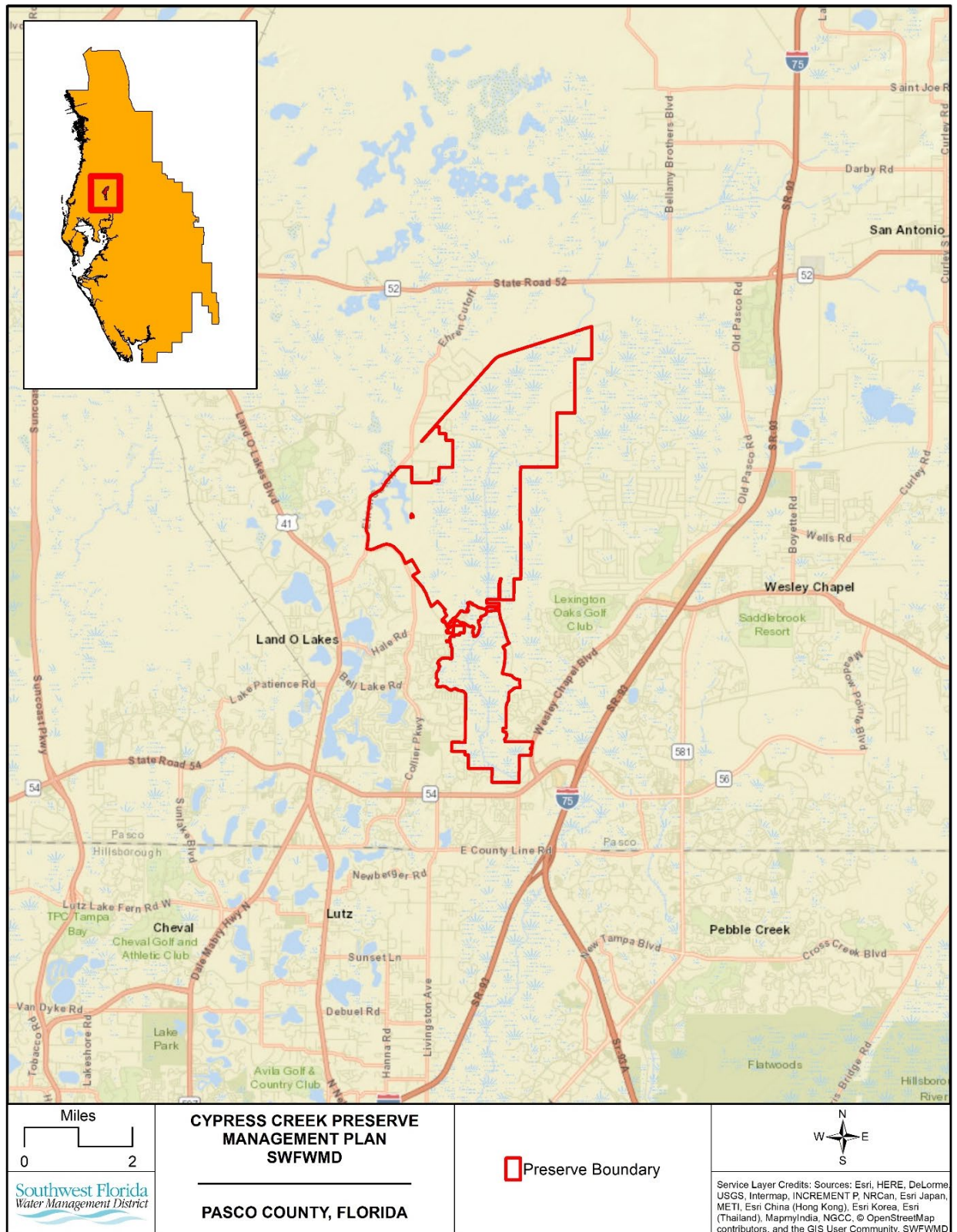
## **Management Authority**

The Preserve is considered by the District as conservation land which dictates the management intent for the property. Pursuant to Subsection 373.089(6)(c) of the Florida Statutes, all lands titled to the District prior to July 1, 1999, were designated as having been acquired for conservation purposes. This brings parcels that were purchased originally as water control projects within the purview of conservation land management. Other parcels that were later acquired under conservation land acquisition programs are also managed for these same purposes.

Furthermore, pursuant to Section 373.1391 of the Florida Statutes, lands titled to the District should be managed and maintained, to the extent practicable, in such a way as to ensure a balance between public access, recreation, and the restoration and protection of their natural state and condition. District Policy and Procedure governs the use and management of these lands in accordance with Chapters 259 and 373 of the Florida Statutes.

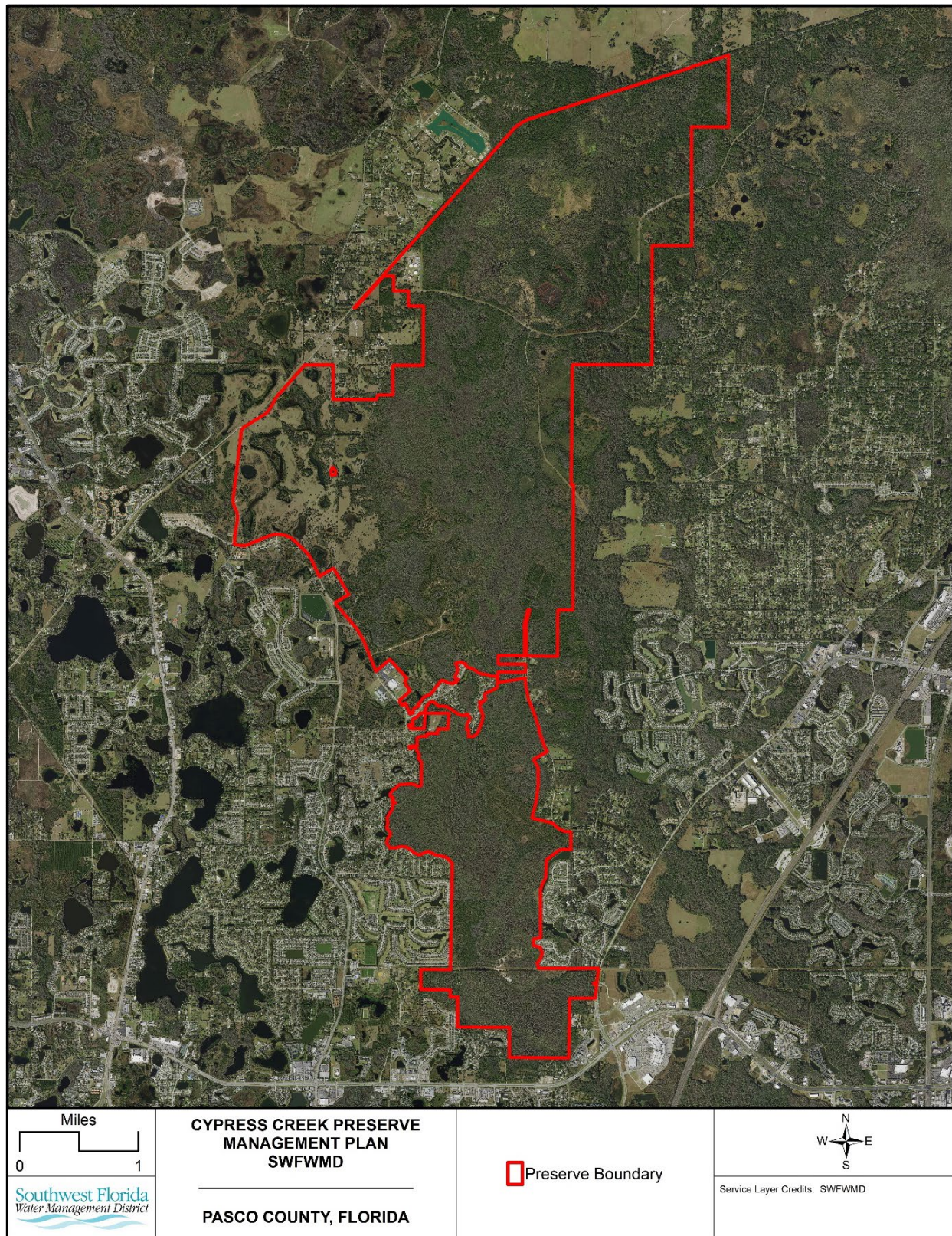
## **Location**

The Preserve is located in south central Pasco County, near the cities of Wesley Chapel and Land O' Lakes (Figure 1 and Figure 2). Cypress Creek is part of the Hillsborough River Basin, and the Preserve exists along the southern extent of Cypress Creek where it enters Hillsborough County. The Preserve is bordered to the north by an abandoned Seaboard Coastline Railroad right-of-way and to the south by State Road 54 (SR 54). Along the eastern and western boundary is a combination of low-density rural housing and higher density residential developments such as Lake Padgett Estates, Plantation Palms, Enclave, Quail Hollow, and The Oaks neighborhoods. This Preserve forms continuous protection of riverine corridor along a 10-mile segment of Cypress Creek.



**FIGURE 1. GENERAL LOCATION**





**FIGURE 2. AERIAL OVERVIEW**



## Acquisition

The District purchases land for the purposes of protecting and conserving water supply, flood protection, water quality, and natural systems. These purposes are referred to as the Areas of Responsibility (AORs) of the District. The primary purpose for the purchase of the Preserve was to protect, restore, and maintain the quality and natural functions of the land, water, and wetland systems, natural flood control and water detention, and to provide natural resource-based public recreational opportunities within the region. The specific resource management is discussed further in the proceeding sections.

## History

Acquisition of parcels in Cypress Creek Preserve began in the early 1970s as part of the Four Rivers Basin Project. This project was intended to provide structural flood protection of communities downstream in the lower portion of the Hillsborough River, including the cities of Temple Terrace and Tampa. This acquisition also supported the implementation of Cypress Creek Wellfield. Later, as part of land acquisitions programs like Preservation 2000 and Save Our Rivers, additional parcels were purchased in the 1990s to complete protection of Cypress Creek south to Highway 54. In conjunction with these acquisitions, several permanent access easements were also acquired. The District also has less-than-fee ownership in the form of conservation easements associated with the Preserve. The acquisition history of the Preserve is broken down as follows:

- Cypress Creek Wellfield- *3,233 acres*. The initial parcel acquired within Cypress Creek was intended to support two functions: to serve as public water supply wellfield and to utilize a structure and levee system to temporarily retain floodwaters and alleviate conditions downstream in the Hillsborough River.
- Save our Rivers- *3,653 acres*. There were numerous parcels acquired using Water Management Lands Trust Fund or “Save our Rivers” funds. This phase of acquisition was focused on protection of the Cypress Creek floodplain from the original parcel south to Highway 54. This resulted in protection of a 10-mile segment of the Cypress Creek and its associated floodplain.
- Donation- *1,042 acres*. This donation on the west side of the property is bordered on the north and west by CR 583 and on the south by Parkway Boulevard. This parcel was donated by the Lavender Trust Company, a Trustee of The Esther and Harold Mertz Foundation. The Esther and Harold Mertz Foundation was started by Harold Mertz, the founder of Publisher’s Clearing House.
- Other- *587 acres*. This includes various small acquisitions from a number of different funding sources, including Ad Valorem, land exchanges, and other funding sources.

## Regional Significance

Along with protecting a significant portion of the Cypress Creek corridor, the Preserve is considered a Priority 1 Florida Natural Areas Inventory (FNAI) resource priority in areas of landscape, integrity, and surface water resources (CLIP Technical report). The Preserve serves as a public water supply wellfield that supports the needs of the Tampa Bay region. In its natural state, the wetlands and natural systems of the Preserve provide significant flood protection.

Protection and ownership of the water resources of this property maintains water quality from surface waters that enter the Preserve from surrounding areas and exit through Cypress Creek. The Preserve also provides a unique recreation experience for the area and experiences high demand for hiking and biking.

FNAI ranks the Preserve as:

- Priority 1 in Biodiversity Resources
- Priority 1 in Surface Water Resources
- Rare Species Habitat

As part of the Hillsborough River, Cypress Creek is included as part of the Special Outstanding Florida Waters for its significant water resource value.

### Regional Conservation Network

The Preserve is part of larger group of conservation lands in the Tampa Bay area (Figure 3). The Preserve provides a significant contribution to this regional network of conservation land by connecting the Hillsborough River corridor to several key acquisitions and conservation easements in central Pasco County. These include Conner Preserve, Cypress Creek Nature Preserve (Hillsborough County), Cross Bar Ranch Wellfield (Pinellas County), and several conservation easements owned by the District. Beyond the direct connection to Cypress Creek, there is a wider collection of conservation lands that contribute to a regional network of protected lands owned by the District, Pasco and Hillsborough Counties, and various other state agencies (Table 1).



