PALM BLUFF CONSERVATION AREA
LAND MANAGEMENT PLAN

VOLUSIA COUNTY, FLORIDA

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

FEBRUARY 13, 2024


Northwest Florida
Water Management District
Suwannee River
Water Management
District
St. Johns
River Water
Management
District
Southwest
Florida Water
Management
District
South Florida
Water Management
District

EXECUTIVE SUMMARY

MANAGEMENT AREA SIZE: 4,179 acres

DATE OF ACQUISITION: Acquisition of parcels within Palm Bluff Conservation Area began in December 2009.

DATE OF PLAN: February 13, 2024
MAJOR BASIN: Middle St. Johns River
PLANNING BASIN: Deep Creek

LOCATION: Palm Bluff Conservation Area (PBCA or Property) is located east of the city of Deltona and the town of Osteen in Volusia County.

FUNDING SOURCES: The acquisition funding sources for PBCA include Florida Forever, District Land Acquisition Fund, ad valorem, Florida Department of Transportation (FDOT) mitigation, and Volusia Forever.

MANAGEMENT PARTNERS: The St. Johns River Water Management District (District) is lead manager of PBCA. There are no secondary managers of PBCA.

VISION STATEMENT: The management focus for Palm Bluff Conservation Area is the continued protection of the water resources of the Middle St. Johns River Basin. This includes protection of nearly 1,100 acres of diverse wetlands associated with Deep Creek. Activities occurring on the uplands within Palm Bluff Conservation Area include forest resource, wildland fire and fuels, and invasive species management for the maintenance and restoration of the Property's natural systems.

RESOURCE PROTECTION AND MANAGEMENT:

- **WATER RESOURCES** – While water resources are largely intact and most protection was accomplished through acquisition; some areas are disturbed. Alterations from past management activities include, for example, row crop farming, pasture drainage, alligator farming, and silviculture include ditches, canals, and silvicultural bedding. Additionally, one or more potential water resource development projects may be developed on portions of the PBCA.
- **FOREST MANAGEMENT AND RESTORATION** – Forest management activities will include thinning of slash pine plantations, monitoring for disease and insect infestation, and re-establishing longleaf and slash pine where appropriate.
- **FIRE MANAGEMENT** – The application of prescribed fire will occur in accordance with the annual burn plan and the Palm Bluff Fire Management Plan.
- **FLORA AND FAUNA** – PBCA provides habitat for numerous wildlife species, including the Florida black bear (*Ursus americanus floridanus*) and gopher tortoise (*Gopherus polyphemus*). Additionally, PBCA provides habitat linkage for wildlife through publicly owned conservation lands and conservation easements in Volusia County as part of the

Volusia Conservation Corridor. Threatened and endangered plants located on PBCA include Rugel's pawpaw (*Asimina rugelii*), Florida beargrass (*Nolina atopocarpa*), snowy orchid (*Platanthera nivea*), and hooded pitcher plant (*Sarracenia minor*). Invasive exotic plant and animal species occur on the Property. The District regularly monitors for the presence of invasive plants and animals and executes appropriate control actions.

- **CULTURAL AND HISTORICAL RESOURCES** – A review of the Department of State Division of Historical Resources Master Site File indicates no known or registered cultural sites within the boundaries of the Property.

LAND USE MANAGEMENT:

- **ACCESS** – One designated public access point is located on the Property.
- **RECREATION** – The Property is open to the public for hiking, bicycling, horseback riding, primitive camping, and wildlife viewing.
- **SECURITY** – Maintenance of fence lines, parking areas, gates, and locks, is conducted by the District. District staff coordinate with the onsite security resident, the Florida Fish and Wildlife Conservation Commission (FWC), and local law enforcement for security needs.

ADMINISTRATION:

- **REAL ESTATE ADMINISTRATION** – Over 1,200 acres have been identified as potential acquisitions to PBCA. In addition, the District may consider purchasing parcels near the Property that become available and that will aid in the conservation of water resources within the Deep Creek basins and the Volusia Conservation Corridor. The District may also pursue acquisition of small parcels, property exchanges, or access easements with adjacent landowners to provide additional/improved access to the Property.
- **COOPERATIVE AND SPECIAL USE AGREEMENTS, LEASES, AND EASEMENTS** – The District and Volusia County are parties to a perpetual conservation easement that encumbers 349 acres located in the northwest portion of the Property. This easement was granted before the District purchased the Property and the Property is still subject to the covenants contained therein. There are four special-use authorizations (SUAs) for biological research on PBCA. The District administers a revenue-generating cattle lease and a security residence lease.
- **MANAGEMENT COSTS AND REVENUES** – Management costs at PBCA were $419,498 from 2010–2023 and are projected at $483,690 from 2024–2034. Revenues from the cattle lease, a timber sale, and security residence lease were $462,753 from 2011–2023 and are projected at $208,600 from 2024–2034. The decrease in revenue is due to having no revenue projection beyond the 2027 expiration of the cattle lease. The District intends to rebid this lease after expiration.

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VISION STATEMENT

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OVERVIEW

This document provides the goals and strategies to guide land management activities at the Palm Bluff Conservation Area (PBCA or the Property) over the next 10 years. This land management plan was developed in accordance with Section 373.1391 and Section 373.591, Florida Statutes. This is the second land management plan for the Property.

The St. Johns River Water Management District (District) owns an interest in nearly 780,000 acres of land across 18 counties, acquired for the purposes of water management, water supply, and the conservation and protection of water resources. The District is the lead manager of approximately 435,000 acres of these lands.

LOCATION

Palm Bluff Conservation Area covers approximately 4,179 acres in Volusia County, mostly within the Deep Creek planning basin of the Middle St. Johns River major basin. The Property includes two parcels and is located in numerous sections of Townships 18 and 19 South and Range 32 East.

The Property is located east of State Road (SR) 415 near the town of Osteen. The Property includes frontage on County Road 4164 (Osteen-Maytown Road) along the southern boundary. Figure 1 depicts the location of the Property and Figure 2 is a 2021 aerial image of the Property.

The District is the lead manager for PBCA. There are no secondary managers.

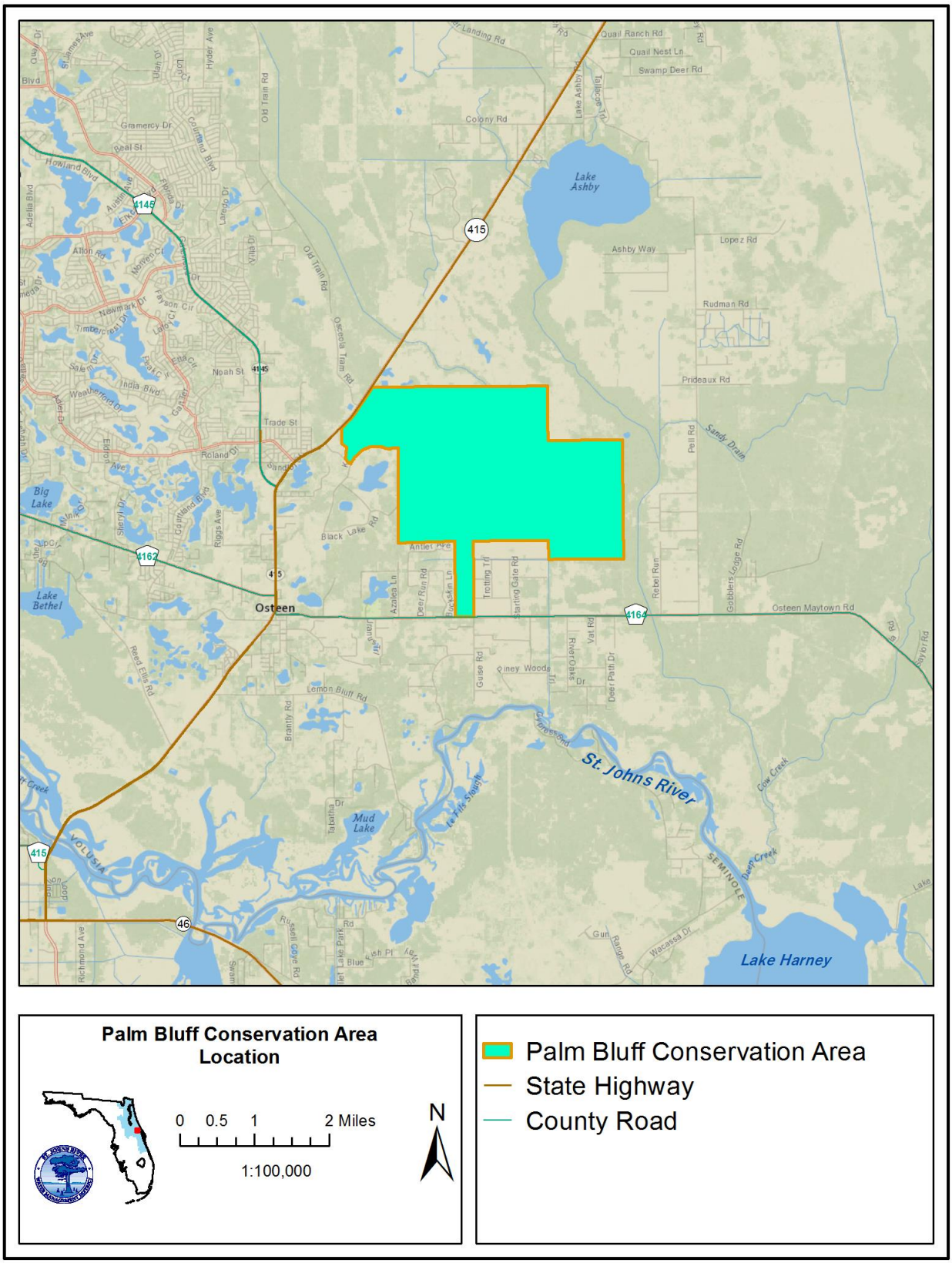

Figure 1: General Location

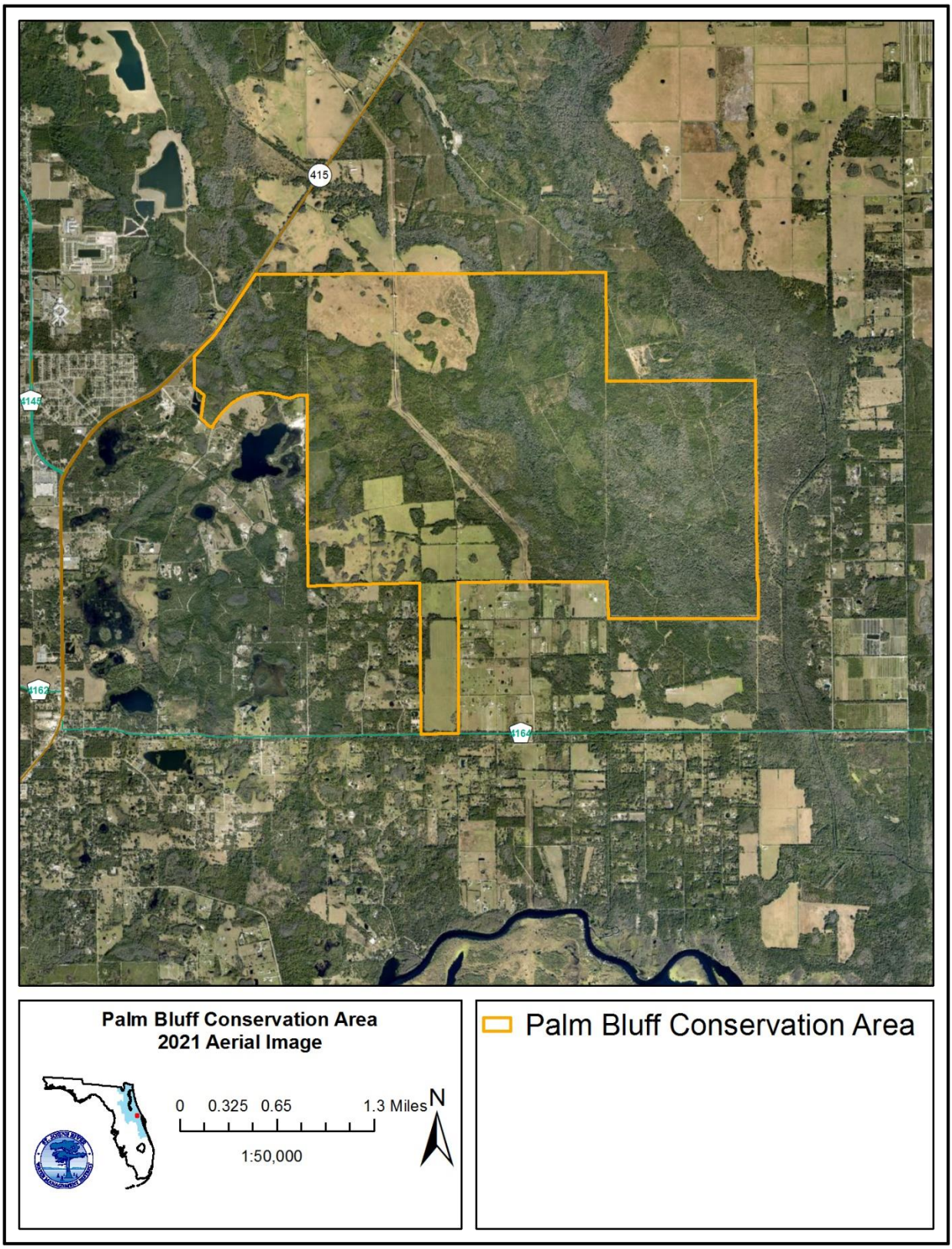

Figure 2: Aerial Imagery

REGIONAL SIGNIFICANCE

PBCA is an integral component of a larger network of conservation lands in Volusia County and provides linkage between a multitude of publicly owned land and conservation easements (Figure 3). These interconnected lands include the Lake Monroe Conservation Area, Deep Creek Preserve and Wiregrass Prairie Preserve as well as several District-held conservation easements (Table 1). This network of lands provides for the protection of water quality and storage, and native plant and wildlife species, as well as numerous natural resource-based recreational opportunities. PBCA lies within the Volusia Conservation Corridor, a Florida Forever project encompassing over 61,000 acres, which acts as a wildlife corridor around the Orlando area.

Table 1: Proximate Properties

Lead Manager	**Conservation Area**
City of Port Orange	Port Orange City Forest
District	Buck Lake Conservation Area
District	Clark Bay Conservation Area
District	Lake Jesup Conservation Area
District	Lake Monroe Conservation Area
District	Seminole Ranch Conservation Area
District	Turnbull Hammock Conservation Area
Farmton/Miami Corporation	Farmton-Volusia Greenkey Conservation Easement
Florida Department of Environmental Protection (DEP)	Lower Wekiva River Preserve State Park
Florida Forest Service (FFS)	Little-Big Econ State Forest
FFS	Tiger Bay State Forest
Private Landowner	Fore Conservation Easements
Private Landowner	Jeff and Debbie Russell Conservation Easement
Private Landowner	LeFils Conservation Easements
U.S. Fish and Wildlife Service	Lake Woodruff National Wildlife Refuge
Volusia County	Deep Creek Preserve
Volusia County	Longleaf Pine Preserve
Volusia County	Wiregrass Prairie Parcels

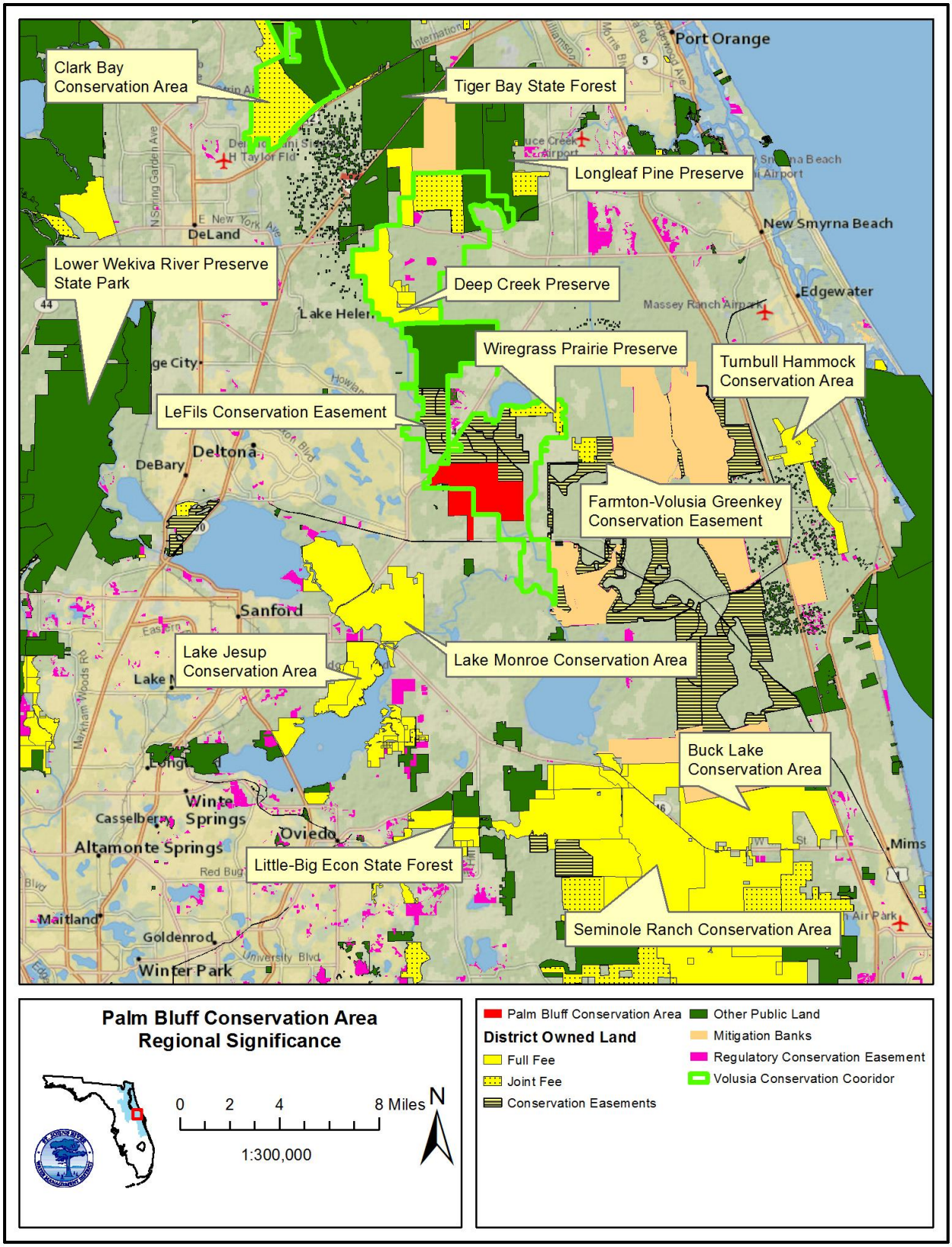

Figure 3: Regional significance

ACQUISITION HISTORY

Acquisition of the parcels that comprise PBCA provides for the protection of important water resources and ecological functions. These acquisitions are consistent with the goals of Middle St. Johns River Basin projects as set forth in the District's Five-Year Strategic Plan and the mitigation goals for the Florida Department of Transportation (FDOT). These goals, as they apply to PBCA, include:

- Improve water quality, maintain natural hydrological regimes, and maintain flood protection by preserving important wetland areas.
- Restore, maintain, and protect native natural communities and diversity.
- Provide opportunities for recreation where compatible with the above listed goals.

Additionally, the Property is within the Florida Forever – Volusia Conservation Corridor and the acquisition of this Property is consistent with the goals of the Volusia Forever program. The primary management goals within this project area are:

- To maintain and conserve the natural environment and provide access for the enjoyment and education of the public.
- To provide resources to ensure sufficient water is available to meet current and future needs.
- To meet the need for high-quality resource based outdoor opportunities, greenways, trails, and open space.
- To ensure that natural resource values of such lands are protected, and the public has the opportunity to enjoy the lands to their fullest potential.

PBCA comprises two (2) parcels totaling 4,179 deeded acres (Figure 4). The parcels that currently comprise PBCA are listed below, and all acreage reported is derived from deed information.

Maytown Tract (3,322 acres), Land Acquisition No. 2009-021-P1:

The Maytown Tract parcel totals 3,322 acres and was acquired by the District on Dec. 29, 2009, for $20,070,115.77 using Florida Forever, Land Acquisition, FDOT Mitigation and ad valorem funds.

Schroeder/Russell-Bowman (857 acres), Land Acquisition No. 2021-002-P1:

The Schroeder/Russell-Bowman parcel totals 857 acres and was jointly acquired by the District and Volusia County on July 14, 2022, for $2,442,022.50 using Land Acquisition and Volusia Forever funds. Both parties retain a 50% undivided interest in the Property, which corresponds to their share of the purchase. This tract will be managed by the District as part of PBCA as stipulated in the joint purchase agreement.

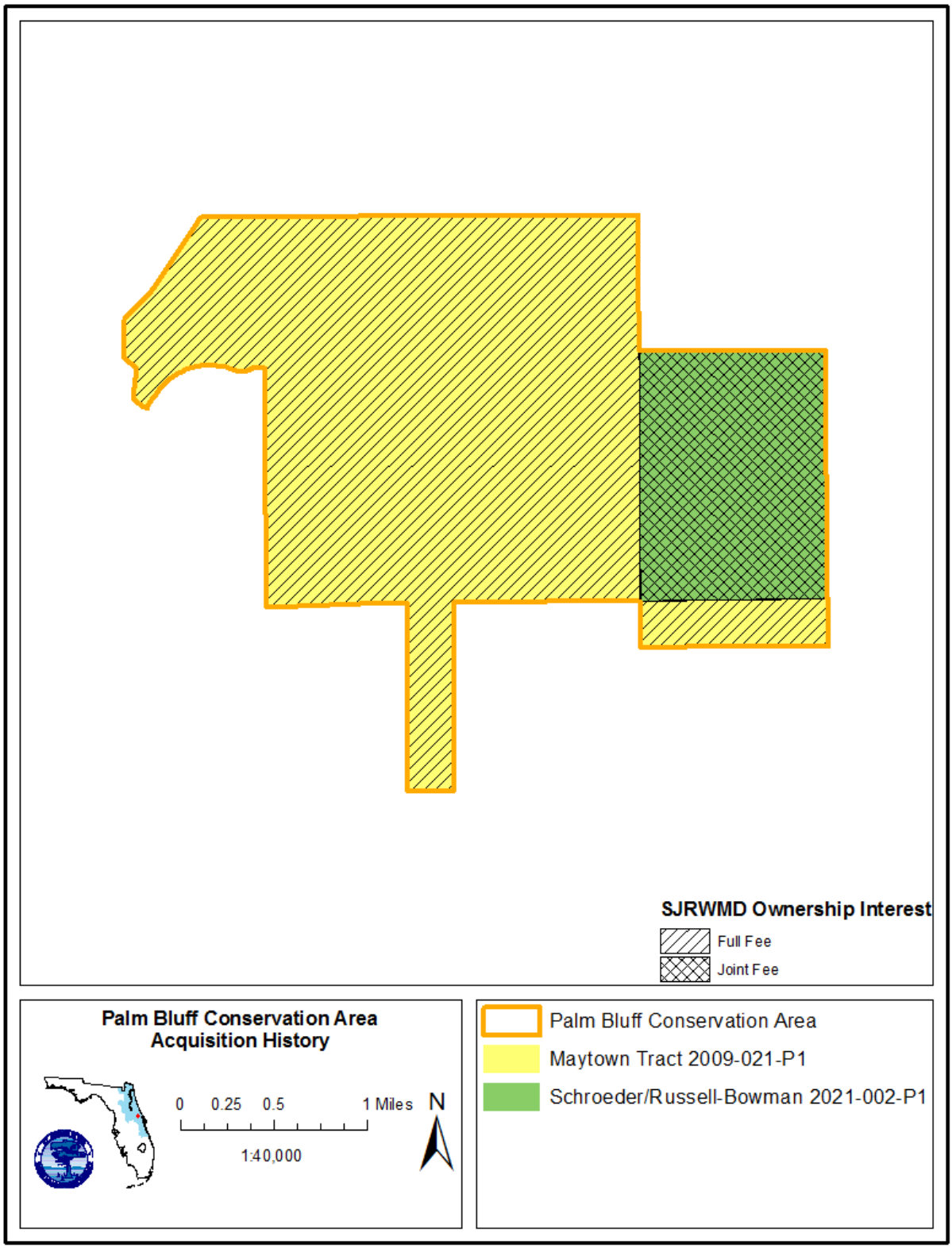

Figure 4: Acquisition

LOCAL GOVERNMENT LAND USE DESIGNATION

Volusia County

According to the 2022 Volusia County Comprehensive Plan update (Volusia County Growth and Resource Management, 2022), the Future Land Use designations for PBCA are:

- Forestry Resource – Areas of land that are primarily suited for silviculture.
- Agriculture Resource – Areas of land that are suited for intensive cultivation, ranching, aquaculture, and timber farming.
- Environmental Systems Corridor – These areas of land are important ecological corridors consisting of environmentally sensitive and ecologically significant lands intended to provide protected, natural pathways which connect to other protected areas such as parks, conservation lands, and water bodies.

The surrounding Future Land Use designations include the above as well as:

- Rural – This designation consists of areas that are a mixture of agriculture and low-density residential development of one (1) dwelling unit per five (5) acres.
- Rural Community – A rural community is characterized by a concentration of a permanent population, sometimes reaching over one thousand (1,000) persons. There may be commercial uses at a level to serve the immediate population.

NATURAL RESOURCES

WATER RESOURCES

PBCA is not located within an Aquatic Preserve or an Area of Critical State Concern pursuant to Section 380.05, Florida Statutes. The Property is located within the Deep Creek, Ashby Canal and Deep Creek Diversion sub-basins in the Deep Creek, Middle St. Johns River planning basin of the Middle St. Johns River Basin. The major waterbodies of this planning basin include Deep Creek, Lake Harney, Lake Ashby, and the St. Johns River (Figure 5).

No 303(d) listed impaired water bodies directly interact with PBCA as determined by the Florida Department of Environmental Protection.

Important nearby habitat areas include Deep Creek, Spruce Creek Swamp, Lake Monroe, and Lake Ashby.

Cattle ranching and silviculture are the principle surrounding land uses to the east and north with development from nearby DeBary and Osteen affecting the west and south boundaries of the Property.

Geomorphology

The majority of PBCA lies within the Atlantic Coastal Complex Province of the Barrier Island Sequence District with the eastern portion of the Property included in the Upper St. Johns River Valley Province of the same district.

The Upper St. Johns River Valley Province follows a low elevation drainage system that was an ancient embayment or lagoon between the Atlantic Coastal Complex Province to the east and the Deland Ridge Province to the west of the Property. Most of the Upper St. Johns River Valley Province is very flat with riverine floodplains, wetlands, and lakes. Ninety percent of the elevations in the province lie between 5 feet and 30 feet MSL (NAVD 88). The boundary with the Atlantic Coastal Complex Province includes the low area currently drained by Deep and Cow creeks. (Williams, et al., 2022).

Figure 6 depicts the topographic features of the PBCA and surrounding area.

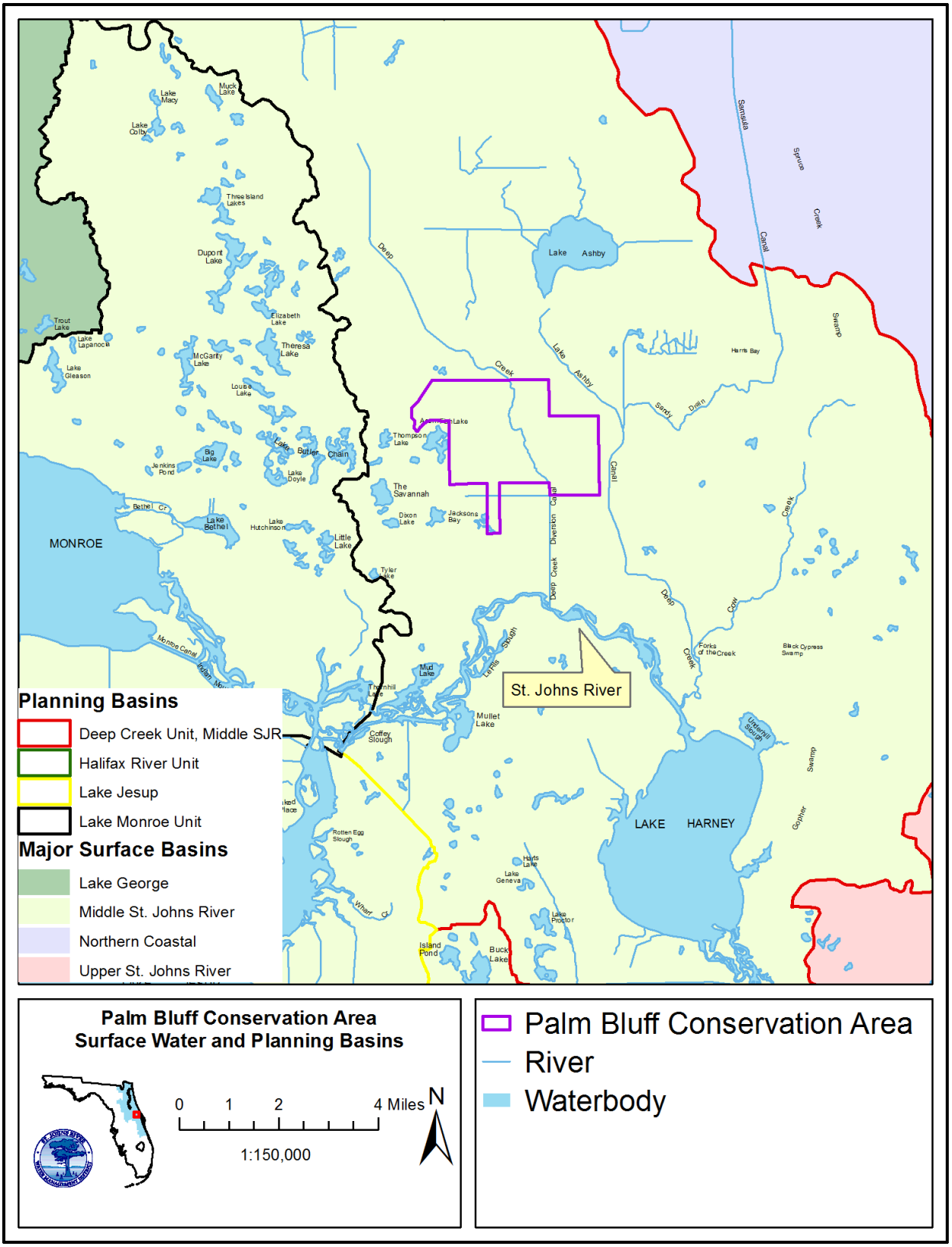

Figure 5: Location within Planning Basins

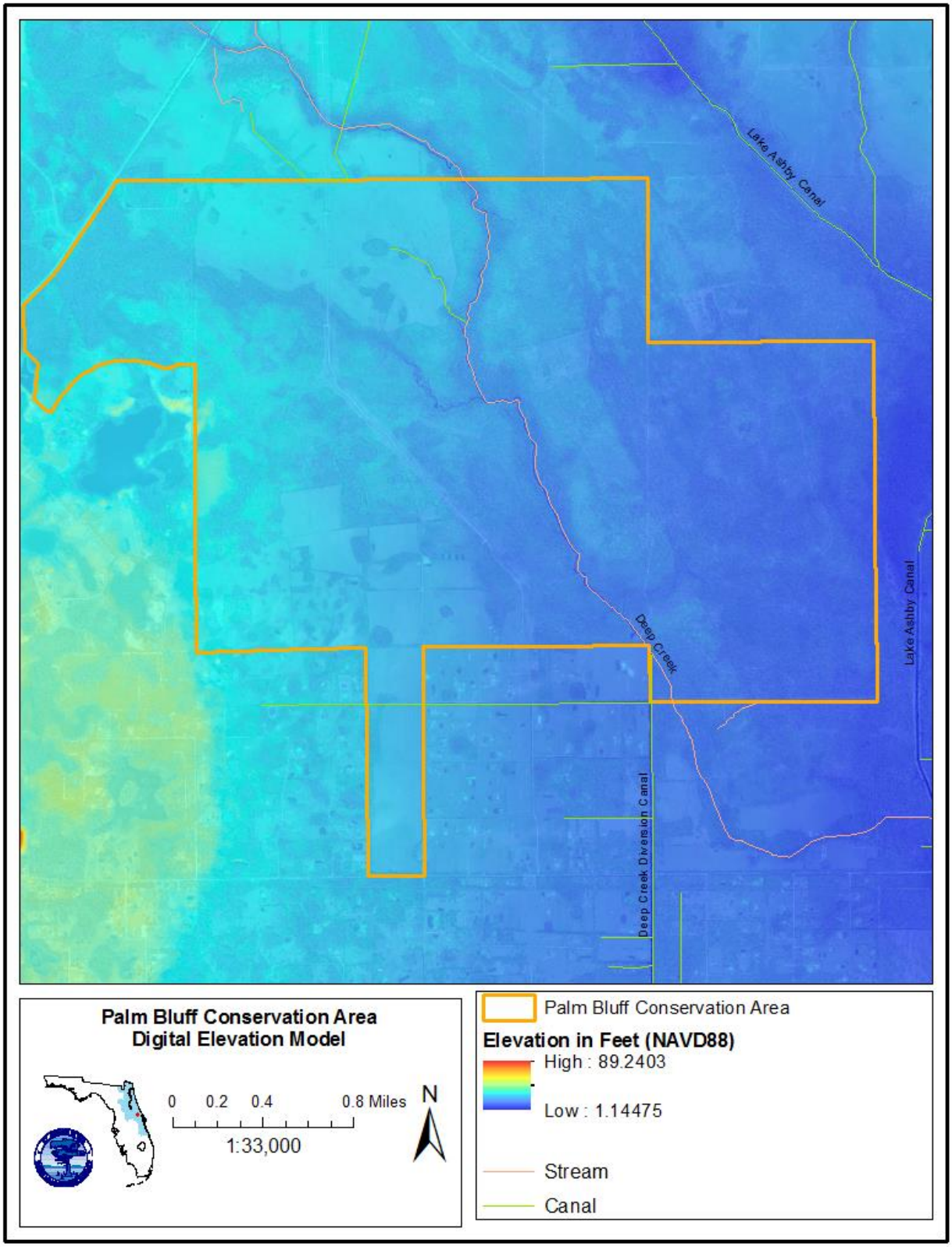

Figure 6: Palm Bluff Conservation Area topography

Water Levels

The District has an active groundwater monitoring well site located east of the Property at the Florida Forest Service's Ashby Tower site, identified as V-01989 (Upper Floridan aquifer). This site has been manually monitored monthly since 1987 and is the most representative of conditions found at PBCA. Historic water levels for this site are plotted in Figure 7.

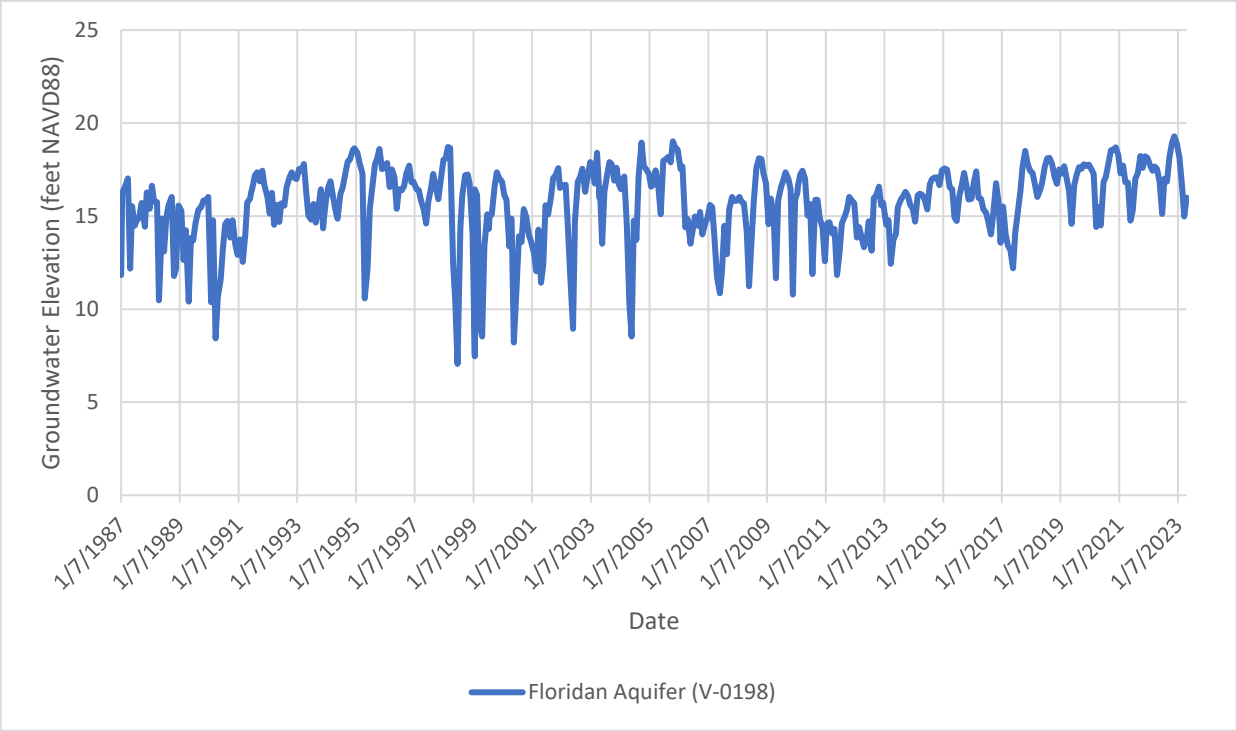

Figure 7:Palm Bluff Conservation Area Groundwater Observation Well Site V-0198

Water Chemistry

The District monitors surface water quality at over 200 long-term sampling stations at rivers, streams, lakes, canals, and estuaries throughout the 18-county service area. Water quality status is an indication of the condition of a water body. The District's 2022 Status and Trends Report is a 15-year assessment that uses data from Jan. 1, 2007, to Dec. 31, 2021. Water quality trends indicate whether a water quality parameter is increasing or decreasing over time. (SJRWMD, 2022 https://floridaswater.maps.arcgis.com).