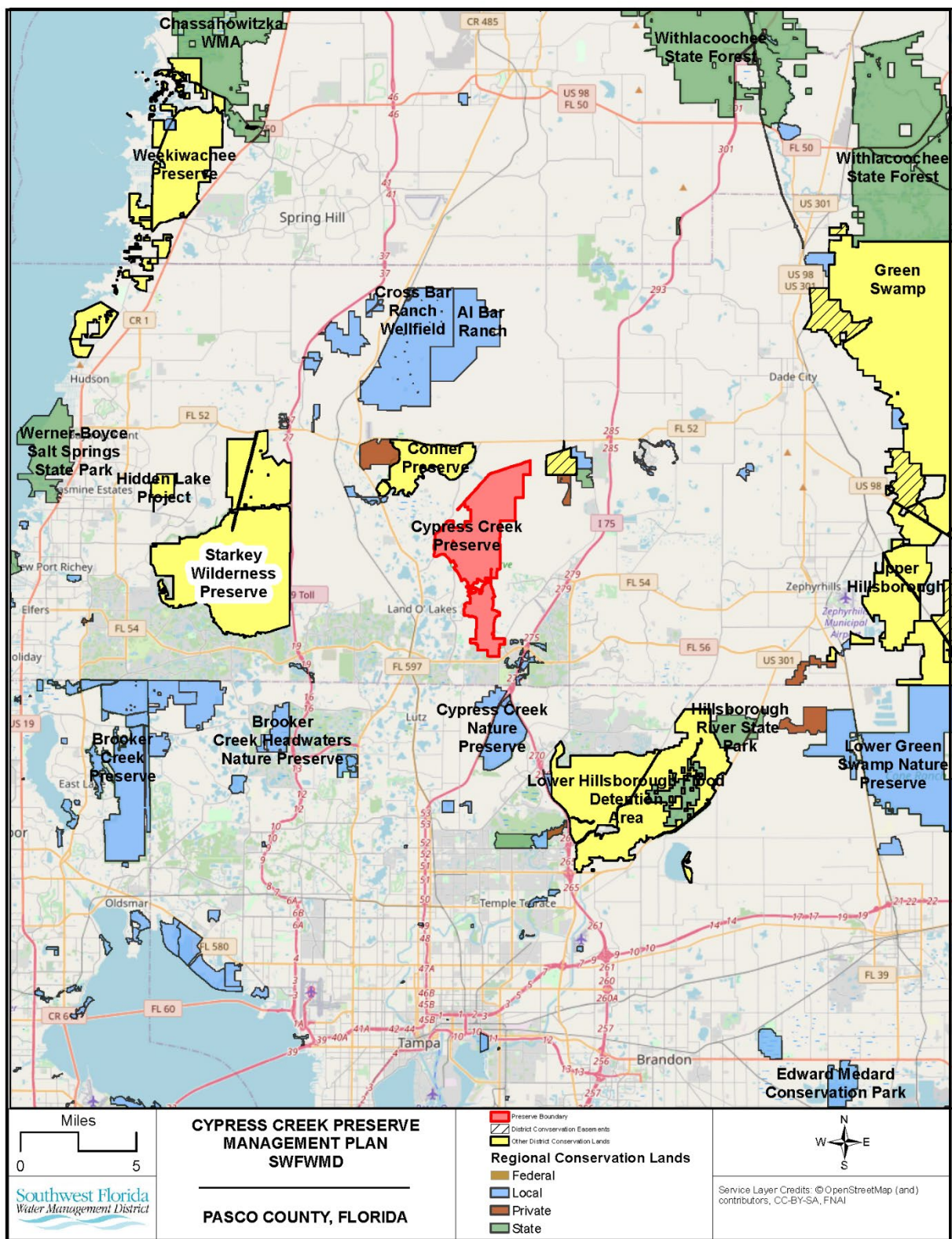


FIGURE 3. REGIONAL CONSERVATION NETWORK

**TABLE 1. CONSERVATION LANDS WITHIN THE VICINITY**

<b>Name</b>	<b>Manager</b>	<b>Owner</b>	<b>County</b>	<b>Acreage</b>
<b>Green Swamp Wilderness Preserve</b>	SWFWMD	SWFWMD	Lake/Pasco/Polk/Sumter	104,275
<b>Lower Hillsborough Preserve</b>	SWFWMD	SWFWMD	Hillsborough	16,063
<b>Starkey Wilderness Preserve</b>	SWFWMD	SWFWMD	Pasco	19,853
<b>Cypress Creek Preserve</b>	SWFWMD	SWFWMD	Pasco	8,515
<b>Upper Hillsborough</b>	SWFWMD	SWFWMD	Hillsborough/Pasco/Polk	9,440
<b>Weekiwachee Preserve</b>	SWFWMD	SWFWMD	Hernando/Pasco	11,237
<b>Conner Preserve</b>	SWFWMD	SWFWMD	Pasco	3,488
<b>Hidden Lake Project</b>	SWFWMD	SWFWMD	Pasco	589
<b>Hillsborough River Corridor</b>	SWFWMD	SWFWMD	Pasco	356
<b>Weeki Wachee Springs State Park</b>	FL DEP	SWFWMD	Hernando	928
<b>Withlacoochee State Forest</b>	FDACS, FFS	State	Citrus/Hernando/Pasco	160,055
<b>Hillsborough River State Park</b>	FDEP	State	Hillsborough	3,319
<b>Werner-Boyce Salt Springs State Park</b>	FDEP	State	Pasco	3,999
<b>Colt Creek State Park</b>	FDEP	State	Polk	5,067
<b>Withlacoochee State Trail</b>	FDEP	State	Citrus/Hernando/Pasco	762
<b>Chinsegut Wildlife and Environmental Area</b>	FWC	State	Hernando	853
<b>Little Gator Creek Wildlife and Environmental Area</b>	FWC	State	Pasco	566
<b>Chassahowitzka Wildlife Management Area</b>	FWC	State	Hernando	28,190
<b>Eagle Point Park</b>	Pasco	Pasco	Pasco	678
<b>Jumping Gully Preserve</b>	Pasco	Pasco	Pasco	1,701
<b>Brooker Creek Headwaters Nature Preserve</b>	Hillsborough	SWFWMD	Hillsborough	1,111
<b>Lettuce Lake Regional Park</b>	Hillsborough	Hillsborough	Hillsborough	240
<b>Rocky Creek Coastal Preserve</b>	Hillsborough	Hillsborough	Hillsborough	352
<b>Brooker Creek Buffer Nature Preserve</b>	Hillsborough	Hillsborough	Hillsborough	490
<b>Upper Tampa Bay Park</b>	Hillsborough	Hillsborough	Hillsborough	573
<b>Sydney Dover Conservation Park</b>	Hillsborough	Hillsborough	Hillsborough	697
<b>Lake Dan Nature Preserve</b>	Hillsborough	Hillsborough	Hills/Pasco/Pinellas	1,172
<b>Bower Tract Preserve</b>	Hillsborough	State	Hillsborough	1,548
<b>Lake Frances Preserve</b>	Hillsborough	Hillsborough	Hills/Pasco	1,664
<b>Blackwater Creek Nature Preserve</b>	Hillsborough	Hillsborough	Hillsborough	2,026
<b>Cypress Creek Nature Preserve</b>	Hillsborough	Hillsborough	Hillsborough	2,684
<b>Lower Green Swamp Nature Preserve</b>	Hillsborough	Hillsborough	Hillsborough	12,800
<b>Cypress Lakes Preserve (Hernando County)</b>	Hernando	Hernando	Hernando	331
<b>Mobbly Bayou Preserve</b>	Pinellas	City of Oldsmar	Pinellas	402
<b>Al Bar Ranch</b>	Pinellas	Pinellas	Pasco	4,253
<b>Cross Bar Ranch Wellfield</b>	Pinellas	Pinellas	Pasco	8,181
<b>Brooker Creek Preserve</b>	Pinellas	Pinellas	Pinellas	8,746
<b>Total</b>				<b>427,204</b>

## **Current Land Use**

The Preserve is managed for the conservation and protection of its water resources and natural resources. In addition, the Preserve offers recreational resources and opportunities to visitors. The Preserve will continue to support a multiple-use concept for environmental conservation, public water supply, and recreational access. It is the policy of the District that appropriate public recreational usage of District lands be permitted, provided that usage is compatible with natural resource management and protection needs. This approach is consistent with Chapter 373 of the Florida Statutes, which states that “Lands titled to the governing boards of the districts shall be managed and maintained, to the extent practicable, in such a way as to ensure a balance between public access, general public recreational purposes, and restoration and protection of their natural state and condition.” The Preserve protects natural wetland and upland systems that provide habitat for many notable species of wildlife and plant life, including many federal and stated listed species. The Preserve offers visitors opportunities for passive nature-based recreation. Various recreational opportunities which are open to the public are outlined later in this plan.

## **Local Government Land Use Designation**

The Pasco County 2025 Comprehensive Plan was developed in accordance with the requirements of Chapter 163 of the Florida Statutes, and Chapter 9J-5 of the Florida Administrative Code. The Pasco County 2025 Comprehensive Plan designates the Preserve as a Conservation Area.

### Zoning

Pasco County has zoned the Preserve mostly as Agriculture (AC). Smaller portions of the site—especially on the south side of the Preserve, are zoned as Master Planned Unit Development (MPUD), Planned Unit Development (PUD), and Agriculture-Residential District (AR). This zoning data ranges back to the 1970s and 1980s (prior to the acquisition of the Preserve) and has not been recently updated.

The newly acquired land donation is designated as Residential 1 and Residential 3 areas. The northern half is designated as Residential 1 (RES-1), and the southern half is designated as Residential 3 (RES-3). RES-1 allows 1 dwelling unit per developable residential acre. RES-3 allows 3 dwelling units per developable residential acre. This area should have its future land use designation changed now that the land has been donated.

## **Adjacent Land Uses**

Residential communities are present along the east, south, and west boundaries of the property. TBW owns property to the northeast of the Preserve together making up the Cypress Creek Wellfield and is primarily managed for conservation and water supply. Cattle grazing and agricultural uses are present along the northern boundary of the property.

## **Management Challenges**

The challenges associated with the management of the Preserve are primarily due to the location of the parcel within an increasing area of development. This additional development has potential to put pressure on the natural systems and could increase flood control needs in the area. In



addition, the abundance of Wildland Urban Interface (WUI) and major highways along the boundary of the Preserve increase the complexities of land management activities like prescribed fire operations. This results in an increased amount of planning to mitigate and limit impacts to smoke sensitive features.

Recreational opportunities on all District conservation lands are typically passive, nature-based, outdoor activities. As the WUI becomes more prevalent near the Preserve, there is the possible challenge upon the District to manage requests for more expansive recreational opportunities. In similar past situations, the District has approved cooperative agreements with other local governing agencies to manage expansive recreational opportunities as the District does not have the staff to manage such opportunities. Prior to the District approving any cooperative agreements for expansive recreational opportunities, the District Governing Board will need to deem such opportunities as “compatible,” as outlined in the District Policy and Procedure.

## **Water Resources and Natural Systems**

The acquisition of conservation lands is important for the management of water resources and is a strategic element in the District's effort to meet its four primary AORs. These AORs are flood protection, water supply, water quality, and natural systems. The District's Mission is to protect water resources, minimize flood risks, and ensure the public's water needs are met. The District is one of five regional agencies directed by state law to protect and preserve water resources within its boundaries. Established in 1961 to operate and maintain several large flood protection projects, the District's responsibilities have since expanded to include managing water supply, protecting water quality, and protecting natural systems including rivers, lakes, wetlands, and associated uplands.

### **Water Quality**

The District is actively involved in maintaining and improving water quality through both regulatory and non-regulatory programs. The ability of natural systems, particularly wetlands, to improve water quality has become an important consideration in water quality related issues. As water passes through a wetland, its velocity is reduced causing sedimentation of suspended particles. These particles may include an array of toxic compounds, nutrients, and other pollutants generated upgradient of the wetland. These can be consolidated into bottom sediments or taken up through the metabolic processes of plants, animals, and microbes, which bind these compounds into living tissue. This natural process effectively removes many contaminants from the water column, preventing them from entering adjacent water bodies or the aquifer (SWFWMD, 1987).

The most significant contribution of the property to water quality enhancement lies in its large area of unaltered floodplain vegetation (Figure 4). On-site wetlands (riverine swamp) associated with the Cypress Creek watercourse are inundated by waters draining from agricultural areas that dominate the upstream portion of the drainage basin. Riverine swamps are particularly effective in assimilating nutrients from surface waters (Christianson, 1986). In contrast, all or most of the water draining into the properties' isolated wetlands originate from natural areas on-site. As such, these isolated wetlands are expected to receive little, or no input of suspended sediments and waterborne pollutants normally associated with stormwater drainage. Water quality enhancement benefits realized through the District's ownership and protection of the property are predicated primarily upon preservation of the riverine floodplain wetlands.



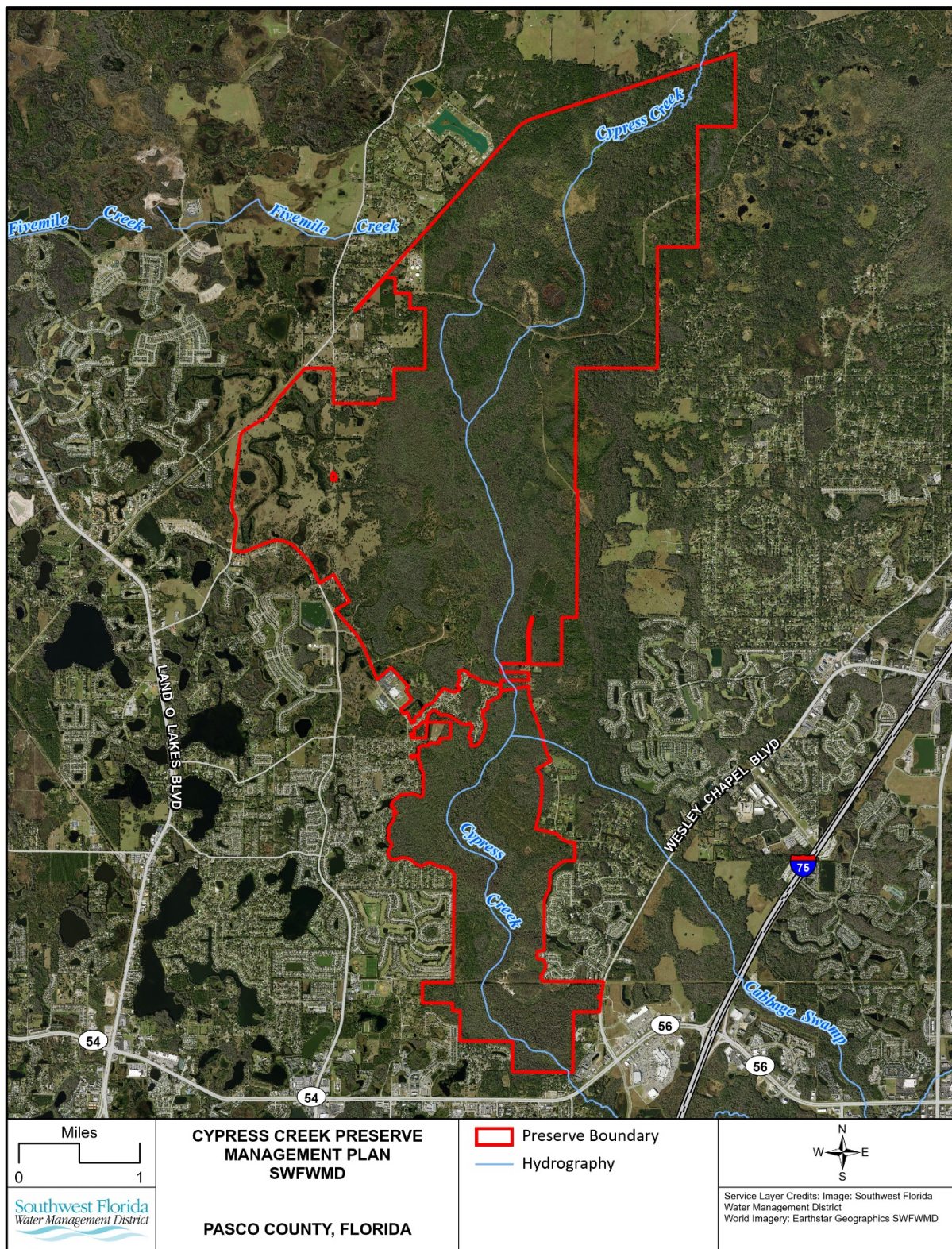


FIGURE 4. WATER RESOURCES AT CYPRESS CREEK PRESERVE



## **Water Supply**

Ensuring adequate water supplies for humans and for the environment is central to the District's Mission. A portion of the Cypress Creek Wellfield (12 production wells total) exists on the Preserve. This wellfield provides potable water to Pinellas County and the City of St. Petersburg and is under the management of Tampa Bay Water and regulatory authority of the District. The wellfield water withdrawals are managed by Tampa Bay Water (TBW) under a District water use permit (WUP No. 2011771.01, last issued January 2011), which regulates the amount of water that may be withdrawn. Moderate to severe stress has previously been observed at several monitored wetlands within the zone of influence at the Cypress Creek wellfield.

In 2000, the first phase of the District's Northern Tampa Bay Water Use Caution Area (NTBWUCA) Recovery Strategy was adopted to address NTBWUCA lake and wetland MFLs and an MFL for the Lower Hillsborough River that were not being met. The strategy called for a phased reduction in groundwater pumping from 160 mgd to 90 mgd at TBW's regional wellfields and for the development of alternative water supply projects.

A second phase of the recovery strategy, adopted in 2010, included a comprehensive plan that addressed continued monitoring, evaluation of environmental mitigation for withdrawal impacts, and continued water conservation activities. In support of the recovery strategy, over 85 mgd of new regional alternative sources of public supply have been developed. A number of other projects providing ancillary recovery benefits, including reuse and water conservation, have also been implemented within the region.

An assessment completed in 2020 identified substantial recovery of hydrologic and ecological conditions associated with strategy implementation and rainfall conditions. MFLs within the NTBWUCA for all but one lake, one wetland, and the Lower Hillsborough River were found to be met and aquifer levels in the region were near their peak elevations observed during the past 40 to 60 years. Based on these findings, the District's Governing Board in March 2021 approved initiation of rulemaking and approved rule language to repeal the NTBWUCA Recovery Strategy.

## **Flood Protection**

In terms of the District's Mission, flood protection is another important element. Historically, flood protection depended upon control structures to provide for the storage and "controlled" conveyance of floodwater. The current approach mimics natural processes and is a more environmentally sound and cost-effective method. The District's primary flood protection strategy depends upon identifying and preserving natural floodplains and other land that can serve as storage areas for storm-generated floodwater.

With over 74 percent of the property being wetlands or lying in the 100-year floodplain (Figure 5), or otherwise recognized as flood prone, public ownership of the property ensures preservation of a significant flood storage area of Cypress Creek and the Hillsborough River. Isolated wetland areas and floodplains have a natural ability to store, detain, and absorb water generated by normal rains and most storm events. Approximately 5,184 acres of the Preserve are delineated as wetlands. Wetlands physically store floodwater, reduce peak elevation of floodwaters, and



moderate or attenuate the release of floodwater. The Preserve's extensive floodplain wetlands may make the most significant contribution to flood protection. The isolated wetland areas are also able to store significant amounts of water. Mesic pine flatwoods, which account for approximately 9.3 percent of the Preserve's total land area, also contribute to the property's flood protection value. The hydrology of these upland areas is strongly influenced by flat topography and a landform which produces little stormwater runoff. Downward percolations are retarded by poorly drained soils, and where present, an underlying clay hardpan. These factors contribute to the presence of standing water over much of the site's flatwoods for various amounts of time during the rainy season, which is characteristic of flatwoods (Myers and Ewel, 1990).

A drainage basin area of approximately 121 square miles lies above the SR 54 crossing of Cypress Creek. The riverine swamp system of the Preserve receives drainage from this upstream area and provides natural floodwater storage during periods of high water. Temporary storage of floodwaters in these wetlands reduces the downstream impacts that would be associated with an unattenuated release of storm-generated waters. Long-term preservation of these wetlands and adjacent uplands through public ownership will prevent development from encroaching on the floodplain of Cypress Creek and ensure that natural volumes of water storage are maintained.

In addition to the natural flood protection, a levee system and water control structure exists over Cypress Creek. The wellfield road functions as a levee and when used in concert with the water control structure, a pool of stream water can be detained within a portion of the riverine swamp lying north of the road. The levee and control structure were designed to fulfill a dual purpose. During periods of flooding, the structure can be used to reduce flood levels in downstream areas. In the event that the wellfield withdrawals cause groundwater levels to drop below regulatory minimums, or by any amount sufficient to stress the vegetation of the riverine swamp, stream waters can be detained to rehydrate the swamp and recharge groundwater stores.

In addition, Tampa Bay Water, in conjunction with the District, implemented the Cypress Creek Wellfield Surface Water Management Project to restore the natural flow ways through the Preserve. The project objective is to rehydrate wetlands impacted by pumping from the Cypress Creek Wellfield and reduce flooding problems in adjacent subdivision areas.

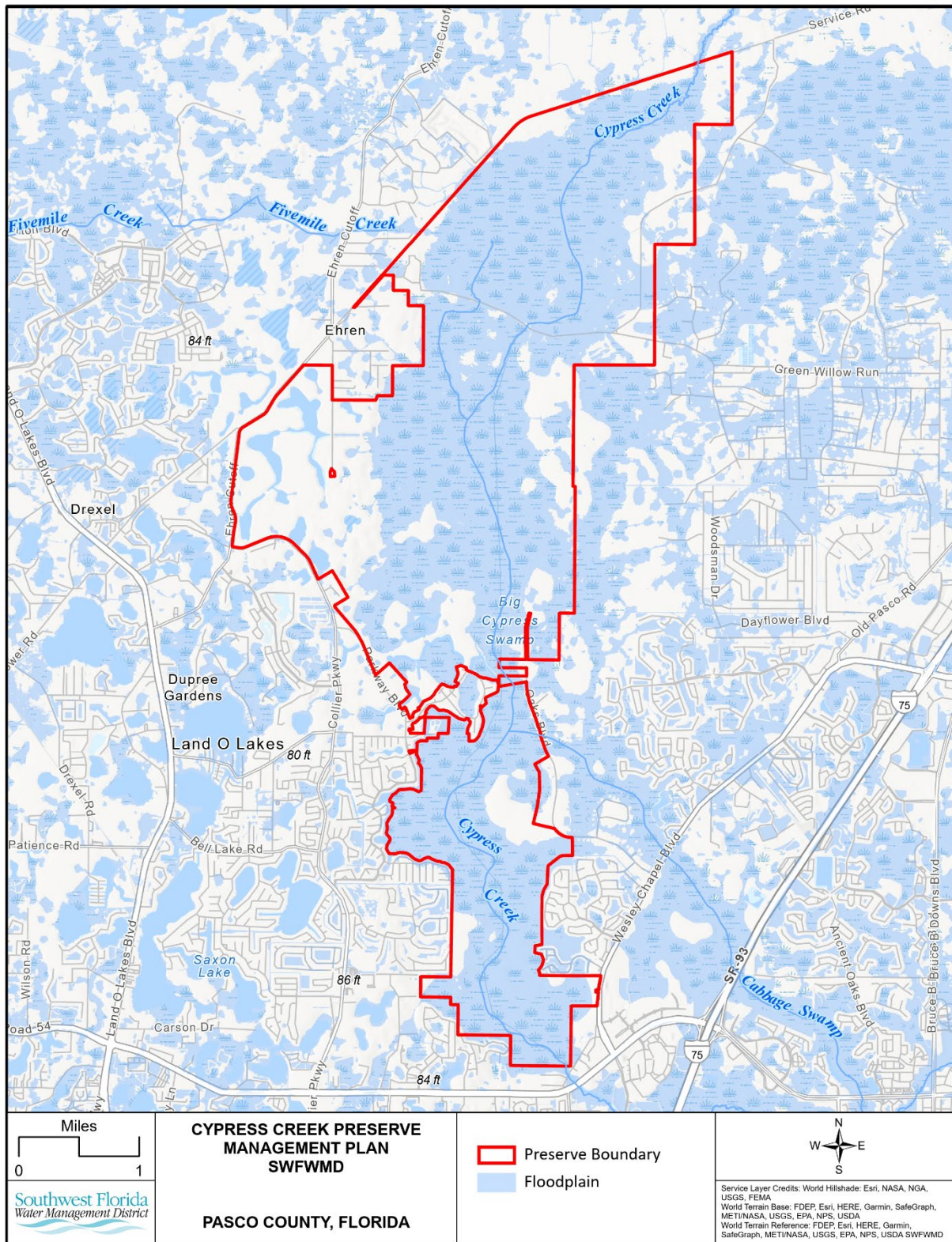


FIGURE 5. FLOODPLAIN MAP

## Natural Systems

The Preserve is dominated by wetlands associated with Cypress Creek itself. Among the wetlands are basin swamps, dome swamps, wet flatwoods, and hydric hammock. The uplands on the Preserve include mesic flatwoods, mesic hammock, scrubby flatwoods, ruderal, and pine plantation. The newly donated western section of the Preserve has not been surveyed to confirm FNAI natural community types, but primarily consists of improved pasture converted from former flatwoods and sandhill. The wetlands on this parcel are highly altered and include basin swamps, freshwater marsh, and dome swamps.

The Preserve's natural systems are maintained through land management activities and restoration projects. These natural wetland and upland systems preserve natural habitat for many notable species of wildlife and plant life inhabiting the Preserve, including many federal and state listed species.

Habitat restoration is a critical component of natural systems protection. The District Policy states that sites on District-owned land that have been altered from a natural state and condition should be restored to a natural condition whenever practical. Habitat restoration is ongoing and is addressed elsewhere in the Land Management section.

Variability in habitat structure in the natural systems described below may occur and is directly related to fire return frequency. Some areas are burned less frequently due to soil moisture and the location on site. Areas that have long periods of inundation are burned less frequently as well.

The District uses natural communities as defined by FNAI to describe the habitats the Preserve. (FNAI, 2010). Eleven natural communities have been identified by FNAI to occur within the Preserve (Figure 6). Below is a summary of the natural communities and Table 2 summarizes the acreage and percent cover of each community type.

**TABLE 2. NATURAL COMMUNITY TYPE SUMMARY**

Natural Community Type	Acreage	Percentage of Land Cover
<b>Basin Swamp</b>	3,171	37%
<b>Hydric Hammock</b>	1,460	17%
<b>Dome Swamp</b>	117	1%
<b>Wet Flatwoods</b>	32	0.40%
<b>Mesic Flatwoods</b>	1,358	16%
<b>Depression Marsh</b>	35	0.40%
<b>Mesic Hammock</b>	491	6%
<b>Scrubby Flatwoods</b>	8	0.10%
<b>Ruderal Abandoned</b>	645	8%
<b>Pine Plantation</b>	127	1%
<b>Improved Pasture</b>	2	0.02%
<b>Not Surveyed</b>	1,068	13%
<b>Total Acreage</b>	<b>8,515</b>	<b>100%</b>



## Wetland Communities

### *Basin Swamp (3,171 acres)*

Basin swamp is the most dominant habitat type on the Preserve. It comprises approximately 3,171 acres, about a third of the Preserve's land. This wetland is mostly centered around Cypress Creek, with fingers of swamp reaching out and creating a mosaic of more upland habitats and lower, wetter areas. This habitat contains species that are hydrophytic: species that can withstand long periods of standing water. Typical overstory species found in this habitat include pond cypress and swamp tupelo, and in the drier areas slash pine, water oak, sweetgum, swamp bay, magnolia, and red maple. The basin swamp in Cypress Creek contains a thick herbaceous layer of maidencane, lizard's tail, arrowheads, and different fern species.

This wetland is inundated for a majority of the year. Percolation of rainwater from the surrounding uplands supplies the water. Historically, hydrological modifications caused by well usage created longer dry periods. These longer dry periods made the habitat more susceptible to species found in drier communities.

The flow of Cypress Creek as well as the Preserve's vicinity to surrounding developments make it a haven for invasive species. Old World climbing fern, Brazilian peppertree, and torpedo grass are all invasive plant species that can be found within the basin swamp habitat.

### *Hydric Hammock (1,460 acres)*

Hydric hammock comprises just under a quarter of the Preserve. This habitat is found bordering the basin swamp systems on the property. These areas are dominated by evergreen hardwoods and palms with a sparse herbaceous understory. The soils in this habitat type are generally moist and support species that can handle wetter habitats. Species composition is dictated solely on inundation patterns. The canopy is typically dominated by swamp laurel oak, water oak, live oak, cabbage palm, magnolia, and sweetgum.

### *Dome Swamp (117 acres)*

Dome swamp is an isolated freshwater wetland located within the fire-maintained communities of mesic flatwoods. The water from the surrounding higher communities flows down into these wetlands. This habitat gets its distinctive shape by the smaller trees growing in the shallower waters along the edges and the taller trees growing within the deeper parts of the wetland. Bald cypress is the dominate tree in this ecosystem.

### *Wet Flatwoods (32 acres)*

Wet flatwoods can be described as a slash pine forest with a ground cover of hydrophytic grasses. Some scattered shrubs such as saw palmetto and gallberry are frequently found in these areas. On the Preserve, wet flatwoods serve as an ecotone between mesic flatwoods and basin swamp, with species from both habitats found here.

### *Depression Marsh (35 acres)*

The depression marshes on site are isolated, small, rounded depressions that are surrounded by fire-maintained communities. These marshes are composed largely of an herbaceous element with species like maidencane, sawgrass, pickerelweed, and sand cordgrass.