Basic water chemistry data are collected at three sites near the PBCA within the Middle St. Johns River watershed: (1) Lake Ashby (ASH), located north of the Property, (2) Deep Creek Diversion (DMR), located south of the Property, and (3) Deep Creek Osteen (DCR-MRD), east of the Property (Figure 8). Only DMR represents water flowing through the Property in Deep Creek.

Water chemistry data are typically collected on a bimonthly basis. Water chemistry parameters discussed in this section include total phosphorus (phosphorus), total nitrogen (nitrogen), salinity, dissolved oxygen (DO), hydrogen ion potential (pH), total suspended solids (TSS) and Chlorophyll-*a* (Chl-a).

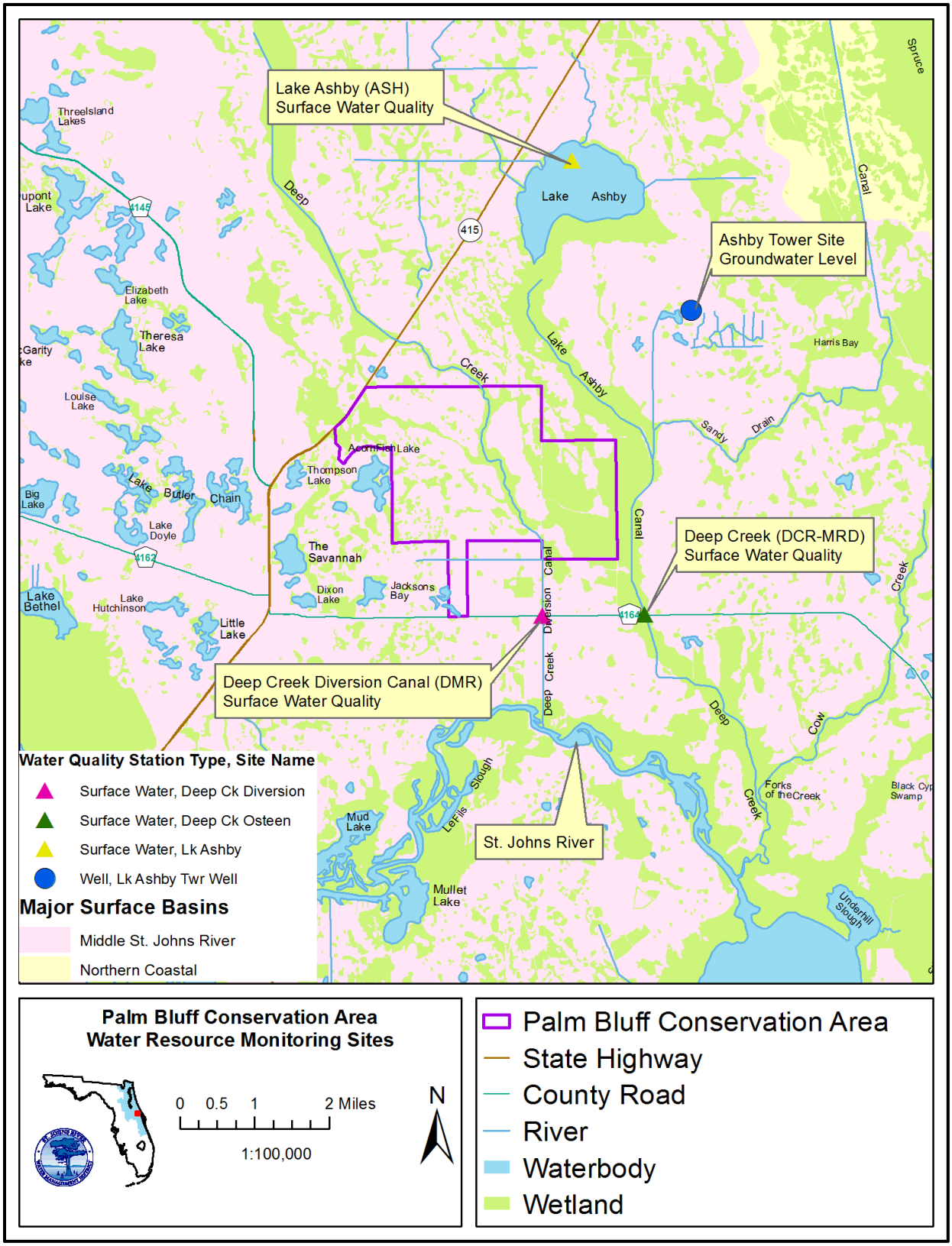

Figure 8: Water Chemistry Sites

The following parameters are discussed in relative terms for the past 15-year period as described in the 2022 Status and Trends Report.

Station DMR
Nitrogen is in the mid-range and stable. Phosphorous is in the low range and decreasing 3.3 percent annually, while pH is in the low range and decreasing 1.6 percent annually. DO is in the mid-range and increasing 1.7 percent annually. Chl-a is in the low range and decreasing at 9.2 percent annually. Salinity is in the low range and decreasing at 5.2 percent annually. TSS is in the mid-range and decreasing at 9.3 percent annually.

Surface water chemistry data do not exist within the Property itself, but the DMR sampling location provides insight to water quality conditions on the Property. These data indicate water quality in Deep Creek leaving the Property is not adversely affected with respect to the tested parameters. The acquisition and protection of PBCA helps protect water storage and quality for the Deep Creek system, an important component of the Middle St. Johns River Basin.

NATURAL COMMUNITIES
The 4,179 acres that comprise PBCA consist primarily of basin swamp, mesic flatwoods, wet flatwoods, and scrubby flatwoods (Figure 9). The Property was mapped in 2023 for both its historic and current natural communities by Florida Natural Areas Inventory's (FNAI). Historic natural community descriptions were derived from aerial photo interpretation obtained in 1943. The most significant change between the current and historic natural communities is the conversion of mesic flatwoods to improved pasture (Figure 10). Currently, there are no management goals to restore the improved pastures to mesic flatwoods. The natural communities are characterized using descriptions published in the FNAI 2010 *Guide to the Natural Communities of Florida.*

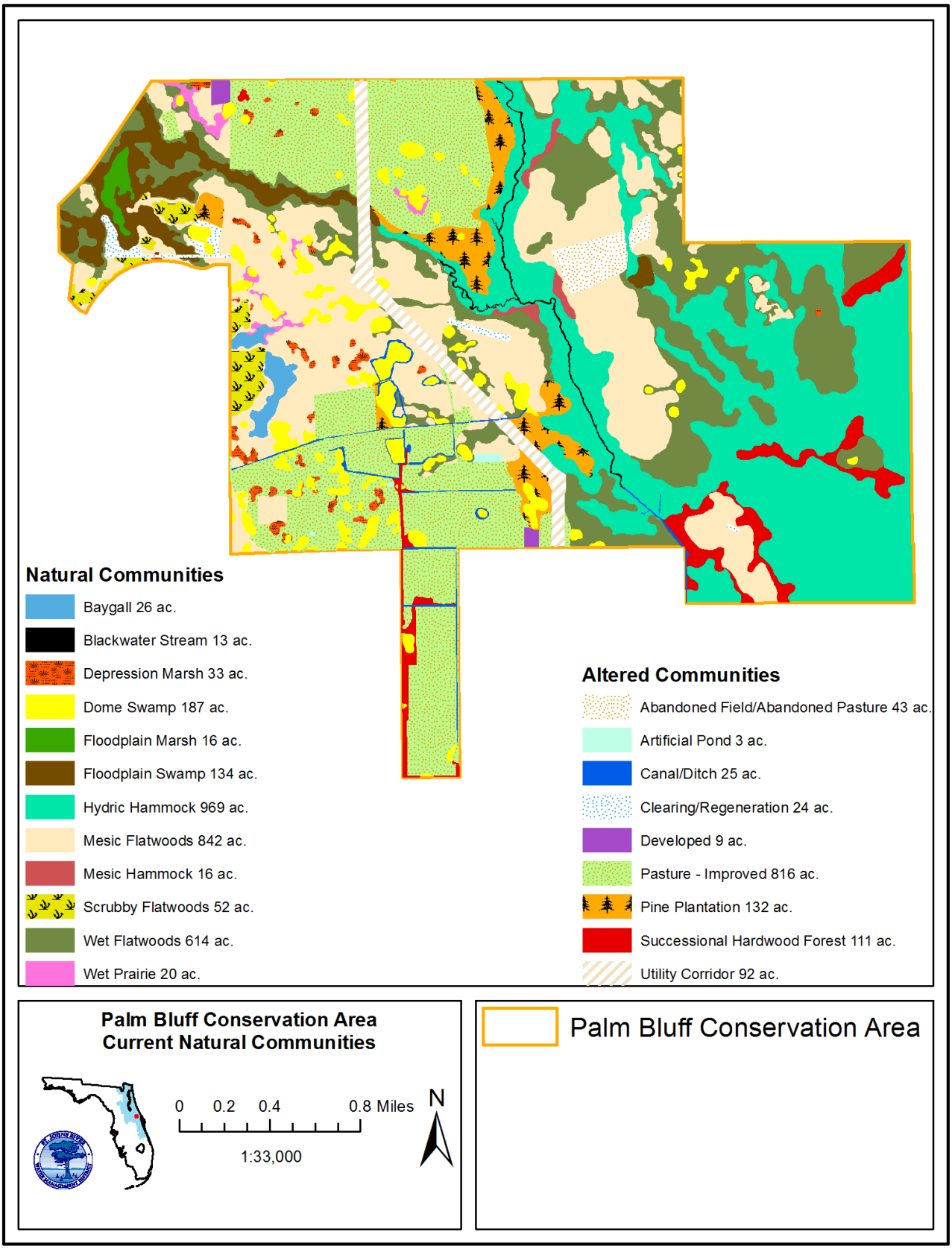

Figure 9: Natural Communities

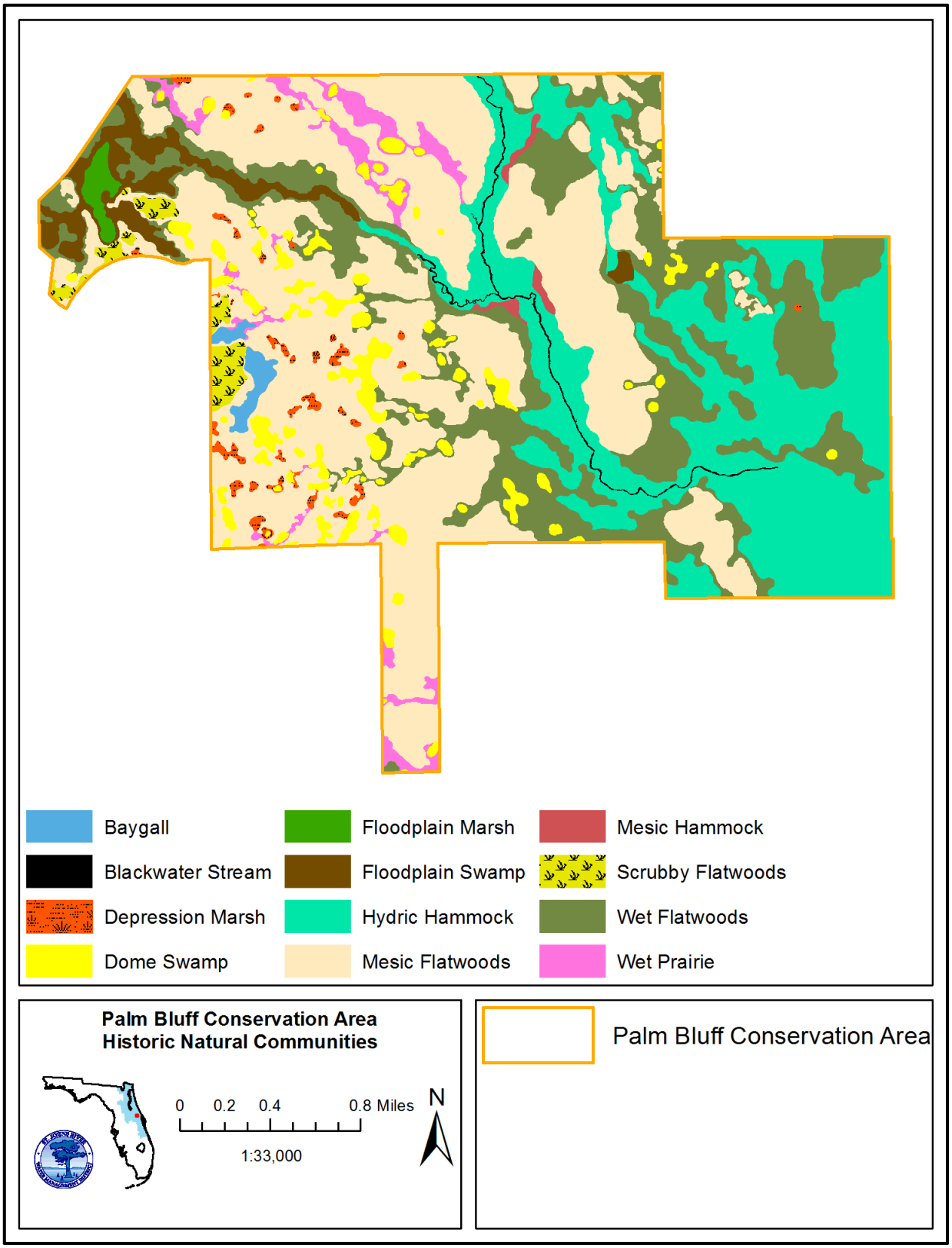

Figure 10: Historic Natural Communities

Baygall (26 acres; 1%)
Baygall is an evergreen, forested wetland characterized by a bay tree-dominated canopy typically found at the base of sandy slopes where water seepage maintains a saturated peat substrate. It may form an ecotone between uplands and swamps, or it may develop as a bay swamp in isolated basins or broad areas of seepage. PBCA has several xeric, scrubby uplands along the western boundary of the Property that provide seepage to two adjacent basin wetlands. These basins are a mix of mostly dense baygall with some basin swamp characteristics.

Baygalls at PBCA have a closed canopy consisting mainly of loblolly bay (*Gordonia lasianthus*), but also with some slash pine (*Pinus elliottii*) and pond cypress (*Taxodium ascendens*) scattered within. The understory is a dense, impenetrable thicket of fetterbush (*Lyonia lucida*) and swamp bay (*Persea palustris*) laced together with vines of laurel greenbrier (*Smilax laurifolia*), and coral greenbrier (*Smilax walteri*). The low-light conditions limit herb cover. There is a thick layer of duff covering the ground. The southern baygall on the Property may be more swamp-like, and the aerial signature indicates more cypress and standing water.

Baygalls should burn infrequently, perhaps only a few times each century in the deepest areas. Although the saturated soils and humid conditions within baygalls typically inhibit fire, droughts may create conditions that allow them to burn catastrophically. These fires not only destroy the canopy, but also may ignite the deep peat layers that can smolder for weeks, or even months. If it can be done safely, prescribed fires in adjacent uplands should be allowed to burn into baygall edges to maintain grassy ecotones and to kill bay shrubs encroaching into the uplands. Plowed firebreaks and ditches should be restored, and hydrology should be returned to its natural state where possible (FNAI 2010).

Blackwater Stream (13 acres; >1%)
Blackwater streams originate in deep, sandy lowlands where wetlands function as reservoirs, collecting rainfall and discharging it slowly. The acidic, tea-colored waters of blackwater streams are laden with tannins, particulates, and dissolved organic matter. Water temperatures fluctuate seasonally with air temperature but are also dependent upon water depth and shading by adjacent vegetation. Blackwater streams are the most widely distributed and numerous riverine systems in the southeast coastal plain (FNAI 2010). At PBCA, Deep Creek and its tributaries are blackwater streams. Possible spoil areas along the stream run indicate that the stream was likely dredged in the past. On the southern part of the Property, an artificial canal alters the original stream course.

Depression Marsh (33 acres; 1%)
Depression marshes are shallow, typically rounded, herb-dominated, seasonally inundated depressions embedded in pyrogenic communities such as pine flatwoods. These marshes may be dry for part of the year and frequently burn with the surrounding landscape. Fire and fluctuating water levels limit organic accumulation, at least in the shallow edges. Frequently there are concentric zones of vegetation that respond to the hydroperiod and edaphic conditions within each zone.

The western portion of PBCA has several herbaceous depressions scattered throughout the current and former pine flatwoods. Some of these were historically connected by shallow drainageways of wet prairie, although that community has largely been converted to improved pastures.

Depression marshes are less common on the eastern part of the Property where wet hammocks dominate the landscape.

Typical marshes have distinct zones of vegetation correlated with depth of inundation. Marshes on the western part of the Property appear to be shallower with a shorter hydroperiod. They may have a prairie-like edge with wiregrass (*Aristida stricta*), beaksedge (*Rhynchospora* sp.), Elliott's yellow-eyed grass (*Xyris elliottii*), yellow hatpins (*Syngonanthus flavidulus*), rosy camphorweed (*Pluchea baccharis*), and scattered peelbark St. John's wort (*Hypericum fasciculatum*). On the eastern part of the Property, marshes are deeper with more organic accumulation. Shallow edges are narrower, but also contain peelbark St. John's wort as well as sugarcane plumegrass (*Saccharum giganteum*), sand cordgrass (*Spartina bakeri*), Virginia chain fern (*Woodwardia virginica*), southern beaksedge (*Rhynchospora microcarpa*), and yellow-eyed grass (*Xyris* sp.). Deeper areas are typically dominated by maidencane (*Panicum hemitomon*), but a diversity of other herbs may also be found, including soft lemon bacopa (*Bacopa caroliniana*), clustered sedge (*Carex glaucescens*), sawgrass (*Cladium jamaicense*), and rush (*Juncus effusus* ssp. *solutus*). Large shrubs and small trees are typically limited to the edges of the marsh and may include southern bayberry (*Morella cerifera*), swamp tupelo (*Nyssa biflora*), slash pine (*Pinus elliottii*), red maple (*Acer rubrum*), swamp laurel oak (*Quercus laurifolia*), and cabbage palm (*Sabal palmetto*).

Depression marshes require frequent fires to maintain a high herbaceous species component and reduce woody encroachment. The natural fire return interval for depression marshes is every 1–8 years, primarily during the growing season (April–June) when water levels are low and fuels in surrounding uplands are dry. Prescribed burns should be implemented more often for depression marshes encroached by woody species to reduce their abundance (FNAI 2010).

Dome Swamp (187 acres; 5%)
Dome swamp is an isolated, forested, depression wetland occurring within a fire-maintained community such as mesic flatwoods. These swamps are usually small with a characteristic dome shape created by smaller trees that grow in the shallow outer edge, while taller trees grow in the deeper, more frequently inundated interior where there is often more organic accumulation. Dome swamps are dominated by pond cypress (*Taxodium ascendens*) and/or swamp tupelo (*Nyssa biflora*).

At PBCA, numerous dome swamps are embedded in the flatwoods and pastures on the western side of the Property. A few domes are also found in the wet flatwoods on the eastern portion. These swamps have the typical pond cypress component with swamp tupelo (*Nyssa biflora*) also found occasionally. The eastern domes are often full of slash pine (*Pinus elliottii*), likely an impact of past forestry operations and fire exclusion. Epiphytes thrive in the humid conditions created by dome swamps, and the swamp canopies at Palm Bluff have abundant golden polypody (*Phlebodium aureum*), Bartram's air-plant (*Tillandsia bartramii*), and Florida air-plant (*Tillandsia simulata*). Small trees and tall shrubs are common, including red maple (*Acer rubrum*), fetterbush (*Lyonia lucida*), southern bayberry (*Morella cerifera*), and cabbage palm (*Sabal palmetto*). Herbs are sparse to common and may include sawgrass (*Cladium jamaicense*), lizard's tail (*Saururus cernuus*), toothed midsorus fern (*Telmatoblechnum serrulatum*), and Virginia chain fern (*Woodwardia virginica*). Pasture conversion and grazing on the southwest portion of PBCA have

impacted the swamps in that area, and several are also ringed by ditches or otherwise altered hydrologically.

Fire is essential to the maintenance of dome swamps; without fire, hardwood invasion will convert the typically cypress-dominated community to a hardwood forest with a deep litter or peat layer. Fires in the surrounding flatwoods should be encouraged to burn through the dome swamps periodically, and, where possible, hydrology restoration may improve natural wetland functions (FNAI 2010).

Floodplain Marsh (16 acres; >1%)
Floodplain marsh is a wetland community occurring in river floodplains and dominated by herbaceous vegetation and/or shrubs. At PBCA, swamps form along the upper reaches of a stream system feeding into Deep Creek. However, a large, open, non-forested area is present on both historic and current aerial photographs. This is a deep basin or floodplain marsh with scattered trees but dominated by shrubs or floating vegetation (FNAI 2010).

Floodplain Swamp (134 acres; 4%)
Floodplain swamps occur on frequently flooded soils along stream and river channels and in low spots and oxbows within river floodplains. Dominant trees are usually buttressed hydrophytic trees such as cypress and tupelo; the understory and ground cover are generally very sparse. Canopy coverage is usually high but can be sparse as the community grades into open water or marsh areas. Shrub and herbaceous layers are often sparse and concentrated in open areas of the community and on included hummocks and stumps (FNAI 2010).

At PBCA, swamps occupy the upper reaches of a tributary to Deep Creek, as well as some lower depressions within the floodplain. Swamp vegetation observed in the floodplain included a canopy of pond cypress (*Taxodium ascendens*), swamp tupelo (*Nyssa biflora*), and slash pine (*Pinus elliottii*).

Hydric Hammock (969 acres; 23%)
Hydric hammock is a low-lying, closed-canopy forest that is periodically flooded, often occurring on shelly sands or where limestone is near the surface. The community is characterized by a mix of cabbage palm (*Sabal palmetto*) and swamp laurel oak (*Quercus laurifolia*). On PBCA, large parts of the Deep Creek floodplain are occupied by a hydric hammock, although the vegetation is also somewhat intermediate to bottomland forest. Soils underlying the forested wetlands are loamy sands and muck, and there is considerable variation in canopy cover and composition throughout the entire hammock owing to elevation changes as well as past clearing and hydrology alteration.

Throughout the hammock, the canopy and subcanopy layers are generally dominated by swamp laurel oak, but slash pine (*Pinus elliottii*) is also a common tree, often making the distinction between hammock and hardwood-encroached wet flatwoods difficult to determine. Cabbage palms (*Sabal palmetto*) of all sizes are common to abundant. Swamp tupelo (*Nyssa biflora*) is scattered in the hammock, becoming more dominant in lower areas, while live oak (*Quercus virginiana*) indicates sandier soils with shorter hydroperiods. Red cedar (*Juniperus virginiana*), a calciphile sometimes indicating limestone closer to the surface, is occasional. Herbs are sparse, consisting of species such as longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), lizard's

tail (*Saururus cernuus*), toothed midsorus fern (*Telmatoblechnum serrulatum*), and Virginia chain fern (*Woodwardia virginica*). The oaks and cabbage palms host an abundance of epiphytes, including Florida butterfly orchid (*Encyclia tampensis*), golden polypody (*Phlebodium aureum*), Bartram's air-plant (*Tillandsia bartramii*), Florida air-plant (*Tillandsia simulata*), Spanish moss (*Tillandsia usneoides*), and shoestring fern (*Vittaria lineata*) (FNAI 2010).

Small swampy depressions throughout the larger hammock are often dominated by swamp tupelo and/or pond cypress (*Taxodium ascendens*), with swamp laurel oak, cabbage palm, red maple (*Acer rubrum*), swamp bay (*Persea palustris*), fetterbush (*Lyonia lucida*), southern bayberry (*Morella cerifera*), and Carolina ash (*Fraxinus caroliniana*) common in the canopy and tall shrub layers. Epiphytes are also common, and herbaceous cover is fairly high, including smallfruit beggarticks (*Bidens mitis*), false hop sedge (*Carex lupuliformis*), sawgrass (*Cladium jamaicense*), lesser creeping rush (*Juncus repens*), maidencane (*Panicum hemitomon*), narrowfruit horned beaksedge (*Rhynchospora inundata*), lizard's tail, toothed midsorus fern, and Virginia chain fern. Coral greenbrier (*Smilax walteri*) can be found as an occasional vine in these small swamps.
At least one deeper, non-forested area of this wetland is evident on current and historic aerial photography. This basin marsh inclusion is dominated by sawgrass, flatsedge (*Cyperus* sp.), iris (*Iris* sp.), soft rush (*Juncus effusus* ssp. *solutus*), and pickerelweed (*Pontederia cordata*), with a few tall shrubs of common buttonbush (*Cephalanthus occidentalis*). The deep, mucky center is probably permanently inundated.

There are generally few non-native invasive plants in the hammocks and swamps. However, scattered strawberry guava (*Psidium cattleianum*; Florida Invasive Species Council (FISC) Category I) was observed in at least one area in the southeast corner of the Property. Both old world climbing fern (*Lygodium microphyllum*; FISC Category I) and Japanese climbing fern (*L. japonicum*; FISC Category I) are present in disturbed parts of the hammock along roads but are not common.

Mesic Flatwoods (842 acres; 20%)
Mesic flatwoods are open canopy upland communities of uneven aged pines with a low, diverse understory of herbs and shrubs maintained by frequent fires. The sandy soils are very dry but also often underlain by a clay hardpan that can impede drainage, creating areas with highly fluctuating water availability depending on the season (FNAI 2010). On PBCA, mesic flatwoods once occupied large, contiguous areas throughout most of the Property. Most historic mesic flatwoods were cleared for pasture, and currently a large utility corridor bisects the center of the Property where mesic flatwoods communities were predominant. The natural longleaf pine (*Pinus palustris*) canopy of flatwoods on the Property has been impacted by logging in the 20th century.

Mesic flatwoods remaining at PBCA are mostly in fair to good condition and have a canopy and subcanopy of young longleaf pine (*Pinus palustris*) and/or young slash pine (*Pinus elliottii*). Good quality stands are maintained by frequent fires and have a low groundcover dominated by about 30% saw palmetto (*Serenoa repens*) with dwarf shrubs such as netted pawpaw (*Asimina reticulata*), dwarf huckleberry (*Gaylussacia dumosa*), Atlantic St. John's wort (*Hypericum tenuifolium*), fourpetal St. John's wort (*Hypericum tetrapetalum*), dwarf live oak (*Quercus minima*), runner oak (*Quercus pumila*), and shiny blueberry (*Vaccinium myrsinites*) common throughout. Herb cover is high with a diversity of grasses and forbs. Species include wiregrass (*Aristida stricta*), lopsided indiangrass (*Sorghastrum secundum*), coastalplain chaffhead

(*Carphephorus corymbosus*), witchgrass (*Dichanthelium* sp.), tall elephantsfoot (*Elephantopus elatus*), Mohr's thoroughwort (*Eupatorium mohrii*), blazing star (*Liatris* sp.), rose rush (*Lygodesmia aphylla*), narrowleaf silkgrass (*Pityopsis graminifolia*), coastalplain milkwort (*Polygala setacea*), bracken fern (*Pteridium aquilinum*), blackroot (*Pterocaulon pycnostachyum*), Nuttall's meadowbeauty (*Rhexia nuttallii*), spiked hoary-pea (*Tephrosia spicata*), and Carolina yellow-eyed grass (*Xyris caroliniana*). There is also a diversity of other shrubs such as American beautyberry (*Callicarpa americana*), gallberry (*Ilex glabra*), coastalplain staggerbush (*Lyonia fruticosa*), fetterbush (*Lyonia lucida*), winged sumac (*Rhus copallinum*), and these species can become tall and overgrown in more disturbed stands, shading out the herb layer. Long-term fire exclusion can also allow hardwoods such as sweetgum (*Liquidambar styraciflua*), swamp laurel oak (*Quercus laurifolia*), and live oak (*Quercus virginiana*), as well as the proliferation of vines, particularly earleaf greenbrier (*Smilax auriculata*), and muscadine (*Vitis rotundifolia*).

Mesic Hammock (16 acres; >1%)
Mesic hammocks are upland, closed-canopy, evergreen forests of mainly live oak (*Quercus virginiana*) and cabbage palm (*Sabal palmetto*). They are similar to the upland hardwood forests mostly found further north, but generally have a less diverse, more evergreen canopy (FNAI 2010). At PBCA, mesic hammock can be found as slightly higher, sandier inclusions within the large hydric hammock complex of forested wetlands. It also forms a broad ecotone in a few areas along the Deep Creek floodplain.

The mesic hammocks near Deep Creek have a closed canopy of live oak with a subcanopy of younger oaks, cabbage palm, and sweetgum (*Liquidambar styraciflua*). Epiphytes are abundant and include Florida butterfly orchid (*Encyclia tampensis*), golden polypody (*Phlebodium aureum*), resurrection fern (*Pleopeltis michauxiana*), Bartram's air-plant (*Tillandsia bartramii*), southern needleleaf (*Tillandsia setacea*), and shoestring fern (*Vittaria lineata*), as well as occasional specimens of the state listed endangered spreading air-plant (*Tillandsia utriculata*). Herbs are sparse and include longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*).

Scrubby Flatwoods (52 acres; 1%)
Scrubby flatwoods have elements characteristic of both mesic flatwoods and scrub communities. Beneath an open canopy of widely scattered pines, scrubby flatwoods have a short understory of scrub oaks and flatwoods shrubs mixed with wiregrass (*Aristida stricta*) and other grasses and herbs (FNAI 2010). On PBCA, there are six areas of historic scrubby flatwoods, all located near or along the western boundary. The well-drained sands of these rises support scrub oaks, and some areas might be better described as scrub communities.

Scrubby flatwoods on PBCA mostly lack a pine canopy, although there are some longleaf pines (*Pinus palustris*) near the western boundary that bisects the largest area of scrubby flatwoods on the Property. Shrubs are dense and very tall, often over 10 feet, and composed of gallberry (*Ilex glabra*), rusty staggerbush (*Lyonia ferruginea*), fetterbush (*Lyonia lucida*), sand pine (*Pinus clausa*), Chapman's oak (*Quercus chapmanii*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), saw palmetto (*Serenoa repens*), and deerberry (*Vaccinium stamineum*). Sandy clearings are occupied by low shrubs and herbs such as bluestem (*Andropogon* sp.), pinebarren frostweed (*Crocanthemum corymbosum*), gopher apple (*Geobalanus oblongifolius*), Atlantic St. John's wort (*Hypericum tenuifolium*), pricklypear (*Opuntia humifusa*), candyroot

(*Polygala nana*), rustweed (*Polypremum procumbens*), bracken fern (*Pteridium aquilinum*), and shiny blueberry (*Vaccinium myrsinites*).

The structure of scrubby flatwoods is maintained by fires, usually on a 3- to 15-year interval. These communities on PBCA are in need of prescribed fire to restore natural function.

Wet Flatwoods (614 acres; 15%)
Wet flatwoods is an open pine-dominated community with a short understory of hydrophytic herbs and shrubs or may have a thick shrubby understory and very sparse groundcover, depending on landscape and soils (FNAI 2010). Wet flatwoods on PBCA are mostly associated with the large hydric hammock complex on the eastern part of the Property, but also can be found in the ecotone between mesic flatwoods and swamps. Most of the flatwoods have a history of silviculture, and the existing pine canopy is mostly planted, regenerating from planted, or remnants from prior logging of the site.

Wet flatwoods on the eastern side of PBCA have a canopy of planted slash pine (*Pinus elliottii*) over a variable understory that includes mostly wetlands trees such as red maple (*Acer rubrum*), dahoon (*Ilex cassine*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), live oak (*Quercus virginiana*), and occasional pond cypress (*Taxodium ascendens*). There are scattered tall shrubs of include southern bayberry (*Morella cerifera*), swamp bay (*Persea palustris*), and cabbage palm (*Sabal palmetto*). Short shrubs are common, sometimes very dense, and include roundpod St. John's wort (*Hypericum cistifolium*), peelbark St. John's wort (*Hypericum fasciculatum*), myrtleleaf St. John's wort (*Hypericum myrtifolium*), gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), southern bayberry (*Morella cerifera*), swamp bay (*Persea palustris*), cabbage palm (*Sabal palmetto*), and patches of saw palmetto (*Serenoa repens*). Herbs are generally sparse and include blue maidencane (*Amphicarpum muehlenbergianum*), spadeleaf (*Centella asiatica*), sawgrass (*Cladium jamaicense*), Elliott's milkpea (*Galactia elliottii*), whitehead bogbutton (*Lachnocaulon anceps*), cinnamon fern (*Osmunda cinnamomea*), camphorweed (*Pluchea baccharis*), orange milkwort (*Polygala lutea*), beaksedge (*Rhynchospora* sp.), nutrush (*Scleria* sp.), toothed midsorus fern (*Telmatoblechnum serrulatum*), and yellow-eyed grass (*Xyris* sp.). These somewhat calcareous flatwoods are also more isolated from fire by the surrounding hammocks and can develop a dense hardwood subcanopy, eventually transforming into a successional hardwood forest, although the distinction between natural hammocks and successional forests that develop from historic wet flatwoods can be difficult to determine both on aerial photographs and in the field.

The history of silviculture and fire exclusion in pine flatwoods on the Property has greatly altered the groundcover, mainly by increasing shrub and cabbage palm cover, reducing the herbaceous cover, and by allowing the expansion of hammock vegetation. Restoration activities should include growing season fires every 2–4 years, although the cabbage palm flatwoods may have naturally burned on a longer fire return interval.

Wet Prairie (20 acres; 1%)
Wet prairies are nearly treeless flatlands dominated by wiregrass (*Aristida stricta*) or wiry beaksedges (*Rhynchospora plumosa, R. oligantha*) with a diverse assemblage of hydrophytic herbs, grasses, and dwarf shrubs (FNAI 2010). At PBCA, wet prairie may have historically formed shallow drainageways through mesic flatwoods. However, much of the former extent has

been eliminated by improved pastures, and the remaining prairies are heavily encroached by pine trees, making them difficult to distinguish from naturally canopied wet flatwoods.

Areas thought to be historic wet prairies on PBCA can be observed in the northwest portion of the Property. These have an open canopy of slash pine (*Pinus elliottii*), sometimes also with longleaf pine (*Pinus palustris*) or a few pond cypress (*Taxodium ascendens*). The understory is quite open and dominated by blue maidencane (*Amphicarpum muehlenbergianum*) and may contain wiregrass (*Aristida stricta*). Shrubs of peelbark St. John's wort (*Hypericum fasciculatum*), gallberry (*Ilex glabra*), and southern bayberry (*Morella cerifera*) are common, and there may be scattered clumps of saw palmetto (*Serenoa repens*), but the species is not dominant.

In the absence of fire, wet prairies are readily invaded by southern bayberry (*Morella cerifera*) and young pine, and the height and cover of these is an indicator of past fire history in any given stand.

ALTERED COMMUNITIES

Abandoned Field/Pasture (43 acres; 1%)
Old fields, fallow pastures, early successional areas formerly grazed or in agriculture without recent activity to maintain the area as pasture or planted field. These areas are often dominated by weedy native (e.g., *Rubus* spp., *Myrica cerifera*) and non-native species (e.g., *Indigofera hirsuta*). Abandoned pasture is generally designated when weedy cover from woody species (*Rubus* spp., *Myrica cerifera*, etc.) is greater than 20 percent, indicating that the pasture is not being maintained. Two abandoned pastures are mapped on PBCA in an area of historic mesic flatwoods. The prior natural community map identified these as improved pastures, but they are now overgrown. Young slash pines (*Pinus elliottii*) are common, possibly planted or simply regenerating. Otherwise, large shrubs of southern bayberry (*Morella cerifera*) are scattered over a dense cover of big carpetgrass (*Axonopus furcatus*) and bahiagrass (*Paspalum notatum*).

Artificial Pond (3 acres; >1%)
Artificial ponds include water retention ponds, cattle ponds, etc. Three artificial ponds are mapped in the large pasture on the southern half of PBCA, as part of the former alligator farm, but smaller ponds are found throughout the Property.