## Upland Communities

### *Mesic Flatwoods (1,358 acres)*

Mesic flatwoods are located on mesic soils in the drier areas on site. This habitat contains species that are able to withstand periods of soil inundation and periods of dry conditions. On this site, the mesic flatwoods are associated with the hydric hammocks and basin swamps. This habitat type typically has a sparse canopy of slash and longleaf pine, with an understory of saw palmetto, gallberry, and wiregrass.

### *Mesic Hammock (491 acres)*

The mesic hammock on site supports an evergreen hardwood forest on higher “islands” within the basin swamps and hydric hammocks. The soils on this habitat are rarely inundated. The closed canopy of the mesic hammock is dominated with live oak, water oak, cabbage palm, and southern magnolia. Pignut hickory and sweetgum also thrive in this community type. The understory is fairly open with a mix of saw palmetto, beautyberry, persimmon, and wax myrtle scattered.

### *Scrubby Flatwoods (8 acres)*

Scrubby flatwoods are found on xeric soils on the southern end of the Preserve. This high, dry island slopes down into mesic flatwoods. This habitat can be characterized by an open canopy with widely scattered pine trees, and an understory with palmettos, scrub oaks, and *Lyonia* species. Patches of wiregrass, broomsedge, gopher apple, and goldenrod break up the barren white sand.

### *Ruderal (645 acres)*

The ruderal areas on site describe a variety of environments. These areas include the TBW offices located off of Pump Station Road, hiking trails, water level control pumps, and open pasture going through passive restoration.

### *Pine Plantation (127 acres)*

Slash pine stands remain in their historic locations and are actively timbered. The District selectively harvests these areas every 25+ years. Funds generated from the timbering go into a large fund that will off-set land management costs of all the District’s properties.

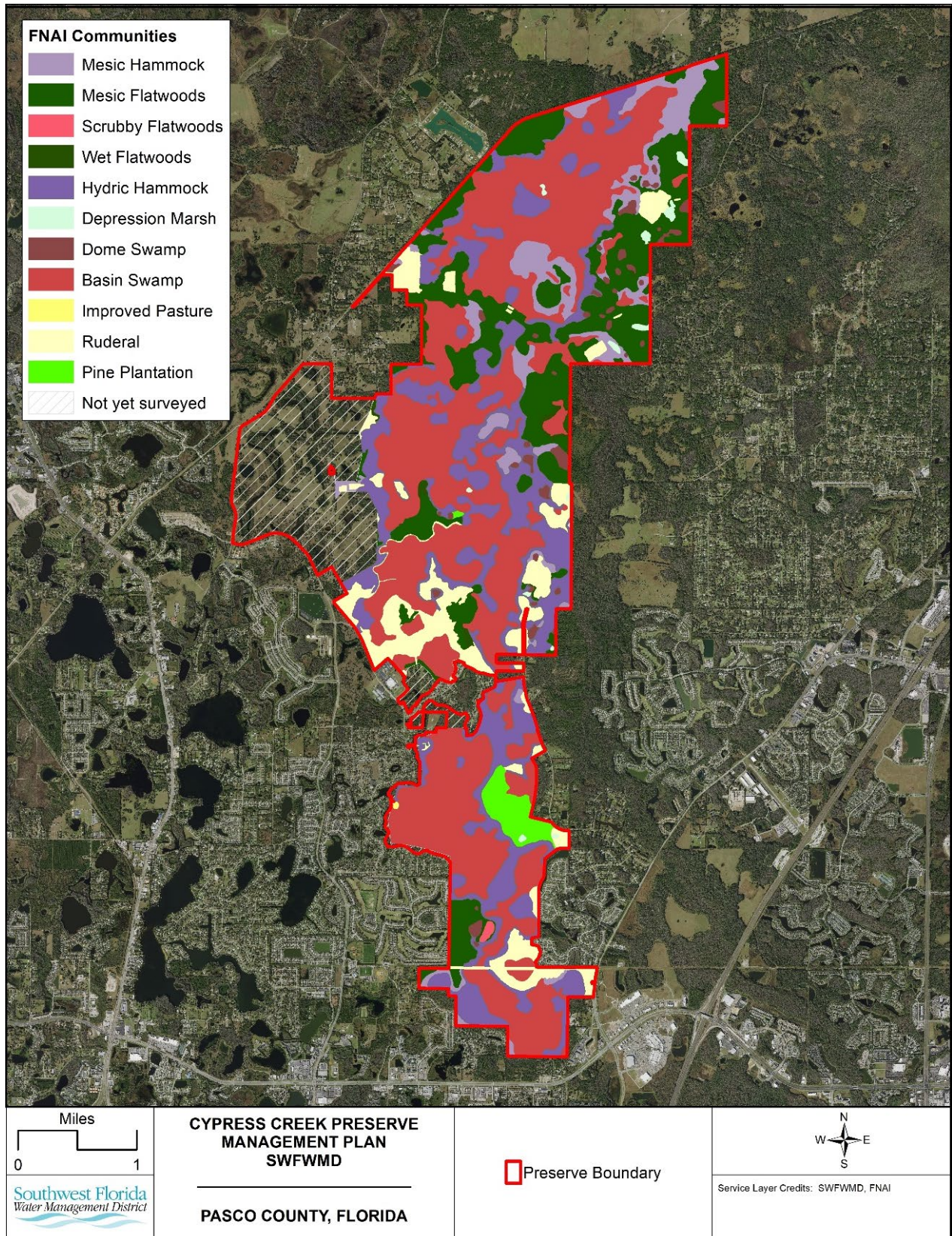
### *Improved Pasture (2 acres)*

The improved pasture on site typically consists of a dense groundcover of bahia and bermuda grasses. Native species like gallberry, wax myrtle, broomsedge, various blackberry species, and prickly-pear cactus, with a sparse canopy of slash and longleaf pine trees. There is an active cattle lease on site.

### *Not Surveyed (1068 acres)*

There are approximately 1,068 acres in the Preserve that have not yet been surveyed to confirm FNAI habitat communities. A significant portion of this includes the newly donated parcel which was primarily improved pasture with embedded wetlands. This will be surveyed in the future and included in the next management plan update.





**FIGURE 6. NATURAL COMMUNITIES- FNAI**



## Soils and Topography

### Soils

There are three distinct soil groupings based on soil moisture: xeric, mesic, and hydric (Figure 7). Xeric soils are located on higher and drier areas, capable of supporting scrub, sandhill, scrubby flatwoods, and xeric hammock. Mesic soils are located in areas that seasonally retain moisture and are capable of supporting pine flatwoods and mesic hammock habitat types. Hydric soils are located in lower, wetter areas and support riverine swamp and other wetland communities. (Pasco County Soil Survey 1989).

Xeric soils on site occupy the pasture, day use areas, and campgrounds. Cassia fine sand, Newnan fine sand, Tavares fine sand, Zolfo fine sand, and Quartzipsamments. The recently acquired parcel has a majority of Tavares sand and Quartzipsamments soil types. Xeric soils have a high depth to water table. These soils have high permeability: water drains quickly through the soil. These soils do not remain saturated for long periods of time.

Mesic soils present on site are Narcoossee fine sand, Symrna fine sand, EauGallie fine sand, Wauchula fine sand, Pompano fine sand, Pineda fine sand, Ona-Ona fine sand, and Adamsville fine sand. These soil types are associated with the pine flatwoods, mesic hammocks, and pasture areas on sites. These areas are somewhat poorly drained; during certain times of the year the water table can be well over the soil surface and at other times be well below the soil surface.

The majority of the site supports hydric soils. Hydric soils on site include Chobee, Basinger fine sand, Basinger fine sand depressional, Felda fine sand, Myakka depressional, Pomona depressional, Sellers mucky loamy fine sand, Wabasso-Wabasso fine sand, Zephyr muck, and Okeelanta-Terra Ceia association. Chobee soils underly the entire riverine swamp. These soils are, topographically, located in lower ridges and along stream banks/beds. They are poorly drained and remain saturated through the majority of the year with the water table above the soil surface. Marshes, cypress swamps, bottomland forests, and wet prairie are typically all found on hydric soils.

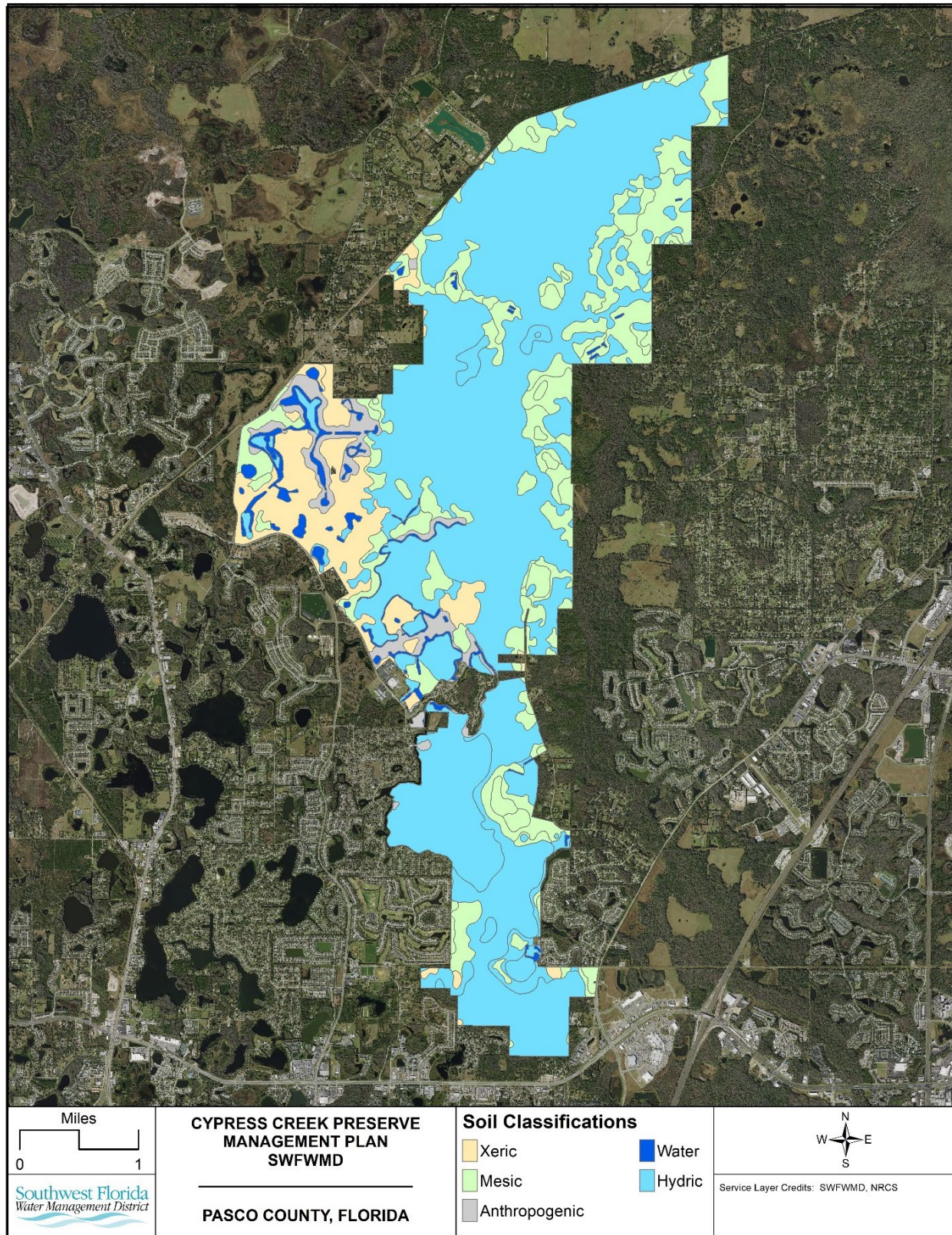
Udalife Arents-Urban land complex soil type and Quartzipsamments are located in areas of soil disturbance. These two soil types are associated with lawns, playgrounds, vacant lots, buildings, and streets. The Udalife Arents-Urban land complex is found where the District's and TBW buildings are located off of Pump Station Road. Quartzipsamment soil type is a heavily disturbed soil. It consists of reworked marsh soil with an added sandy component.

### Topography

The Preserve is gently sloping with elevations ranging from 75 feet to the lowest elevations of 50 and 45 feet above sea level along the creek bed. The Preserve gently slopes down from its borders to the creek and drains to the south into Hillsborough County (Figure 8). The hydrology of these uplands is strongly influenced by the flatter topography and a landform which produces little stormwater runoff. Downward percolations are slowed by poorly drained soil, and where present, an underlying clay hardpan.

The Preserve is within the Southern Coastal Plain Ecoregion; specifically, the Southwestern Florida Flatwoods Subregion (Griffith et al. 1994). This ecoregion covers parts of northern Florida and most of central Florida. The subregion includes barrier islands and peninsulas, Gulf Coastal lowlands and valleys, and parts of the Bone Valley in Polk County. This subregion gives rise to forested wetlands, pastures and rangelands, and pine flatwoods.