Canal/Ditch (25 acres; 1%)
These include artificial drainageways. PBCA has a network of shallow ditches associated with vehicle trails through the southern pastures. These ditches also extend around several dome swamps. In addition, a larger canal provides artificial drainage from Deep Creek southward off the Property and toward the St. Johns River. Ditches and canals can be easily exploited by non-native invasive species. At PBCA, Chinese tallow tree (*Triadica sebifera*; FISC Category I), Peruvian primrosewillow (*Ludwigia peruviana*; FISC Category I), camphor tree (*Cinnamomum camphora*; FISC Category I), and Chinese brake fern (*Pteris vittata*; FISC Category II) were all observed along ditches, although infestation levels are generally low.

Clearing/Regeneration (24 acres; 1%)
Recent or historic clearings that have significantly altered the groundcover and/or overstory of the original natural community (old homesites, etc.), clearings of unknown origins. PBCA has many

clearings and old abandoned roads throughout the Property, particularly on the most recently acquired eastern portion. These are mostly mapped as inclusions within the broader natural community. They are regenerating in native hammock vegetation, but also contain non-native invasive Chinese tallow trees (*Triadica sebifera*; FISC Category I) and torpedo grass (*Panicum repens*; FISC Category I). There is also some cleared land on the Maytown Tract, now under a regenerated pine canopy, that were former wildlife food plots and an abandoned grass landing strip.

Developed (9 acres; >1%)
This category includes parking lots, buildings, maintained lawns (as part of recreational, business, or residential areas), campgrounds, recreational, and residential areas. Two developed areas are mapped at PBCA, both small areas with buildings (barns and security residence). They are mostly open with pasture grasses. The entrance to the developed area on the north side of the Property has a large patch of the non-native invasive cogongrass (*Imperata cylindrica*; FISC Category I) at the entrance.

Improved Pasture (816 acre; 20%)
Improved pasture is dominated by planted non-native or domesticated native forage species and evidence of current or recent pasture activity and/or cultural treatments (mowing, grazing, burning, fertilizing). Improved pastures have been cleared of their native vegetation. PBCA has large areas of former mesic flatwoods and wet prairies that have been converted to improved pasture. These areas have also been used in the past for row crop agriculture and sod farming.

Pine Plantation (132 acres; 3%)
Areas altered by silvicultural activities include lands where either (1) planted pines are having or will have an ongoing detrimental effect on native groundcover, (2) the history of planted pines has damaged groundcover to the point where further restoration beyond thinning and burning is required, and/or (3) the method of planting (e.g., bedding) has severely impacted groundcover. Pine plantations in Florida are often dominated by even-aged loblolly, sand, or slash pine (*Pinus taeda*, *P. clausa*, or *P. elliottii)*, respectively (FNAI 2010). There is evidence of past silviculture throughout much of PBCA. However, many clearly planted stands have been thinned and burned, and the groundcover is in fair to good condition. These stands were mapped as their respective natural communities. Dense slash pine (*Pinus elliottii*) stands that do not appear to have undergone any restoration activities were mapped as pine plantation.

Successional Hardwood Forest (111 acres; 3%)
Closed-canopied forest dominated by fast growing hardwoods such as laurel oak (*Quercus hemisphaerica*), water oak (*Quercus nigra*), and/or sweetgum (*Liquidambar styraciflua*), often with remnant pines. These forests are either invaded natural habitat (i.e., mesic flatwoods, sandhill, upland pine, upland mixed woodland) due to lengthy fire-suppression or old fields that have succeeded to forest. The subcanopy and shrub layers of these forests are often dense and dominated by smaller individuals of the canopy species. Successional hardwood forests can contain remnant species of the former natural community. Restoration of these forests includes mechanical tree removal and reintroduction of fire. Where characteristic herbaceous species (e.g., wiregrass) have been lost, reintroduction via seed or plants may be necessary to restore natural species composition and community function (FNAI 2010).

The wet flatwoods on the more recently acquired eastern side of PBCA is heavily invaded with oaks and cabbage palms due to long-term fire exclusion. These areas often retain a slash pine (*Pinus elliottii*) overstory but have a closed canopy of mostly swamp laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), and live oak (*Quercus virginiana*), as well as many cabbage palms (*Sabal palmetto*). Shrubs and herbs are usually remnants of wet flatwoods or generalist species that can tolerate shading and disturbance.

Utility Corridor (92 acres; 2%)
These corridors include electric, gas, and telephone rights-of-way. A Florida Power & Light (FPL) high-voltage powerline corridor bisects PBCA, extending the length of the Property from north to south. The corridor is maintained by mowing and contains non-native centipede grass (*Eremochloa ophiuroides*) and bahiagrass (*Paspalum notatum*), as well as native weeds such as dogfennel (*Eupatorium capillifolium*), soft rush (*Juncus effusus* ssp. *solutus*), and climbing hempvine (*Mikania scandens*).

SOILS
According to the U.S. Department of Agriculture (USDA) Soil and Conservation Service, 19 different soil types are within PBCA. The Volusia County Soil Survey (USDA, 2023) provided information used to develop descriptions of the predominant soil series found within the Property. The soil descriptions are in Appendix A.

CULTURAL AND HISTORICAL RESOURCES
A review of the Department of State Division of Historical Resources does not indicate the presence of any registered cultural sites within the boundaries of the Property. If any sites are located, District staff will document and report the sites to the Division of Historical Resources.

SPECIAL MANAGEMENT CONSIDERATIONS
Conservation Easement
Prior to acquisition, approximately 334 acres of the Property were encumbered by a perpetual conservation easement with a less-than-fee title interest (conservation easement) held by both the District (75%) and Volusia County (25%). While the District has since acquired the fee interest in these acres from the landowner, the Property is still subject to the terms of Volusia County's interest in this conservation easement. The perpetual conservation easement and easement documentation report are attached as Appendix B and should be referenced prior to conducting management activities including timber harvest operations, road and trail construction, the installation or replacement of culverts, bridges, or other water crossings, and fencing.

Potential Water Storage Project
Approximately 1,383 acres of the Property located between the conservation easement and the utility easement is identified by the District as an area that has potential for one or more future water resource development (WRD) project(s). Funding for this portion of the Property utilized ad valorem funds earmarked for Water Sustainability/Alternative Water Supply Program. As such, this area is not categorized as conservation land, which allows for potential WRD projects to be constructed. Any impacts to rare and endangered plants or animals will be mitigated. Access easements to the Jeff and Debbie Russell Conservation Easement and the FPL utility easement will

be maintained if a project(s) is / are developed. Future land management objectives and priorities may be influenced by potential projects.

FDOT Mitigation Projects

The District's FDOT Mitigation Program (Section 373.4137, Florida Statutes) funded the acquisition of a portion of the PBCA for the purposes of mitigation. The mitigation would offset permitted wetland impacts associated with FDOT roadway projects that occur within SJRWMD Regulatory Basin 18 (St. Johns River-Canaveral Marshes to Wekiva). To provide the mitigation for the functional loss of the permitted wetland impacts, the District will implement preservation, enhancement and long-term management of 993 acres. The deed for this area notes that the property was purchased for conservation purposes and lists the relevant Army Corps of Engineers permit numbers. See Appendix C for specific Mitigation Objectives.

Figure 11 depicts the extent of the areas of special management consideration.

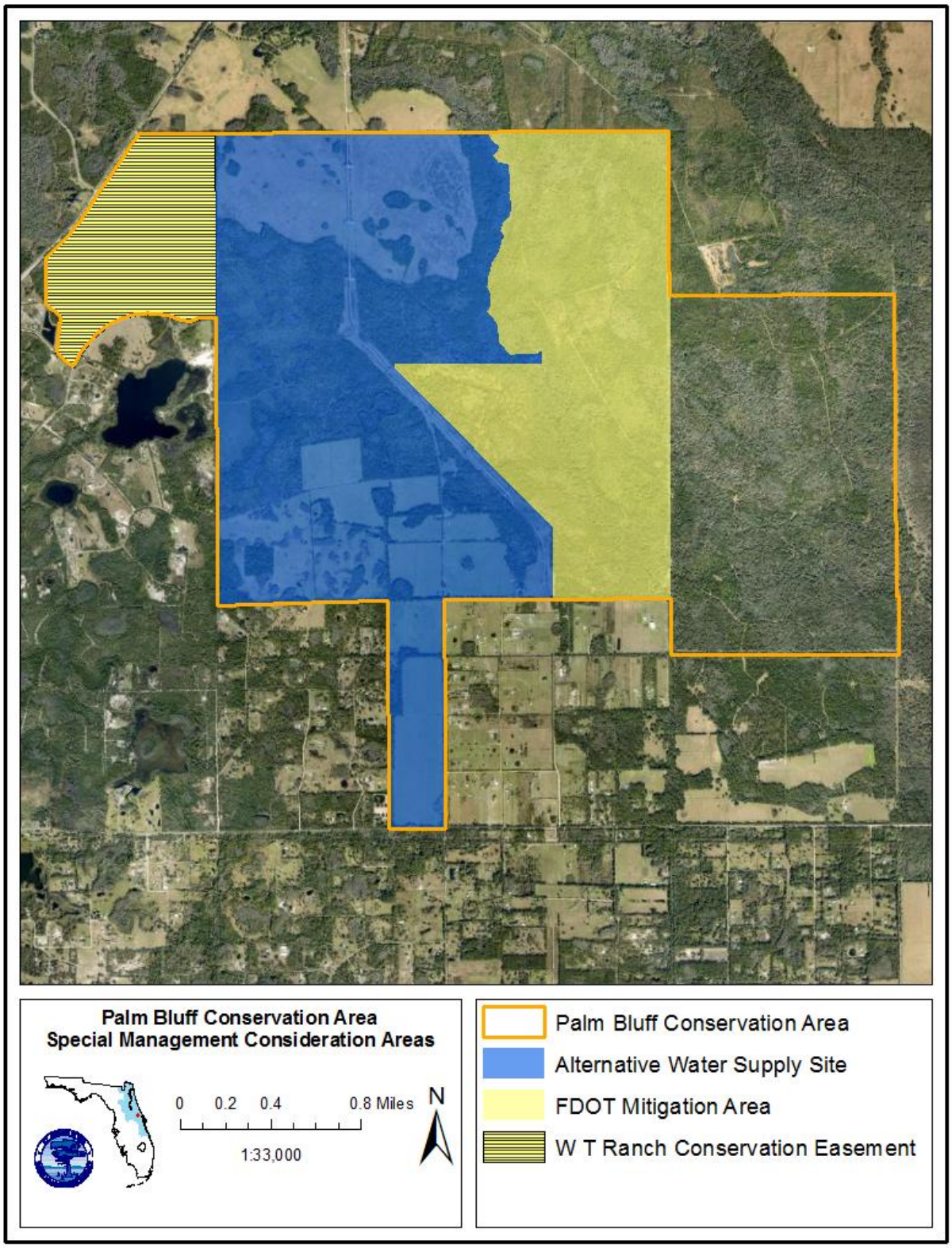

Figure 11: Special Management Consideration Areas

IMPLEMENTATION

The following sections outline land management strategies for resource protection, land use, and administration on PBCA for the next 10 years.

RESOURCE PROTECTION AND MANAGEMENT

Water Resources

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

Strategies:

- Maintain roads and culverts to prevent erosion.
- Identify culvert and low-water crossing needs on 2022 acquisition.
- Evaluate need for ditch/swale plugging or filling associated with former agricultural operations.
- Level silvicultural beds from timber harvest areas if restoration is feasible.

While most wetland protection was accomplished through acquisition, portions of the wetlands within the Property have a history of disturbance. Hydrologic disturbances within the Property include roads, ditches, culverts, and silvicultural beds.

Roads and associated ditches as well as culverts, low-water crossings, and a bridge are located within the Property and provide access for land management activities (Figure 12). The District has made improvements to and conducted maintenance on many of these features, helping to reduce the potential for erosion. In 2018, multiple culverts were replaced, including additional stabilization material surrounding them, by a District contractor. District staff will continue to inspect roads and culverts for erosion problems and maintenance/repair needs. The bridge over Deep Creek was redecked in 2022.

Roads and culverts in the newly acquired Schroeder/Russell-Bowman parcel of the Property will be evaluated for repair. The road system appears to be in fair condition, though several of the existing culverts are in poor condition. These culverts will be located, incorporated into the culvert geodatabase, and evaluated for repair. Scope of repairs may include culvert replacement, ditch earthwork, additional fill, rip-rap, and roadbed stabilization.

Numerous ditches and swales are present on the Property, created to facilitate drainage in the areas that are currently improved pasture. In addition, ditching is present around several dome swamps created for alligator farming that occurred on the Property prior to the District's acquisition. These features are not present in the 1943 aerial images but appear in aerials from 1984. The District may fill portions of these features to restore the site's hydrology within the scope of this plan if deemed feasible and beneficial.

Portions of the upland acreage within the Property is former commercial silviculture sites and some of the acreage was bedded prior to planting. Bedding is a method of site preparation that includes a series of linear mounds and alternating trenches designed to improve soil aeration and nutrient concentrations on wet and/or nutrient poor sites. Primary objectives of bedding are to

elevate seedling root systems out of the waterlogged soil into mounds where the concentrated nutrients are readily available. Bedding also helps to reduce competition for newly planted trees. The trenches associated with bedding channel water and are detrimental to the sheetflow of water across the Property. Where restoration is feasible, and when such activities will not produce unacceptable disturbance to existing, desirable groundcover, leveling of silvicultural beds will be a component of site preparation for replanting after a clearcut harvest.

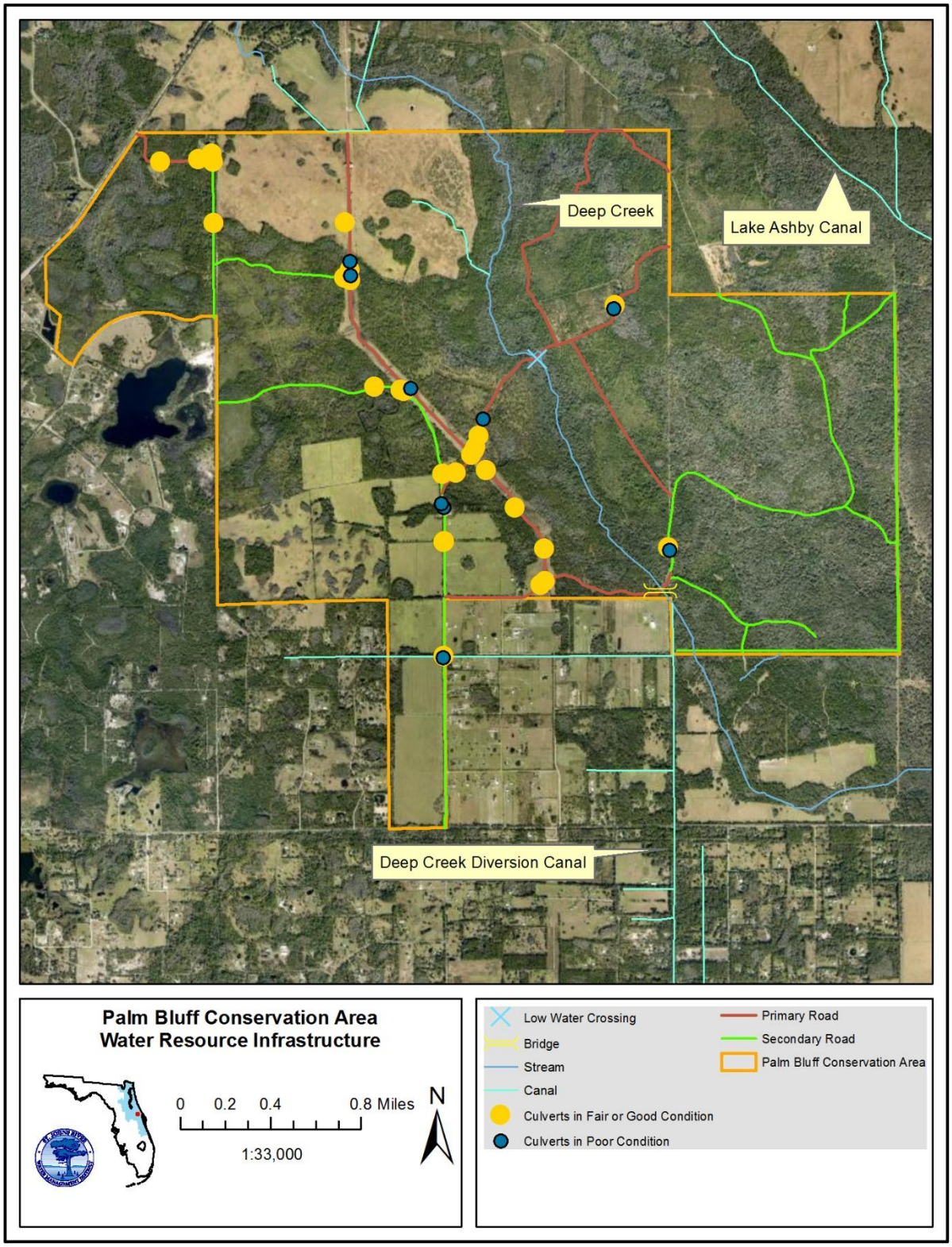

Figure 12: Water Resource Improvements

Forest Management

Goal: Maintain, improve, and restore forest resources.

Strategies:

- Update forest management database.
- Thin at least 158 acres of timber.
- Conduct forest inventory analysis on 2022 acquisition.

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

The management objectives of the Property will require periodic pine thinning to control tree density. In addition to planned harvest activities, the District will remove trees as needed in the case of insect infestations, disease, and damage from severe weather, wildfire, or other occurrences that could jeopardize the health of natural communities. Periodic thinning harvest provides some protection against wildfires and pine beetle outbreaks. The District will abide by Florida Silviculture Best Management Practices, Florida Forestry Wildlife Best Management Practices for State Imperiled Species and will target the achievement of appropriate overstory species in proper stand densities as described in the District Forest Management Plan (Appendix D).

PBCA is partitioned into forest management compartments and each compartment is further divided into stands. Management decisions are made on the stand level. On properties like PBCA, where silvicultural management is an intrinsic component of the overall management of the upland portions of the Property, an annual timber inventory is conducted on a small percentage of the Property. Stand-level values derived from the inventory include number of trees per acre, basal area, and volume of trees by product type and species. After each inventory cycle, growth and yield projections are calculated on all active plots. The inventory data output is then incorporated into the District's forest management database. Harvest operations and reforestation events that may occur over time are also recorded in the database. This information is used to help land management staff forecast needs and make forest management decisions.

Forest management activities anticipated during the scope of this plan include timber inventory and thinning operations. Reforestation projects may be preceded by various site preparation techniques including mechanical treatments, such as disc harrowing to remove silvicultural bedding, roller chopping and mowing, herbicide applications, and prescribed fire. These techniques may be used singularly or in combination as site conditions warrant. Figure 13 depicts dominate pine coverage by species across the Property.

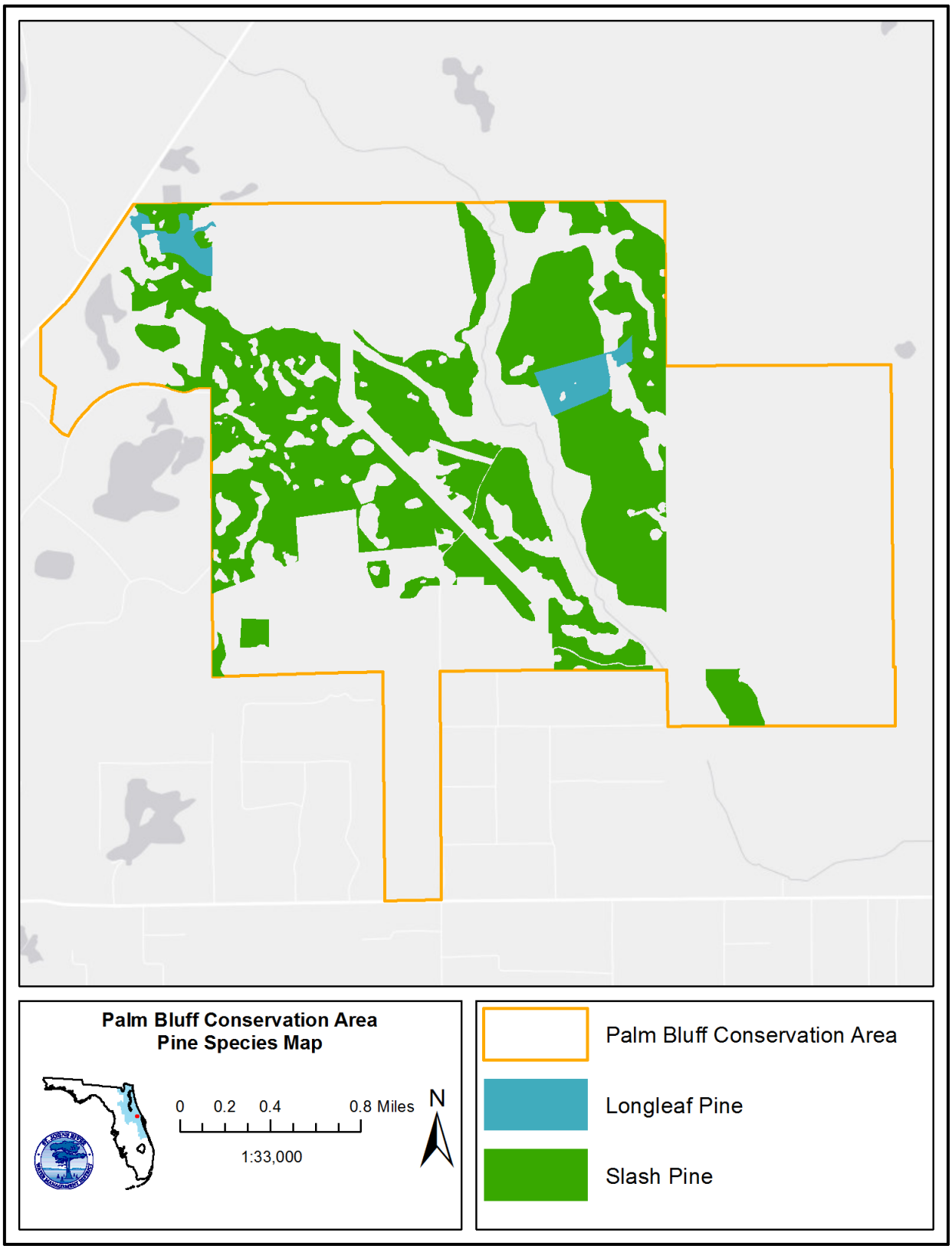

Figure 13: Pine coverage by species

Through periodic thinning, the District will remove the poorest trees to reduce crown density and allow the better trees to develop full, vigorous crowns. Since 2010, a total of 353 acres have been thinned (Figure 14). One pine second thinning is planned within the Property from 2023–2033, totaling 158 acres (Figure 15). Additional stands may be added to the forest harvest plan at the discretion of the land manager and District forester. Depending on stand conditions, portions of these sales may include clearcut harvests. Mean annual increment measurements will be used to determine the harvest type. Clearcut harvests will be reforested with site-appropriate pine species. Some harvesting or removal of cabbage palms may occur within flatwoods to minimize excessive fuel loading to improve forest health and/or improve habitat.

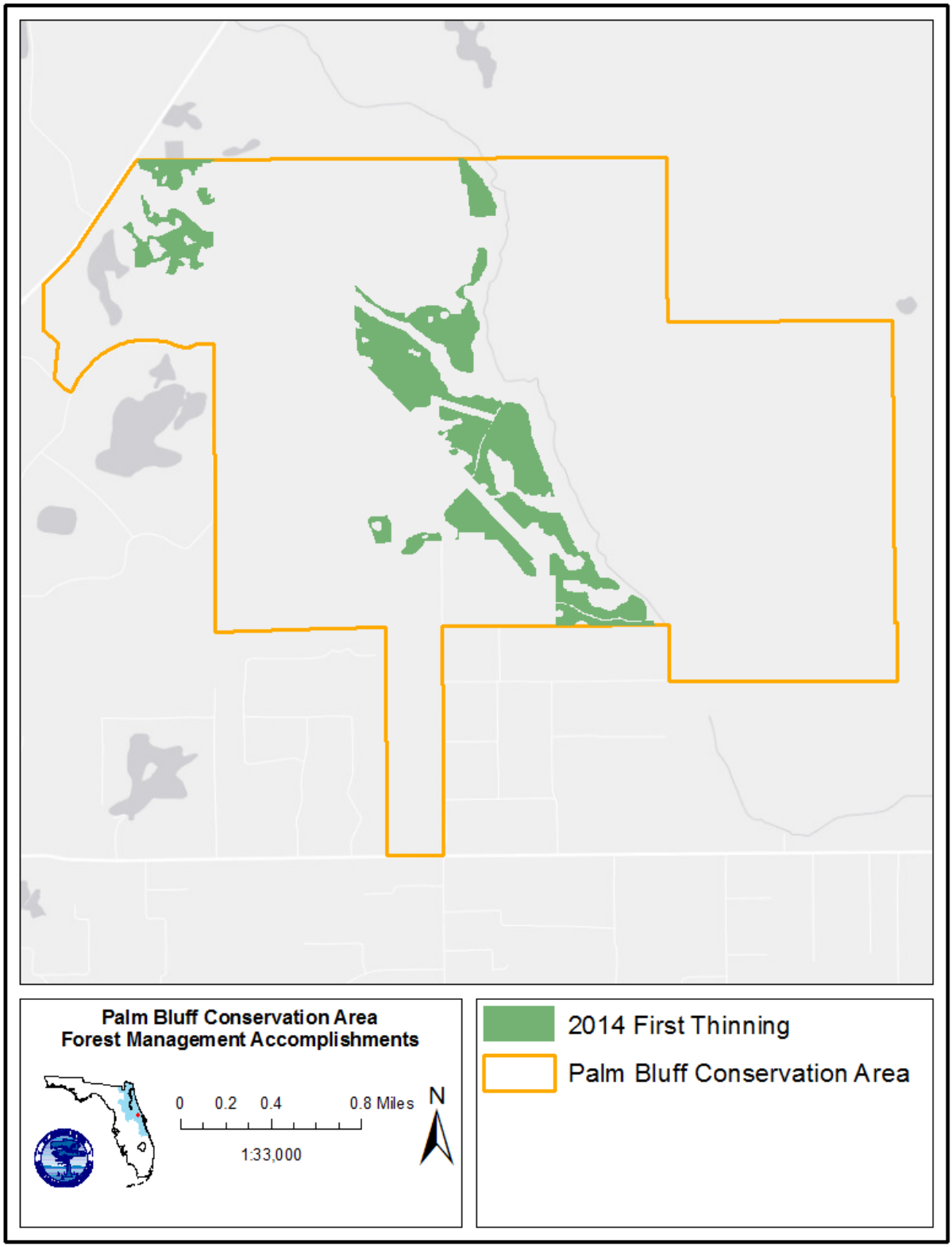

Figure 14: Forest management accomplishments

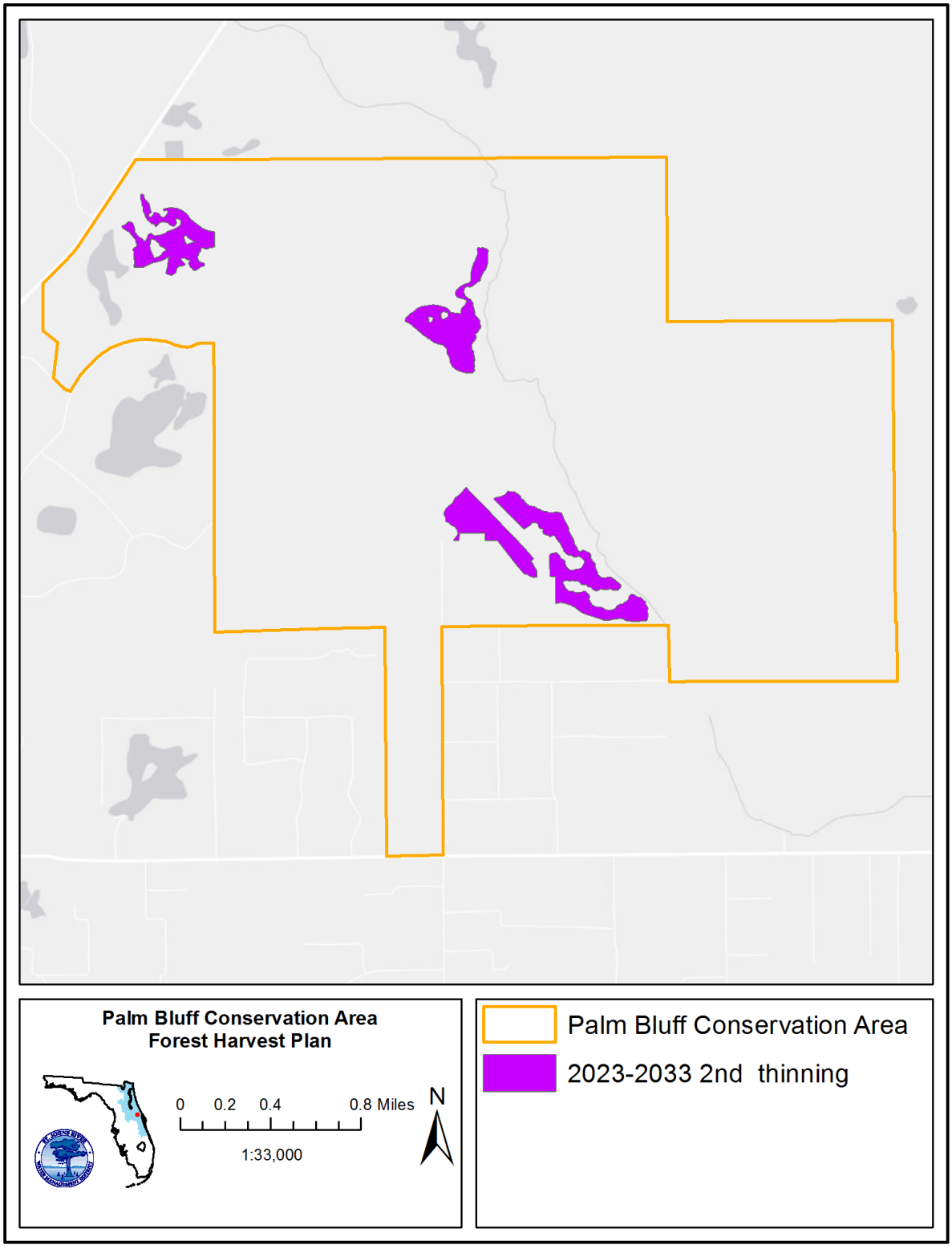

Figure 15: Forest management plan

Fire Management

Goal: Implement a prescribed burning program in accordance with District's Fire Management Plan.

Strategies:

- Apply fire to 329 acres of all flatwoods communities annually, averaged over the 10-year planning period, using a 4-year fire return interval.
- Focus on conducting dormant season burns in areas of high fuel loading and/or for reintroducing fire into a unit with no recent fire history.
- Maintain existing firebreaks and create new firebreaks as needed on the 2022 acquisition area.
- Use mechanical fuel reduction as a fire surrogate in areas where it is difficult to burn due to high fuel loads or smoke management concerns.
- Delineate Fire Management Units for 2022 acquisition area.
- Develop annual burn plans and populate the fire management database on an annual basis.

Forest and fire management activities within the Property are critically important and integrally linked. The planning and implementation of forest and fire management activities must be coordinated to achieve restoration and management goals.

Fire is a vital factor in managing the character and composition of vegetation in many of the natural communities in Florida. The District's primary use of fire is to mimic natural fire regimes to encourage the amelioration of native pyric plant communities and dependent wildlife. Additionally, the application of fire aids in the reduction of fuels and minimizes the potential for catastrophic and damaging wildfires. All the upland natural communities at the PBCA are fire adapted, making prescribed fire an important tool to restore and maintain plant communities within the Property. Since the writing of the last plan, approximately 586 acres have received prescribed fire and 55 acres have burned in wildfires (Figure 16).

Historically, most fires occurring on what is now the PBCA would have been ignited by lightning during the growing season (April–August). The District intends to reintroduce growing-season fires where possible, understanding that constraints in some areas such as high fuel loading and proximity to smoke-sensitive areas may predicate the use of dormant season burning.

Figure 17 shows the approximately 2,632 acres of fire-maintained natural communities within the Property (63 percent of PBCA). For the eight fire management units (FMUs) that are classified as flatwoods natural communities (which includes scrubby, mesic, and wet), a 4-year fire return interval has been established. The annual burn goal for the Property, averaged over the 10-year planning period, is 329 acres, which is half the ecological objective of the natural community on the Property at 658 acres annually. Once FMUs have two or more burns, including wildfires, applied to them over the next 10 years, timing of future prescribed fires should focus on growing/lightning season (April–August) application but not exclude any opportunity to conduct a prescribed fire during the typical December–August prescribed fire season.

The FMUs on the Property have a variety of natural communities embedded within them, which may or may not be fire-dependent. Prescribed fires that are ignited in the FMUs may result in patchy or mosaic patterns. These results should not be viewed as negative as they mimic what would have occurred in landscape level fires. Emphasis should be placed on post-prescribed fire monitoring as patches of unburned fuels could ignite or portions of the FMU could reburn. In addition, the utilization of natural firebreaks, such as hammocks, wetlands, or drainages warrant additional monitoring as these breaks are heavily moisture-dependent for their efficacy. If a dry period occurs after a fire utilizing such a firebreak, additional resources should be ordered to ensure control and extinguishment along natural firebreaks.

The Property has 5.3 miles of pre-suppression firebreaks to allow for access and control of prescribed fire and wildfires. These breaks are disked or mowed one to two times a year to maintain the footprint of the break and provide a mineral soil fuel break. Interior roads are also used as firebreaks. In addition to these existing breaks, approximately 4 miles of firebreaks are conceptualized for construction on the 2022 acquisition within the scope of this plan. As these breaks are constructed, this will allow additional FMUs to be incorporated into the Property's prescribed fire goals. The majority of these will be co-located along a substantial dirt road that runs the eastern border of the Property. The creation of a disked line to mineral soil in this area will be at staff's discretion. This line may be maintained by mowing in lieu of disking.

Overall, the Property lacks recent fire history, which creates unknown challenges when fire is reintroduced to the landscape. The fire managers do not know the issue areas with a FMU, particularly areas that could be subject to smoldering combustion. Fuel loads are generally heavy across the Property owing to limited contemporary fire history. Methods to reduce this loading are described in the next paragraph.

While prescribed fire is the preferred tool for restoration and maintenance within the Property, it may be necessary, under certain circumstances, to implement alternative methods. During periods of extended drought conditions or in areas where implementing prescribed fire is not safely feasible at this time, the District may employ management methods such as selective herbicide treatments, mowing, roller chopping, and overstory manipulation through timber harvest. These activities change the fuel structure within FMUs thus moderating fire behavior.

Limiting factors narrowing the window of opportunity for the application of prescribed fire on the Property are the proximity to smoke sensitive areas, including SR 415, CR 4146 (Osteen-Maytown Road), and developed areas such as the city of Deltona. Smoke management is paramount, and any potential burns will be conducted to minimize off-site impacts by maneuvering smoke plumes away from smoke-sensitive areas based on wind direction and speed, as well as by ensuring adequate smoke dispersal based on atmospheric stability and dispersion index values.

All implementation of prescribed fire within the Property will be conducted in accordance with the District's Fire Management Plan, the PBCA Fire Management Plan (Appendix E), and the annual burn plan for the Property. Prescribed fires and wildfires will be reported in the Prescribed and Wildfire Report in Survey123.