**FIGURE 7. SOIL TYPES AT CYPRESS CREEK PRESERVE**



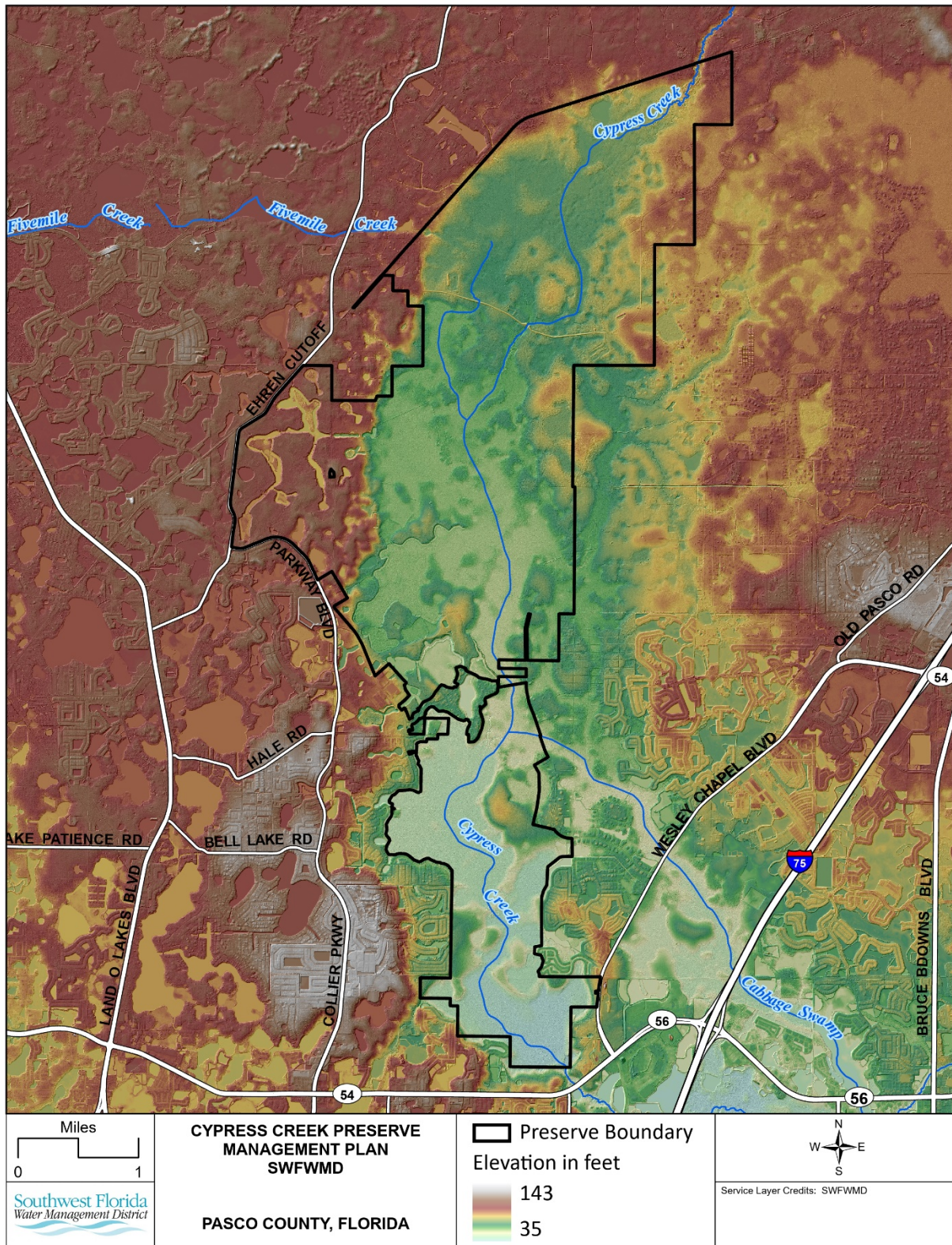


FIGURE 8. DIGITAL ELEVATION MODEL OF CYPRESS CREEK PRESERVE

## **Historical Land Use and Cultural Resources**

### **Historical Land Use**

The majority of the Preserve is a floodplain, with sheet flow rather than distinct, channelized flow south into the Hillsborough River. With the forest wet most of the year, this made development and agriculture practices difficult. Historically, the Preserve was just as it is now, flooded forest. A few areas of uplands along the edges of the current Preserve boundaries were once in agriculture and pasture. The TBW office located off Pump Station Road on the west side of Cypress Creek is placed on land purchased by the District from the Burnside family citrus grove business. The Mertz company historically purchased thousands of acres of forestland in central Pasco County in the late 1970s and early 1980s. When the founder, Harold Mertz, passed away, his wife, Esther Mertz, and the Trust sold portions of this land to the District in the early 1990s as part of a buffer between neighborhoods and the Preserve.

### **Cultural and Archaeological Resources**

The Preserve contains four archaeological sites that have been recorded in the Florida Master File of the Florida Department of State, Division of Historical Resources. These include the Barn Pond Mound (ceramic scatter), Big Cypress Swamp mound (lithic scatter), Rattlesnake Island Flaking Area (lithic scatter/quarry), and the Cable Guy Site (pre-historic but lacking pottery).

The District will provide the Best Management Practices for upholding the integrity of the historical and cultural resources that are documented within the confines of the Preserve. District staff will alert law enforcement, when necessary, as illegal activities have historically occurred at the Preserve. Management of these archaeological and historical resources will consist primarily of preventing disturbance. The sites may be made available for supervised study by archaeological researchers.



# Land Management and Land Use

## Land Management

As part of the ownership of conservation lands, the District is responsible for the protection of water resources and natural systems through the application of effective and efficient land management practices. These land management practices include prescribed fire, forest management, habitat restoration, exotic and invasive species control, and habitat maintenance. The primary land management tool that managers utilize is the application of prescribed fire. This is the most cost-effective method to maintain the natural communities in their natural condition. Along with prescribed fire, the District uses other common land management techniques to achieve specific land management objectives. The goal of the District's land management program is to maintain and restore natural systems according to their natural community descriptions outlined by the Florida Natural Areas Inventory (FNAI) Natural Communities Guide.

### Fire Management

Prescribed fire is the primary tool for management of District conservation lands. Fire is a natural process that has occurred on Florida's landscape for thousands of years. The goal of the District's fire program is to mimic that natural process and apply prescribed fire in a safe, efficient, and effective manner to maintain the natural function of the plant and animal communities. Many of the plant and animal species that occur on the Preserve are specifically adapted to fire to maintain a healthy and successful population. As a result, the District aims to apply fire to all fire-dependent natural communities based on their natural fire return intervals defined by FNAI (FNAI, 2010).

The program targets the natural fire season, or the "growing" season, which occurs during the spring and summer. Research indicates that burning during the growing season has the most beneficial impact on native plant communities but maintaining a consistent burn frequency can be just as valuable. Therefore, the District conducts prescribed burns throughout the year to achieve various objectives.

The District's fire management program seeks to achieve the following:

- Maintain and restore natural systems.
- Promote water resource benefits.
- Reduce hazardous fuel loads and minimize wildfire risk.
- Promote native plant diversity and habitat function.
- Maintain wildlife habitat quality.
- Support forest management activities.
- Maintain aesthetics and access for recreation.

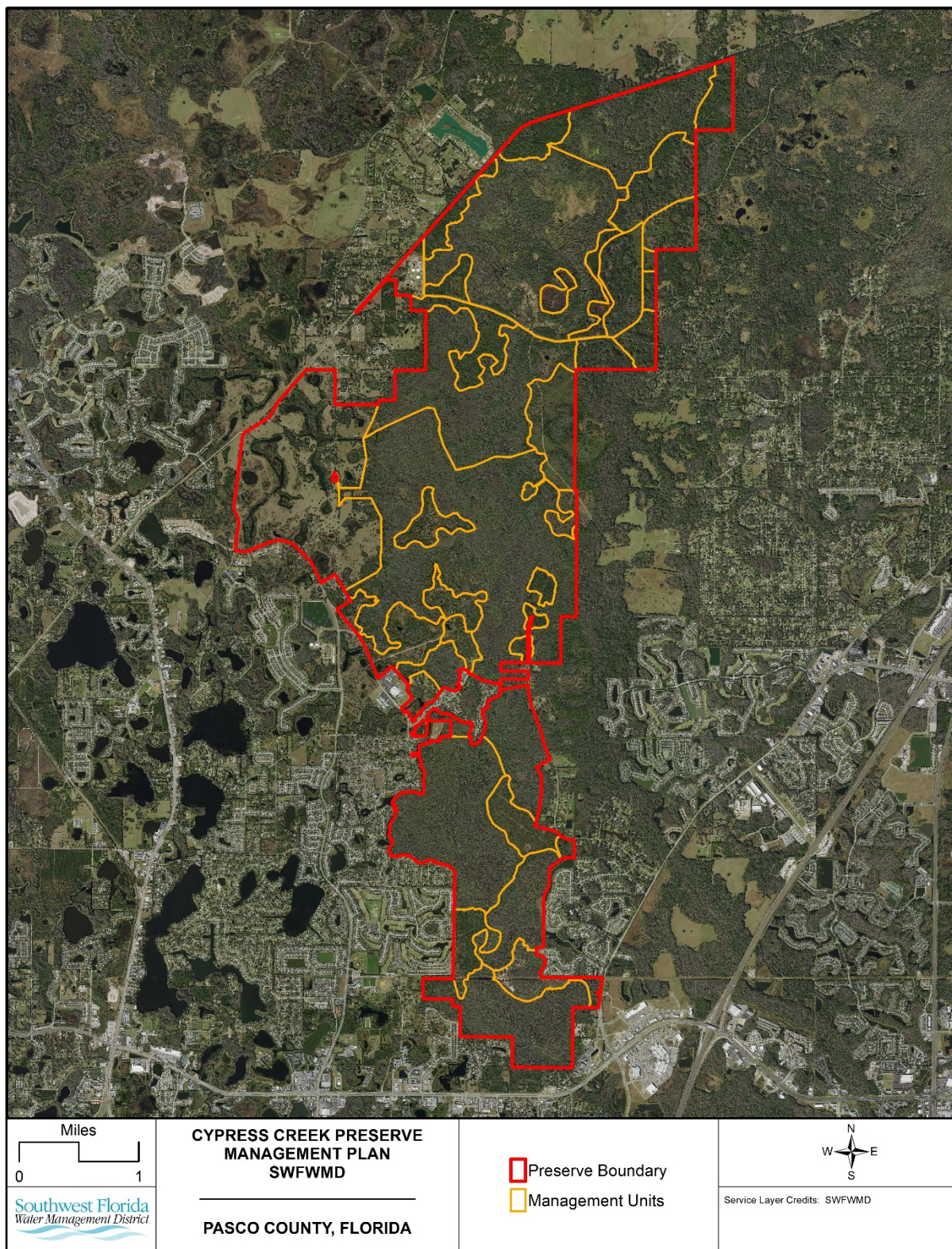
On the Preserve, there are 38 management units with approximately 2,022 acres of fire-dependent natural communities. District burn managers always take precautions to limit potential impacts from prescribed burns and target specific weather conditions. There is a network of firelines and natural firebreaks throughout the property that allow for successful fire management and limit the potential for wildfires. These management units are outlined in Figure 9.



The term “condition class” is a reference to the status of District-owned and managed lands relative to a historic fire return interval described in the natural history of each community type. The fire return interval demonstrates the amount of time between disturbances that resets succession within a natural community. Condition Class 1 would be within one fire return interval and Condition Class 2 would be within two fire return intervals. Condition Class 3 would represent any unit that is at three or more intervals since the last disturbance. Condition Class 4 represents any system that has had fire excluded for so long that it is beyond recovery through reintroduction of fire without implementing cost-prohibitive measures. Condition Class 5 was developed to represent systems that are not regularly fire-maintained, such as hydric hammock. Condition Classes 1-5 represent the majority of the program aside from special circumstances that have been identified and treated separately for a variety of reasons.

The primary objective of the Land Management Condition Class Evaluation Program is to assign a condition class value to all fire management units based on the natural fire return interval of the targeted community type, and the purpose of the Condition Class Evaluation Program is to provide an accurate representation of the condition of lands managed by the District with fire. It is the District’s goal to preserve, protect, and restore natural systems to support their natural hydrologic and ecological functions.





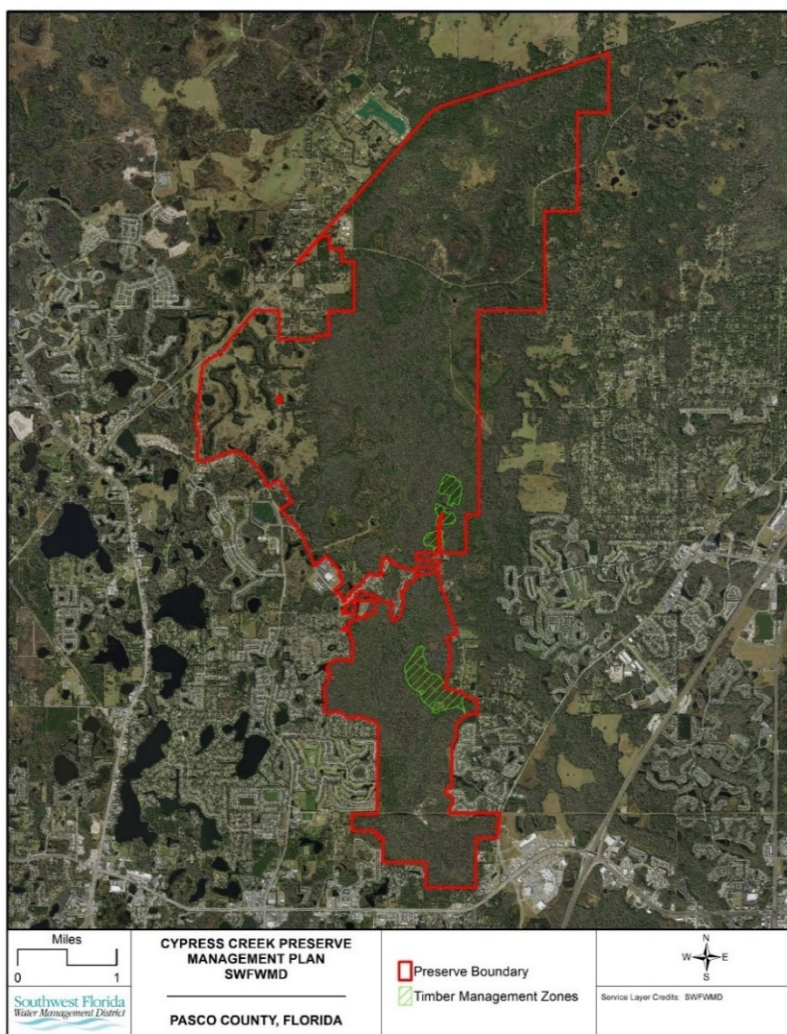
**FIGURE 9. MANAGEMENT UNITS AT CYPRESS CREEK PRESERVE**



## Forest Management

The Preserve contains two Timber Management Zones (TMZ) located in the southern and central portion of the Preserve. These plantations were created to restore the pine overstory in previously altered areas, in this case, improved pasture. The goal is to manage these areas using standard silvicultural practices to maintain forest health, provide wildlife habitat, support local economies, and generate revenue to offset the cost to manage these properties. The District uses planted pine and timber harvesting as a tool for land management, forest health, restoration, and to salvage timber lost to fire, insects, or disease.