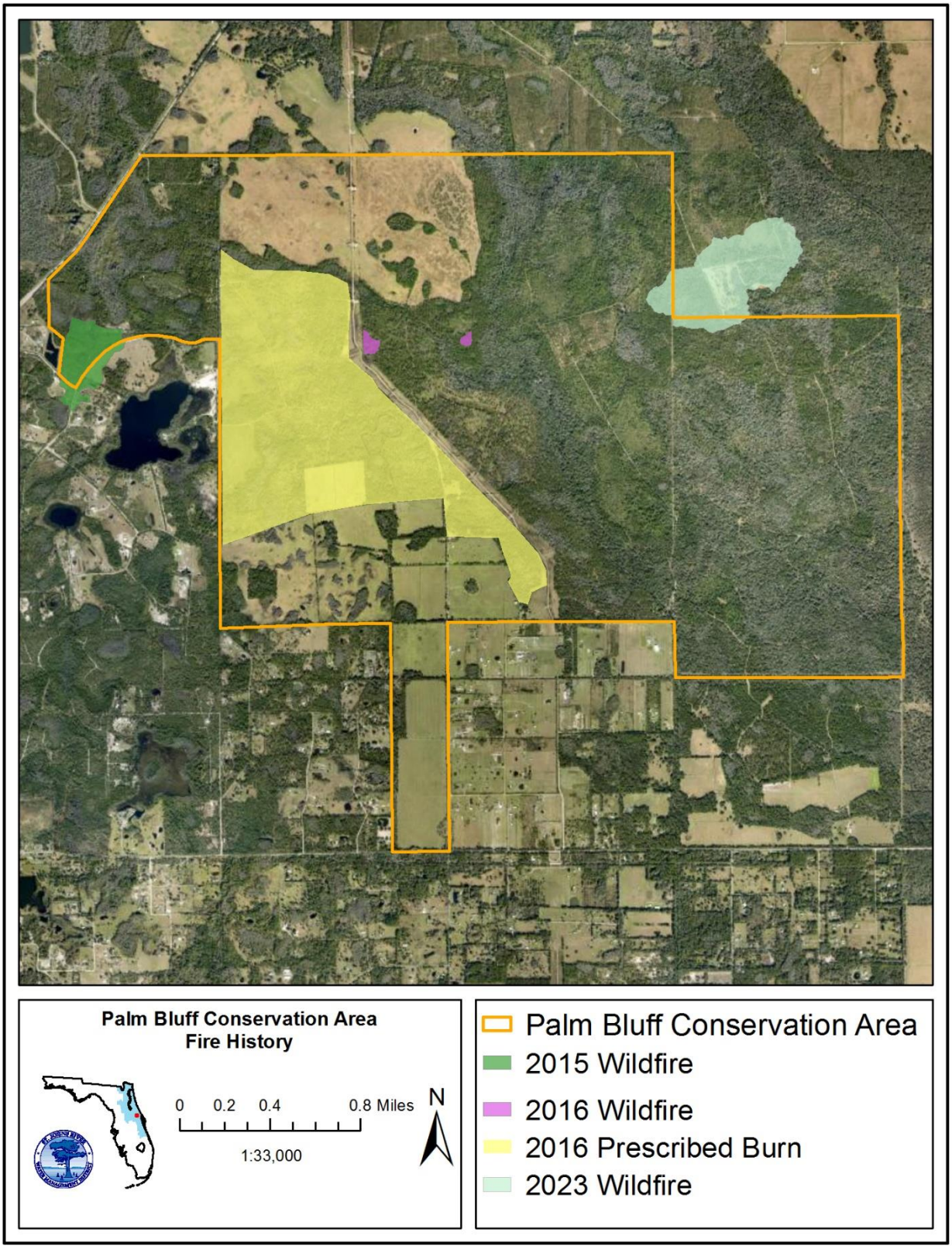

Figure 16: Fire history map

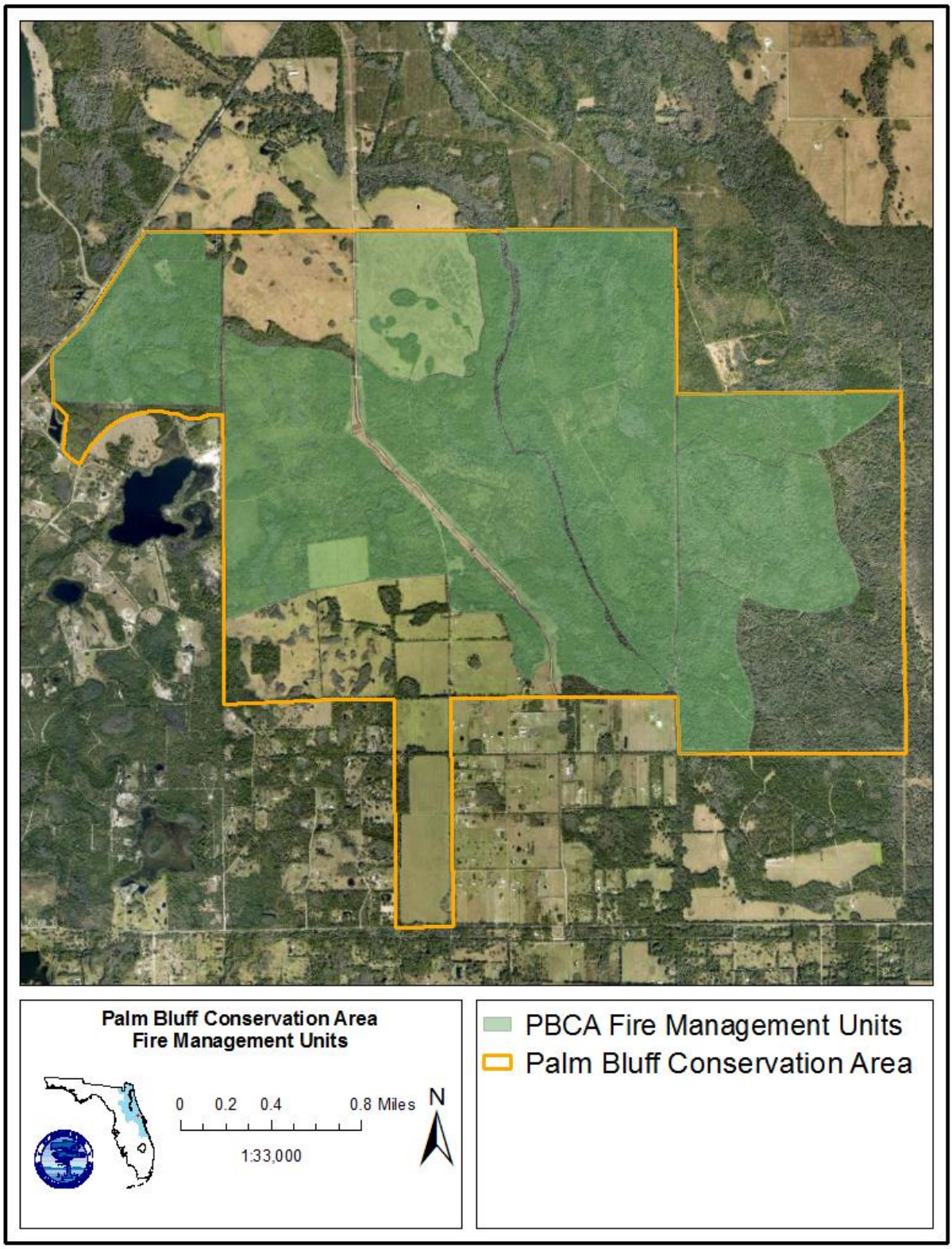

Figure 17: Fire Management Units

A system of Fire Regime Condition Class measures was originally developed by the Nature Conservancy and the USDA Forest Service in 2003 to assess ecosystem health. The system is based on a relative measure and describes the degree of departure from the historical natural fire regime of a given ecosystem (Hann, et al., 2003). This departure results in changes to one or more of the following ecological components: species composition, structural stages, stand age, canopy closure, or mosaic pattern. The District adopted the system in 2008 to establish a reference for ecosystem health and land management effectiveness. While fire is the preferred disturbance that maintains most natural communities in Florida, other disturbances, such as timber harvest or mechanical fuels treatments, may serve to accomplish or aid in the accomplishment of management objectives. Annually, each burn zone is assigned a Condition Class score based upon the most recent disturbance and the fire frequency recommended for that plant community by FNAI. If FNAI recommends a fire return interval of 3–5 years, a plant community that has benefited from disturbance in the past 5 years is in Condition Class 1. If it has been more than 5 years but less than 15 years, or three cycles, the zone is in Condition Class 2. If it has been more than three times the fire return interval, but can still be recovered by fire, it would fall into Condition Class 3. If the plant community has gone without disturbance so long that fire alone can no longer restore the area, it is in Condition Class 4. PBCA has approximately 1,039 acres that are not maintained by fire or disturbance, such as hydric hammock, which are not included in the Condition Class report. The 2022 acquisitions on the east side of the Property are not included in these Condition Class calculations; they will be incorporated into the report as management actions occur on them.

District staff will make annual condition class assessments and incorporate them into annual burn and work plans. The overall Condition Class distribution of the Property zones in 2023 was 0 percent Condition Class 1, 35 percent Condition Class 2 and 65 precent Condition Class 3. In 2022, no zones fell within Condition Class 4 (Figure 18).

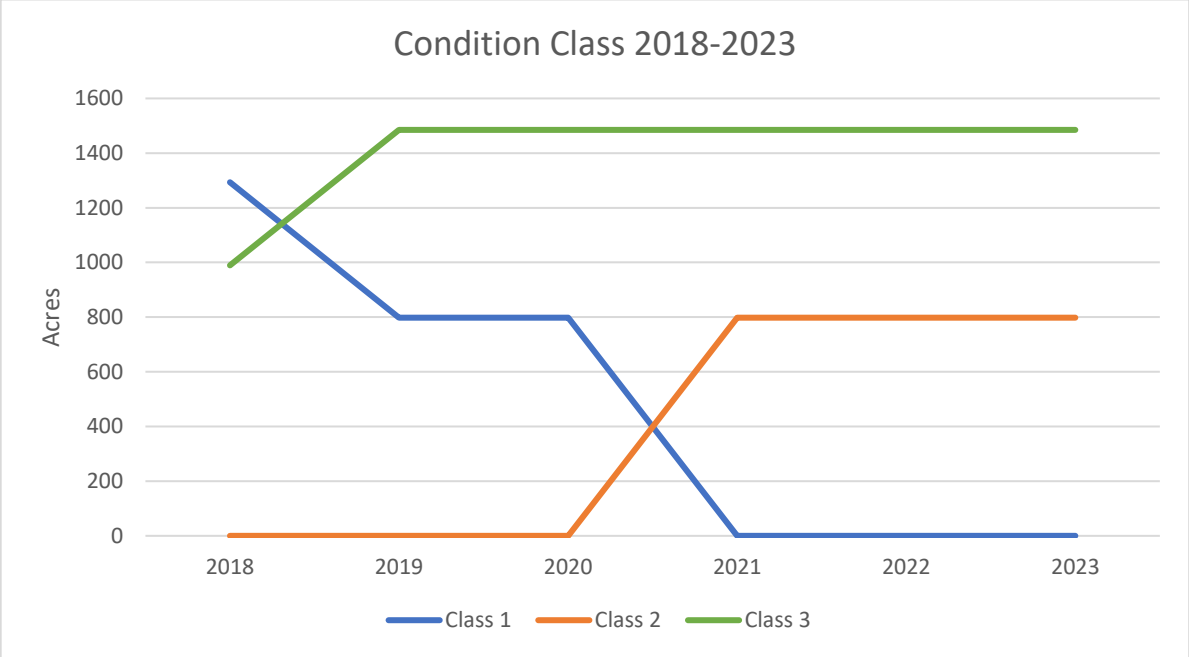

Figure 18: Condition classes

Flora and Fauna

Goal: Maintain, improve, or restore native and listed species populations.

Strategies:

- Conduct plant and wildlife surveys and develop species lists.
- Monitor for the presence of listed species and adjust management actions appropriately.

PBCA has a diverse assemblage of natural communities providing significant habitat for a variety of floral and faunal species. The Property provides habitat for the Florida black bear (*Ursus americanus floridanus*). Numerous species of wading birds occur in the wetland portions of the Property. A District lead citizen-scientist biological survey of the Property was conducted in November 2022. FNAI, as part of the 2023 contracted natural communities mapping, also provided species occurrence data for PBCA.

Plant, insect, and animal lists are contained in Appendix F. Lists were compiled using observations gathered on site visits by District staff, FWC and FNAI species occurrence data as well as crowd-sourced biological data websites. The Property will be managed to improve natural community biodiversity and quality, resulting in diverse wildlife habitat. There are 29 state and/or federally listed plant and animal species found on PBCA.

Southern Fox Squirrel
The southern fox squirrel (*Sciurus niger niger*) is a state-listed species of special concern that occurs within PBCA. Southern fox squirrels inhabit the pastures and flatwoods of the Property feeding on pinecones and acorns. The application of prescribed fire that limits damage to green pinecones as well as maintaining areas of trees in the pastures for nesting sites will maintain the population on PBCA (FWC, 2017).

Gopher Tortoise
The gopher tortoise (*Gopherus polyphemus*) is a state-listed threatened species that occurs within PBCA. This species is typically found in dry upland habitats, such as sandhill, scrub, and pine flatwoods. Gopher tortoises excavate deep burrows and are considered a keystone species because their burrows provide refuge for more than 300 animal species. Management activities within the pine flatwood communities of the Property will focus on restoring species composition and natural fire return intervals, which will benefit gopher tortoise. Any management activities will occur in accordance with the FWC's Gopher Tortoise Management Plan (FWC, 2012).

Rugel's pawpaw
The Property is likely home to a population of federally endangered Rugel's false pawpaw, based upon soil and natural community type. Rugel's false pawpaw is a rare, cryptic plant "endemic to Volusia County, with 33 known populations" This low shrub species tends to flower prolifically after fire; without fire, over time, the plants will decline and eventually die (USFWS, 2018).

District-conducted management practices to benefit this species focus on growing-season prescribed fire and minimizing soil disturbance (FNAI, 2000). Survey efforts will partner with the Pawpaw Chapter of the Florida Native Plant Society during the narrow window in which these

plants flower, generally in April. Outside of flowering, they are inconspicuous, making them difficult to locate and identify.

Invasive Species Management

Goal: Manage invasive and/or exotic plants and animals.

Strategies:

- Scout and treat at least 42 acres of invasive species annually.
- Continue feral hog removal as needed.
- Locate, map, and treat any new infestations of invasive and/or exotic plant species.

Invasive plants known to occur within the Property include camphor tree (*Cinnamomum camphora*), cogongrass (*Imperata cylindrica*), Japanese climbing fern (*Lygodium japonicum*), torpedo grass (*Panicum repens*) and Chinese tallow tree (*Triadica sebifera*). Invasive species control is necessary to inhibit the continued proliferation of invasive plants and integral in the maintenance and restoration of natural plant communities. The District uses a variety of techniques including fire, mechanical, and chemical treatments. Herbicide, approved for use in Florida by the Florida Department of Agriculture and Consumer Services, is applied per U.S. Environmental Protection Agency-approved label instructions using the most appropriate method of application for the target species.

While it is unlikely that the District will eradicate invasive plants within the Property, achieving maintenance control of such species is targeted within the scope of this plan. Invasive plant infestations are light across the Property, and the Property is regularly monitored and treated as necessary. All known occurrences of FISC Category I and II invasive plants at PBCA are currently at a maintenance level. District staff have scouted and treated approximately 197 acres of invasive vegetation within the Property since 2017. In addition, the cattle lessee has treated 30 acres of Chinese tallow tree in dome swamps within the pastures for in-kind lessee credits. An annual goal of scouting and treating a minimum 42 acres of invasive plants will be established.

Exotic wildlife species known to occur within the Property include feral hogs (*Sus scrofa*), brown anole (*Anolis sagrei*), and nine-banded armadillos (*Dasypus novemcinctus*). The District currently utilizes feral hog removal agents through a Special Use Authorization (SUA) process to assist in the control of feral hogs. The District keeps records of hog removal from the Property. Beginning in 2011, feral hog removal agents have removed 29 hogs. Hog hunting activities on the adjacent private properties surrounding PBCA also serve to put pressure on the local hog population and help keep the numbers low on the Property.

Cultural Resource Protection

Goal: Identify, protect, and maintain any cultural resources found on the Property.

Strategies:

- Identify and report sites to the Florida Division of Historical Resources (DHR).
- Identify and report any detrimental activities to the sites to the DHR and law enforcement.

A review of the DHR data indicates no documented Florida Master Site File cultural sites within the Property. If any sites are located, District staff will document and report sites to the DHR. District land management activities that may affect or impact these resources will be evaluated and modified to reduce the potential for disturbance of the identified sites. Additionally, detrimental activities discovered on these sites will also be reported to the DHR and appropriate law enforcement agencies. Due to District and State policy, the locations of such cultural sites are not identified on public maps.

LAND USE MANAGEMENT

Access

Goal: Maintain access to and around the Property to facilitate land management and resource protection.

Strategies:

- Maintain, gates, roads and associated swales/ditches.
- Update District database on maintenance of existing and creation of new signs, gates, trails, roads, and other related infrastructure.

Currently, 29 gates provide management access to and across the Property. These gates are monitored regularly for maintenance and/or repair needs. Approximately 21 miles of interior management roads traverse the Property. To manage road maintenance, the District utilizes a roads classification system. This system includes the following classifications:

A. Paved Road – any road that is paved (there are no paved roads on the Property).
B. Primary Road – any road that requires routine maintenance of any kind.
C. Secondary Road – any road that does not require routine maintenance, only periodic or no maintenance.

Approximately 8 miles within the Property are classified as primary roads, and 13 miles are classified as secondary roads, with the majority consisting of grass surface without stabilization material. District staff will update the roads database to reflect changes to the road network within the Property, as necessary.

Roads will be regularly inspected and receive maintenance and repair, as necessary. Figure 19 depicts the location of the roads and gates on the Property.

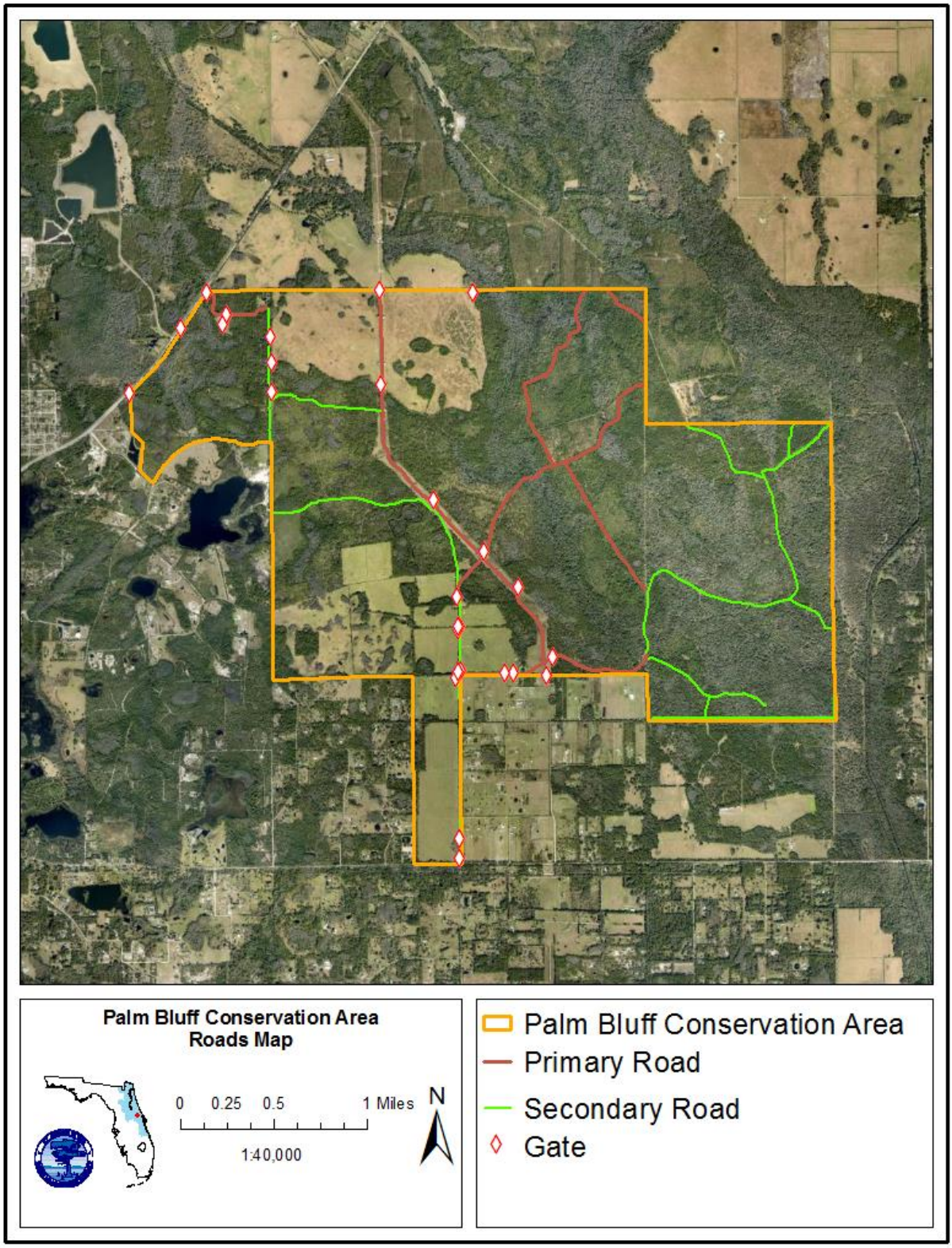

Figure 19: Road Infrastructure

Recreation

Goal: Provide public recreation opportunities on the Property

Strategies:

- Maintain 9.2 miles of trails, one campsite, and a parking area.
- Delineate and develop trail extension on the 2022 acquisition.
- Evaluate alternative hunting opportunities.

Recreation at PBCA includes bicycling, hiking, horseback riding, and wildlife viewing. The trailhead and parking area are an eighth of a mile from the entrance located at 1275 SR 415 in Osteen (Figure 20). The Property features 9.2 miles of multi-use trails accessed by a single trailhead. An additional 3 miles of trails are conceptualized to expand the trail system into the 2022 acquisition. A primitive campsite can be accessed through the parking area. The tent-only campsite site is reservable though the District's website and offers drive-in access. Recreational vehicles and travel trailers are prohibited at District campsites at all times and are not allowed overnight in District parking areas, per Chapter 40C-9, Florida Administrative Code. The trail and campsite are maintained by a District mowing contractor with staff oversight as well as by the onsite security resident.

Hunting opportunities are not included on the Property due to the special management consideration involving the proposed water resource development project. FWC, in consultation with the District, has determined that adding a Wildlife Management Area (WMA) that may be greatly reduced in size by the proposed project is not in the best interests of its statutory requirement of no-net-loss of hunting opportunity acres in the State. The District is not opposed to FWC- or FFS-managed special opportunity hunts, such as youth or veteran hunts, on the Property.

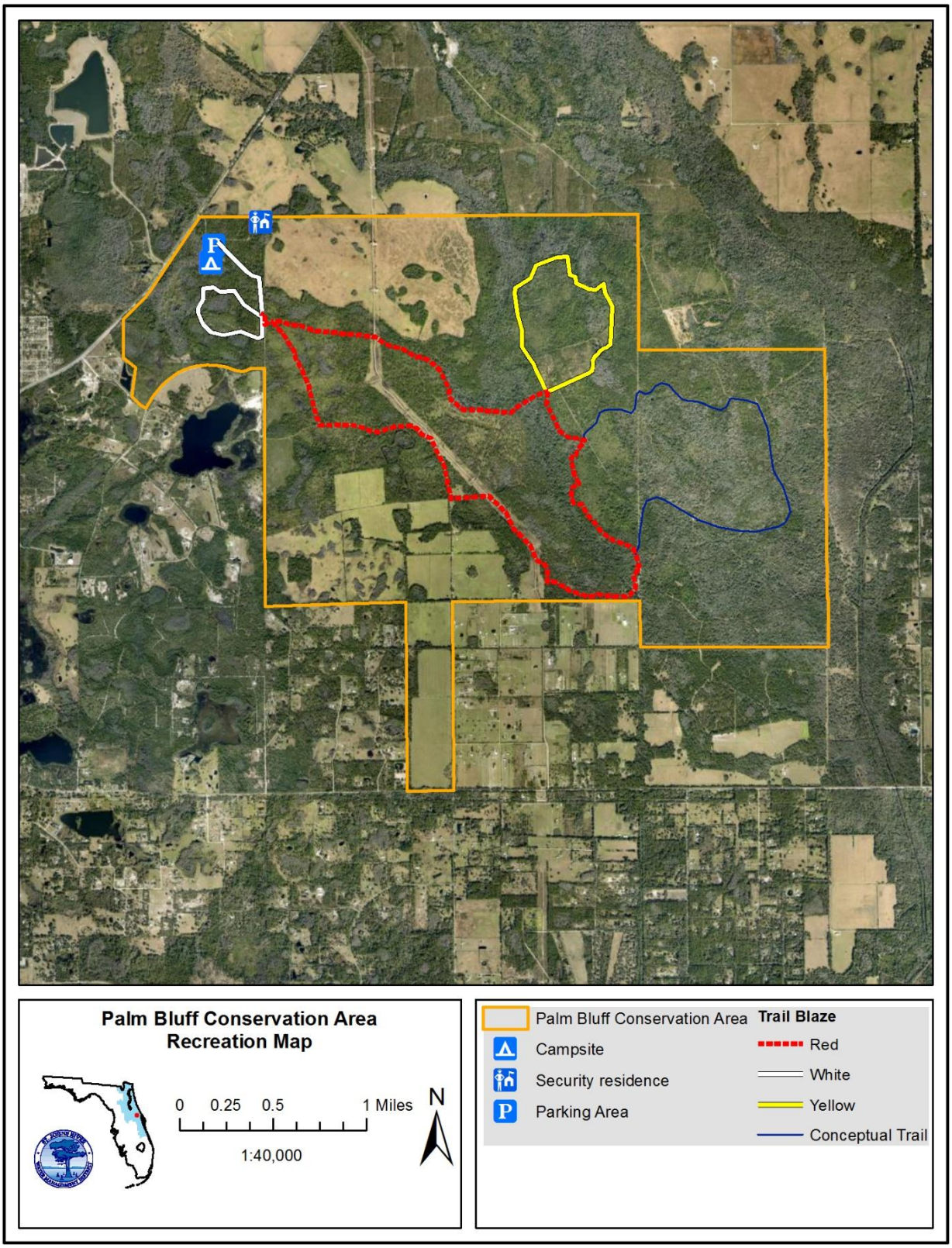

Figure 20: Recreation Trail Map

Security

Goal: Provide and maintain the Property's security.

Strategies:

- Maintain boundary signage, gates, and locks.
- Continue coordination with onsite security resident, FWC and local law enforcement.

Security concerns within the Property include vandalism of recreational infrastructure, illegal motorized vehicle access, poaching, and dumping. The District coordinates with FWC and local law enforcement to administer security within the Property. The Property hosts an onsite security resident who provides patrol hours on the Property and surrounding District properties to offset rent payments. While law enforcement officers are preferred when selecting a security resident, the District also considers public service employees with land management backgrounds, such as FFS forest rangers, when selecting security residents.

Structure Management

Goal: Evaluate existing structures for maintenance and land management use or demolition due to safety concerns or limited operational utility.

Strategies:

- Use contractors to demolish and remove unsafe and unused structures.
- Security residence shall be maintained by the resident with major repairs being conducted by District facilities staff.

Numerous structures have been demolished and removed from the Property, all of which had been identified in the 2010 Land Management Plan. Most were associated with former agriculture and alligator farming operations. A hunting cabin, built in the 1980s near Deep Creek, was also demolished. This cabin had no septic facilities and discharged wastewater to Deep Creek. All demolished structures were not historically significant, had no operational value to land management, and were in a condition beyond repair. Several remaining structures are used by the cattle lessee to aid in their operations. Any future demolitions will be determined by the structure's condition and utility for land management operations.

The District-owned security residence is maintained by the resident as well as District facilities staff. Routine home maintenance and repairs, including lawn maintenance, is the responsibility of the resident while larger repairs or appliance replacements and installations are the responsibility of the District.

ADMINISTRATION

Real Estate Administration

Goal: Explore opportunities for adjacent property acquisition, transfer, or surplus.

Strategy:

- Evaluate adjacent properties for potential acquisition.

A total of 1,213 acres adjacent to the Property have been identified as potential acquisitions (Figure 21). If these or other neighboring parcels become available, which increase continuity between the Property and the surrounding conservation easements, provide additional protection for Deep Creek and the Ashby Canal, or allow for restoration of impacted land, they will be evaluated for acquisition by District staff.

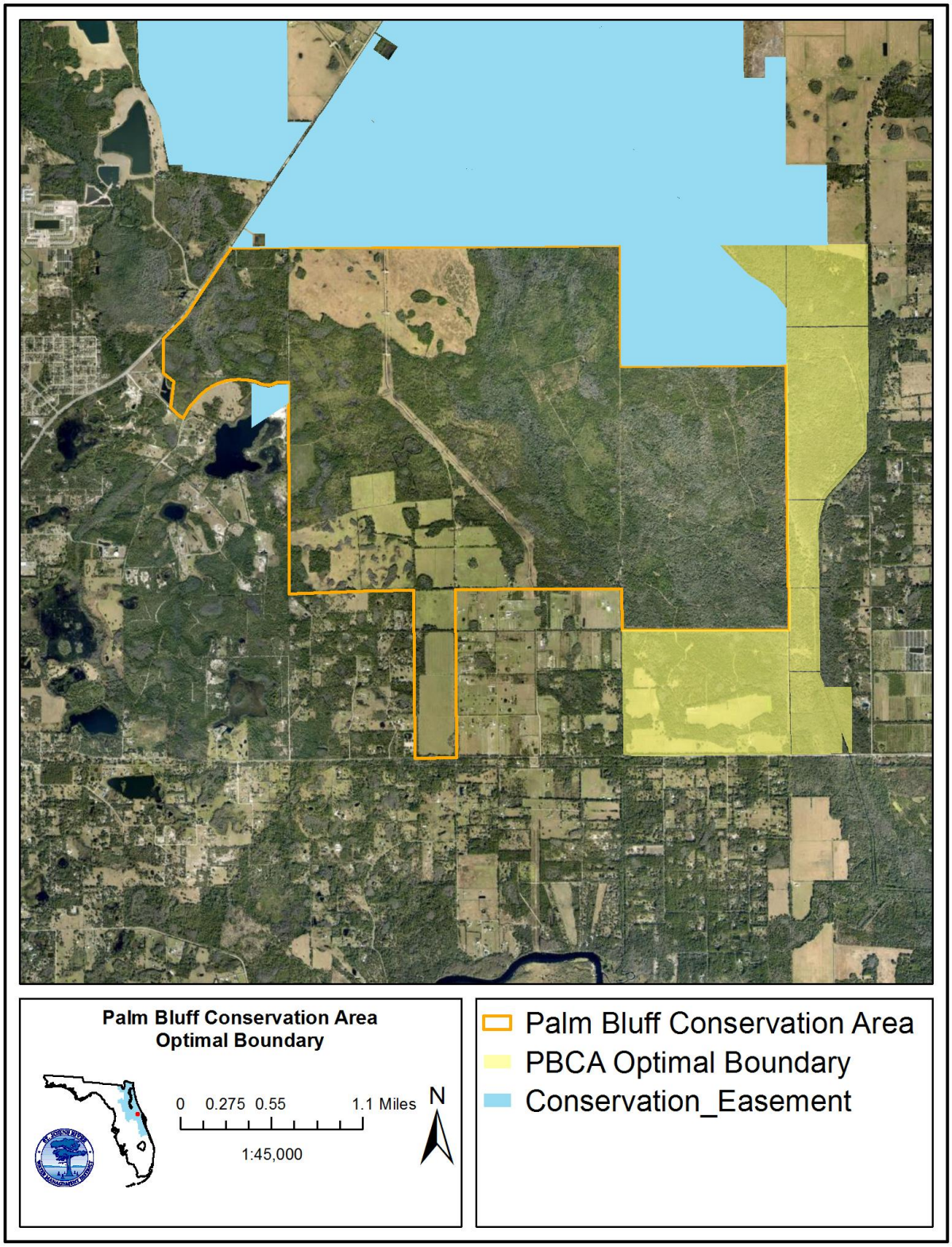

Figure 21: Potential Acquisitions

Pursuant to section 373.139, Florida Statutes, the District may explore and pursue the surplus of portions of its land. The District's interest in surplusing land may arise from a variety of considerations, including but not limited to:

- A property purchased as part of a larger acquisition and the surplus portion is not needed for District purposes but was included to complete a larger acquisition.
- Original project for which a property was purchased was ultimately not built.
- A property is part of a patchwork of conservation ownership, managed by another agency or local government and the surplus is to transfer the ownership to the entity managing the property for conservation purposes.
- Actions by adjacent owners that lower a property's conservation values or increase management costs.

When surplusing a property, the District commonly retains a conservation easement over the property and/or the deed contains a reverter clause. This provides for the future conservation of the property and the ability for the District to regain fee ownership if conservation or preservation is threatened in the future.

Any surplus of District-owned property requires the approval of the District's Governing Board. If the property in question was originally purchased for conservation purposes, the Governing Board shall determine that the land is no longer needed for conservation purposes, which requires two-thirds vote (§ 373.089, F.S.).

No parcels have been identified for surplus at PBCA.

Cooperative Agreements, Leases, Easements, and SUA

Goal: Evaluate, pursue, and manage cooperative opportunities.

Strategies:

- Maintain cattle lease.
- Maintain security residence lease.
- Maintain Volusia County perpetual conservation easement.
- Maintain intergovernmental fire management agreement.
- Evaluate new lease and Special Use Authorization opportunities for compatibility with conservation and management goals.
- Continue to cooperate with researchers and universities as appropriate.

Section 373.1391, Florida Statutes, authorizes and encourages the District to enter into cooperative land management agreements with state agencies or local governments to provide for the coordinated and cost-effective management of lands to which the water management districts, the Trustees, or local governments hold title. District Policy #820 promotes the District entering into agreements with other agencies and private parties for cooperation and coordination of management of the District's lands.

In addition, the District is authorized to enter into cooperative agreements, cooperative management leases, leases, easements and Special Use Authorizations (SUAs) to protect the District's water management interests and to enhance the management and public value of the land. Leases can be a useful tool to accomplish land management objectives and will be evaluated and implemented where appropriate. Common examples include cattle grazing and apiaries, and the District remains open to considering other types of leases that help achieve management goals. Table 2 details the agreements, leases, and SUAs in effect during the writing of this plan.

The Property currently hosts a District-administered 1,545-acre cattle lease (Figure 22). The stocking rate is 200 animal units (animal unit defined as cow with calf, dry cow or bull). The lease payment is $188 per animal unit for a total annual payment of $37,600. Lease payments can be paid in cash or by in-kind services provided by the lessee. These services include land management-related activities such as mowing, fence repair, and invasive species management. Lease includes hog and coyote hunting rights for up to six agents. This lease expires Sept. 14, 2027. The District intends to rebid the lease after expiration.

The Property also hosts a District-administered security residence agreement. The District-owned security residence is maintained by the resident and District facilities staff. Routine home maintenance and repairs, including lawn maintenance, is the responsibility of the resident while larger repairs or appliance replacements and installations are the responsibility of the District. While law enforcement officers are preferred when selecting a security resident, the District also considers public service employees with land management backgrounds, such as FFS forest rangers, when selecting security residents. The monthly rent is $450, which can be paid by in cash or with in-kind services such as property patrol hours, infrastructure repair, or mowing. The lease expires Nov. 30, 2026. The District intends to readvertise the lease after expiration.

Prior to acquisition, approximately 334 acres of the Property were encumbered by a perpetual conservation easement with a less-than-fee title interest (conservation easement) held by both the District (75%) and Volusia County (25%) (Figure 11). While the District has acquired the remaining title interest in these acres from the landowner, the Property is still subject to the terms of Volusia County's interest in this conservation easement. The perpetual conservation easement and easement documentation report are attached as Appendix B and should be referenced prior to conducting management activities including timber harvest operations, road and trail construction, the installation or replacement of culverts, bridges, or other water crossings, and fencing.

The District and Volusia County are parties to an intergovernmental agreement for the sharing of wildland fire management resources (staff and equipment) within the boundaries of conservation areas administered by the District and on undeveloped lands protected by Volusia County Fire Service. The reciprocal fire service associated within this agreement is provided by the District and Volusia County at no cost to each other. This agreement expires Sept. 29, 2040.

Two deeded access easements are associated with the Property. One is held by Florida Power and Light to access and maintain the distribution lines that run though the Property. The other allows for limited access through PBCA to the Jeff and Debbie Russell Conservation Easement on the northeast boundary of the Property.

Four research SUAs currently involve the Property. Past SUAs include trail runs, research, and large camping groups at the group campsite.

Table 2: Cooperative Agreements, Leases, and Special Use Authorizations

Agreement Number	Type/Purpose	Agreement Name	Term
1320	Lease/Cattle	Payton Tilton Cattle Grazing Lease ITO Palm Bluff	September 2027
2277	Lease/Security Residence	Stephen LaRoche Palm Bluff Residence	November 2026
2215	Easement-Conservation	Perpetual Conservation Easement to Volusia County – WT Ranch	Perpetual
1111	Intergovernmental Agreement/ Fire Management	SJRWMD and Volusia County-Cooperative Fire Management Agreement	September 2040
1560	SUA/Research	FWC Bat Research	February 2024
2102	SUA/Research	Cathy Lail Eagle Nests Observation	June 2024
2243	SUA/Research	University of Central Florida Kelly Invertebrate Sampling	July 2026
2268	SUA/Research	Kent State University District Wide Lobelia & Soil Sampling	September 2026

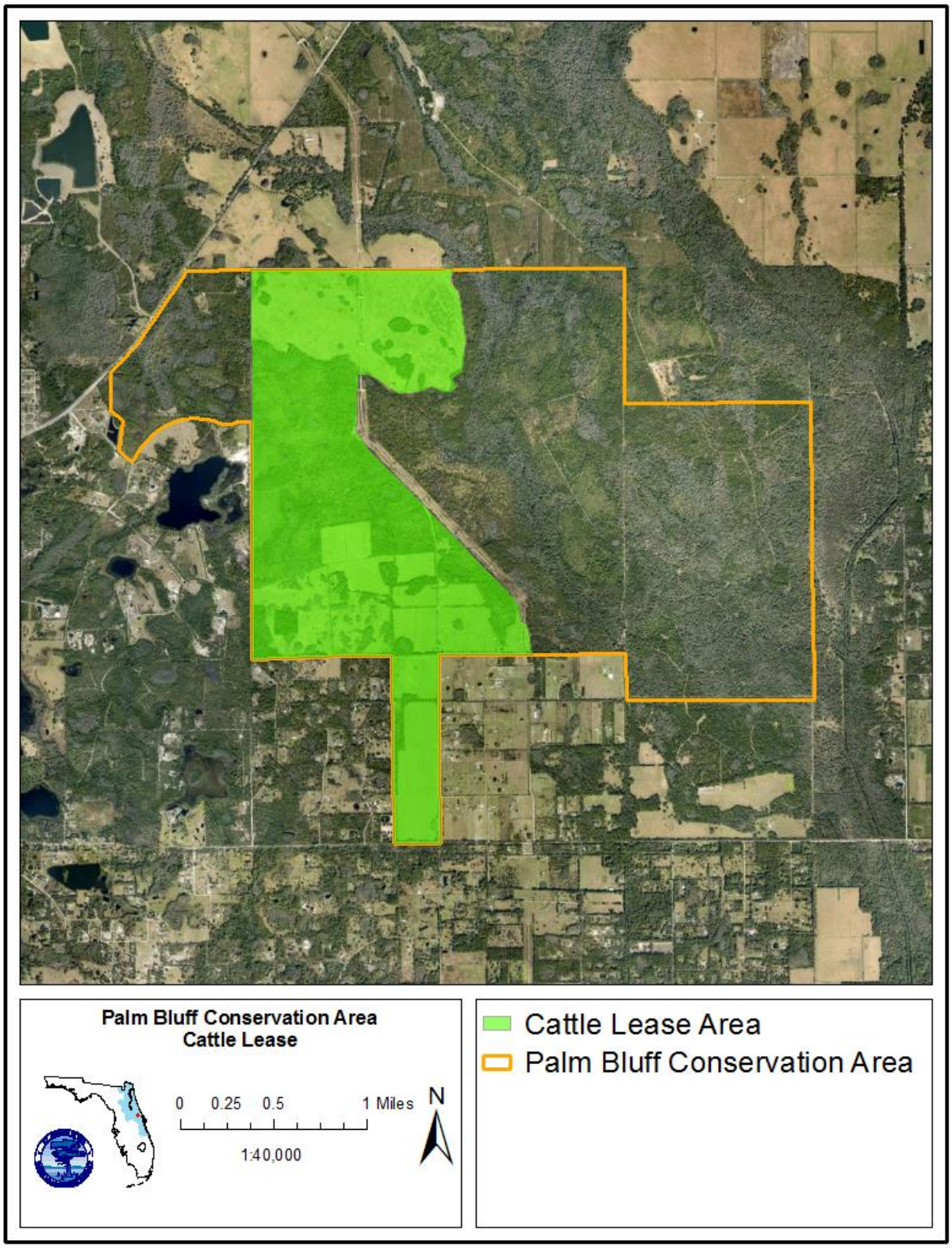

Figure 22: Cattle Lease

Management Revenues and Costs

Goal: Analyze and report projected and actual costs and revenues.

Strategies:

- Analyze and report revenues.
- Analyze and report land management costs.

This section reviews costs and revenues since the last land management plan update (2010–2023) as well projects costs and revenues for the upcoming planning period (2024–2034). All generated revenue will be applied toward the District's land management budget to offset management costs.

Tables 3 and 4 provide the received revenue and land management costs for PBCA since the last land management plan update in 2010. Most revenue was produced by cattle leases. The greatest cost was associated with 2018 culvert replacement project; most of these costs were reimbursed by the Federal Emergency Management Agency as the damage was associated with Hurricane Irma.

Revenues and Cost Since Last Land Management Plan Update (2010)

Revenues since the last land management plan update (2010–2023) total $462,753 (Table 3). Costs between 2011 and 2023 have totaled $419,498 (Table 4).

Table 3 Revenues from 2010-2023

Activity	Revenue Year	Revenue
2012 timber sale	2012-2015	$136,642
Cattle lease	2010-2017	$90,211
Cattle lease	2017-2023	$225,600
Security resident lease	2021-2023	$10,300
Total		**$462,753**

Table 4: Management Costs from 2010 to 2023

Recurring Annual Costs

Activity	**Annual Number of Units**	**Units**	**Annual Cost**	**Total Cost (Since 2010)**
Staff time	120	Hours	$3,000	$39,000
Invasive plant control	33	Acres	$1,223 (average)	$15,902
Firebreak disking	5.3	Miles	$1,590	$20,670
Mowing (roads)	26	Acres	$2,250	$29,250
Parking lot and campsite mowing	1.8	Acres	$585	$7,605
Trails mowing, blazing and trimming	10 miles of trail, one campsite		$3320	$43,160
Total Annual Costs 2010–2023				*$155,587*

One Time Activity Cost

Activity	**Total Number of Units**	**Units**	**Total**
2012 Board fence construction and gate installation			$3,585
2013 Hunt cabin structure removal			$8,400
2015 Wildfire	44	Acres	$6,690
2016 Prescribed fire	576	Acres	$8,020
2016 Wildfire	7	Acres	$3,383
2016 Fireline rehabilitation			$5,525
2017 Alligator farm structure removal			$30,594
2018 Culvert replacement			$85,710
2019 Forest inventory	62	Plots	$1,240
2019 Fuel reduction mulching	53	Acres	$35,000
2019 Fireline rehabilitation			$4,960
2020 Shed structure and debris removal			$11,800
2022 Packing barn and trailer structure removal			$29,780
2022 Bridge decking replacement			$13,900
2023 Wildfire	128	Acres	$15,324
Total One-Time Activity Cost 2010-2023			*$263,911*
Total Cost Since 2010			**$419,498**

Projected Land Management Revenues and Costs (2024-2034)

Costs and revenues for PBCA are projected into the future. However, prices of timber fluctuate depending on the markets. Projected revenue generated by timber sales, shown in Table 5, is an estimate based on 2023 market prices.

The projected revenues from the cattle lease, forest management, and residence lease at PBCA between 2024–2034 are $208,600 (Table 5). Cattle lease revenues are not projected beyond 2027 lease expiration, though the District does intend to rebid the lease. Security residence lease revenues are not projected beyond 2026 lease expiration, though the District does intend to readvertise the lease. All revenue generated from District lands are applied toward the District's land management budget to offset management costs. Projected management costs for PBCA from 2023–2033 are $484,690 (Table 6). Years in which activities take place are estimated.

Table 5: Projected Revenues between 2024 to 2034

Activity	Year	Revenue
Cattle lease	2024–2027	$150,400
Timber thinning	2024	$42,000
Security residence lease	2024–2026	$16,200
Total		**$208,600**

Projected Management Costs

Table 6: Projected Management Costs from 2024–2034

Activity	**Number of Units (annual)**	**Units**	**Annual Cost**	**10 Year Total Cost**
Staff time	120	Hours	$3,360	$33,600
Invasive plant control	39	Acres	$1,250	$12,500
Prescribed fire	329	Acres	$8,883	$88,830
Fireline Disking	9.3	Miles	$3,255	$32,550
Road Maintenance	21	Miles	$4,500	$45,000
Mowing (roads)	29	Acres	$8,811	$88,110
Parking lot and campsite mowing	1.8	Acres	$1,350	$13,500
Trails mowing, blazing and trimming	13 miles of trail, one campsite		$3,860	$38,600
One-Time Cost				
Activity	**Total Number of Units**	**Units**	**Cost**	**Total**
2024 Timber marking	158	Acres	$66	$10,000
2025 Recreational trail construction	3	Miles	$333	$1,000
2025 Fireline construction	4	Miles	$7,500	$30,000
2026 Timber inventory	60	Plots	$16	$1,000
2028 Structure and debris removal	2	Structure	$7500	$15,000
2030 Fuels reduction mowing	200	Acres	$75,000	$75,000
Total cost over 10 years				**$484,690**

LAND MANAGEMENT PLAN IMPLEMENTATION SCHEDULE

Table 7: Land Management Plan Implementation Schedule

RESOURCE PROTECTION AND MANAGEMENT

Water Resources

Goal	Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition	Measure	Planning Period
Strategy A	Maintain roads and culverts to prevent erosion.	Roads and culverts maintained	Ongoing
Strategy B	Identify culvert and low-water crossing needs on 2022 acquisition.	Water bars, turnouts, and low water crossings installed	1-5 Years
Strategy C	Evaluate need for ditch/swale plugging or filling associated with former agricultural operations.	Projects evaluated	5-10 Years
Strategy D	Level silvicultural beds from timber harvest areas if restoration is feasible.	Removed beds	5-10 Years

Forest Management and Restoration

Goal	Maintain, improve, and restore forest resources	Measure	Planning Period
Strategy A	Update forest management database.	Updated forest management database	Annually by November
Strategy B	Thin at least 158 acres of timber.	Acres of timber thinned	1-5 Years
Strategy C	Conduct forest inventory analysis on 2022 acquisition.	Updated forest volume summary database	1-5 Years

Fire Management

Goal	Implement a prescribed burning program in accordance with District's Fire Management Plan	Measure	Planning Period
Strategy A	Apply fire to 329 acres of flatwoods annually, averaged over the 10-year planning period	Number of acres burned	10 Years

Strategy B	Focus on conducting dormant season burns in areas of high fuel loading and/or for reintroducing fire into a unit with no recent burn history.	Acres burned in dormant season	Ongoing
Strategy C	Maintain existing firebreaks and create new firebreaks on the 2022 acquisition.	Miles maintained or constructed	Annually by October for maintenance; 1-5 Year for creation
Strategy D	Use mechanical fuel reduction as a fire surrogate in areas where it is difficult to burn due to high fuel loads.	Number of acres mowed or roller chopped	5-10 Years
Strategy E	Delineate Fire Management Units for 2022 acquisition.	Units delineated	1-5 Years
Strategy F	Develop annual burn plans and populate the fire management database on an annual basis.	Burn plan and reports	Annually by September

Flora and Fauna

Goal	**Maintain, improve, or restore native and listed species populations**	**Measure**	**Planning Period**
Strategy A	Conduct plant and wildlife surveys and develop species lists.	Updates to species list	Ongoing
Strategy B	Monitor the presence of listed species and adjust management actions appropriately.	Updates to species list and adjusted management actions	Ongoing

Invasive Species Management

Goal	**Manage invasive and/or exotic plants and animals**	**Measure**	**Planning Period**
Strategy A	Scout and treat at least 42 acres of invasive species annually.	Acres treated	Annually by September
Strategy B	Conduct feral hog removal activities as needed.	Number of hogs removed	Annually by September
Strategy C	Locate, map, and treat any new infestations of invasive and/or exotic plant species.	Mapping and treatment of new infestations	Ongoing

Cultural Resource Protection

Goal	Identify, protect, and maintain any cultural resources found on the Property	Measure	Planning Period
Strategy A	Identify and report sites to the Florida Department of Historical Resources (DHR).	Sites identified and reported	Ongoing
Strategy B	Identify and report any detrimental activities to the sites to the DHR and law enforcement.	Sites identified and reported	Ongoing

LAND USE MANAGEMENT

Access

Goal	Maintain access to and around the Property to facilitate land management and resource protection	Measure	Planning Period
Strategy A	Maintain, gates, roads and associated swales/ditches.	Gates, roads and swales/ditches maintained	Ongoing
Strategy B	Update District database on maintenance of existing and creation of new signs, gates, trails, and roads.	Database updated	Ongoing

Recreation

Goal	Provide public recreation opportunities on the Property		
Strategy A	Maintain 9.2 miles of existing trails, campsite and parking area.	Miles maintained	Annual, ongoing
Strategy B	Delineate and develop trail extension on 2022 acquisition.	Miles developed	1-5 Years
Strategy C	Evaluate alternative hunting opportunities.	Options evaluated	5-10 Years

Security

Goal	Provide and maintain the site's security	Measure	Planning Period
Strategy A	Maintain boundary signage, gates, and locks.	Signs, fences, gates, and locks maintained	Ongoing

Strategy B	Continue coordination with onsite security resident, FWC and local law enforcement.	Secure property	Ongoing

Structure Management

Goal	Evaluate existing structures for maintenance and land management use or demolition due to safety concerns or limited operational utility.	Measure	Planning Period
Strategy A	Use contractors to demolish and remove unsafe and unused structures.	Structure or debris removed	Ongoing
Strategy B	Security residence shall be maintained by the resident with major repairs being conducted by District facilities staff.	Residence maintained	Ongoing

ADMINISTRATION

Real Estate Administration

Goal	Explore opportunities for adjacent property acquisition	Measure	Planning Period
Strategy A	Evaluate adjacent properties for potential acquisition.	Properties evaluated	Annually by September

Cooperative Agreements, Leases, Easements, and Special Use Authorizations (SUA)

Goal	Evaluate, pursue, and manage cooperative opportunities	Measure	Planning Period
Strategy A	Maintain cattle lease.	Lease administered	Ongoing
Strategy B	Maintain security residence lease.	Lease administered	Ongoing
Strategy C	Maintain Volusia County perpetual conservation easement.	Easement administered	Ongoing
Strategy D	Maintain intergovernmental fire management agreement.	Agreement administered	Ongoing
Strategy E	Evaluate new lease and Special Use Authorization opportunities for compatibility with conservation and management goals.	Leases and SUA's evaluated	Ongoing
Strategy F	Continue to cooperate with researchers and universities as appropriate.	Research SUA's evaluated	Ongoing

Management Revenues and Costs

Goal	Analyze and report projected and actual costs and revenues	Measure	Planning Period
Strategy A	Analyze and report revenues.	Annual report	Annually by November
Strategy B	Analyze and report land management costs.	Annual report	Annually by November

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APPENDIX A: PALM BLUFF CONSERVATION AREA SOILS

Below is a description of the soils and an accompanying map (Figure 1) at PBCA (USDA, 2023).

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

Cassia
The Cassia series consists of very deep, somewhat poorly drained, moderately rapid permeable soils on low ridges and knolls that are slightly higher than the adjacent flatwoods. The native vegetation supported by this series generally consists of scattered slash pine, longleaf pine, and saw palmetto.

Daytona
The Daytona series consists of very deep, moderately well drained, moderately rapid permeable soils on knolls and ridges in the flatwoods. They formed in sandy deposits of marine or eolian sediments. The native vegetation may include sand pine with an understory of creeping bluestem, broom sedge bluestem, splitbeard bluestem, lopsided indiangrass, pineland threeawn, switchgrass, panicum, and paspalums.

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

Gator
The Gator series consists of very poorly drained organic soils that formed in moderately thick beds of hydrophytic plant remains overlying beds of loamy and sandy marine sediments. They are in depressions and on flood plains. Native vegetation includes mostly cordgrass or saw grass, maidencane, willow, dogwood, or swamp vegetation including bald cypress, sweet gum, red maple, and American hornbeam.

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

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

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

Orsino
The Orsino series consists of very deep, moderately well drained, very rapidly permeable soils that formed in thick beds of sandy marine or aeolian deposits. They are on moderately high ridges in the coastal plain. Native vegetation consists primarily of scrub vegetation with sand live oak, Chapman oak, myrtle oak, and scrub hickory. Scattered sand, slash, and longleaf pines and scattered blue jack, turkey, and post oak are found with a sparse understory.

Pineda
The Pineda series consists of deep and very deep, poorly and very poorly drained, very slowly permeable soils in depressions, low hammocks, poorly defined drainageways, broad low flats, and floodplains. Formed in thick beds of sandy and loamy marine sediments on the lower coastal plain. Slopes in areas where these soils are found range from 0-2 percent. Native vegetation consists of slash pine, cypress, myrtle, cabbage palm, blue maidencane, chalky bluestem, blue point panicum, sedges, pineland threeawn, and sand cordgrass.

Pomona
The Pomona series consists of very deep, poorly, and very poorly drained, moderate to moderately slowly permeable soils on broad low ridges on the Lower Coastal Plain. They formed in sandy and loamy marine sediments. The native vegetation consists of slash pine (Pinus Elliottii), longleaf pine (Pinus Palustris), and south Florida slash pine (Pinus Elliottii Densa) with an understory of saw palmetto, wax myrtle, gallberry, creeping bluestem, chalky bluestem, indiangrass, and pineland threeawn.

Samsula
The Samsula series consists of very deep, very poorly drained, rapidly permeable soils that formed in moderately thick beds of hydrophytic plant remains and are underlain by sandy marine sediments. These soils are in swamps, poorly defined drainage ways, and flood plains. Slopes are less than 2 percent. Natural vegetation is loblolly bay, with scattered cypress, maple, gum, and trees with a ground cover of greenbriers, ferns, and other aquatic plants.

Scoggins

The Scoggin series consists of very poorly drained soils formed in loamy and sandy marine sediments on the low Coastal Plain in central Peninsular Florida. They occur in swamps and low areas bordering swamps. They are covered with standing water for as much as 6 months in most years beginning in the summer rainy season. Most areas are in a sparse forest of slash pine and swamp hardwoods with a ground cover of maidencane, pineland threeawn, gallberry, and clumps of saw palmetto.

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

St. Johns
The St. Johns series consists of very deep, very poorly or poorly drained, moderately permeable soils on broad flats and depressional areas of the lower Coastal Plain. They formed in sandy marine sediments. Principal vegetation of the forested areas is longleaf pine, slash pine, and pond pine with an undergrowth of saw palmetto, gallberry, wax myrtle, huckleberry, and pineland threeawn.

Tavares
The Tavares series consists of very deep, moderately well drained, rapidly or very rapidly permeable soils on lower slopes of hills and knolls of the lower Coastal Plain. They formed in sandy marine or eolian deposits. In most places, the natural vegetation consists of slash pine, longleaf pine, a few scattered blackjack oak, turkey oak, and post oak with an undercover of pineland threeawn. In some places, natural vegetation consists of turkey oak, blackjack oak, and post oak with scattered slash pine and longleaf pine.

Tequesta
The Tequesta series consists of very deep, very poorly drained, moderately slowly permeable soils in depressional areas, freshwater swamps and marshes, and broad low flats adjacent to organic soils. They formed in stratified marine sandy and loamy sediments on the Lower Coastal Plain. The natural vegetation consists of needle grass, pickerelweed, maidencane, ferns, wax myrtle, and scattered cypress.

Valkaria
The Valkaria series consists of deep, rapidly permeable soils that formed in thick beds of marine sands. These soils occur in broad, poorly defined, low gradient drainageways, depressions and low nearly level areas. Natural vegetation is palms, cabbage palmettos, St. Johnswort, wax myrtle, blue maidencane, chalky bluestem, pineland threeawn, and widely spaced pine and cypress. Maidencane is the most common plant in depressions.

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

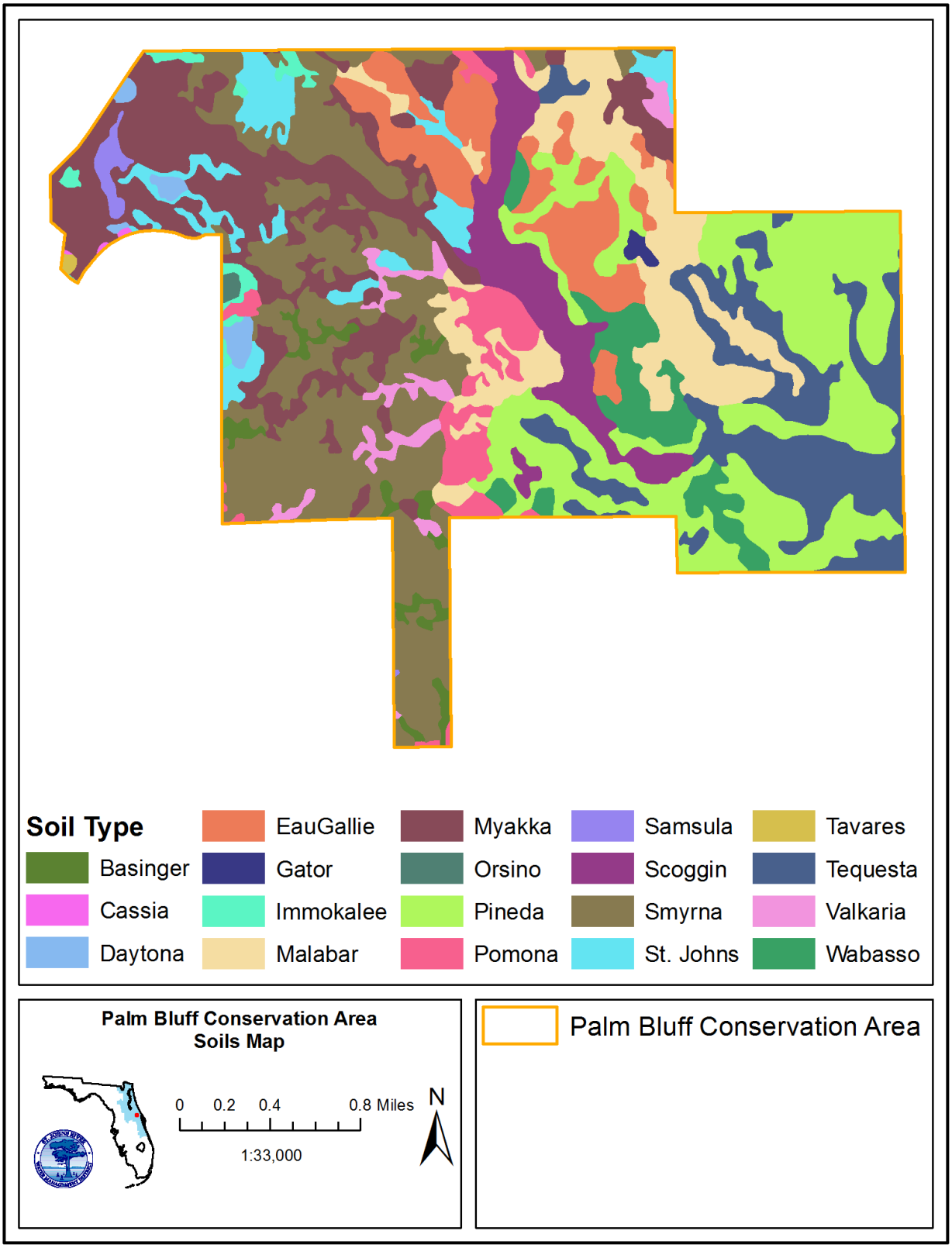

Figure 1: Soil types at Palm Bluff Conservation Area.

APPENDIX B: WT RANCH CONSERVATION EASEMENT

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Page: 3258

THIS DOCUMENT PREPARED BY
AND SHOULD BE RETURNED TO:
Dykes C. Everett, Esquire
Winderweedle, Haines, Ward & Woodman, P.A.
Post Office Box 880
Winter Park, Florida 32790-0880

PERPETUAL CONSERVATION EASEMENT

THIS INDENTURE, made and entered into this 28th day of February, 2003, by and between **ROBERT A. WAGNER, AS TRUSTEE OF THE ROBERT A. WAGNER REVOCABLE TRUST DATED JUNE 3, 1993, and MELISSA BETH TULP AS TRUSTEE OF THE MELISSA BETH TULP TRUST AGREEMENT DATED FEBRUARY 26, 2002**, whose address is c/o Louis P. Tulp, Post Office Box 621024, Oviedo, Florida 32762 (hereinafter collectively referred to as the "Grantor"), and the **ST. JOHNS RIVER WATER MANAGEMENT DISTRICT, a public body existing under Chapter 373 of the Florida Statutes,** as to an undivided seventy-five percent (75%) interest (hereinafter referred to as the "District"), whose address is Post Office Box 1429, Palatka, Florida 32178-1429, **and VOLUSIA COUNTY, a political subdivision of the State of Florida,** as to an undivided twenty-five percent (25%) interest (hereinafter referred to as the "County"), whose address is 123 W. Indiana Avenue, Room 201, Deland, Florida 32720-4606 (hereinafter District and County collectively referred to as the "Grantee").

W I T N E S S E T H:

WHEREAS, the Grantor is the owner in fee simple of certain real property lying and being situated in Volusia County, Florida, more specifically described in Exhibit "A," attached hereto and incorporated herein by reference (hereinafter referred to as the "Property"); and,

WHEREAS, the Grantor and the Grantee mutually recognize the natural, scenic and special character of the Property and have the common purpose of conserving certain natural and agricultural values and character of the Property by conveyance to the Grantee of a Perpetual Conservation Easement (hereinafter referred to as the "Easement") on, over and across the Property, which shall conserve the value, rural and agricultural character, ecological integrity and hydrological integrity of the Property, conserve and protect the animal and plant populations on the Property and prohibit certain further development activity on the Property.

NOW, THEREFORE, the Grantor, in consideration of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable consideration in hand paid by the Grantee to the Grantor, the receipt and sufficiency of which is hereby acknowledged, does hereby grant, bargain, sell and convey to the Grantee and its successors and assigns forever this Easement pursuant to Section 704.06, Florida Statutes, on, over, upon, and across the Property of the nature, character, and extent hereinafter set forth.

I. PURPOSE OF THE EASEMENT.

It is the purpose of this Easement to preserve the Property in its existing condition as a working ranch and silviculture operation, to provide sustainable and relatively natural habitat for fish, wildlife, plants or similar ecosystems, and to preserve the Property as productive timberland and ranch land that sustain for the long term the conservation values of the current uses of the Property and its environs through management guided by the terms of Article III, IV and V hereof.

II. PROHIBITIONS AND RESTRICTIONS ON USE.

Grantor and Grantee acknowledge that a purpose of this Easement is to prevent any use of the Property that will cause or result in a sustained degradation of the present environmental and conservation quality of the Property. Therefore, subject to the rights and interests of Grantor hereinafter reserved in this Easement, and in furtherance of the affirmative rights of Grantee described in Section IV herein, Grantor, for itself and its successors and assigns, and with the intent

that the same shall run with and bind the Property in perpetuity, does hereby make and impose with respect to the Property the following general covenants, prohibitions and restrictions relating to the use of the Property:

1. **Uses.** Except as may be allowed under Article III hereof, no commercial, agricultural or industrial activity shall be undertaken or allowed on the Property, nor shall any right of passage across or upon the Property be allowed or granted if that right of passage is used in conjunction with commercial or industrial activity. Provided, however, no commercial or industrial land development shall be undertaken upon the Property. Except as may be expressly allowed under Article III hereof, no residential land development shall be undertaken on the Property. Provided, however, passage or access upon or over the Property ancillary to the activities allowed to Grantor under Article III is not prohibited.

2. **Roads**. No additional roads, nor paving of existing roads, are allowed; however, Grantor may maintain the existing roads and trails on the Property and may construct two (2) all weather unpaved roads to access the additional homesite areas. In addition, Grantor may re-locate an existing all weather road to accommodate the re-location of a homesite. When siting such new roads, Grantor agrees to utilize a practicable direct route which does not otherwise violate the terms of this Easement. Road construction may include ancillary ditches, culverts and crossings provided there is no detrimental alteration of hydrology. Typical road construction and maintenance activities may include discing, plowing, grading, side-borrowing excavation and the application of clay, gravel, shell or other like material. Grantor may use the spoil from any pond excavation allowed under Article III, Paragraph 8. Grantor may maintain existing fire lines and breaks, as well as plow new fire lines and breaks as reasonably required for fire prevention and/or control. All construction and maintenance shall be subject to any applicable permitting process of Grantee, shall be included within the Management Plan (as hereinafter defined), and shall be in accordance with the applicable Best Management Practices ("BMP's" as hereinafter defined).

3. **Waters**. No hydrological modifications or activities which cause substantial or permanent degradation to water quality or quantity shall be allowed; however, Grantor retains the right to negotiate the sale or transfer of public water supply well sites. The buyer of such well sites shall be subject to the approval of Grantee, which approval shall not be unreasonably withheld. Grantor may maintain existing culverts, ditches, drains and swales on the Property. Grantor may, subject to applicable permitting, install wells for the activities allowed under this Easement. Activities designed to create, restore or enhance wetlands or other surface waters on the Property, including without limitation modifications to topography, are not prohibited hereby if said activities are consistent with the purposes of this Easement as stated herein, and are permitted by the appropriate authority and approved in writing by Grantee prior to commencement of the activity.

4. **Improved Pasture**. Conversion to improved pasture of areas not in improved pasture as of the date of this Easement shall not be allowed except as provided for in Article III hereof.

5. **Construction.** Except as may be allowed under this Easement, there shall not be any construction of or the placing of buildings, utilities, infrastructure, or roads on, under, or above the ground. The construction and maintenance of fences allowed under this Easement shall not substantially impede the movement of wildlife upon, onto or across the Property.

6. **Dumping.** There shall be no dumping or placing of trash, solid or liquid waste (including sludge material), or hazardous materials, wastes or substances,

toxic waste or substances, pollutants or contaminants, including but not limited to those as defined by the Federal Solid Waste Disposal Act ("SWDA"), the Federal Clean Air Act ("CAA"), the Federal Clean Water Act ("CWA"), the Federal Resource Conservation and Recovery Act of 1976 ("RCRA"), the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), the Federal Superfund Amendments and Reauthorization Act of 1986 ("SARA"), the Federal Emergency Planning and Community Right-To-Know Act ("EPCRA"), the Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA"), the Toxic Substances Control Act ("TSCA"), Chapters 161, 253, 373, 376, and 403, Florida Statutes, and the rules and regulations of the (i) United States Environmental Protection Agency, (ii) the Florida Department of Environmental Protection, and (iii) the St. Johns River Water Management District, now or at any time hereafter in effect, or any Florida Statute defining hazardous materials, wastes or substances, toxic wastes or substances, pollutants or contaminants (hereinafter collectively referred to as "Contaminants") on the Property. This prohibition shall not be construed to include reasonable amounts of agricultural waste generated as a result of activities allowed under Article III nor prohibit the use and lawful application of chemicals, pesticides, herbicides or fertilizers, dirt, soil, rock, shell and other materials in accordance with the activities allowed under this Easement.

7. **Concentrated Animal Feeding Operations.** There shall be no concentrated animal feeding from permanent feed lots for bovine, swine, poultry or other animals on the Property.

8. **Exotics and Invasive Species.** Grantor shall not plant, and will use reasonable efforts to control, the spread of nuisance, exotic and non-native invasive vegetation on the Property, including planting in the game food plots and the improved pasture.

9. **Pesticides/Herbicides.** Pesticides or herbicides must be applied according to applicable BMP's or in the absence of BMP's in accordance with label instructions.

10. **Fertilizer.** When used pursuant to allowed uses under Article III, fertilizer shall be applied according to applicable BMP's.

11. **Mining and Excavation.** Except as otherwise allowed under this Easement, there shall be no mining, excavation, filling or dredging on the Property. The sale by Grantor of material produced as a result of excavation allowed under this Easement is prohibited.

12. **Commercial Signs or Billboards.** Except for signs marketing or identifying the Property or the allowed activities thereon, there shall be no commercial signs or billboards, temporary or permanent, constructed, placed or maintained upon the Property. The total square footage of all allowed signage for the Property shall not exceed fifty (50) square feet.

III. RIGHTS RESERVED TO GRANTOR.

Grantor reserves in perpetuity, and reserves for its successors and assigns in perpetuity, the following reserved rights, which may be exercised at any time (subject to any notice requirements set forth below):

1. **Fee Simple Title.** Grantor has, and shall be deemed hereby to have retained, the underlying fee simple title absolute in the Property. Further Grantor retains and reserves all rights of, in and to the Property not expressly prohibited under Article II or expressly conveyed to Grantor under Article IV.

2. **Sale of Property.** Grantor shall have the right to sell, rent or mortgage the Property provided that the maximum number of parcels into which the Property may ever be divided or sold is three (3) parcels. Any such interest granted subsequent to this document shall be subject to this Easement.

3. **Homesites and Buildings.** Within each subdivided parcel, Grantor may construct and maintain buildings, residences and structures, together with ancillary utilities which, together with the buildings shown on the Easement Documentation Report, collectively, contain no more than 10,000 square feet of roof top per subdivided parcel ("Structures"). These Structures shall be located within a five (5) acre homesite area within each subdivided parcel. Removable or semi-affixed structures, such as windmills, corrals, gates, game feeders, equestrian jumps, watering troughs and pump houses, shall not be included within the foregoing footprint limitations. Within each homesite area, Grantor may plant and maintain sod and ornamental trees, shrubs and fruit bearing trees for landscaping purposes, provided such plants are not listed as a Category I or Category II "Invasive Species" by the Florida Exotic Pest Plant Council.

4. **Improved Pasture.** Pastures currently improved for cattle and equine operations can be, or can continue to be, used as improved pasture. Grantor may plant cover crops in the existing pasture areas, provided any such crop is of a non-invasive, non-exotic species. Grantor may also manage the Improved Pasture Areas as pine plantation or native range. Agricultural activities reserved by the Grantor hereunder shall be conducted in accordance with the applicable BMP's. Consistent with any applicable BMP's, Grantor may maintain the Improved Pasture Area, as delineated in the Easement Documentation Report, through generally accepted habitat management practices, such as controlled burning, mowing, rotary chopping and discing as required to further good husbandry and game management.

5. **Silviculture and Timber Harvesting.** Grantor shall have the right to conduct commercial forestry operations (silviculture) and timber harvest on the Property as indicated below, in accordance with the applicable BMP's and subject to the following conditions and restrictions:

a. **Wetland Harvesting**. Except for salvage harvesting under Paragraph 5(e), there shall be no harvesting in wetlands delineated on the Easement Documentation Report.

b. **Pine Plantation Harvesting.** Provided Grantor follows applicable BMP's, harvesting and replanting of existing pine plantation can continue within the areas that are periodically planted and periodically harvested, such areas being depicted in the Easement Documentation Report ("Pine Plantation Area"). Grantor shall be entitled to manage the Pine Plantation Area as native range, however, Pine Plantation areas shall not be converted to Improved Pasture.

c. **Management of Pine Plantation.** The management of the allowed Pine Plantation Area shall be in accordance with applicable BMP's and may include generally accepted habitat management practices, such as controlled burning, mowing, rotary chopping and discing as required to further good husbandry and game management. Site preparation, application of fertilizers, use of pesticides/herbicides, implementation of prescribed burning, clear cutting and harvesting methods shall be addressed within the Management Plan and performed in accordance with applicable BMP's.

d. **Upland Harvesting.** There shall be no timber harvesting in the uplands, with the exception of (i) Pine Plantation Area, (ii) Improved

Pasture Area uplands, (iii) forested uplands with selective hardwood harvesting and selective palm tree harvesting, and (iv) residential clearing within the five (5) acre homesites. Any such timber harvesting shall be subject to the applicable BMP's.

e. **Salvage Harvesting.** Salvage harvesting following natural disasters, including but not limited to insect infestations or wildfires, shall be allowed in all areas of the Property in accordance with applicable BMP's. Following such disaster, all site preparation and re-establishment activities will be conducted according to the BMP's applicable to the type area of the Property affected, consistent with the condition of such area as it existed prior to the disaster event.

6. **Ranch Operation.** Grantor shall retain the right to ranch and maintain commercial cattle and equine operations in accordance with the Natural Resources Conservation Service ("NRCS"), local soil and water district guidelines, or State of Florida Department of Agriculture and Consumer Services ("DACS") BMP's and as provided for in the Management Plan. The NRCS, local soil and water district, or DACS BMP's shall establish the number of animal units that are acceptable on the Property. The maximum number of animal units will be determined by the NRCS, local soil and water district, or DACS and shall also include the number of horses allowed on the Property. The NRCS, local soil and water district, or DACS BMP's determination shall be maintained at the Grantee's headquarters office. The maximum carrying capacity in animal units may only be changed after consultation with NRCS, local soil and water district, or DACS BMP's. Provided, however, Grantor shall be entitled to maintain a cattle and equine stocking rate of a minimum of one (1) animal unit per ten (10) upland acres of the Property. Grantor shall have the right to repair and maintain existing fences and to fence and cross-fence as reasonably required for the conduct of ranch operations.

7. **Hunting, Fishing and Wildlife Viewing.** Grantor reserves the right to observe, maintain, photograph, introduce and stock native fish or wildlife on the Property, the use of the Property for hunting and fishing, and for wildlife viewing and study activities. The foregoing activities shall be conducted in compliance with applicable federal, state and local laws. Hunting shall be by the family members of Grantor's principals, the caretaker, and their guests only. In furtherance of game management and husbandry, Grantor may maintain the existing game fields on the Property as identified in the Easement Documentation Report. Planting in all game fields and food plots shall be limited to non-invasive, non-exotic species.

8. **Ponds and Restoration**. Grantor retains the right to excavate additional ponds or expand existing man-made ponds in the improved pasture, pine plantation, or native range upland area only, not to exceed a total of ten (10) acres of pond excavation for the entire Property. Grantor may excavate on the Property pursuant to a habitat or wetlands restoration or enhancement plan approved by Grantee. Areas of excavation under such an approved plan shall not be included within the foregoing ten (10) acre limitation. Grantor's sale of material produced as a result of excavation allowed under this paragraph is prohibited.