The two TMZ's on the Preserve are the Oaks and the Island plantations which are outlined in Figure 10. The Oaks stand is 107 acres of slash pine planted in 2001. This stand was harvested for the first time in 2015 using a third-row thinning. The Island stand is a series of three small individual stands totaling 56 acres of longleaf pine planted in 2008. This stand is scheduled to be thinned in 2023.



**FIGURE 10. TIMBER MANAGEMENT ZONES AT CYPRESS CREEK PRESERVE**



## Restoration and Maintenance

Managing altered lands on conservation tracts often necessitates additional management activity, especially if fire dependent communities can no longer carry fire at the necessary time (seasonality) or intensity. Cypress Creek is a tributary of the Hillsborough River. Formerly, water control structures along Pump Station Road were utilized to help control water flow down the creek, limiting water levels in the Hillsborough River. In the past, this helped keep the Hillsborough River from flooding. Now, the water control structure helps to maintain water levels on the northern side of the property. This has assisted in restoring the wetland areas north of Pump Station Road previously impacted by over-pumping in the wellfield. Upland species were encroaching into these wetlands and soil subsidence was occurring. The increased hydroperiod and higher water levels helped to limit many of these encroaching species and has improved the wetland habitats.

## Exotic and Invasive Species Management

### Invasive Plant Management

Invasive, non-native plants are a threat to ecosystems worldwide and are an especially serious issue in Florida due to the state's warm, amenable climate and many ports of entry which import non-native plants. This high rate of introduction, combined with the sub-tropical climate, makes it more likely for non-native plant species to be introduced into the wild and to establish successful self-propagating populations. As a result, Florida is home to many non-native plant species that have become aggressive invaders that severely impact natural systems.

The Florida Exotic Pest Plant Council (FLEPPC) tracks non-native plant species in the state, compiles species lists, and categorizes these species based on their impact to natural systems. Category I species are the most aggressive and can impact natural communities by displacing native species, changing community structure or ecological functions, or by hybridizing with native species. Category II species are those that are increasing in abundance but have not yet altered Florida plant communities to the extent shown by Category I species. Many species on the FLEPPC lists also appear on the Florida Department of Agriculture and Consumer Service's Noxious Weed List.

The District is committed to the management of invasive exotic plant species and uses an adaptive management strategy to control their establishment and spread on the Preserve. The District has a Vegetation Management Section with dedicated staff that spearhead control efforts by surveying, prioritizing, and treating invasive exotic plant populations on District conservation lands. The District focuses management efforts on invasive exotic plant species which the FLEPPC has deemed Category I or II plants, as discussed above. Furthermore, the Vegetation Management Section uses the framework set out in The Nature Conservancy's Site Weed Management Plan Template to analyze and prioritize invasive exotic plant species for treatment based on several factors, including:

1. their infestation levels.
2. the current and potential impacts of the species.
3. the value of habitat that the species does or could infest; and
4. the difficulty controlling the species.

This prioritization scheme ensures that the District’s resources are spent where they will have the greatest impact on the ecosystem. Additionally, the District has implemented an Early Detection, Rapid Response (EDRR) strategy which identifies and rapidly treats occurrences of exotic species that are not currently present or are not widespread on the property but have the potential to become invasive if they get established.

The most problematic invasive plant species found at Cypress Creek are listed in Table 3 along with their priority level for control, with lower numbers indicating a higher priority and vice versa. The species of primary concern on the Preserve include cogon grass (*Imperata cylindrica*), Chinese tallowtree (*Triadica sebifera*), Japanese climbing fern (*Lygodium japonicum*), Old World climbing fern (*Lygodium microphyllum*), coral ardesia (*Ardisia crenata*), and rosary pea (*Abrus precatorius*). Infestations of invasive exotic plant species at the Preserve are most commonly found in historically disturbed sites such as pastures, old home sites, adjacent to roadways, and housing developments.

The District employs a variety of measures to control invasive exotic plant species including thorough surveying, chemical treatment (basal-bark treatment, cut-stump applications, hack-and-squirt methods, and foliar applications), mechanical treatment, and the use of biological control agents or some combination thereof, which are done with both in-house and contracted labor. Upland treatments are often scheduled to occur in the year following a prescribed burn because access to a site is easier and visibility is increased at this time. Treatments utilizing herbicides comply with instructions found on the herbicide label and employ the Best Management Practices for their application.

**TABLE 3. INVASIVE PLANTS FOR CYPRESS CREEK PRESERVE**

Common Name	Scientific Name	FLEPPC Category	Priority Level for Control
<b>Old world climbing fern</b>	<i>Lygodium microphyllum</i>	1	4
<b>Tropical soda apple</b>	<i>Solanum viarum</i>	1	5
<b>Chinese tallow-tree</b>	<i>Triadica sebifera</i>	1	5
<b>Japanese climbing fern</b>	<i>Lygodium japonicum</i>	1	6
<b>Coral ardesia</b>	<i>Ardisia crenata</i>	1	6
<b>Rosary pea</b>	<i>Abrus precatorius</i>	1	6
<b>Cogongrass</b>	<i>Imperata cylindrica</i>	1	7
<b>Brazilian pepper</b>	<i>Schinus terebinthifolia</i>	1	7
<b>Chinaberry tree</b>	<i>Melia azedarach</i>	2	7
<b>Arrowhead vine</b>	<i>Syngonium podophyllum</i>	1	7
<b>Skunk vine</b>	<i>Paederia foetida</i>	1	8
<b>Castor bean</b>	<i>Ricinus communis</i>	2	8
<b>Wild taro</b>	<i>Colocasia esculenta</i>	1	8
<b>Lantana</b>	<i>Lantana strigocamara</i>	1	8
<b>Sword fern</b>	<i>Nephrolepis cordifolia</i>	1	9
<b>Air potato</b>	<i>Dioscorea bulbifera</i>	1	9
<b>Ear pod tree</b>	<i>Enterolobium cyclocarpum</i>	N/A	10
<b>Caesar weed</b>	<i>Urena lobata</i>	1	15
<b>Water Hyacinth</b>	<i>Eichhornia crassipes</i>	1	N/A
<b>Hydrilla</b>	<i>Hydrilla verticillata</i>	1	N/A

### Invasive Wildlife Management

The monitoring and control of non-native animal species statewide is overseen by the Florida Fish and Wildlife Conservation Commission (FWC). The District obtains annual control permits through FWC to track and conduct invasive wildlife removal practices on District-owned properties.

The Preserve is host to several invasive wildlife species. The primary invasive wildlife species that the District focuses control efforts on is the feral hog (*Sus scrofa*). Feral hogs are the most conspicuous and destructive exotic animal species found throughout the conservation lands owned and managed by the District. The species' ability to readily adapt to a wide variety of habitats combined with their high reproductive rates and a lack of significant natural predators has led to rapidly increasing population densities throughout North America (West, Cooper, and Armstrong 2009).

Feral hogs cause millions of dollars in damages to lawns, ponds, natural areas, flood control structures, and rights-of-way each year (Giuliano 2016). Feral hogs are capable of carrying multiple zoonotic and epizootic diseases, including brucellosis, leptospirosis, and pseudorabies. They also have the potential to be aggressive if startled or angered and are vectors for many invasive plant species on site; specifically, Caesar's weed. Furthermore, feral hogs also compete with native species for forage and have been documented preying on native species; specifically, ground-nesting birds.

Recognizing the severe ecological threat posed by this exotic species, the District first developed and implemented a feral hog population control plan in 1995. Due to the adaptive nature of wild hogs, the District has since taken a multi-faceted approach to their removal. Current control methods include trapping, FWC administered Wildlife Management Area hog hunts, special District administered hog hunts, and on select properties, aerial operations conducted by the United States Department of Agriculture – Wildlife Services program. The use of electronically controlled hog traps in targeted areas has also proven highly effective.

Given the current array of practical, environmental, and social constraints, it is generally recognized that the complete eradication of feral hogs from District conservation lands is an unattainable goal. Therefore, the overall goal of the feral hog management strategy is to reduce the number of hogs on District conservation lands to a maintenance level, thus reducing the overall ecological damage resulting from feral hog rooting. This is done through the use of a comprehensive and scientifically based management strategy that is humane, cost-effective, and compatible with ecologically sustainable land management.

### Imperiled Species

#### *Wildlife*

The term 'Imperiled Species' refers to plant and animal species that are designated as Endangered or Threatened by the FWC or the U.S. Fish and Wildlife Service. The District manages the Preserve in a holistic fashion and according to Best Management Practices which benefit a wide array of native plant and animal species, including those that are considered imperiled. Numerous imperiled species are known to exist on the Preserve.



The FNAI Biodiversity Matrix Map Server is a screening tool which provides site specific lists of the rare species that are known to occur or are likely to occur on a given parcel of land. According to the FNAI Biodiversity Matrix Report for the Preserve, 11 federal and/or state listed wildlife species are likely to occur or have the potential on the property (Table 4). Additionally, numerous federal and state listed plant species are likely to occur or have the potential to occur there as well.

**TABLE 4. IMPERILED WILDLIFE SPECIES KNOWN OR LIKELY TO OCCUR AT CYPRESS CREEK PRESERVE**

Common Name	Scientific Name	Federal Status*	State Listing**
<b>Florida Burrowing Owl</b>	<i>Athene cunicularia florida</i>	N	ST
<b>Eastern Indigo Snake</b>	<i>Drymarchon couperi</i>	LT	FT
<b>Little Blue Heron</b>	<i>Egretta caerulea</i>	N	ST
<b>Tricolor Heron</b>	<i>Egretta tricolor</i>	N	ST
<b>Gopher Tortoise</b>	<i>Gopherus polyphemus</i>	C	ST
<b>Florida Sandhill Crane</b>	<i>Grus canadensis pratensis</i>	N	ST
<b>Short-tailed Snake</b>	<i>Lampropeltis extenuata</i>	N	ST
<b>Wood Stork</b>	<i>Mycteria americana</i>	LT	FT
<b>Red-cockaded Woodpecker</b>	<i>Picoides borealis</i>	LE	FE
<b>Florida Pine Snake</b>	<i>Pituophis melanoleucus mugitus</i>	N	ST
<b>Sherman's Fox Squirrel</b>	<i>Sciurus niger shermani</i>	N	ST

\*N=Not federally listed, LT=Federally Threatened, LE=Federally Endangered, C=Candidate species

\*\* ST=State Threatened, FT=Federally Threatened, FE=Federally Endangered

### *Plants*

There are 30 species of imperiled plants known to occur or are likely to occur in the Preserve (Appendix A). Imperiled plants include federally protected and commercially exploited species (Anderson and Weaver 2010). Federally endangered species documented on the Preserve include Tampa mock vervain (*Glandularia tampensis*) and Hand fern (*Ophioglossum palmatum*).

### **Arthropod Management**

In compliance with Section 388.4111, Florida Statutes and in Section 5E-13.042, Florida Administrative Code, land within Cypress Creek Preserve in Pasco County have been evaluated and subsequently designated as environmentally sensitive and biologically highly productive. Such designation is appropriate and consistent with the previously documented natural resources and ecosystem values and affords the appropriate protection for these resources from arthropod control practices that could impose a potential hazard to fish, wildlife, and other natural resources existing on this property.

## Recreation

Part of the District Policy governs the authority of the District to provide passive, natural resource dependent recreational uses on its conservation lands, as well as appropriate public access. The compatibility for such recreational uses and public access points considers the environmental sensitivity and the suitability of the property. Compatible uses generally consist of outdoor recreation and educational activities, while public access points are minimal and only allow for walkthrough foot traffic. The District Governing Board holds authority to determine the compatibility of recreational uses on District conservation lands, as based upon the purpose of the property acquisition.

For some District properties, there are cooperative agreements associated with other public agencies to provide for a more expansive recreational use. These agreements are discussed further in 'Partnerships and Cooperative Agreements' below.

The recreational activities permitted at the Preserve are bicycling, inline skating, camping, horseback riding, fishing, birding, and hiking (Figure 11). Public access to the property is provided by four walkthrough access points. An access point to the northern portion of the Preserve is provided by a gate and parking area at the west end of Pump Station Road. A second access for the northern portion of the property is provided by a gate and parking area on the east side of the property at the end of Quail Hollow Boulevard. A third access point is also provided by a gate and parking area at the west end of the Preserve on Parkway Boulevard, just north of the Pine View Middle School. A fourth access point is provided by a walkthrough at the end of Eagle Island Boulevard. There are informational kiosks located at the north and south public access points which contain a large trail map of the property and trail map brochures. Motorized access on the property is restricted to authorized personnel directly affiliated with the District, and any other non-affiliated personnel pursuant to any cooperative agreements with the District.

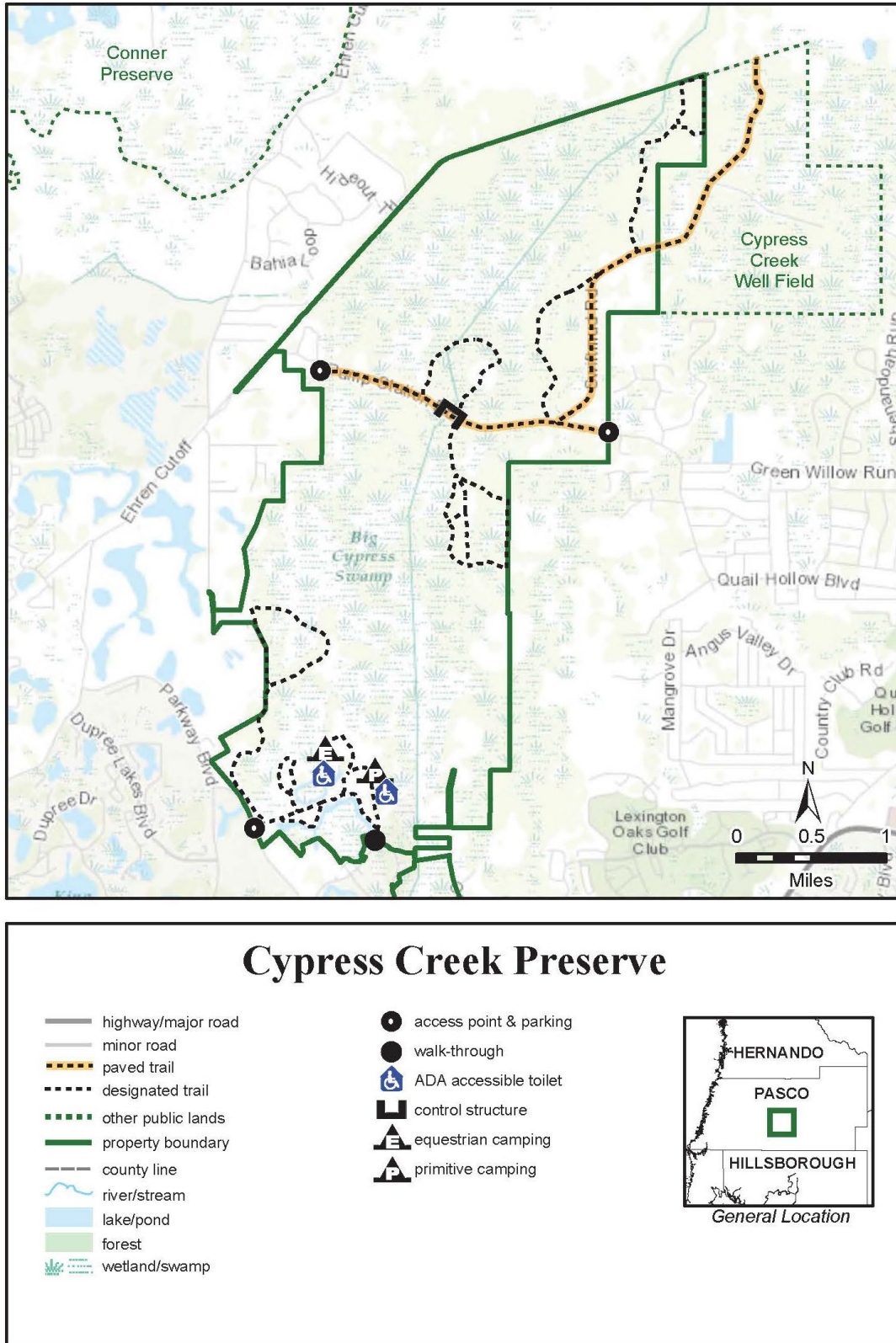


FIGURE 11. RECREATION TRAILS AT CYPRESS CREEK PRESERVE



## Trails

The Preserve provides for approximately 19 miles of multi-use trails. These trails are also promoted under the designation of the Florida Greenways and Trails network. Trails give nature-based experiences while minimizing impacts to the lands and natural systems. Trail markers identify the type of recreational use and the arrows indicate the direction of the trail. The main trail intersections are numbered, which coincide with the trail map brochure.

Of the 19 miles of multi-use trails, there are approximately 8 miles of paved trails, accessible from Pump Station Road, and approximately 11 miles of unpaved trails that provide for the additional uses of bicycling and inline skating. Furthermore, approximately 14 miles of the multi-use trails provide for equestrian use. It is required that each equestrian must carry proof of their horse's current negative Coggins test results.

## Camping

The Preserve provides primitive and equestrian camping opportunities. There are two campgrounds that are accessible from the Parkway Boulevard access point. Each of the sites are equipped with picnic tables, pavilion(s), fire rings, and portable toilets. Potable water is not provided on the property. Camping at the Preserve is available at no cost to the user, but a free reservation must be made through the [WaterMatters.org/Reservation](http://WaterMatters.org/Reservation) website prior to camping at a site.

## Wildlife Viewing, Hunting, Fishing, and Boating

The Preserve has a wide variety of wildlife viewing opportunities. Cypress Creek flows through the property and provides the opportunity for observing an abundance of bird species. The property contains many other species of wildlife, such as deer, gopher tortoises, turkeys, sandhill cranes, fox squirrels, and bald eagles. This high species richness is indicative of proper land management practices which have created flourishing natural habitats throughout the Preserve.

Currently, the Preserve is not open to hunting, with the exception of any feral hog population management hunts administered by the District.

Fishing is typically open along Cypress Creek during the highwater periods and at the manmade impoundments located at the Parkway Recreation area. Fishing is regulated by the FWC and a license may be required.

Although the Cypress Creek watercourse may appear to be suitable for canoeing or kayaking on a seasonal basis, there is no designated launch site, and the waterway is not maintained for boating recreation. Furthermore, the water control structure located at the intersection of the creek and the wellfield road serves as an additional impediment to this use. Currently, boating is not a designated recreational use on the Preserve.

## Americans with Disabilities Act

The District does not discriminate on the basis of disability. This nondiscrimination policy involves every aspect of the District's functions, including access to and participation in the District's programs, services, and activities. Anyone requiring reasonable accommodation, or who

would like information as to the existence and location of accessible services, activities, and facilities as provided for in the Americans with Disabilities Act should contact the Human Resources Office Chief, at 2379 Broad St., Brooksville, FL 34604-6899; telephone (352) 796-7211 or 1-800-423-1476 (FL only), ext. 4747; or email [ADACoordinator@WaterMatters.org](mailto:ADACoordinator@WaterMatters.org). If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1-800-955-8771 (TDD) or 1-800-955-8770 (Voice). If requested, appropriate auxiliary aids and services will be provided at any public meeting, forum, or event of the District. In the event of a complaint, please follow the grievance procedure located at [WaterMatters.org/ADA](http://WaterMatters.org/ADA).

## **Land Use Administration**

The land uses administered on District conservation lands are governed by District Policy. According to District Policy, appropriate land use types are separated into two categories: public recreation use and non-recreational public use. Public recreation uses vary by property, and compatibility is based upon the environmental sensitivity and suitability of the property. Furthermore, some District conservation lands are subject to cooperative agreements with other public agencies to administer the responsibilities for any expansive recreational opportunities that the District may deem as compatible on its conservation land. Cooperative agreements meet the District's Core Mission of protecting water resource and providing nature-based recreation to the greatest extent practicable. The specific public recreation uses at the Preserve are discussed in the previous Section. Non-recreational public uses include, but are not limited to, linear facilities, scientific research opportunities, water resource development projects, sustainable forestry, and environmental education. Like cooperative agreements for expansive recreational uses, the District is a party to a variety of agreements with private entities for the allowance of the aforementioned use types. The administration of non-recreational and recreational public uses for the Preserve is discussed in the subsequent sections.

## **Partnerships and Cooperative Management**

The District is a party to a public water supply license agreement with TBW for the purpose of providing public water supply from multiple wellheads and facilities located within the northern region of the Preserve. There is also a license agreement with an apiary farmer for the private production of honey.

There is a designation agreement with The Florida Department of Environmental Protection's (FDEP) Office of Greenways and Trails (OGT) for the designation of the recreation trails on the Preserve for the purpose of providing recognition as part of the OGT trail network.

The District has also granted access easements and utility easements on the property. The access easements are for access permissions onto the Preserve for Circle 8 Angus Ranch, Withlacoochee River Electric, the Ehren Cemetery private inholding, and for private entities to perform culvert maintenance tasks. The utility easements are granted to TBW, Withlacoochee River Electric, and Duke Energy for the purposes of linear facilities located on the Preserve.

During the 2021 fiscal year, the District entered into an agreement with a lessee for the administration of a cattle lease on the donated parcel of the Preserve.

### Research Opportunities

District properties provide for a variety of research opportunities for the benefit of natural resource conservation and preservation efforts and advancements. These opportunities can consist of wildlife surveys, groundwater sampling, natural communities research or wetland studies. Overall, District properties provide an abundance of research opportunities due to the proper management of healthy ecosystems.

The Preserve has been a frequent location for wetland studies, amphibian surveys and soil investigations.

### Special Use Authorizations (SUA)

For any requests for undesignated uses on District property, it is required to apply for an SUA from the District's Land Resources Bureau. The SUA application will be reviewed by the District to determine the compatibility of the requested use on District conservation lands.

The types of approved SUAs on the Preserve can be categorized under recreational uses, research opportunities, training, and general granted access allowances. As previously mentioned, the approval for obtaining access to the designated trails for a mobility disabled person is completed through the SUA process. Recreational uses have typically been for events that included, but were not limited to, marathons, equestrian outings, and charity events. As mentioned in the previous section, the specific research opportunities have included, but were not limited to, wetland studies, amphibian surveys, and soil investigations. The general granted accesses have typically been for the purposes of allowing access to construction crews for the purpose of performing maintenance activities on the Preserve and adjacent property owners.

### Future Land Conservation

The District will continue to consider the opportunity to purchase lands adjacent to the Preserve with the goal of promoting the District's Mission of protecting the natural features of conservation lands for the benefits of flood protection, water quality, and water supply. It would be advantageous to seek possible opportunities for acquiring fee simple and less-than-fee properties to further promote protections of the natural systems within the region.



## Land Maintenance and Operations

### Roads and Boundaries

The District is responsible for maintaining the infrastructure on District lands for access to conduct management activities, to provide recreational opportunities, and to provide site security. This includes roads, trails, firelines, culverts, wet-crossings, recreational amenities, and perimeter fencing that requires periodic maintenance which occurs throughout the year. Properly established and maintained roads are required to provide access for management activities and public use. Well-maintained roads will provide quick access for wildfire protection and serve as firelines for prescribed fires. Continuous observation will ensure that roads remain clear and that they are vehicle worthy for management and public use.

Motorized access on the Preserve is restricted to authorized personnel only. The main access road, Pump Station Road, is paved and maintained by TBW to support access and management of the Cypress Creek Wellfield. It also serves as a multiple-use trail within the recreational trails network. Several management roads are utilized as service roads to support management activities and regional hydrological data collection. Since the acquisition of the Preserve, most of the unnecessary roads have been closed and are being allowed to revegetate naturally.

As part of the general road maintenance, the District maintains a network of culverts and wet-crossings to ensure the conveyance of water. Culverts are periodically replaced based on the results from a culvert inspection process which identifies culverts that are damaged or are nearing the end of their expected service life. Wet crossings are utilized, where feasible, to mimic the natural conveyance of water and to provide limited disturbance in wet areas. These low water crossings are typically at ground level and are improved with rock or some other material to limit erosion while allowing for the natural flow of water to occur.

Properly marked and maintained boundaries help to minimize disputes, encroachments, trespassing, and other unwanted impacts from adjoining properties. Well-marked boundaries also aid in proper placement of fire lines for wildfire protection and prescribed fire application. Boundaries on the Preserve are identified by perimeter fencing and District boundary signs.

District staff secure the property by maintaining perimeter fencing, removing unauthorized access gates, posting appropriate boundary signage, identifying frequent points of unauthorized access, documenting evidence of illegal activities, and placing entry barriers at designated points to stop unauthorized vehicle access. The District also contracts with FWC law enforcement for site security. Additionally, TBW provides security in and around their infrastructure with the high level of security afforded a water treatment plant because of its importance in the regional water supply.

### Facilities and Infrastructure

Consistent with legislation that was adopted by the state in 1999, lands acquired through state-funded acquisition programs can be used for a variety of public facilities. These include utility lines and other linear facilities, stormwater management projects, and water supply development projects. Approval of such uses is contingent upon a number of criteria, such as the use must be compatible with the natural resource values of the property, reasonable compensation must be

provided to the titleholder of said lands, the proposed use must be located appropriately on the lands with due consideration given to use of other lands, and the proposed use must not be inconsistent with the management plan for the property.

The Preserve supports a number of public facilities and utilities lines. A Duke Energy right-of-way containing a transmission line crosses the southern portion of the property and is not directly associated with District functions. The other utility lines on the property provide service exclusively to on-site facilities. Utility easements, which enter the property and provide service to the on-site facilities, include two Withlacoochee River Electric Cooperative power line easements and a Verizon Communications telephone line.

The Cypress Creek Wellfield is located on the northern end of the Preserve and is managed by TBW. The wellfield facilities include a total of 13 water production wells, 5 of which are located on the Preserve. The Cypress Creek Water Treatment Plant, which currently produces 60 million gallons of treated potable water per day, is located on the west end of the Preserve near the west gate at Pump Station Road and serves the Cypress Creek, Cross Bar Ranch, and Cypress Bridge Wellfields. The treatment plant is the primary operations center for TBW and controls all water distribution to member counties. Three transmission mains service the treatment plant. One of the mains enters the property from the north, transporting water from Crossbar Ranch Wellfield to the Cypress Creek Water Treatment Plant. Another conveys treated water from the treatment plant to Pinellas County and the third links the Cypress Creek pumping station with the Cypress Bridge Wellfield to the south. Also, on site are two 5-million-gallon water storage tanks, a pumping station, and a series of monitoring station.

The District provides public access in the most efficient, cost-effective manner with minimal impact on the natural resources. Development and construction of recreational facilities on the Preserve will be kept to the minimum required to provide access for resource-based recreational activities and to administer and manage the Preserve. There are currently no improved recreation facilities located on the Preserve.

# Goals and Objectives

## Overview

The following represents a general overview of the goals and objectives over the next 10-year planning period for the Preserve. This set of goals will serve as an outline of management expectations and provide direction over the management activities for the life of this plan. These goals are not an annual work plan, which is beyond the scope of this plan.

## Resource Protection and Management

### Hydrologic Management

*Goal: Protect water resources within the Preserve and associated tributaries.*

- Objective 1: Continue to observe and assess water resources within the Preserve to ensure desired hydrologic function and develop restoration projects, as necessary.
- Objective 2: Continue monitoring water quality and wetland conditions through the data collection network and periodic wetland assessments.
- Objective 3: Protect water resources during management activities by continued implementation of Silvicultural and Agricultural Best Management Practices.

*Goal: Continue to support regional watershed initiatives and maintain agreements with regional water authorities for water supply functions.*

- Objective 1: Coordinate with TBW on mitigation projects within the wellfield to enhance hydrologic conditions in wetlands.
- Objective 2: Maintain existing agreement with TBW for operation of the Cypress Creek Wellfield for public water supply.

### Fire Management

*Goal: Maintain and restore function of natural systems through application of prescribed fire as the primary management tool.*

- Objective 1: Develop and implement an annual burn plan and apply prescribed fire according to the District's Fire Management Guidelines.
- Objective 2: Conduct majority of prescribed burns during the growing season to support development of native fire-dependent species and habitat function.
- Objective 3: Update and maintain a condition class database to track management activities on specific management units.
- Objective 4: Maintain perimeter firelines on an annual basis and disk strategic internal management lines supporting the seasonal needs of prescribed fire program.