9. **Access.** Grantor retains the right to control and limit all access to the Property.

10. **Quiet Use and Enjoyment.** Grantor retains all rights and use of the Property not otherwise prohibited by the express terms of this Easement, including all rights of possession and quiet use and enjoyment.

IV. **GRANTEE'S AFFIRMATIVE RIGHTS.**

Subject to the rights and interests of Grantor herein reserved, Grantor gives, grants and conveys the following affirmative rights to Grantee:

1. Grantee shall have visual and physical access to the Property for the purposes of monitoring and enforcement of the terms and conditions of the Easement including, but not limited to, Article II, *supra*. Grantor shall furnish Grantee with reasonable advance notice of any physical inspection of the Property.

2. As provided in Article V, Grantee shall have the right to enforce, by proceedings at law or in equity, compliance with this Easement, including, but not limited to, the right to require restoration by Grantor of the Property to the pre-violation condition.

V. **GENERAL PROVISIONS.**

1. **Grantee's Remedies.** In the event that Grantee becomes aware of a violation of the terms of this Easement, Grantee shall give notice to Grantor in accordance with the notice provisions of Section V(8) hereof. Failure by Grantor to cause discontinuance, abatement, or commence corrective action within thirty (30) days after receipt of such notice shall entitle Grantee to bring an action at law or in equity before a court of competent jurisdiction to: (i) enforce the terms of this Easement; (ii) require the restoration of the Property to the condition that existed prior to such activity; (iii) recover liquidated damages in lieu of restoration of harvested timber, and in the event Grantor harvests or causes to be harvested timber in violation of this Easement, Grantor stipulates to liquidated damages for such violation in an amount equal to three hundred percent (300%) of the then fair market value of the harvested timber; provided, however, nothing herein shall be construed to alter or waive Grantee's right to seek restoration of any portions of the Property altered in violation of this Easement; (iv) enjoin such noncompliance by a temporary or permanent injunction in a court of competent jurisdiction; (v) seek a mandatory injunction in a court of competent jurisdiction to compel Grantor to take such corrective action as required to remedy the violation; and/or (vi) recover any damages arising from noncompliance with this Easement. Such damages, when recovered, may be applied by Grantee, in its sole discretion, to corrective action on the Property.

a. If Grantee, in its discretion, determines that Grantor is affirmatively acting in fashion not allowed by this Easement, and further determines that circumstances require immediate action to prevent or mitigate significant damage to the conservation values of the Property, Grantee may pursue its remedies under this paragraph without prior notice to Grantor or without waiting for the period for cure to expire; provided, however, that Grantee shall provide notice to Grantor of the violation and Grantee's actions to prevent or mitigate said damage at the earliest feasible time.

b. Grantee does not waive or forfeit the right to take such action as may be necessary to ensure compliance with this Easement by any prior failure to act and Grantor hereby waives any defenses of laches with respect to any delay by Grantee in acting to enforce any restriction or exercise any rights under this Easement.

c. Nothing herein shall be construed to entitle Grantee to institute any enforcement proceedings against Grantor for any changes to the Property or plant or animal life thereon due to causes beyond Grantor's control, such as, without limitation, changes caused by fire, flood, storm, earthquake, major plant or animal disease, acts of God, or the unauthorized wrongful acts of third persons.

2. **Warranty and Title**. Subject to easements, rights of way, restrictions and other matters of record as of the date of this Easement, Grantor hereby warrants that Grantor is fully vested with fee simple title to the Property and will warrant and defend Grantee's interest in the same created by this Easement against the lawful claims of all persons.

3. **Taxes and Assessments**. Grantor agrees to pay when due any real estate taxes or other assessments levied on the Property. Upon request of Grantee, Grantor shall furnish to Grantee timely proof of such payment. In the event that Grantor fails to pay any tax or assessment on the Property when due, Grantee, subject to the notice and cure provision of this Easement, and in Grantee's absolute discretion, may pay such tax or assessment. Such payment by Grantee on behalf of Grantor shall bear interest at the statutory rate for money judgments then in effect in the State of Florida. Grantee's payment, together with interest, shall constitute a lien upon the fee interest of Grantor until repaid to Grantee with the priority date of such lien being the date of payment of the tax or assessment by Grantee. Such lien shall be enforceable by Grantee in the manner provided under the laws of the State of Florida for the foreclosure of mortgages on real property.

4. **Transfers by Grantor**. Grantor agrees to incorporate by reference the terms of this Easement in any deed or other legal instrument by which Grantor transfers any interest in all or a portion of the Property, including, without limitation, a leasehold or other possessory interest. The failure of Grantor to perform any act required by this subsection shall not impair the validity of this Easement or limit its enforceability in any way. Grantee shall have the right to record, from time to time, this Easement or a notice of the existence of this Easement in the Public Records of Volusia County, Florida.

5. **Modification.** The terms and conditions of this Easement may be modified only by mutual agreement, in writing, between the Grantor and the Grantee, or their respective successors or assigns.

6. **Attorneys' Fees and Costs.** In any dispute between Grantor and Grantee arising out of this Easement which results in the filing of a lawsuit, each party in such action shall bear its own fees and costs (including fees and costs of appeal) incurred by such party in regard to this dispute.

7. **Successors and Assigns.** The terms "Grantor" and "Grantee" as used herein shall include, without limitation, the successors and assigns of Grantor and Grantee. The covenants, terms, conditions and restrictions of this Easement shall be binding upon and inure to the benefit of such Grantor and Grantee and shall continue as a servitude running in perpetuity with the Property. Grantee shall only assign its rights and obligations of this Easement to an agency or political subdivision of the State of Florida charged to carry out the conservation purposes that this grant is intended to carry out.

8. **Notices.** Any notice, demand, consent, or communication that either party is required to give to the other hereunder shall be in writing and either served personally by hand-delivery, next-day courier delivery, facsimile delivery with printed receipt confirmation, or by registered or certified mail, postage prepaid, addressed as follows:

To the Grantor: Melissa Beth Tulp, Trustee
Robert A. Wagner, Trustee
c/o Louis P. Tulp
Post Office Box 621024
Oviedo, Florida 32762
Telephone: (407) 366-6510
Fax: (407) 359-5385

To the Grantee: St. Johns River Water Management District
Director, Division of Land Management
Post Office Box 1429
Palatka, Florida 32178-1429
Telephone: (386) 329-4399
Fax: (386) 329-4125

and Volusia County
Growth and Resource Management Department
123 W. Indiana Avenue
Room 201
Deland, Florida 32720-4606
ATTN: Land Acquisition Manager
Telephone: (386) 740-5261
Fax: (386) 740-5277

or to such other address as any of the above parties shall from time to time designate by written notice, delivered pursuant to the terms of this paragraph. All such notices delivered hereunder shall be effective upon delivery, if by hand-delivery, next-day courier delivery or facsimile delivery with printed receipt confirmation, or within three (3) days from the date of mailing if delivered by registered or certified mail.

9. **Mediation.** From time to time, the terms and conditions of this Easement will require Grantor and Grantee to reach agreement on certain plans and courses of action described and contemplated herein. Grantor and Grantee agree to attempt to reach agreement on such plans and courses of action in good faith. In the event that, after a reasonable effort, Grantor and Grantee fail to reach agreement on a plan or course of action required to be undertaken pursuant to this Easement, then in that event, Grantor and Grantee shall submit such issue to mediation. Mediation shall be held at a time and place mutually agreeable to Grantor and Grantee provided, however, in no event shall the mediation be scheduled later than thirty (30) days after notice provided by one party to the other requesting mediation on the issue in dispute. The mediation shall be held before a panel of three mediators chosen in the following manner: Grantor shall choose one mediator, Grantee shall choose one mediator, and the two mediators selected shall confer and choose a mutually acceptable third mediator having expertise in the subject matter in dispute. This mediation provision is intended to apply to good faith disputes regarding mutual decisions to be reached by Grantor and Grantee under the terms and conditions of this Easement. In no event shall this mediation provision supplant or impede election of the remedies set forth in Section V(A) hereof.

10. **No Waiver of Regulatory Authority.** Nothing herein shall be construed to restrict or abrogate the lawful regulatory jurisdiction or authority of Grantee.

11. **Condemnation.** If the Property is condemned under the power of eminent domain, Grantee and/or Grantor shall be entitled to compensation in accordance with applicable law to the extent and in the proportion that the rights of each party are affected by any such act of condemnation.

12. **Environmental Indemnification.** Grantor hereby indemnifies and agrees to save, defend and hold harmless Grantee from and against any and all liabilities, claims, demands, losses, expenses, damages, fines, fees, penalties, suits, proceedings, actions, costs and other liabilities (whether legal or equitable in nature including, without limitations, attorneys fees and costs) claimed or asserted by or on behalf of any person or governmental authority and caused by a violation by Grantor (or Grantor's agents, employees, invitees or guests) of Environmental Laws. Provided, however, in the event that Grantee is named or joined as a party in a suit or proceeding alleging a violation of Environmental Laws (or a violation by Grantor's

agents, employees, invitees or guests), Grantee shall give Grantor timely notice of such suit or proceeding. Upon receipt of such notice, Grantor shall tender a defense of Grantee in such action or proceeding. Grantee shall have the right to reasonably approve Grantor's selection of counsel for such defense. So long as Grantor tenders and maintains such defense on behalf of Grantee, the indemnity provisions of this Paragraph shall not extend to attorneys' fees and costs incurred or paid by Grantee in defense of such suit or proceeding if such fees and costs are independent of the defense tendered by Grantor. The term "Environmental Law" shall mean all federal, state and local laws including statutes, regulations, ordinances, codes, rules and other governmental restrictions and requirements relating to the environment or hazardous substances including, but not limited to, as amended, the Federal Solid Waste Disposal Act ("SWDA"), the Federal Clean Air Act ("CAA"), the Federal Clean Water Act ("CWA"), the Federal Resource Conservation and Recovery Act of 1976 ("RCRA"), the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), the Federal Superfund Amendments and Reauthorization Act of 1986 ("SARA"), the Federal Emergency Planning and Community Right-To-Know Act ("EPCRA"), the Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA"), the Toxic Substances Control Act ("TSCA"), Chapters 161, 253, 373, 376, and 403, Florida Statutes, and the rules and regulations of the (i) United States Environmental Protection Agency, (ii) the Florida Department of Environmental Protection, and (iii) the St. Johns River Water Management District, now or at any time hereafter in effect.

13. Best Management Practices. As used in this Easement, the term "Best Management Practices" ("BMP's") shall be deemed to be those Best Management Practices that are approved by any of the following: Florida Department of Agriculture and Consumer Services ("DACS"), University of Florida Institute of Food and Agricultural Sciences ("IFAS"), Natural Resources Conservation Service ("NRCS"), the local soil and water conservation district, or in the absence of the foregoing, those BMP's then utilized as the prevailing practices for commercial ranching and silviculture operations in Florida.

14. Unity of Interest and Coordinating Grantee. Grantor shall not be obligated, by virtue of the division of ownership of the easement interest between District and County, to undertake or suffer any duplication of burdens or compliance imposed by this Easement. All administration of Grantee's rights, remedies and functions under this Easement shall be by and through a "Coordinating Grantee", including, without limitation, the Right of First Refusal. District shall be designated as the Coordinating Grantee until such time as notice of a substitute Coordinating Grantee is provided to Grantor by District and Volusia County.

VI. EASEMENT DOCUMENTATION REPORT. Grantor and Grantee acknowledge and agree that an Easement Documentation Report (the "Report") of the Property shall be prepared within 180 days of the date hereof by the District. The Report shall be approved by Grantee and Grantor as an accurate representation of the physical, ecological, and biological condition of the Property at the time of the grant of this Easement. The Report, signed by Grantor and Grantee, will be placed and retained on file with Grantee as a public record and a copy will be provided to Grantor. In the event a controversy arises with respect to the nature and extent of the physical, ecological or biological condition of the Property, the parties may utilize the Report and any other relevant documents, surveys, photographs or other information to assist in the resolution of the controversy. The Report shall serve, however, as the principal base line for the biological, ecological, and physical condition of the Property on the date of this Easement.

VII. MANAGEMENT PLAN AND ANNUAL REPORT.

1. Management Plan. Grantor and Grantee acknowledge that a Management Plan (the "Management Plan") for the Property has been prepared, or will be prepared, within 180 days of the recordation in the public records of this Easement. The Management Plan shall be prepared by Grantor and shall relate to Grantor's uses, operations and improvements upon the Property as reserved or allowed to Grantor

by this Easement. Grantor shall prepare the Management Plan in consultation with the local soil and water district, or the Natural Resources Conservation Service, or DACS, setting forth Grantor's current plans for cattle, equine and silviculture operations, hunting and related activities upon the Property. The Management Plan shall specify that these activities are to be conducted upon the Property in accordance with the applicable BMP's. The accepted Management Plan shall be subject to revision by addenda submitted by Grantor no more frequently than annually, but no less frequently than every five (5) years. The Management Plan shall be consistent with the purposes of this Easement. In no event shall the Management Plan allow or contemplate activities that are not allowed or reserved by this Easement.

2. Annual Report. On or before March 31, or such other mutually agreeable date, of each year, Grantor shall prepare and furnish to Grantee an annual report, in a format reasonably acceptable to Grantee, including (i) documenting Grantor's compliance with the Management Plan and the Easement for the preceding calendar year period, (ii) stating the Grantor's activities upon and use of the Property during the preceding calendar year period, and (iii) providing for the Grantor's proposed activities upon and use of the Property during the current/upcoming calendar year period.

VIII. DUTY OF CARE. Grantor and Grantee recognize and acknowledge the natural, scenic, aesthetic, ecological, and hydrological character of the Property and have the common purpose and intent of the conservation and preservation of the Property in perpetuity. Accordingly, Grantor hereby acknowledges a continuing duty of care to Grantee imposed by this Easement upon Grantor to carry out the intent and purpose of this Easement in regard to Grantor's ownership and occupancy of the Property.

IX. RIGHT OF FIRST REFUSAL. In the event that Grantor receives an offer to purchase the Property, Grantee shall have the right of first refusal ("Right of First Refusal") to purchase the Property upon the following terms. In the event that Grantor receives an offer to purchase the Property which Grantor has decided, in its sole discretion, to accept, Grantor shall notify Grantee in writing (the "Notice of Offer") of the terms of the offer. If Grantee wishes to purchase the Property upon the terms set forth in the Notice of Offer, then Grantee shall send to Grantor, within ten (10) days after receipt of the Notice of Offer (the "Acceptance Deadline"), notice in writing (the "Notice of Purchase") that Grantee has elected to purchase the Property upon the terms set forth in the Notice of Offer. Thereafter, the parties shall mutually execute and deliver a purchase and sale contract at the price and on the terms set forth in the Notice of Offer. If Grantee fails to give the Notice of Purchase on or before the Acceptance Deadline, Grantee's Right of First Refusal shall expire as to the immediate offer only and Grantor shall be free to sell the Property to the party which has made the offer. Grantor shall have the right (including without limitation the principals of Grantor existing as principals as of the date of this Easement), and the heirs and lineal descendants of same, shall have the right to convey one to another and to their heirs and lineal descendants perpetually free of the Right of First Refusal and the notice requirements hereof.

[Remainder of page intentionally left blank]

IN WITNESS WHEREOF, the parties hereto have duly executed this Easement, to become effective as of the day and year first above written.

Signed, Sealed and Delivered
In the Presence of:

Print name: DYKES C. EVERETT

Print name: Deborah A. Sieffert

ROBERT A. WAGNER, as Trustee of the Robert A. Wagner Revocable Trust dated June 3, 1993

Print name: Deborah A. Sieffert

Print name: DYKES C. EVERETT

MELISSA BETH TULP, as Trustee of the Melissa Beth Tulp Trust Agreement dated February 26, 2002

"Grantor"

STATE OF FLORIDA
COUNTY OF Orange

I HEREBY CERTIFY that the foregoing instrument was acknowledged before me this 28th day of February, 2003, by **ROBERT A. WAGNER, AS TRUSTEE OF THE ROBERT A. WAGNER REVOCABLE TRUST DATED JUNE 3, 1993**, on behalf of the Trust, who is personally known to me or produced Fla Dr. License as identification.

Notary Public-State of Florida
My Commission Expires:

DEBORAH A. SIEFFERT
MY COMMISSION EXPIRES
August 17, 2005
#DD 034884
Bonded thru
Notary Public Underwriters
NOTARY PUBLIC, STATE OF FLORIDA

STATE OF FLORIDA
COUNTY OF Orange

I HEREBY CERTIFY that the foregoing instrument was acknowledged before me this 28th day of February, 2003, by **MELISSA BETH TULP, AS TRUSTEE OF THE MELISSA BETH TULP TRUST AGREEMENT DATED FEBRUARY 26, 2002**, on behalf of the Trust, who is personally known to me or produced Fla Dr. License as identification.

Notary Public-State of Florida
My Commission Expires:

DEBORAH A. SIEFFERT
MY COMMISSION EXPIRES
August 17, 2005
#DD 034884
Bonded thru
Notary Public Underwriters
NOTARY PUBLIC, STATE OF FLORIDA

Witnesses:

Print Name: GRACIE L. BARLING

Print Name: SHARON G. CARLIN

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT, a public body existing under Chapter 373, Florida Statutes

By: _____
DUANE L. OTTENSTROER
Title: Chairman

Attest: _____
ROBERT CLAYTON ALBRIGHT
Title: Secretary

"Grantee"

For use and reliance only by St. Johns River Water Management District, Legal Form and Content Approved:

Wright, Fulford, Moorhead & Brown, P.A.

By: _____
Donald F. Wright, Esq.

STATE OF FLORIDA
COUNTY OF DUVAL

I HEREBY CERTIFY that the foregoing instrument was acknowledged before me this 13th day of February, 2003, by DUANE L. OTTENSTROER, as Chairman of the governing board of the St. Johns River Water Management District, on behalf of the District, who is personally known to me and who did not take an oath.

SYLVIA D. WEBER
MY COMMISSION # CC 964012
EXPIRES: December 28, 2004
Bonded Thru Notary Public Underwriters

_____
NOTARY PUBLIC, State of Florida
My Commission Expires: 12/28/04

STATE OF FLORIDA
COUNTY OF Putnam

I HEREBY CERTIFY that the foregoing instrument was acknowledged before me this 11th day of February, 2003, by ROBERT CLAYTON ALBRIGHT, as Secretary of the governing board of the St. Johns River Water Management District, on behalf of the District, who is personally known to me and who did not take an oath.

SHARON G. CARLIN
MY COMMISSION # CC 961051
EXPIRES: October 29, 2004
Bonded Thru Notary Public Underwriters

_____
NOTARY PUBLIC, State of Florida
My Commission Expires: 10/29/04

R:\Fore Ranch\WT Ranch\Conservation Easement 3.wpd
2/11/03 (2:46 PM)

EXHIBIT "A"
Legal Description
(survey of 2/4/03)

Book: 5027
Page: 3270

VOLUSIA COUNTY, a political subdivision of the State of Florida

By: _____
RAY W. PENNEBAKER
Deputy County Manager

_____
Print Name: Chris Ordetx

_____
Print Name: Jessica Cortes

STATE OF FLORIDA
COUNTY OF VOLUSIA

I HEREBY CERTIFY that the foregoing instrument was acknowledged before me this 3rd day of March, 2003, by **RAY W. PENNEBAKER**, as Deputy County Manager of Volusia County, Florida, a political subdivision of the State of Florida, on behalf of Volusia County, who is personally known to me.

VICTORIA N WISE
MY COMMISSION # CC 960118
EXPIRES: Oct 4, 2004
1-800-3-NOTARY FL Notary Service & Bonding, Inc.

_____
Notary Public, State of Florida
My Commission Expires:

EXHIBIT "A"

ACORN LAKES UNRECORDED PLAT - PARCELS 1 THROUGH 9

A portion of Section 32, Township 18 South, Range 32 East, and a portion of Section 5, Township 19 South, Range 32 East, Volusia County, Florida, more particularly described as follows:

From the Southwest corner of said Section 32, run S87°55'11"E along the South line of said Section 32, a distance of 1550.06 feet; thence departing said line, N02°04'49"E 181.24 feet to a point on the centerline of that certain 60' ingress and egress easement as described in Official Records Book 2264, Page 1097, in the Public Records of Volusia County, Florida and the POINT OF BEGINNING; thence run S42°15'17"E a distance of 239.50 feet to the P.C. of a curve concave Northeast and having a radius of 528.54 feet; thence run Southeasterly along the arc of said curve through a central angle of 21°25'39" a distance of 197.66 feet to the P.T. of said curve; thence S63°40'56"E a distance of 100.00 feet to the P.C. of a curve concave Southeast and having a radius of 1985.24 feet; thence from a tangent bearing of N26°19' 04"E, run Northeasterly along the arc of said curve through a central angle of 18°09'21" a distance of 629.08 feet to the P.T. of said curve; thence N44°28'25"E a distance of 200.00 feet to the P.C. of a curve concave Southeast and having a radius of 1705.20 feet; thence run Easterly along the arc of said curve through a central angle of 55°07'23" a distance of 1640.54 feet to the P.T. of said curve; thence S80°24'12"E a distance of 200.00 feet to the P.C. of a curve concave Southwest and having a radius of 639.24 feet; thence run Easterly along the arc of said curve through a central angle of 17°46'55" a distance of 198.39 feet to the P.R.C. of a curve concave to the Northeast and having a radius of 884.99 feet; thence run Easterly along the arc of said curve through a central angle of 22°44'46" a distance of 351.34 feet to the P.C.C. of a curve concave to the Northwest and having a radius of 374.56 feet ; thence run Easterly along the arc of said curve through a central angle of 33°07'42" a distance of 216.57 feet to the P.R.C. of a curve concave Southeast and having a radius of 260.79 feet; thence run Easterly along the arc of said curve through a central angle of 30°29'46" a distance of 138.81 feet to the P.T. of said curve; thence S87°59'59"E a distance of 303.73 feet to a point on the Easterly line of said Section 32; thence run N02°00'48"E 1658.77 feet along said East line to the Southeast corner of the Northeast 1/4 of said Section 32; thence run N02°02'31"E 2660.52 feet to the Northeast corner of the Northeast 1/4 of said Section 32; thence run N88°02'50"W 1802.75 feet more or less along the North line of said Section 32 to a point on the Easterly right of way line of State Road 415; thence run along said Easterly right of way line S35°59'37"W 340.65 feet; thence S35°58'26"W 1993.99 feet to the point of curvature of a curve concave to the Northwest having a radius of 2914.93 feet and a central angle of 11°28'16"; thence run Southerly along the arc of said curve 583.59 feet; thence S47°26'42"W 712.16 feet more or less to a point on the East line of the Northwest Quarter of the Southwest 1/4 of said Section 32; thence run S01°43'37"W 1094.56 feet along said East line to the Southeast corner of the Northwest 1/4 of the Southwest 1/4 of said Section 32; thence run S47°55'18"E 436.05 feet along the Northerly line of Parcel 10 of the UNRECORDED PLAT OF ACORN LAKES; thence run S08°59'56"W 869.41 feet along the West line of said Lot 10 to the POINT OF BEGINNING.

LESS AND EXCEPT all lands lying within that certain Ingress, Egress, Drainage and Utility Easement as recorded in Official Records Book 2264, Page 1097, Public Records of Volusia County, Florida.

TOGETHER WITH an easement for ingress and egress over and across the Southwesterly 30 feet of the following described property:

A portion of Section 5, Township 19 South, Range 32 East and a portion of Section 32, Township 18 South, Range 32 East, Volusia County, Florida, more particularly described as follows:

From the Southwest corner of said Section 32 run S87°55'11"E along the South line of said Section 32, a distance of 2137.78 feet; thence departing the South line of said Section 32, run N02°04'49"E, a distance of 156.90 feet to the POINT OF BEGINNING and the P.C. of a curve concave Southeast and having a radius of 1985.24 feet; thence from a tangent bearing of N36°16'12"E run Northeasterly along the arc of said curve through a central angle of 08°12'13" a distance of 284.24 feet to the PT.

of said curve; thence N44°28'25"E a distance of 200.00 feet to the P.C. of a curve concave Southeast and having a radius of 1705.20 feet; thence run Northeasterly along the arc of said curve through a central angle of 19°09'57" a distance of 570.40 feet to the P.T. of said curve; thence from a tangent bearing of N63°38'22"E run S34°52'52"E a distance of 1803.70 feet; thence S39°16'05"W a distance of 200.00 feet; thence N60°50'29"W a distance of 1933.67 feet to the POINT OF BEGINNING.

AND TOGETHER WITH an ingress/egress, drainage and utility easement as described in Official Records Book 2264, Page 1097, Public Records of Volusia County, Florida.

TOGETHER WITH

ACORN LAKES RANCHES PARCEL 33

A portion of Section 32, Township 18 South, Range 32 East, and a portion of Section 5, Township 19 South, Range 32 East, Volusia County, Florida, more particularly described as follows:

From the Southeast corner of said Section 32, run N02°00'48"E along the East line of said Section 32, a distance of 410.00 feet to the POINT OF BEGINNING; thence continue N02°00'48"E along the East line of said Section 32 a distance of 580.00 feet; thence departing the East line of said Section 32, run N87°59'59"W a distance of 303.73 feet to the P.C. of a curve concave Southeast and having a radius of 260.79 feet; thence run Westerly along the arc of said curve through a central angle of 30°29'46" a distance of 138.81 feet to the P.R.C. of a curve concave Northwest and having a radius of 374.56 feet; thence run Westerly along the arc of said curve through a central angle of 33°07'42" a distance of 216.57 feet to the P.C.C. of a curve concave Northeast and having a radius of 885.00 feet; thence run Westerly along the arc of said curve through a central angle of 22°44'46" a distance of 351.34 feet to the P.R.C. of a curve concave Southwest and having a radius of 639.24 feet; thence run Westerly along the arc of said curve through a central angle of 17°46'55" a distance of 198.39 feet to the P.T. of said curve; thence from a tangent bearing of N80°24'12"W, run S02°43'07"W a distance of 1431.04 feet; thence N58°08'36"E a distance of 1432.15 feet to the POINT OF BEGINNING.

LESS AND EXCEPT all lands lying within that certain Ingress, Egress, Drainage and Utility Easement as recorded in Official Records Book 2264, Page 1097, Public Records of Volusia County, Florida.

TOGETHER WITH an ingress/egress, drainage and utility easement as described in Official Records Book 2264, Page 1097, Public Records of Volusia County, Florida.

EASEMENT DOCUMENTATION REPORT FOR W.T. RANCH VOLUSIA COUNTY, FLORIDA

Prepared by:
St. Johns River Water Management District
January 2004

W.T. RANCH CONSERVATION EASEMENT
Easement Documentation Report

Location: Volusia County
Total Acres: 349.4

The attached baseline documentation report, Pages 1-4 and Figure pages a-d, written for the W.T. Ranch Conservation Easement, is a description of the conservation easement property. The report accurately describes all existing physical improvements and natural features on the property.

Grantor

1-30-04
Date

Grantee, St. Johns River Water Management District

2-24-04
Date

W.T Ranch Conservation Easement Summary

Site Visit: On or before March 31
Total Acres: 349.4
County: Volusia
March 31

Sale Price: $663,791
Date of Closing: February, 28, 2003
Annual Report Due: on or before

Prohibitions/Restrictions

1. **Uses** - With the exception of what is allowed under Article III, there is no commercial, agricultural, or industrial activity allowed, nor any right of passage for such use. No residential land development is allowed except for that which is allowed under Article III.
2. **Roads** - No additional roads, or paving of existing roads, however, Grantor may maintain the existing roads and trails and may construct two all weather unpaved roads to access the additional homesite areas. Grantor may also relocate an existing all weather roads to accommodate the relocation of a homesite. Road construction may include ancillary ditches, culverts and crossings providing the hydrology is not altered. Typical road construction and maintenance activities may include discing, plowing, grading, side-borrowing excavation, and the application of clay, gravel, and shell or other like material. Grantor may use the spoil from any pond excavation. Grantor may maintain existing fire lines and breaks and may plow new fire lines and breaks as reasonably required.
3. **Waters** - No hydrological modifications or activities, which cause substantial or permanent degradation to water quality or quantity. Grantor retains right to negotiate the sale or transfer or public water supply well sites. Grantor may maintain existing culverts, ditches, drains and swales. Grantor may install wells under activities in Article III.
4. **Improved Pasture** - No conversion of natural areas to improved pasture except as is allowed in Article III.
5. **Construction** - No construction of or placing of buildings, utilities, infrastructure, or roads except as is allowed in Article III. Construction and maintenance of fences is allowed, but must not substantially impede movement of wildlife.
6. **Dumping** - No dumping, placing of trash, solid or liquid waste, hazardous materials, wastes or substances.
7. **Concentrated Animal Feeding Operation** - No concentrated feeding for bovine, swine, poultry or other animals.
8. **Exotics and Invasive Species** - Shall not plant, and must use reasonable efforts to control the spread of nuisance, exotic and non-native invasive vegetation on the property, including planting in the game foods plots and the improved pasture.
9. **Pesticides/Herbicides** - Must be applied according to BMP's and label.
10. **Fertilizer** - Must be applied according to Article III and BMP's.
11. **Mining and Excavation** - No mining, excavation, filling or dredging, except as allowed in previous paragraphs. May not sell any spoil.
12. **Commerical Signs or Billboards** - Except for signs marketing or identifying the property or allowed activities thereon, no commercial signs or billboards, temporary

or permanent, constructed, placed or maintained. Total square footage of all allowed signage shall not exceed fifty (50) square feet.

Rights Reserved to Grantor (Article III)

1. **Fee Simple Title** – Grantor has retained underlying fee simple title.
2. **Sale of Property** – Grantor has the right to sell, rent or mortgage the property provided the maximum number of parcels divided or sold is three (3). Conservation easement goes with subdivisions.
3. **Homesites and Buildings** – Within each subdivided parcel grantor may construct structures not to exceed more than 10,000 square feet of rooftop. The structures shall be located in a 5-acre footprint. Semi-affixed structures shall not be included within the footprint limitations. Within each footprint, owner may plant and maintain sod, ornamental trees, shrubs and fruit bearing trees for landscaping purposes provided such plants are not listed as Category I or II invasive plants by the Florida Exotic Pest Plant Council.
4. **Improved Pasture** – Pastures currently improved for cattle and equine operations can continue to be used. Grantor may plant cover crops in existing pasture areas. Grantor may also manage the improved pasture areas as a pine plantation or native range.
5. **Silviculture and Timber Harvesting** – Grantor shall have the right to conduct commercial forestry operations and timber harvest.
    a. **Wetland Harvesting** – Except for salvage harvesting under 5 (e), no harvesting in wetlands.
    b. **Pine Plantation Harvesting** – Harvesting and planting of existing pine plantation is allowed. Pine plantation areas can be managed as native range, however, they cannot be converted to improved pasture.
    c. **Management of Pine Plantation** – Must follow BMP's and allowed to burn, mow, rotary chop, and disk.
    d. **Upland Harvesting** – No timber harvesting in uplands except in the pine plantation are, improved pastures, forested uplands with selective hardwood harvesting and selective palm tree harvesting, and residential clearing within the 5-acre footprint.
    e. **Salvage Harvesting** – Salvage harvesting allowed following natural disasters.
6. **Ranch Operations** – Grantor retains right to ranch and maintain commercial cattle and equine operations. Allowed a minimum of one animal unit per ten (10) upland acres.
7. **Hunting, Fishing, Wildlife Viewing** – Grantor reserves right to observe, maintain, photograph, introduce and stock native fish or wildlife. Hunting shall be by family members and guests only. May maintain existing game food fields and plots.
8. **Ponds and Restoration** – Grantor retains right to excavate additional ponds or expand existing man-made ponds in the improved pasture, pine plantation, or native range uplands only, not to exceed a total of ten (10) acres for the entire property. Habitat or wetland enhancement projects are not included under the ten-acre limitation.

Grantee's Affirmative Rights

1. Grantee shall have visual and physical access to the property for the purposes of monitoring and enforcement with advance notice.
2. Right to enforce conservation easement limitations.
3. Grantee has the right of first refusal in the event that the Grantor receives an offer to purchase the property.

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Table of Figures

CONSERVATION EASEMENT DOCUMENTATION REPORT

PROJECT SUMMARY

The St. Johns River Water Management District Governing Board on February 28, 2003, approved a less-than-fee acquisition of the 349.3-acre W.T. Ranch property in Volusia County. The property is located within sections 5 and 32, Townships 18 and 19 South; and Range 32 East, along the southeast side of State Road 415, northeast of Osteen (Figure 1). The District partnered with Volusia County for the purchase of the conservation easement, with 75% of the cost being paid by the District and 25% by Volusia County. This acquisition is designated in the District's Florida Forever Work Plan as part of the Volusia Conservation Corridor and provides for the protection of the area's water resources. Increasing development pressures from the Orlando metropolitan area and Deltona make acquisition of development rights in this area particularly important. Approximately 213 acres of the property are uplands and approximately 136 acres are wetlands. Upland portions of the property consist of mesic flatwoods, oak hammock, xeric shrub, and a small amount of pasture. The wetlands consist of a mosaic of freshwater marshes and forested wetlands.

TERMS AND CONDITIONS OF THE CONSERVATION EASEMENT

The purpose of the conservation easement is to conserve the property as in its existing condition, as a working ranch and silviculture operation, to provide sustainable and relatively natural habitat for fish, wildlife, plants and the ecosystem as a whole; and to preserve the property as productive timberland and ranch land that sustain for the long term the economic and conservation values of the current uses of the property.

The Seller will retain fee simple ownership in the Property. The Buyer's interest will be in the form of a recorded deed noting the perpetual conservation easement. All rights concerning the Property will be transferred to the Buyer, except those retained by the Seller in the conservation easement. The perpetual conservation easement will run with the land and be binding on the heirs, assigns, legal representatives, and successors in title of the Seller (Exhibit A to be added after closing).

PROPERTY ASSESSMENT

The W.T. Ranch property lies within the Talbot (marine) terrace, formed by the retreat of the sea during the Pleistocene. This region, especially around Lake Ashby, is still predominantly divided into small ranches and has retained its rural character and supports a landscape dominated by a mosaic of pine flatwoods, swamps, marshes, native prairies and improved pastures. However, most of these ranches have been managed for wildlife as well as cattle.

Habitat Profile

The W.T. Ranch conservation easement area is mostly intact natural plant communities with some disturbance in the northeast corner where a lodge and fish pond are located, in the

southeast corner of the property where uplands have been converted to pasture, and in areas where the timber has been harvested. The property is a mosaic of uplands and wetlands including mesic flatwoods, oak hammocks, cypress domes and hardwood swamps. The location of these upland and wetland communities are depicted in Figure 2. Approximately 60% of the conservation easement property is uplands and 40% wetlands. There are a number of areas that contain planted pine trees.

The vegetative composition of the wetlands are water oak (*Quercus nigra*), wax myrtle (*Myrica cerifera*), cabbage palm (*Sabal palmetto*), and cypress (*Taxodium* sp.). The uplands consist mostly of slash pine (*Pinus elliottii*), some longleaf (*Pinus palustris*), wiregrass (*Aristida beyrchiana*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*) and various native herbs and grasses. Stormwater and surface water flows south and east towards the ditches and canals around the property that connect to Deep Creek and Acorn Fish Lake.

Soil Types

There are nine primary associations of soil types on the conservation easement including Placid fine sand depressional; Daytona sand, 0 to 5 percent slopes; Myakka fine sand, Myakka-St. Johns complex, Canaveral sand; 0-5 percent slope; Smyrna fine sand, Samsula muck, St. Johns fine sand, and Immokalee sand, depressional. These soils are generally described as nearly level and poorly drained. They are often found in depressions bordering swamps, sandhills, flatwoods, and drainage-ways. The water table is within 30 inches of land surface during most months of the year in all of these soil types, and at or above land surface for part of the year in most. These soils are often found in use for pine production or as improved pasture.

Wildlife

Species found on the property include white-tailed deer, wild turkey, feral hogs, gray squirrels, sandhill cranes, southeastern kestrels and cattle egrets.

Built Structures and Roads

Based on a few field trips, there appears to be only two structures located on the property; a hunt lodge measuring approximately 2,500 square feet, and a barn measuring approximately 1,440 square feet. There is one well located near the hunt lodge that provides potable water. The grantor may subdivide the property into three (3) parcels, however, structures are limited to a total of 10,000 square feet per subdivided area and this includes the existing structures. There are few roads located on the conservation easement and they total XX miles in length.

Ponds and Restoration

The conservation easement currently has only one pond (Figure 4) located by the lodge that appears to be approximately ½ acre in size. The Grantor has retained the right to excavate ponds in the improved pasture area or native range upland areas only, not to exceed a total of ten (10) acres for the entire property. This may include increasing the size of the existing pond. The Grantor may excavate ponds on the property pursuant to a habitat or wetlands restoration or

enhancement plan approved by the United States Department of Agriculture Natural Resources Conservation Service or Grantee. The ponds excavated under a habitat wetland restoration or enhancement plan would not be included in the 10-acre limitation on ponds.