### Restoration and Natural System Maintenance

*Goal: Evaluate individual management units and develop restoration projects to recover historic natural communities.*



- Objective 1: Assess habitat conditions and develop restoration strategy to recover historic natural communities on previously altered sites targeting imperiled natural communities.
- Objective 2: Utilize information obtained from historic imagery, FNAI Natural Communities Mapping, and on-site investigations to implement site specific restoration projects that support the District's restoration goals.

*Goal: Maintain and enhance natural system structure and function.*

- Objective 1: Continue to maintain existing habitat enhancement projects over the long-term to achieve desired future conditions outlined in the FNAI Natural Community Guide.
- Objective 2: Evaluate and develop habitat enhancement projects to improve habitat function.
- Objective 3: Implement habitat management projects that support the improvement and development of native plant and animal communities, including imperiled species.

### Forest Management

*Goal: Manage the forest resources on the Preserve by applying sound silvicultural techniques, with consideration for maintenance of sustainable forest resources to achieve the District's land stewardship goals.*

- Objective 1: Manage the forest resources in accordance with the District's 10-Year Timber Management Plan and conduct timber harvests as scheduled.
- Objective 2: Evaluate and develop forest management projects to support specific restoration and enhancement objectives developed for the Preserve.
- Objective 3: Conduct annual inspections of forest resources for indication of disease, insect infestations, or damage from fire to promote forest health and sustainability.

### Imperiled Species Management

*Goal: Manage and maintain natural systems to support development of imperiled, threatened, or endangered plant and animal species.*

- Objective 1: Implement land management strategies and techniques that support development of habitat required for known imperiled species.
- Objective 2: In cooperation with other agencies and partners, implement survey and monitoring protocol where feasible for imperiled species and identify strategies for their recovery.
- Objective 3: Work with other state agencies, conservation organizations, and landowners to maintain habitat connectivity.

### Invasive and Exotic Species Management

*Goal: Manage the populations of exotic and invasive plants and animals found on the Preserve at a maintenance level.*

- Objective 1: Implement the District's Invasive Plant Management Plan for the Preserve.
- Objective 2: Employ an EDRR methodology on new infestations identified in the Invasive Plant Management Plan.
- Objective 3: Implement the feral hog control plan and manage the feral hog population on the Preserve.

## Infrastructure and Maintenance

*Goal: Manage and maintain the infrastructure to protect the water resources and support the District's management objectives.*

- Objective 1: Annually inspect and maintain roads and trails according to their designated maintenance schedule.
- Objective 2: Monitor and maintain culverts, bridges, and low water crossings to prevent adverse impacts on hydrology.
- Objective 3: Periodically inspect boundary fencing and gates to assure adequate protection and site security of resources and repair, as needed.

## Administration

### Land Acquisition

*Goal: Pursue land acquisition projects that support the Florida Forever acquisition plan and seek to obtain conservation easements to maintain critical habitat linkages.*

- Objective 1: Consider acquisition of inholding parcels to complete project boundary and improve management.
- Objective 2: Evaluate opportunities to acquire fee interest of parcels within the District's optimal boundary and Florida Forever work plan.
- Objective 3: Pursue acquisition of less-than-fee interest through strategic conservation easements that complement the District's existing network of fee interest and less-than-fee acquisitions.

### Land Use and Recreation

*Goal: Manage District lands for multiple-use purposes through the administration of leases, easements, and various types of agreements.*

- Objective 1: Routinely review agreements, easements, and leases. Routinely review and update as necessary agreements, easements, and leases.
- Objective 2: Review special requests and issue special use authorizations for uses that are consistent with the District policies.
- Objective 3: Maintain cooperative relationships with state, local, and other governmental entities along with stakeholders.

*Goal: Provide quality, resource-based passive recreational opportunities for the public's enjoyment.*

- Objective 1: Maintain appropriate public access and quality compatible recreational opportunities.
- Objective 2: Evaluate requests for additional compatible public access and recreational opportunities.

### Archaeological and Cultural Resources

*Goal: Manage cultural and historical resources to protect and preserve natural and cultural history.*

- Objective 1: Coordinate and follow the Division of Historical Resources' recommendations for protection on known sites. Continue to monitor, protect, and preserve as necessary any identified sites.
- Objective 2: Take precautions to protect these sites from potential impacts resulting from management or maintenance activities.
- Objective 3: Maintain qualified staff as an Archaeological Site Monitor.

### Security

*Goal: Provide site security and resource protection.*

- Objective 1: Identify, document, and address security issues, including encroachments and unauthorized access.
- Objective 2: Maintain and inspect boundary fences, boundary lines, and gates to deter encroachment and unauthorized access. Post and maintain rule and boundary signage.
- Objective 3: Maintain and as needed, update law enforcement agreement with FWC or other agencies as appropriate.



## Significant Management Accomplishments

Below is a summary of the significant management accomplishments over the last ten years for the Preserve. This is not an exhaustive list of all the management activities that have occurred, but a brief highlight of the significant accomplishments over the last ten years.

### Land Management

- Developed annual burn plans.
- Completed prescribed burns on approximately 1,605 acres.
- Maintained perimeter firelines on an annual basis for prescribed fire and wildfire mitigation.
- Performed maintenance of internal roads and trail along with mowing twice per year on primary and secondary roads.
- Removed 58 feral hogs.
- Conducted timber harvest on a plantation of 105 acres in 2016.
- Over 6,000 acres surveyed for invasive exotic plants and any invasives found within the surveyed area were treated.

### Water Resources

- Tampa Bay Water completed phase 1 and 2 hydrologic restoration of wetlands in NE portion of the property.
- Maintained the structure along Pump Station Road to maintain water levels upstream for longer periods and to alleviate flood conditions as necessary.
- Performed regular measurements on data collection network to monitor hydrologic conditions.

### Recreation

- Created parking area for improved public access at Pump Station Rd at the Quail Hollow Road access point.
- 1,468 camping reservations were made at the campgrounds.
- 139 volunteer hours were logged to help with trail maintenance, trash cleanup, amenities maintenance, and invasive plant removal.

### Acquisition

- Three parcels were acquired through the Mertz Family Foundation donation, totaling 1,042 acres along western boundary.

### Administration

- Authorized 27 SUAs for recreational uses, research opportunities and training.
- Established 967-acre cattle lease in newly acquired tract along Parkway Boulevard.
- Entered into two apiary leases.
- Conducted a Land Management Review in 2014.

## References

Bailey, Eva, et al. October 2003. *Environmental Lands Acquisition Task Force Summary Report*. Pasco County, Florida.

<https://www.pascocountyfl.net/DocumentCenter/View/354/Environmental-Lands-Acq-Task-Force-Summary-Report?bidId=>

Calleson, Debbie and Draper, Eric. *Save Our Rivers. Protecting Florida's Waters – 1981- 1992*. The Nature Conservancy. <https://ufdc.ufl.edu/WL00004501/00001/1j>

Florida Natural Areas Inventory (FNAI). 2010. *Guide to the Natural Communities of Florida: 2010 edition*. Florida Natural Areas Inventory, Tallahassee, FL.

Florida Exotic Pest Plant Council (FLEPPC). 2019. *2019 List of Invasive Plant Species*. [http://bugwoodcloud.org/CDN/fleppc/plantlists/2019/2019\\_Plant\\_List\\_ABSOLUTE\\_FINAL.pdf](http://bugwoodcloud.org/CDN/fleppc/plantlists/2019/2019_Plant_List_ABSOLUTE_FINAL.pdf)

Glatting Jackson Kercher Anglin Lopez Rinehart, Inc. March 2002. *Assessment of Measures to Protect Wildlife Habitat in Pasco County*.

[https://www.pascocountyfl.net/DocumentCenter/View/2220/Chapter\\_3\\_-\\_Conservation\\_Element-Support?bidId=](https://www.pascocountyfl.net/DocumentCenter/View/2220/Chapter_3_-_Conservation_Element-Support?bidId=)

Griffith, Glen; Omernik, James; Rohm, Christina; Pierson, Suzanne. August 1994. *Florida Regionalization Project*. U.S. Environmental Protection Agency, Environmental Research Laboratory. Corvallis, OR.

Guiliano, William. June 2016. *Wild Hogs in Florida: Ecology and Management*. UF IFAS. <https://edis.ifas.ufl.edu/uw322>

Kawula, Robert; Redner, Jennylyn. September 2018. *Florida Land Cover Classification System*. Florida Fish and Wildlife Conservation Commission, Center for Spatial Analysis Fish and Wildlife Research Institute. Tallahassee, Florida.

Oetting, Jon; Hctor, Tom; Volk, Michael. *Critical Lands and Waters Identification Project (CLIP): Version 4.0 Technical Report*. Florida Natural Areas Inventory, Florida State University; Center for Landscape Conservation Planning, University of Florida. Updated September 2016.

Pasco County Planning and Development Department. July 25, 2013. *2025 Comprehensive Plan Pasco County, Florida*. Chapter 2 Future Land Use Element.

[https://www.pascocountyfl.net/DocumentCenter/View/11363/CP-ch02\\_FLUelement-7\\_25\\_13?bidId=](https://www.pascocountyfl.net/DocumentCenter/View/11363/CP-ch02_FLUelement-7_25_13?bidId=)

Pasco County Planning and Development Department. July 25, 2013. *2025 Comprehensive Plan Pasco County, Florida*. Chapter 3 Conservation Element.

[https://www.pascocountyfl.net/DocumentCenter/View/11365/CP-c03\\_conservationelement-7\\_25\\_13?bidId=](https://www.pascocountyfl.net/DocumentCenter/View/11365/CP-c03_conservationelement-7_25_13?bidId=)

Southwest Florida Water Management District (SWFWMD). 2020. *2020-2024 Strategic Plan*. Updated February 2020.

<https://www.swfwmd.state.fl.us/sites/default/files/medias/documents/2020%20Strategic%20Plan%20web.pdf>

Stankey, Daniel L. 1982. *Soil Survey of Pasco County, Florida*. United States Department of Agriculture, Soil Conservation Service (now Natural Resources Conservation Service).

Weaver, Richard; Anderson, Patti. 2010 *Notes on Florida's Endangered and Threatened Plants*. Bureau of Entomology, Nematology and Plant Pathology – Botany Section Contribution No. -38, 5<sup>th</sup> edition.

West, B. C., A. L. Cooper, and J. B. Armstrong. 2009. Managing wild pigs: A technical guide. Human-Wildlife Interactions Monograph 1:1–55.

[https://www.aphis.usda.gov/wildlife\\_damage/feral\\_swine/pdfs/managing-feral-pigs.pdf](https://www.aphis.usda.gov/wildlife_damage/feral_swine/pdfs/managing-feral-pigs.pdf)



## Appendix A

### Imperiled Plant Species Known to Occur or Likely to Occur at Cypress Creek Preserve

Common Name	Scientific Name	Status	Habitat
<b>Hooded Pitcher Plant</b>	<i>Sarracenia minor</i>	E	Flatwoods/cypress dome ecotones
<b>Spreading airplant</b>	<i>Tillandsia utriculata</i>	E	Mesic/hydric hammocks, cypress swamp
<b>Treat's rainlily</b>	<i>Zephyranthes atamasca</i>	E	Flatwoods, wet prairie, wet roadside ditches
<b>Auricled spleenwort</b>	<i>Asplenium erosum</i>	E	Cypress swamps, mesic hammocks
<b>Brown hair-comb fern</b>	<i>Ctenitis submarginalis</i>	E	Mesic hammock
<b>Cardinal airplant</b>	<i>Tillandsia fasciculata</i>	E	Mesic hammock, riverine swamp, cypress swamp
<b>Pond spice</b>	<i>Litsea aestivalis</i>	E	Cypress strands and swamps
<b>Giant airplant</b>	<i>Tillandsia utriculata</i>	E	Mesic hammock, riverine swamp, cypress swamp
<b>Swamp plume polypody</b>	<i>Pechuma ptilodon</i>	E	Mesic hammock
<b>Tampa vervain</b>	<i>Gundularia tampensis</i>	E	Hardwood hammocks and pine flatwoods
<b>Hand fern</b>	<i>Ophioglossum palmatum</i>	E	Mesic-hydric hardwood forests
<b>Giant orchid</b>	<i>Pteroglossaspis ecristata</i>	T	Sandhill, scrub, pine flatwoods
<b>Cardinal flower</b>	<i>Lobelia cardinalis</i>	T	Forested creek and river edges
<b>Catesby's lily</b>	<i>Lillium catesbaei</i>	T	Pine flatwoods and wet prairies
<b>Lacelip ladiestresses</b>	<i>Spiranthes laciniata</i>	T	Pine flatwoods, wet/dry prairies
<b>Yellow-fringed orchid</b>	<i>Plantantera ciliaris</i>	T	Pine flatwoods, herbaceous wetlands
<b>Northern needleleaf</b>	<i>Tillandsia balbisiana</i>	T	Mesic hammock
<b>Rain lily</b>	<i>Zephyranthes atamasco</i>	T	Herbaceous wetlands
<b>Rose pogonia</b>	<i>Pogonia ophioglossoides</i>	T	Pine flatwoods and cypress swamp
<b>Simpson's zephyr-lily</b>	<i>Zephyranthes simponii</i>	T	Herbaceous wetlands
<b>Snowy orchid</b>	<i>Plantantera nivea</i>	T	Pine flatwoods, herbaceous wetlands
<b>Twisted airplant</b>	<i>Tillandsia flexuosa</i>	T	Riverine swamp
<b>Gypsy spikes</b>	<i>Plantantera flava</i>	T	Riverine swamp, cypress swamp
<b>Florida butterfly orchid</b>	<i>Encyclia tampensis</i>	CE	Mesic/hydric hammocks
<b>Green-fly orchid</b>	<i>Epindrum conopseum</i>	CE	Mesic/hydric hammocks
<b>Cinnamon fern</b>	<i>Osmunda cinnamomea</i>	CE	Forested wetlands
<b>Royal fern</b>	<i>Osmunda regalis</i>	CE	Forested wetlands
<b>Royal fern</b>	<i>Osmunda regalis</i>	CE	Forested wetlands
<b>Needle Palm</b>	<i>Rhapidophyllum hystrix</i>	CE	Forested wetlands
<b>Coontie</b>	<i>Zamia pumila</i>	CE	Mesic flatwoods, mesic hammock