Improved Pastures and Pine Plantation Area

There is one area of improved pasture located in the southeast corner of the property (Figure 4). There are a number of areas on the conservation easement that are periodically harvested and planted (Figure 4). The Grantor may also maintain these areas as native range. Upland harvesting is restricted to the pine plantation areas, improved pasture area, forested uplands with selective hardwood harvesting and selective palm tree harvesting, and residential site clearing (5 acre foot print). Salvage harvesting is allowed in the uplands and wetlands following natural disasters only, otherwise there is no harvesting allowed in the wetlands.

Game Fields/Food Plots

Grantor has indicated that only the roadways and fire lines are used for food plots.

Archeological Sites

According to the Florida Division of Historical Resources, the conservation easement area has no historical sites or cultural sites.

REFERENCES

Brooks, H.K. 1981. *Guide to the Physiographic Regions of Florida.* Institute of Food and Agricultural Services, University of Florida. Gainesville, FL.

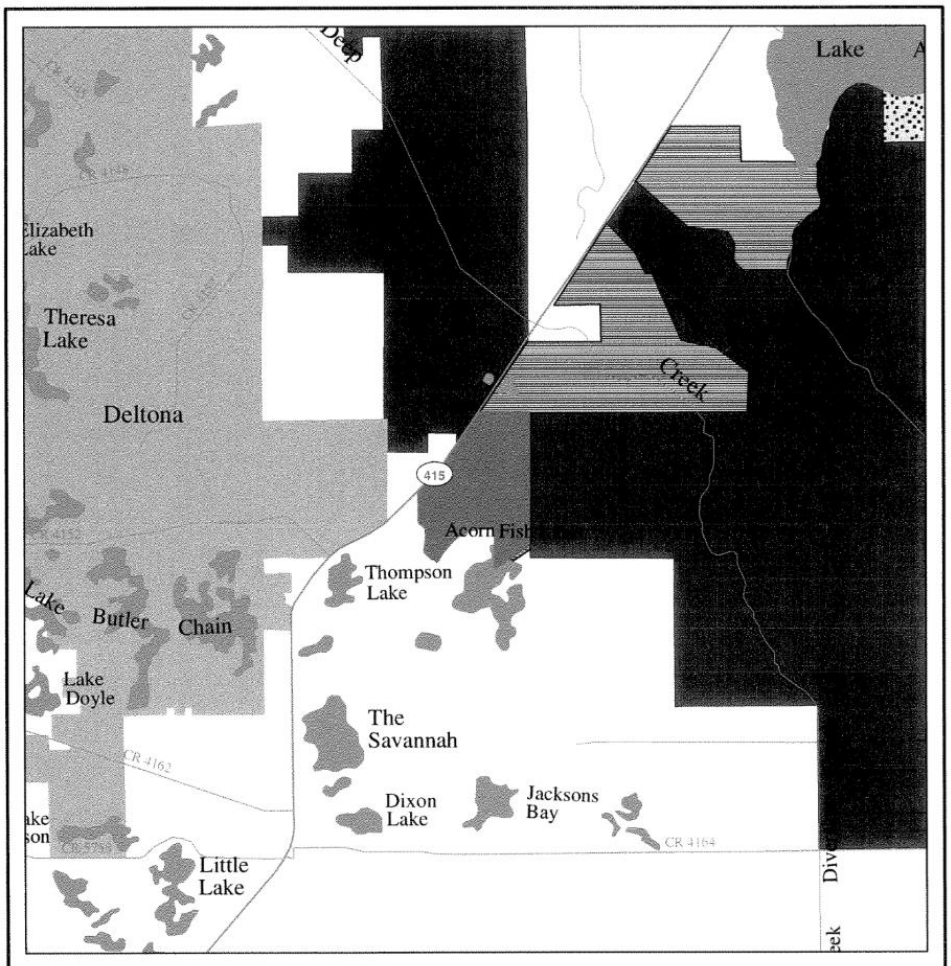
Florida Natural Areas Inventory. 1990. *Guide to Natural Communities of Florida.* Tallahassee, FL.

Personal Communications with District Staff and the Tucker family.

United States Department of Agriculture, Soil Conservation District. *Soil Survey of Volusia County, FL.*

Wunderlin, R.P. 1998. *Guide to the Vascular Plants of Florida.* The Board of Regents of the State of Florida. Tallahassee, FL.

FIGURES


Lake
Elizabeth Lake
Theresa Lake
Deltona
Creek
415
Acorn Fish
Thompson Lake
Lake Butler Chain
Lake Doyle
The Savannah
CR 4162
Dixon Lake
Jacksons Bay
CR 4164
Little Lake
W.T. Ranch Conservation Easement
Figure 1: Location Map
N
W
E
S
0.5 0.25 0 0.5 Miles
1:50715
Legend
County Roads
State Roads
W.T. Ranch
Water
City
District - full fee
District - joint ownership
District (less than fee)
Potential
Other Public Lands
The St. Johns River Water Management District prepares and uses this Information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems.Program Management. P.O.Box 1429.Palatka, Florida 32178-1429. Tel: (386) 329-4176.
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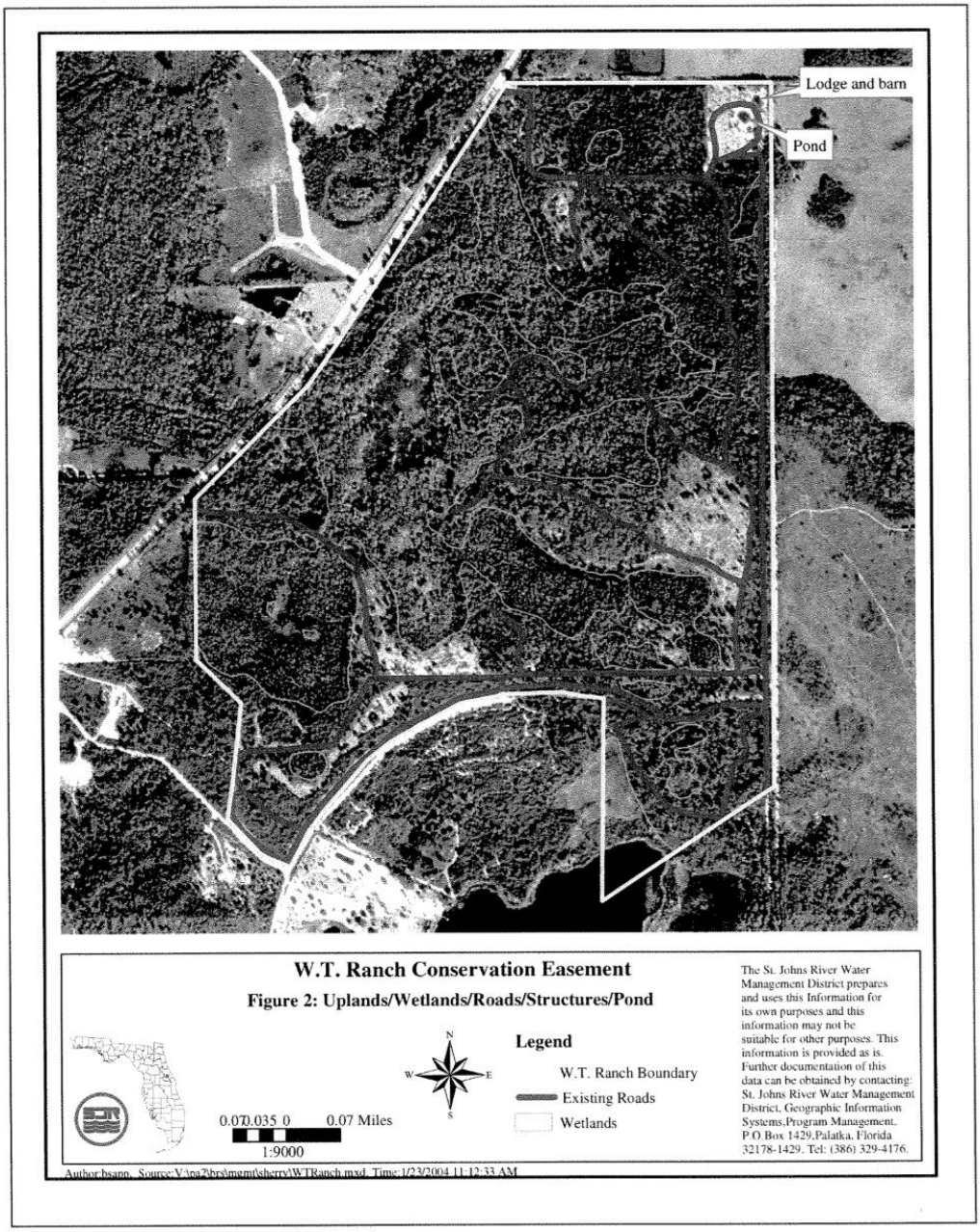
Lodge and barn
Pond
W.T. Ranch Conservation Easement
Figure 2: Uplands/Wetlands/Roads/Structures/Pond
Legend
W.T. Ranch Boundary
Existing Roads
Wetlands
0.07 0.035 0 0.07 Miles
1:9000
The St. Johns River Water Management District prepares and uses this Information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems,Program Management, P.O.Box 1429,Palatka, Florida 32178-1429. Tel: (386) 329-4176.
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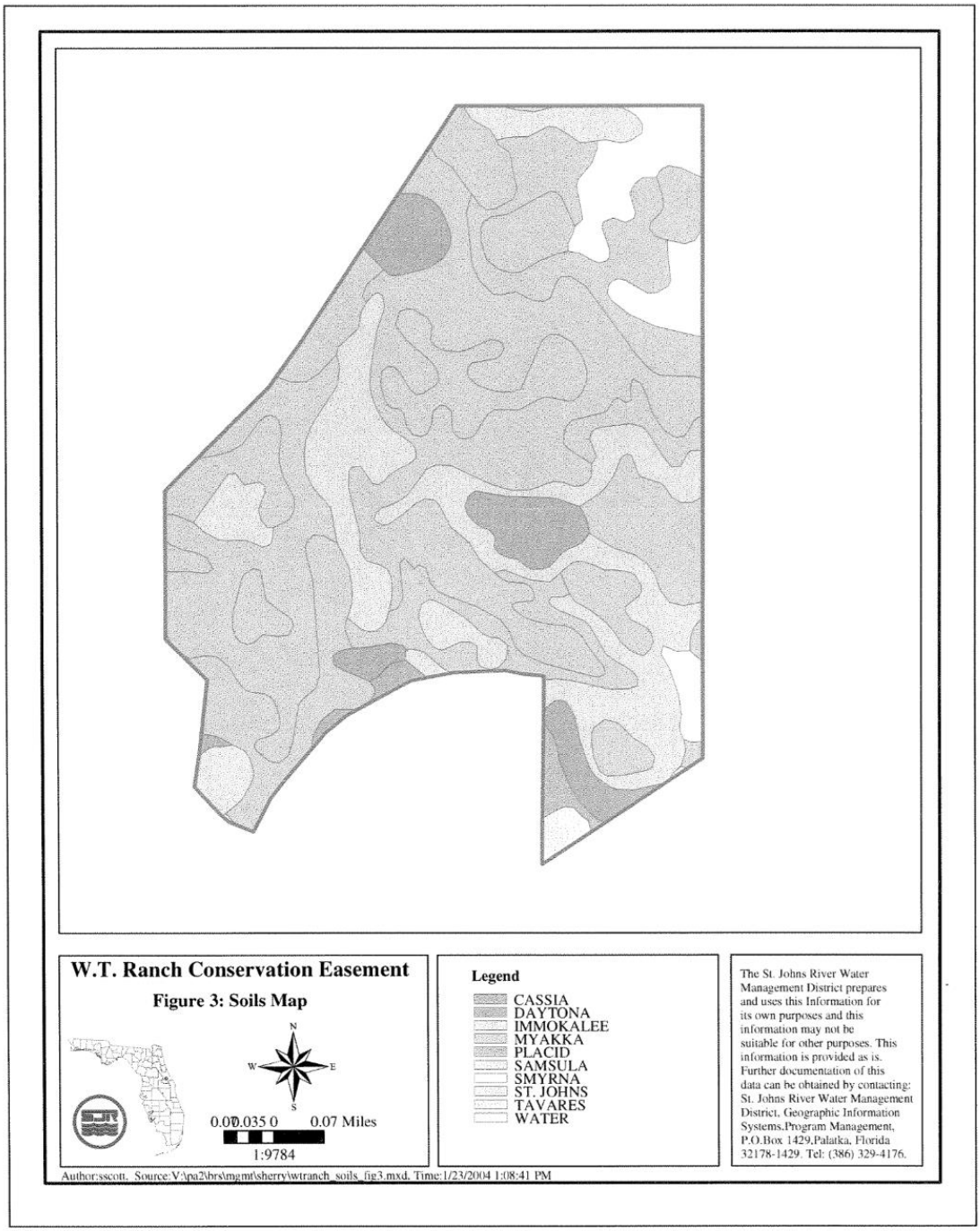
W.T. Ranch Conservation Easement
Figure 3: Soils Map
N
W
E
S
0.07 0.035 0 0.07 Miles
1:9784
Legend
CASSIA
DAYTONA
IMMOKALEE
MYAKKA
PLACID
SAMSULA
SMYRNA
ST. JOHNS
TAVARES
WATER
The St. Johns River Water Management District prepares and uses this Information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems,Program Management, P.O.Box 1429,Palatka, Florida 32178-1429. Tel: (386) 329-4176.
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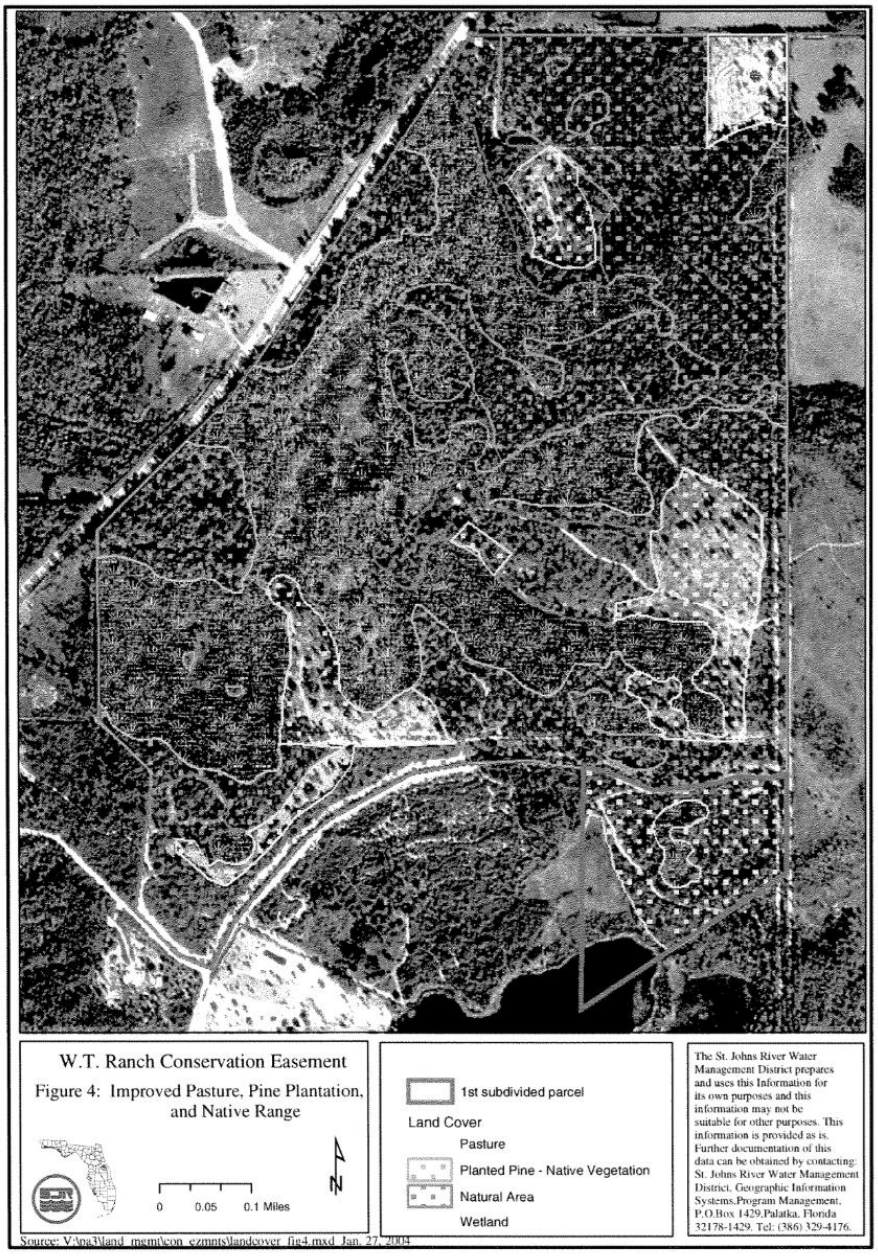
c


W.T. Ranch Conservation Easement
Figure 4: Improved Pasture, Pine Plantation, and Native Range
0 0.05 0.1 Miles
N
1st subdivided parcel
Land Cover
Pasture
Planted Pine - Native Vegetation
Natural Area
Wetland
The St. Johns River Water Management District prepares and uses this Information for its own purposes and this information may not be suitable for other purposes. This information is provided as is. Further documentation of this data can be obtained by contacting: St. Johns River Water Management District, Geographic Information Systems,Program Management, P.O.Box 1429,Palatka, Florida 32178-1429. Tel: (386) 329-4176.
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d

Appendix A
Conservation Easement Document

e

APPENDIX C: FDOT MITIGATION PLAN AND MAP

The District's FDOT Mitigation Program (section 373.4137, Florida Statutes) funded the acquisition of 993 acres of the PBCA for the purposes of mitigation. The mitigation would offset permitted wetland impacts associated with these FDOT roadway projects that occur within SJRWMD Regulatory Basin 18 (St. Johns River-Canaveral Marshes to Wekiva). In order to provide the mitigation for the functional loss of the permitted wetland impacts, the District will implement preservation, enhancement and long-term management of the 993 acres.

Objectives

The proposed management goals include the reestablishment of historic habitat communities through a prescribed burn schedule, ceasing silviculture and cattle operations, selective pine thinning within the pine plantation areas, replanting of native communities, and the control of nuisance and exotic species. Future goals set forth to promote the restoration efforts are detailed below. The attached figure depicts the specific mitigation objectives.

Preservation & Enhancement

A large part of the mitigation value of the PBCA is the preservation of floodplain swamp, basin marsh, depression marsh, dome swamp, mesic flatwoods, and pasturelands. The enhancement component of the PBCA will be the active management which primary entails the return of fire intervals appropriate for each community type.

Pine Plantation-Flatwoods Restoration

The management of the plantation areas will include implementing prescribed burn plans, selective thinning of slash pine and the planting of longleaf pine.

Pasture-Upland and Wet flatwoods Restoration

The cattle were removed from the pasture areas of the mitigation portion of the PBCA in the spring of 2010. The pasture areas within the mitigation parcel will initially be planted with dense slash and longleaf pine to shade out the bahia grass. Eventually the pines will be thinned and with a combination of a burn regime are anticipated to regain the characteristics of natural flatwood communities within 25-30 years.

Exotic Species Control

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

attain a maintenance control level within one year and anticipates conducting a minimum of two (2) treatment events each year thereafter, monitoring/re-treating previously treated areas and identifying new/additional infestations.

Performance Standards

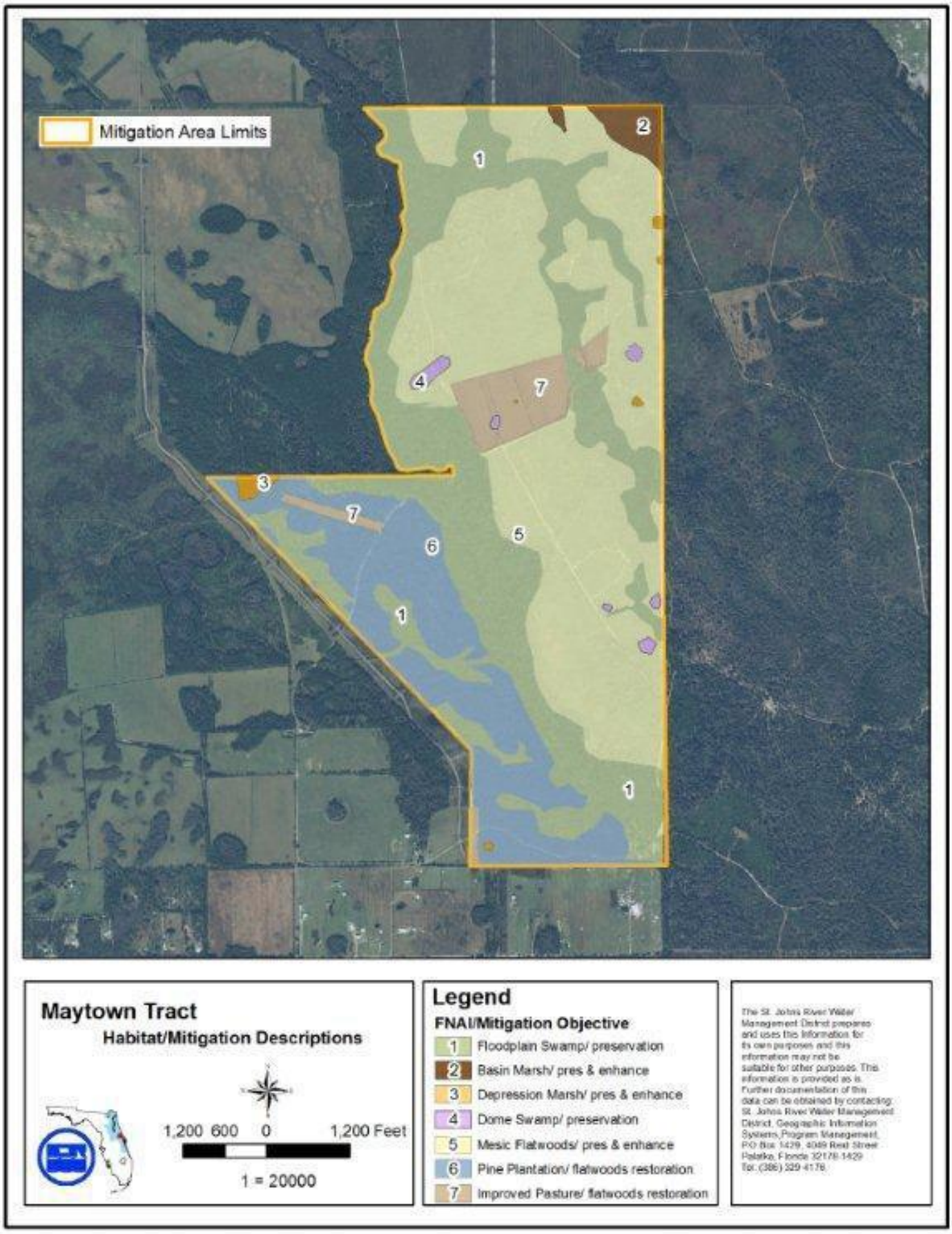
The SJRWMD performance standards for the PBCA include the following:

a. nuisance/exotic species controlled and kept less than 5% of the total percent cover;
b. increase or stable appropriate species diversity;
c. maintain the ecological conditions so that the enhancement goals are met for each of the specified community types

Performance standards will be achieved by the end of the 5-year monitoring period discussed below.

Monitoring

Monitoring requirements: The District will provide time–zero monitoring report as well as 5 years of annual monitoring reports documenting the enhancement activities on the mitigation area. The annual monitoring reports will include photographic monitoring stations, a qualitative assessment documenting whether performance standards are being met, dates of maintenance events, and proposed corrective actions (if needed). The SJRWMD will provide a 10-year update of the Land Management Plan, which will address any adjustments to the management goals.


Mitigation Area Limits
1
2
3
4
5
6
7
Maytown Tract
Habitat/Mitigation Descriptions
1,200 600 0 1,200 Feet
1 = 20000
Legend
FNAI/Mitigation Objective
1 Floodplain Swamp/ preservation
2 Basin Marsh/ pres & enhance
3 Depression Marsh/ pres & enhance
4 Dome Swamp/ preservation
5 Mesic Flatwoods/ pres & enhance
6 Pine Plantation/ flatwoods restoration
7 Improved Pasture/ flatwoods restoration
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APPENDIX D: DISTRICT FOREST MANAGEMENT PLAN

In 1998, the Florida Legislature under Section 253.036, Florida Statutes charged all state land management agencies with managing the forest resources on the lands they have acquired. To date, the St. Johns River Water Management District (District) has acquired over 775,000 acres of land. Approximately 43 percent of these acres are forested. Prior to 2000, no overall long-term plan existed to provide guidance and coordination for the management of the District's forest resources. This plan will provide that guidance and continuity.

Even prior to the legislative directive, the District had been managing its forest resources. Timber sales began in 1991 with a salvage sale at Lake George Conservation Area following a wildfire. From 1991-2023, nearly 200 timber sales have been completed.

PURPOSE OF FOREST MANAGEMENT

The District manages forest resources for the:

1) Restoration of natural communities.
2) Maintenance of the health and vigor of natural communities.
3) Generation of revenues to counterbalance the cost of land management activities.

Restoring Natural Communities

The District acquires its land from a variety of private owners, and each owner had their own vision for the land. Many times in fulfilling their vision, private owners altered the natural communities by clearing for agricultural purposes or for planting trees. Whenever practicable, the District is charged with maintaining and/or restoring the land to its natural state and condition.

Thinning, clearcutting, and planting are all tools used to restore natural communities, but in almost all cases they are used in conjunction with fire. The combinations of overstory control and fire management are the primary restoration tools in forested communities.

In forested communities, controlling or manipulating the overstory serves as the primary tool to maintain or restore the natural community. The density of the overstory dictates the health and diversity of understory species. If the overstory becomes too dense, both the overstory and understory species begin to suffer. In cases where the overstory remains crowded too long, individual understory plants begin to disappear. Often, seeds of these plants will remain dormant in the soil. Thinning individual trees from an overcrowded stand allows more light, moisture and nutrients to be available for groundcover plants. This allows dormant plants to reoccupy their former sites, thereby restoring the natural state and condition.

In some cases, private owners planted a species of tree that did not naturally occupy the site. In these cases, the District will clearcut the undesired tree species and replant with the more appropriate species.

In cases where the previous owner cleared the site, the District will prepare the site and plant the appropriate tree species. Since longleaf pine occupies approximately 5 percent of the area it did in 1900, and since longleaf offers a suite of wildlife benefits greater than most other pines, the District will emphasize planting of longleaf on all sites where longleaf is suited for the site.

Maintenance of the Health and Vigor of the Natural Communities

The health or quality of a forested natural community is maintained by three primary factors: 1) the availability of water, 2) the frequency of fire, and 3) the density and species composition of the overstory.

In few cases do the activities of the District affect the availability of water on District forestlands. One exception is where sites are restored through the plugging of ditches or rehydration of historically wetland systems. Weather is the primary factor influencing the availability of water.

Fire influences the health of forested communities by altering the process of succession. Fire holds natural communities in an intermediate stage of succession that is referred to as a fire climax community. If fire is removed, these natural communities follow the path of succession to become some other community. In Florida, most natural communities historically experienced fire on a frequent basis. In fact, most communities are dependent upon frequent fire for their continued existence. Because of its importance as a management tool, fire is addressed in detail in the District's Fire Management Plan.

The third factor influencing the health and/or quality of forested natural communities is the overstory density and species composition. In a truly natural system, wildfire, climatic disturbances, along with insects and diseases, combined to control the composition of the overstory, which in turn controls the composition of the understory. Wildfire, insects and disease kill trees as individuals or groups, which reduces the density of the overstory and alters the species composition. These events or outbreaks would often impact large areas, especially areas where the stand density was high, weakening the overstory trees and increasing their susceptibility to pathogens. Prior to human intervention, there were huge expanses of natural land that could easily absorb large-scale alterations of the overstory so that no plant or animal species could be extirpated. Today, Florida is fast approaching a condition where natural areas are becoming islands. Plants and animals have fewer areas to populate, and it is more difficult to transfer their genetic material between isolated areas of ideal habitat. Therefore, we can no longer rely entirely on large-scale disturbances to control overstory density and species composition. By managing the overstory with selective harvesting, the density and species composition can be controlled to maintain a healthy natural community while minimizing the potential for large-scale impacts.

As land managers, the District also has an obligation to protect neighboring landowners from any large-scale wildfire, insect or disease outbreaks that may originate on District land and spread to adjacent lands. This obligation prohibits the District from employing a truly natural management system to control overstory species, density, and composition and requires the District to utilize a more interactive management program.

Generation of Revenues

Section 253.036, Florida Statutes directed public land managers to manage forest resources for an economic return. The District generates revenue when implementing sound overstory management practices to maintain the health of the natural community. These practices include but are not limited to thinning operations, removal of undesired species (clearcuts), and salvage cuts to remove trees damaged from wildfires, insect infestations and/or disease outbreaks. The revenue generated from these operations can be used to fund restoration and other land management activities.

FOREST RESOURCES INVENTORY

Following Section 253.036, Florida Statutes and seeking to keep its land management efficient, the District has sought management partners. The following chart illustrates the lead manager status of District-owned lands (Figure 1).

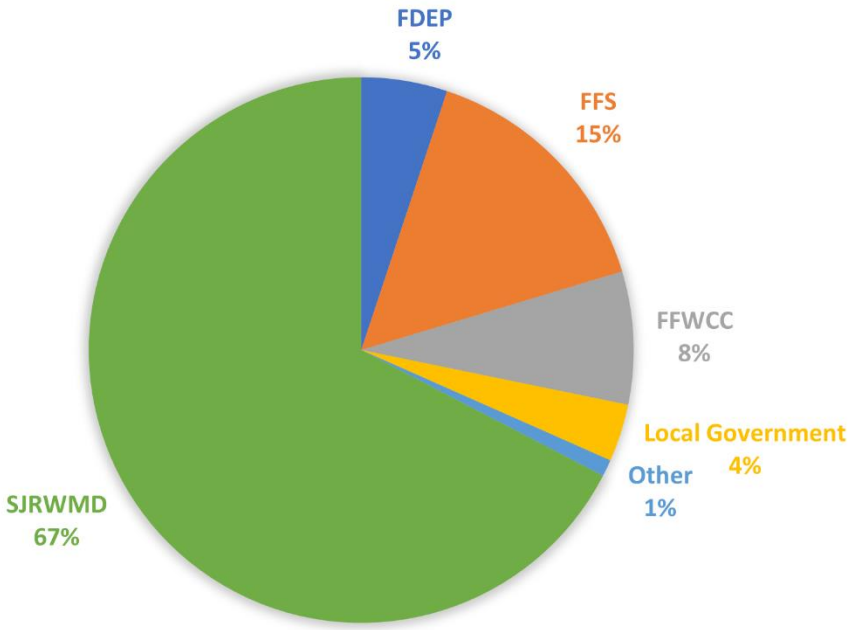

Figure 1: District Owned Land by Lead Manager. Updated January 2020

The District's Land Management Rule, agreements and philosophy call for the lead manager's rules and policies to direct the management of the affected lands, therefore this plan will be focused on the lands where the District is identified as the lead manager. The District serves as the lead manager on 430,000 acres. These acres managed by the District are broken down as follows (Figure 2).

Twenty-seven percent of the District Managed Lands are forested, with 12 percent being forested uplands and 15 percent forested wetlands.

OBJECTIVES OF FOREST MANAGEMENT

The District's forest management objectives are to:

- Maintain the health and diversity of forested communities on District lands.
- Provide for older aged forest conditions. As public landowners we have the opportunity to provide habitat for species requiring older age classed trees.
- Provide for an array of forest stand structures and age classes. Each species of plant and animal has an age-class of forest stand that is most desirable. By providing the array of structures and age-classes, the District can provide habitat for a wide variety of species.

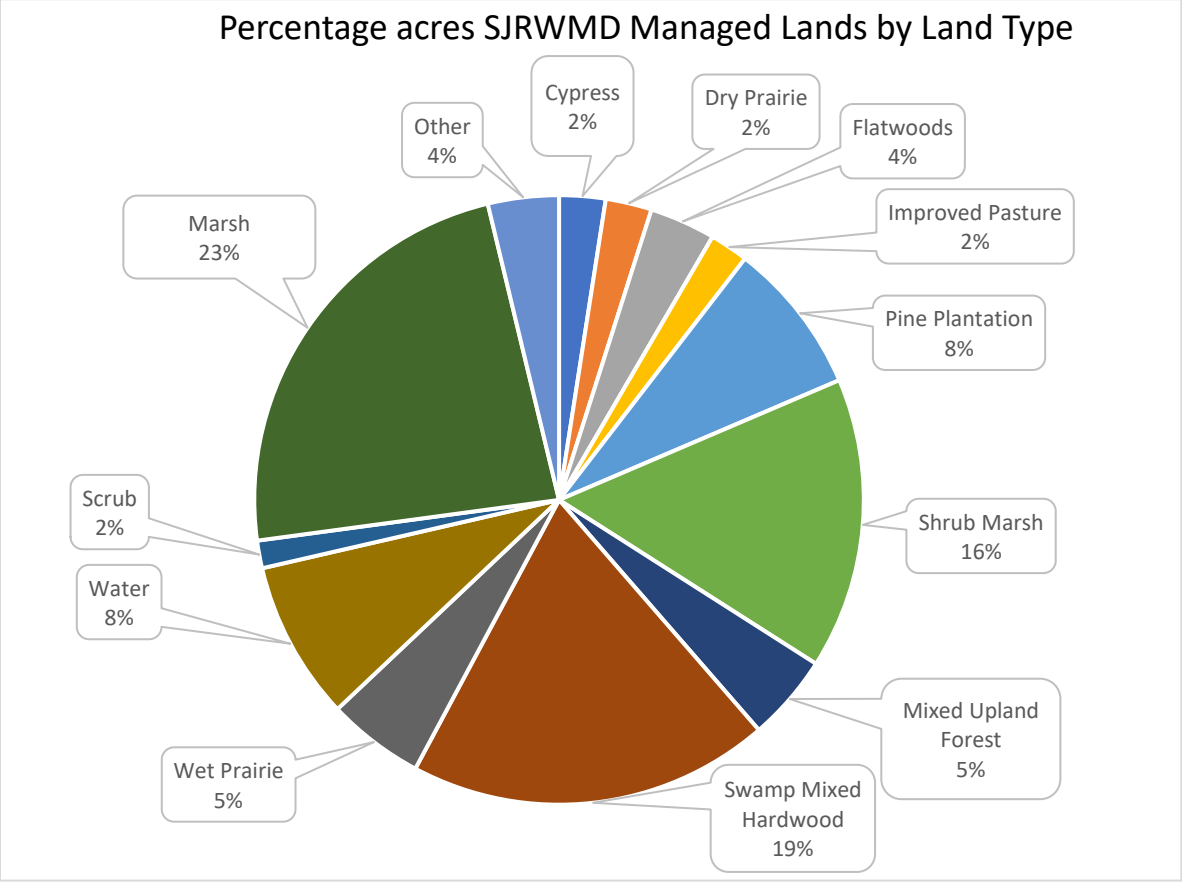

Figure 2: Percentage acres SJRWMD Managed Lands by Land Type. Updated January 2020

Techniques of Forest Management

Inventory

The District is currently developing a timber management database that will directly link timber volume information with the GIS lands database. The database will incorporate inventory data collected at acquisition and track changes overtime. Changes resulting from harvests, wildfires, insect infestations, disease outbreaks and reforestation efforts can be updated quickly and easily. Periodic updates of volume and growth information will be scheduled and incorporated into the database. The database links will aid in determining natural community needs along with geographic distribution and appropriate management techniques to implement. The database will be an intricate part in managing community health and in developing future land management workplans.

Harvesting

To accomplish its goals the District will employ a suite of harvesting systems.

Clearcutting is a silvicultural operation used to remove the entire overstory at one time. This tool will be used with limited application dependent upon the specific management needs. Those needs may include:

1. Insect or disease control. Forest pests occur naturally at low population densities and are a vital part of the forested community. When population densities reach epidemic levels, control measures to remove the host and adjacent trees must be implemented to protect the remainder of the stand.
2. Salvage. If the overstory has been killed or severely damaged, removing (salvaging) the overstory will recover some financial value of the timber and will allow the District access necessary to replant the site.
3. Species conversion. If offsite species exist, clearcutting enables the District to replace the offsite species with one that is appropriate.

Thinning is a silvicultural operation where selected individual trees are removed from the stand to reduce the density of overstory trees to improve growing conditions for the remaining overstory trees and the understory plants. This method is not applied with a goal of establishing regeneration.

The seed tree system is a silvicultural operation where the entire overstory except 10-15 prime trees per acre are harvested at one time. These 10-15 trees serve as the seed source for the next generation. This technique is seldom used by the District. While the seed tree system is effective, it creates major change in the stand condition both visually to the public and biologically to the plants and animals in the stand.

Shelterwood is a silvicultural operation in which the overstory is removed in phases. When it is time to regenerate the stand, approximately 60-70 percent of the stand is removed either in one or two harvests. Again, the older trees serve as the seed source for the next generation. Once the younger trees are established the original overstory trees can be removed or they can remain on site and be subject to thinning at the same time as the younger generation. The major benefit of

this system is it results in a more gradual change from the mature trees to the next generation both visually to the public and biologically to the plants and animals.

A new modification of the shelterwood called an irregular shelterwood has recently been developed and may become the primary silvicultural system employed by the District. An irregular shelterwood begins the same as shelterwood but portions of the original overstory remain on site. When the second-generation trees are thinned, a few of the first-generation trees are also thinned. When it is time for the third generation to be established both the first- and second-generation trees are reduced to 30-40 square feet of basal area to make room for the third-generation trees. Once the third-generation trees are established the site has few first-generation trees, some second-generation trees and many third-generation trees. This provides for a variety of age classes in a single stand but is much easier to apply and should require much less staff time than uneven-aged selection management.

Uneven-aged selection is a silvicultural operation in which trees, either as individuals or in small half-acre groups are harvested from throughout the stand every five to 10 years. The holes left by the removal of these trees are filled with seedlings from adjacent trees thereby creating a patchwork stand composed of trees of all ages. While this system offers the greatest distribution of age within a stand, truly an uneven aged condition which some scientists feel is best for wildlife, it also requires significant staff inputs and to date appears too labor intensive to employ on a large scale.

Site Preparation

When it is necessary to establish regeneration, either naturally or artificially, the District may employ one or more of the site preparation techniques described below.

Herbicide will be used when staff has determined that it is the most effective means to control the competing vegetation. Herbicides will not be used if it adversely effects the desirable understory species within the planting site. The use of herbicide is necessary when attempting to restore native trees and groundcover to areas of improved pasture. Herbicide can be applied with hand sprayers, tank sprayers, or aerially from a helicopter, depending upon the species to be treated and site conditions.

Disking/Scalping techniques are most useful when trees are being planted in areas of improved pasture. Both techniques protect the seedlings from grass competition but offer no benefit to groundcover restoration.

Drum Chopping is effective at reducing competition from shrub species, especially saw palmetto. If properly applied grasses within the treatment area will survive chopping and will often benefit from the choppers effect on the shrubs.

Bedding is a technique where a small ridge of surface soil is formed to provide an elevated planting or seedbed. It is used primarily in wet areas to improve soil drainage and aeration for seedlings. This type of site preparation technique has not been utilized by the District because of the adverse effects it has on groundcover and sheetflow. Therefore, the District’s planting costs are often higher than private industry’s because without bedding several plantings are often necessary to establish seedlings on wet sites.

Regeneration

Emphasis will be placed on natural regeneration to the extent practicable. In cases where species conversion is required or where no overstory exists to provide natural seed fall, planting will be necessary.

Hand planting is primarily method used by the District, because it offers the following benefits:

1. Trees can be placed on the best microsites (i.e., highest ground in wet areas, areas with the least competition).
2. Groundcover disturbance is minimized.
3. Seedlings can be randomly spaced or planted in clusters to provide for a more natural appearance.

Machine planting is used primarily in old field conditions where scalping is employed and rows are suitable.

OVERALL METHODOLOGY

Forested natural communities can be lumped into three different groups with regards to forest management. These include Pine Forests, Upland Hardwoods, and Wetland Hardwood/Cypress. The management of each will differ and be described separately.

Pine Forests

Pine forests include flatwoods, plantations, sandhills and sand pine scrub. With the exception of sand pine scrub pine forests will be managed through thinning. Once the stand is established and trees have reached merchantable size (five inches at diameter breast height) at approximately 15-20 years of age depending on tree species and sites, thinning will begin. Stands will be thinned as necessary to maintain an overstory basal area range of 60 to 90 square feet per acre. This range promotes good growth of understory plants and provides good habitat for most wildlife using forested natural communities. To maintain this basal area range harvests will occur in each stand approximately every 10 years, depending on growth rates of the trees. Great care will be exercised during harvesting operations to minimize disturbance of the soil and groundcover. When properly performed, harvesting actually benefits groundcover regeneration by reducing shrub species and improving growing conditions.

The need for regeneration will be determined by an inventory of the health, vigor, and species composition for the trees in each stand. Once the conditions of the overstory trees indicate the need, a regeneration harvest will be scheduled employing the appropriate silvicultural system described previously. Emphasis will be placed on making the most seamless transition from one generation to the next. The irregular shelterwood will be employed frequently in loblolly, slash and longleaf pine stands.

Emphasis will be placed on having a wide array of age classes between stands and an array of different aged trees within stands. Included in the desired array of ages will be trees and stands significantly older than those typically found on private lands.

To ensure the wide array of age classes is met, the District will separate pine stands into four different types based upon general age and condition. These four types include:

1. Regeneration (age 0-10): The site is occupied primarily by tree seedlings and saplings, herbs and shrubs. Competition from the trees has not yet resulted in any reduction in herb or shrub layer. This type begins at planting and continues until crown closure. Herbs, shrubs and grasses occupy 20%-80% of the ground. This type offers benefits to early successional wildlife species such as quail, rabbits, gopher tortoises, deer, turkeys and their predators.
2. Closed Canopy (age 11-20): Trees fully occupy the site and form a single, main canopy layer. There is little understory development due to the lack of light passing through the canopy. Where understory exists it is dominated frequently by palmetto and/or gallberry. This type benefits fewer wildlife species but does offer bear and deer good escape cover.
3. Understory (age 21-60): The overstory density has been reduced through thinning and the understory is beginning to reinitiate. Adequate light is again available to the forest floor. Groundcover plant species and wildlife both begin to flourish again. Wildlife benefiting from this stand type include deer, turkey, quail, and gopher tortoises.
4. Older Forest Structure (age 60+): This stand type begins to develop a layered overstory. Trees are large, with diameters >12 inches. Snags will begin to appear and should be protected. The understory is diverse and healthy. Wildlife benefiting from this stand are fox squirrels, great horned owl, southeastern kestrel, turkeys, quail, gopher tortoises, red cockaded woodpeckers, eagles, and ospreys (nesting trees).

The District will strive to keep 10-15 percent of its pine forests in type 1; 10-15 percent in type 2; 30-40 percent in type 3; and 40 percent in type 4. The present condition is shown below (Figure 3):

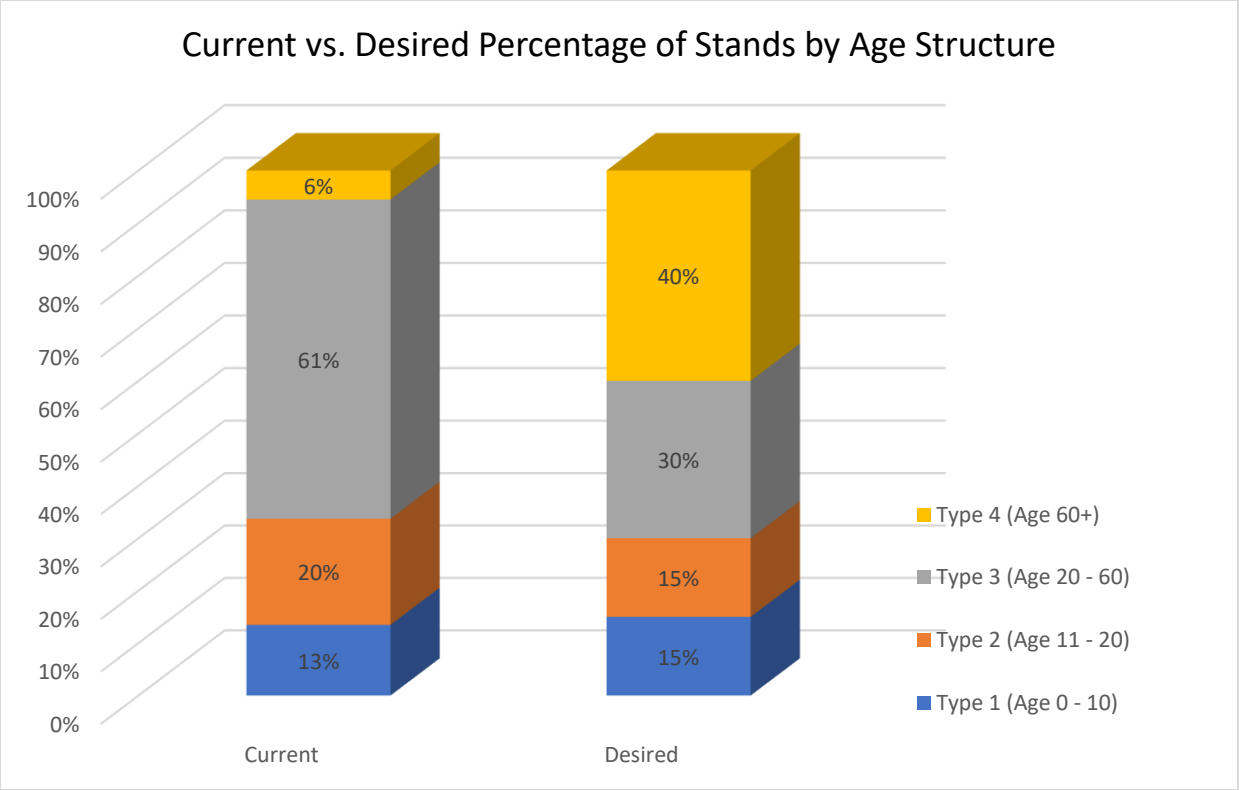

Figure 3: Current vs. Desired Percentage of Stands by Type. Updated January 2020

Sand pine management will differ from other pine types because it is adapted to an even aged environment. Sand pine characteristically grows in dense, even-aged, pure stands, which originated as a direct result of catastrophic fires or similar events. When a killing fire sweeps through a stand of cone-bearing trees, the serotinous cones (which remain tightly closed for many years unless opened by heat) open and release large quantities of seeds to naturally regenerate the area. These catastrophic fires are difficult to mimic with prescribed fire since they are difficult to control. Complete stand removal (clearcutting) is the preferred method available to mimic the natures stand replacing events. The natural cycle for stand replacing events are from 20–60 years. Sand pine stand will therefore be clearcut and regenerated on a similar cycle.

The primary forest management activities of the District will be within these pine stands.

UPLAND HARDWOODS

Currently upland hardwoods constitute 2 percent of District-managed lands. Typically, they are mesic and xeric hammocks with the dominant species being live oak. There is no ecological need for harvesting within these communities and no commercial value to be derived from harvesting live oak.

Limited areas of upland hardwoods have developed on former sand hills and flatwoods due to a lack of fire or other ownership priorities prior to acquisition. These areas can be returned to their original natural community by harvesting the overstory and planting the original specie appropriate to the site. Hardwood species encountered on such site include turkey oak, laurel oak, bays, and sweetgum.

WETLAND HARDWOODS AND CYPRESS

As with State Forests, the District has no plans to harvest timber from the swamps. However, the following may be situations where limited harvesting would offer the District benefits.

Following a catastrophic outbreak of insects, disease or wildfire harvesting the dead timber can create the growing space for the next generation. Most swamp species reproduce from both seed and sprouting. Removing the dead overstory will reduce the hazard from trees falling on people and young trees.

Twenty to 30 years following some catastrophic event the District may choose to selectively thin the hardwoods and cypress to accelerate the process of developing old-growth conditions. In a truly natural setting, the development of old-growth conditions will take 75-100 years since the trees compete with one another until the weaker individuals die. Through thinning, the number of trees can be reduced, and the growth concentrated on the remaining trees so that they become larger faster and old-growth habitat can be created earlier.

The sensitivity required to log wetland systems cannot be overly stressed. Any harvesting performed in wetlands must be carried out under the most stringent conditions to avoid damage to the site. Harvesting can only be done when rutting and damage to residual trees can be minimized. Harvesting must be closely monitored and shut down if conditions deteriorate.

This plan was approved by the Governing Board in February 2000 with charts updated January 2020

APPENDIX E: PALM BLUFF CONSERVATION AREA FIRE MANAGEMENT PLAN

The District Fire Management Plan provides general fire management information relative to policy, procedure, and reporting. This document provides the guidelines for the implementation of prescribed fire activities on the Palm Bluff Conservation Area (PBCA or Property).

Introduction and Objectives

Palm Bluff Conservation Area covers approximately 4,179 acres in Volusia County. The Property includes two parcels and is located in numerous sections of Townships 18 and 19 South and Range 32 East.

The Property is located east of State Road (SR) 415 near the towns of Deltona and Osteen. The Property includes frontage on County Rd. 4164 (Osteen-Maytown Rd.) along the southern boundary.

Historically, fires have played a vital role in the shaping and maintenance of many of the natural communities in Florida. As such, most vegetative communities and associated wildlife are fire adapted and, in many instances, fire dependent. Conversely, the exclusion of fire from an area allows for successional changes within the natural community. Fire exclusion leads to the excessive accumulation of fuel loads, which increases the risk for catastrophic wildfires. The goals for the implementation of fire management activities within the Property include:

- Reduction of fuel loads through the application of dormant season burns to decrease potential risk of damaging wildfires.
- Introduction of growing season burns (April to August) to encourage the perpetuation of native fire adapted ground cover species.
- Mitigation of smoke management issues.
- Restoration and maintenance of a mosaic of natural plant communities and ecological diversity.
- Maintenance and restoration of ecotonal areas.
- Utilize fire surrogates, such as mechanical or chemical treatments, in areas of limited fire history to facilitate future application of prescribed fire.

The achievement of these goals requires that the Property be partitioned into manageable burn units prior, termed fire management units (FMU), to the application of prescribed fire within those units. The following sections summarize the considerations necessary for the safe and effective use of prescribed fire as a land management tool within the Property.

Fire Return Interval

The general frequency to which fire returns to a community type is termed its fire return interval. Some communities require frequent pyric disturbances to perpetuate themselves while others are not fire adapted and subsequently do not require fire to maintain their characteristics. The following discussion of native plant communities occurring on the Property and optimal fire

return intervals was characterized in part using information from the 2010 Florida Natural Areas Inventory's *Guide to the Natural Communities of Florida* (Table 1).

Natural Community Type	FNAI Fire Return Interval
Mesic Flatwoods	2-4 years
Wet Flatwoods	1-3 years in grass dominated systems; 5-7 years in shrubbier systems; 2-4 year average
Scrubby Flatwoods	5-15 years, will be burned in conjunction with the surrounding mesic flatwoods on a 2-4 year interval
Depression Marsh	2-7 years; frequency of fire varies depending on the hydrology of the marsh and its exposure to fire from surrounding areas.
Dome Swamp	3-5 years along the outer edges (or as adjacent communities burn); 100-150 years interior.
Wet Prairie	2-3 years, burned in conjunction with neighboring natural communities
Baygall	Infrequent; may burn with adjacent pyric plant communities.
Floodplain marsh	Periodic; no established return interval
Floodplain swamp	This is not a fire-adapted community.
Hydric hammock	This is not a fire-adapted community.
Mesic Hammock	This is not a fire-adapted community.

The above referenced fire return intervals relate to high quality natural communities. The fire return interval within degraded systems is variable. Prescribed fire will be applied as necessary to achieve restoration and management goals.

Mesic, scrubby and wet flatwoods are the most prevalent fire-adapted natural community types found within the Property. Due to the embedded nature of these three natural communities, they will be burned in conjunction with each other and not broken into individual FMU's by natural communities. The fire return interval goal for these combined flatwoods will be 2-4 years, acknowledging that the burn pattern may be patchy, particularly in the scrubby flatwoods. Several timber stands within these flatwoods are slated for thinning in the near term or have recently received mechanical fuels treatments. These sites where disturbance has recently occurred will be the priority for upcoming prescribed fires. Initially, dormant season prescribed fires should be the focus to reduce the standing fuel loads and minimize temperature stress to the overstory pines, while not ignoring the entirety of the December to September prescribed fire season seen in central Florida.

Fire management within the remaining pyric plant communities (below) will be in conjunction with the associated mesic, scrubby, or wet flatwoods. These plant communities will burn as site conditions permit during the implementation of prescribed fires in adjacent plant communities. Additionally, these areas will not be excluded from fire activities unless warranted by safety or smoke management issues.

Depression marsh is a fire-adapted community. Though fire may not carry entirely through each marsh during every burn, it is an important factor in the maintenance and serves to restrict

encroachment of woody plant species. Natural fire regime coincides with that of the adjacent habitat. Approximately 33 acres of depression marshes are adjacent to the uplands within the Property. In general, depression marsh fires are carried through the herbaceous layer. Many of these marshy areas have been disturbed by past land use, but all still occupy an important niche in providing habitat for numerous species of wildlife. Fire may be applied to these marshes any time the surrounding natural communities are burned.

187 acres of dome swamps are scattered throughout the Property. As site conditions and safety permits, fire will be allowed to burn into the domes to maintain the characteristic open edges of the domes while preventing excessive peat accumulation. Checking the soil moisture within and along the edge of the swamps should be conducted prior to prescribed fire operations to limit the chance of smoldering ignition.

Baygalls are not generally targeted specifically for fire management, and pockets of bay trees will begin to move into adjacent mesic and wet flatwoods natural communities over time with the absence of fire. This natural community is located in the western portion of the Property and fire has been applied to it along with the adjacent flatwoods communities.

20 acres of wet prairie are located on the western portion of the Property within flatwoods communities and often adjacent to dome swamps. Those contained within the large section of mesic flatwoods west of the powerline corridor and the boundary will be burned in conjunction with that FMU. There is another area of wet prairie close to the security residence. This will also be burned in conjunction with the surrounding flatwoods likely after a fuels treatment of the flatwoods.

Seasonality and Type of Fire

Historically, most fires in Florida occurred in what is commonly referred to as the "growing season." The growing season usually spans from April through August. Fires during the growing season generally have significant ecological benefits as most fire-adapted flora is perpetuated by fire. Mimicking lightning ignited natural fires by implementing prescribed fire during the growing season provides benefits to natural systems by controlling shrub layers and encouraging diversity in groundcover species.

Dormant season burns, conducted from late November through mid-March, help to reduce fuel loads in overgrown areas or in areas of newly planted pines. Cooler conditions associated with dormant season burning are a consideration in areas of high fuel loads and where only minimal pine mortality is acceptable. Additionally, dormant season burning may result in fewer safety and smoke management issues due to higher fuel moisture and more consistent winds. District staff will continue to work to maintain fire return frequencies that are consistent with those identified by FNAI for the various communities within the Property.

In many cases, fire management units with similar fire management needs may be burned simultaneously, either with crews igniting the areas by hand from the ground, or with the aid of aircraft. Because PBCA is large and currently has an ample smoke shed, the Property is a candidate for implementing prescribed fire with the use of a helicopter. Aerial ignition allows District staff to ignite fire management units quickly, which results in faster burnout and reduces

smoke management concerns. Additionally, convection produced by igniting an area can help move the smoke up and away more quickly. Aerial ignition also allows staff to introduce fire into areas that may be inaccessible from the ground, ensuring that prescribed fire is introduced into even the most remote areas within the fire management units. Aerial ignition allows staff to burn more acres in a shorter period, which in time will aid District staff in maintaining optimal fire return frequencies. An aerial burn safety plan (Exhibit 1) will accompany the individual burn prescriptions and be onsite and on the ground the day of any aerial burn. In the past, the trailhead parking lot was utilized as a helicopter landing zone for aerial operations.

Wildfire Policy
In the event of a wildfire, if conditions permit, suppression strategies will utilize existing fuel breaks to contain the wildfire. These fuel breaks may include previously burned areas, existing roads, trails, firelines, wetlands and other water bodies. This is only possible with the agreement of local fire rescue, Florida Forest Service, District staff, and when all the following conditions are met:

1) Fuels within the area have been managed.
2) No extreme weather conditions are present or expected.
3) There are no other wildfires that may require action.
4) Sufficient resources are available to manage the fire to containment.
5) The fire and the resulting smoke will not impact neighbors or smoke-sensitive areas.

If any of these conditions are not met, direct suppression action will be taken.

As soon as possible following a fire in which firelines are plowed, a plan for fireline rehabilitation shall be developed and implemented.

Persons discovering arson or wildfires on the Property should report them to the Florida Forest Service, the District, or by dialing 911.

Post Burn Reports
Survey 123 burn reports must be completed after each prescribed burn or wildfire. These reports include detailed information regarding the acreage, fuel models, staff and equipment hours, cooperator hours, contractor hours, as well as a notes section that can include information on weather (forecasted and observed), and fire behavior. The timely completion of these reports is necessary for the compilation of information relative to the entire District burn program. Additionally, these reports provide a documented account of site-specific conditions, which are helpful in the planning of future burns.

Smoke Management
A significant challenge to the implementation of any prescribed burn program is smoke management (Figure 1). Fuel loads across the Property are moderate to high. Accumulated fuels have the potential to produce a tremendous amount of smoke as areas are burned. As the surrounding areas become increasingly urbanized, smoke management concerns will increase in magnitude, as there become fewer acceptable places to maneuver a smoke column from a prescribed fire.

While PBCA currently has an acceptable smoke shed in which to place a smoke column from a prescribed fire, there are smoke sensitive areas that surround the Property and may affect the smoke management of each burn unit. Smoke management is a limiting factor in the application of prescribed fire within the Property. Figure 1 illustrates the smoke management area for PBCA. As development increases in the area, smoke management will become more difficult. Proximity to the City of Deltona as well as increasing daily traffic on SR 415, County rd. 4164 (Osteen-Maytown Rd.) and other area roadways may further impair the District's ability to implement prescribed burns at the appropriate fire return intervals within the Property. Currently, this Property still has an acceptable smokeshed, within the Property and to the east, in which to place a smoke column from a prescribed fire.

Depending on the arrangement and composition of fuels, fire spread will be through grasses and/or needle litter, the shrub layer, or logging slash. Areas within the Property having heavier shrub and mid-story fuel accumulation or logging slash can burn for long periods of time, causing additional smoke management issues.

A fire weather forecast is obtained and evaluated for suitable burning conditions and smoke management objectives. A wind direction is chosen that will transport smoke away from urbanized areas and/or pose the least possible impact on smoke-sensitive areas. When possible, the smoke plume from burns should be directed back through the property. Smoke can then mix and loft into the atmosphere over uninhabited or rural land adequately enough to minimize off-site impacts.

On burn day, the ability of smoke to mix and disperse into the atmosphere should be good. The dispersion index is a value that indicates the atmosphere's ability to "absorb and disperse" smoke. The higher the index value, the more the smoke dissipates. Dispersion indices should be above 30. Dispersions of greater than 75 will not be utilized unless other weather and site conditions mitigate expected fire behavior, such as relative humidity no lower than 50% through out the burn period or recent burn adjacent to the fire management unit. Forecast mixing heights should be above 1,700 feet. Transport winds should be at least 9 mph to effectively minimize residual smoke. Lower transport wind speeds can be utilized if dispersion index and mixing heights are above average. Burns will be conducted with a carefully plotted wind direction to limit and/or eliminate negative impacts from smoke to neighbors and urbanized areas. Land Management Program Managers must be consulted in planning of burns that vary from the aforementioned parameters.

Fire Surrogates

Short- and long-term weather conditions and a fire management unit's proximity to urban areas become increasingly important when implementing a prescribed fire program. Should drought conditions become severe, or if smoke management becomes an insurmountable problem, the District may use fire surrogates, such as mechanical or chemical, as alternatives to prescribed fire. These surrogates can also be used to facilitate the reintroduction of prescribed fire in areas of heavy fuel loading from lack of contemporary fire history

Some of the pyric plant communities within the Property are dominated by pine plantations. An integral component to the implementation of a successful prescribed fire program within the

Property is the harvesting of planted pine. Harvesting of pine trees will provide safer conditions for prescribed fire staff and decrease the potential for fire related mortality to the remaining pines and other desirable vegetation.

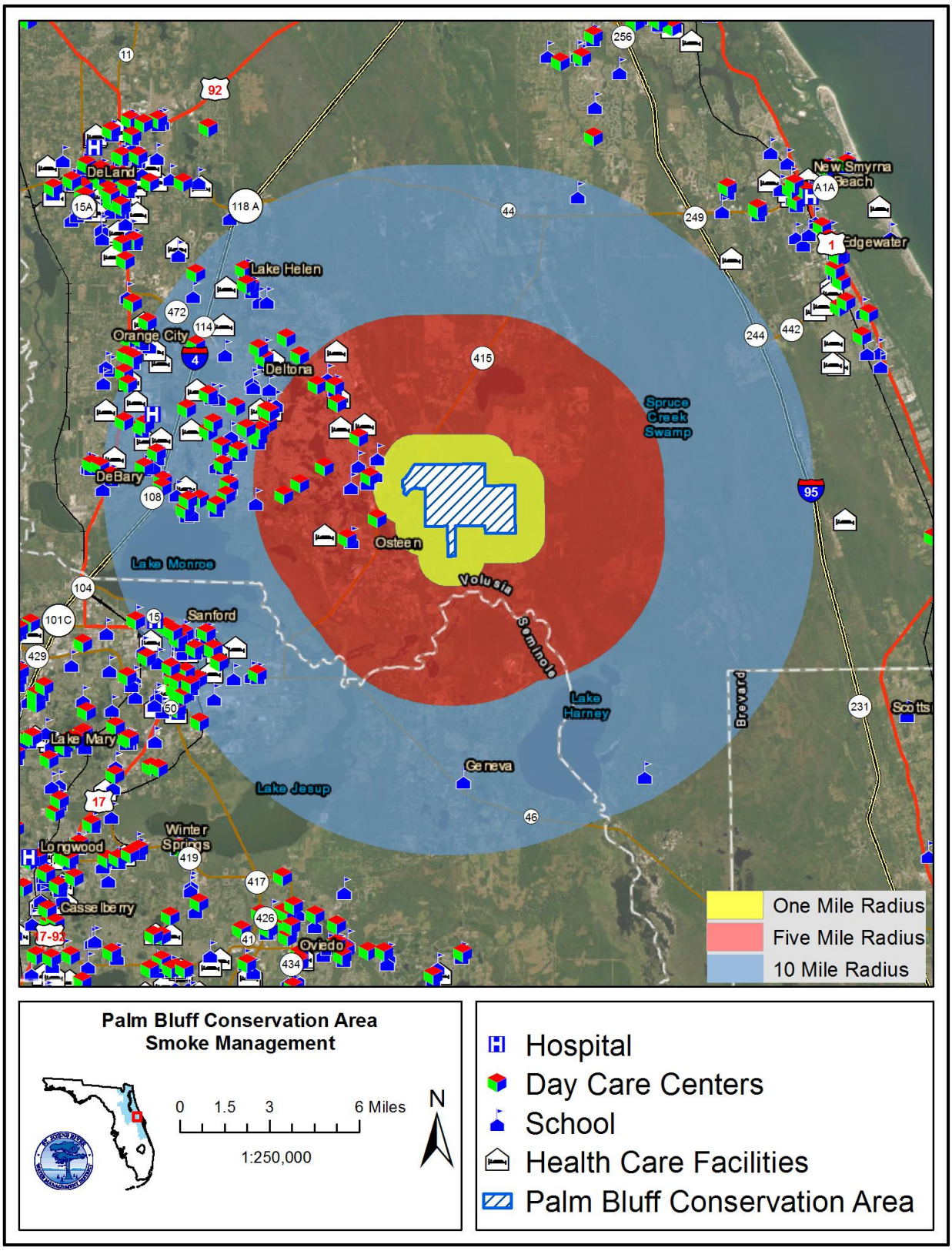

Figure 1: Fire management – smoke sensitive areas.

Hazards
Common hazards include heat stress, venomous snakes, trip hazards or falling trees. Individual prescriptions address the hazards to consider when burning each unit and are discussed during the pre-burn briefing.

Legal Considerations
Only burn managers certified by Florida Forest Service will approve the unit prescriptions and must be on site while the burn is being conducted. Certified burn managers adhering to the requirements of Section 590.125, Florida Statutes, are protected from liability for damage or injury caused by fire or resulting smoke, unless gross negligence is proven.

Fire Management Units
Fire management units (FMU) have been delineated on the Property. Where logical, the District used existing roads and landscape features to delineate fire management units. Occasionally, multiple FMUs with similar fire needs will be burned simultaneously, and roads and natural landscape features provide a break in fuels so that staff may burn smaller areas than initially planned if needed.

Ideally, District staff thoroughly address and describe each fire management unit in terms of its fire management needs. All FMUs are categorized into one of several fuel model (FM) descriptions. The 13 standard fuel models (as described in Hal E. Anderson's *Aids to Determining Fuel Models for Estimating Fire Behavior*) were used as a basis for this categorization. The factors considered in determining each FM are amount, composition and arrangement of available fuels within units, predicted fire behavior within each unit (under conditions acceptable to implement a prescribed burn), and resources necessary to regain management of a fire in extenuating circumstances. District staff anticipates the change of vegetative assemblages over time due to growth and/or restoration and understand that fuel characteristics, models, and resulting fire behavior will also change.

Exhibit 1
Aerial Burn Safety Plan
Palm Bluff Conservation Area

The hazards associated with this type of burning are related to working with the helicopter, the sphere dispenser, and dealing with active fire. All helicopter safety procedures and all District fireline policies and procedures will be followed.

1. **BRIEFING –** During the operational briefing the safety plan will be reviewed with all personnel on the burn.
2. **HELICOPTER SAFETY –** The pilot will give a helicopter safety briefing at the morning operational briefing.
3. **AIDS SAFETY –** The operator will review the operation and cleaning procedures for the dispenser at the morning briefing.
4. **PERSONAL PROTECTIVE EQUIPMENT –** The incident commander will ensure that all personnel have the required Personal Protective Equipment (PPE).
5. **HIGH HAZARD AREAS –** All high hazard areas such as power lines shall be designated on the map and attached to the burn plan.
6. **EMERGENCY LANDING ZONES –** These should be confirmed with the pilot and indicated on the burn map.

Helispot **Latitude 28° 53' 18" N Palm Bluff CA Trailhead parking lot**
Longitude 81° 08' 23" W

Crash Rescue Plan

In the event of an accident involving the helicopter the following procedures will be followed.

INCIDENT COMMANDER or BURN BOSS

1. **Notify 911**
2. Notify Volusia County Fire Rescue (386)-313-4200.
3. Notify Volusia Sheriff's Office (386)-313-4911
4. Assume responsibility of the Rescue Operation.
5. Notify National Transportation Safety Board (NTSB) (305-957-4610 or 404-462-1666).
6. Delegate responsibility of fire control to the second in command or the most qualified.

SECOND IN COMMAND

1. Assume responsibility of the burn.
2. Assist the Incident Commander (IC) or Burn Boss with resource and personnel needs for the rescue operation.
3. If the IC is in the helicopter, second in command will assume rescue operation responsibilities and assign the most qualified to fire control.

Emergency Phone Numbers

AIR RESCUE UNITS

1. Orlando Regional Medical Center
   Air Services **407-843-5783 or 800-895-4615**

BURN UNIT LOCATIONS

1. Orlando Regional Medical Center – Burn Unit **407-237-6398**

FLORIDA FOREST SERVICE

1. Bunnell District Dispatch **386-585-6151**

NTSB

1. Southeast Regional Office **305-957-4610**
2. Southeast Field Office **404-462-1666**

APPENDIX F: PALM BLUFF CONSERVATION AREA SPECIES LIST

Plants

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Acer rubrum	red maple			
Aletris lutea	yellow colicroot			
Amphicarpum muehlenbergianum	blue maidencane			
Andropogon brachystachyus	shortspike bluestem			
Andropogon capillipes	chalky bluestem			
Andropogon cretaceus	purple bluestem			
Andropogon glomeratus	bushy bluestem			
Aristida purpurascens	arrowfeather threeawn			
Aristida spiciformis	bottlebrush threeawn			
Aristida stricta	wiregrass			
Asclepias pedicellata	savannah milkweed			
Asimina reticulata	netted pawpaw			
Asimina rugelii	Rugel's pawpaw	E	E	S1/G1
Aster sp.	aster			
Axonopus fissifolius	carpetgrass			
Axonopus furcatus	big carpetgrass			
Baccharis angustifolia	saltbush			
Bacopa caroliniana	Carolina Hyssop			
Bacopa monnieri	herb-of-grace			
Bejaria racemosa	tarflower			
Bidens laevis	larger bur-marigold			
Bidens mitis	smallfruit beggarticks			
Bigelowia nudata	pineland rayless goldenrod			
Bigelowia nudata australis	Peninsular pineland rayless goldenrod			
Blechnum serrulatum	swamp fern			
Buchnera floridana	Florida bluehearts			
Burmannia capitata	Southern bluethread			
Callicarpa americana	beautyberry			
Campsis radicans	trumpet vine			
Carex glaucescens	clustered sedge			
Carex lupuliformis	false hop sedge			
Carphephorus corymbosus	coastalplain chaffhead			

Carphephorus odoratissimus	vanillaleaf			
Carphephorus paniculatus	hairy chaffhead			
Celtis laevigata	sugarberry			
Centella asiatica	spadeleaf			
Cephalanthus occidentalis	buttonbush			
Chaptalia tomentosa	pineland daisy			
Chasmanthium laxum var. *sessiliflorum*	longleaf woodoats			
Cirsium horridulum	bristle thistle			
Cirsium horridulum	purple thistle			
Cirsium nuttallii	Nuttall's thistle			
Cladium jamaicense	sawgrass			
Commelina gambiae	African dayflower			
Coreopsis gladiata	coastalplain tickseed			
Coreopsis leavenworthii	Leavenworth's tickseed			
Cornus foemina	swamp dogwood			
Crocanthemum corymbosum	pine barren frostweed			
Crotalaria rotundifolia	rabbitbells			
Cynodon dactylon	bermudagrass			
Cyperus haspan	haspan flatsedge			
Dichanthelium patulum	hemlock witchgrass			
Dichanthelium scabriusculum	woolly witchgrass			
Diodia virginiana	buttonweed			
Diospyros virginiana	persimmon			
Drosera brevifolia	dwarf sundew			
Drosera capillaris	pink sundew			
Eichhornia crassipes	water hyacinth			
Eleocharis baldwinii	slender spikerush			
Elephantopus elatus	tall elephant's-foot			
Encyclia tampensis	Florida butterfly orchid	N	CE	S3S4/G4
Epidendrum conopseum	green-fly orchid			
Eragrostis elliottii	elliott's lovegrass			
Erigeron strigosus	daisy fleabane			
Erigeron vernus	early whitetop fleabane			
Eriocaulon decangulare	ten-angled pipewort			
Eryngium aromaticum	fragrant eryngo			
Eupatorium leptophyllum	falsefennel			
Eupatorium mohrii	Mohr's thoroughwort			
Eupatorium rotundifolium	round-leaved boneset			

Euthamia caroliniana	slender goldentop			
Flaveria trinervia	clustered yellowtops			
Fraxinus caroliniana	pop ash			
Fuirena scirpoidea	Southern umbrella-sedge			
Galactia elliottii	Elliott's milkpea			
Galium tinctorium	bedstraw			
Gaylussacia dumosa	dwarf huckleberry			
Gelsemium sempervirens	yellow jessamine			
Geobalanus oblongifolius	gopher apple			
Gordonia lasianthus	loblolly bay			
Gratiola hispida	rough hedgehyssop			
Grona triflora	creeping tick trefoil			
Habenaria floribunda	toothpetal false reinorchid			
Habenaria repens	water-spider bog orchid			
Hibiscus moscheutos	crimsoneyed rosemallow			
Hieracium megacephalon	coastal plain hawkweed			
Houstonia procumbens	roundleaf bluet			
Hydrocotyle verticillata	whorled marshpennywort			
Hypericum cistifolium	roundpod St. John's wort			
Hypericum fasciculatum	peelbark St. John's wort			
Hypericum hypericoides	St. Andrew's cross			
Hypericum myrtifolium	myrtleleaf St. John's wort			
Hypericum tenuifolium	sandhill St. John's wort			
Hypericum tetrapetalum	fourpetal St. Johns wort			
Hypoxis juncea	fringed star grass			
Hyptis alata	cluster bushmint			
Ilex cassine	dahoon holly			
Ilex glabra	gallberry			
Ilex vomitoria	yaupon holly			
Indigofera hirsuta	hairy indigo			
Iris sp.	iris			
Iris virginica	Virginia iris			
Juncus effusus	soft rush			
Juncus repens	lesser creeping rush			
Juncus scirpoides	needlepod rush			
Juniperus silicicola	red cedar			
Juniperus virginiana	Eastern red cedar			
Lachnanthes caroliniana	Carolina redroot			
Lachnocaulon anceps	whitehead bogbutton			
Lemnoideae	duckweed			
Lespedeza repens	creeping bush-clover			

Liatris gracilis	slender blazing-star			
Liquidambar styraciflua	sweetgum			
Lobelia glandulosa	glade lobelia			
Lobelia paludosa	white lobelia			
Ludwigia octovalvis	Mexican primrose-willow			
Ludwigia virgata	Savannah primrose-willow			
Luziola fluitans	Southern watergrass			
Lycopodiella alopecuroides	foxtail clubmoss			
Lygodesmia aphylla	rose rush			
Lyonia ferruginea	rusty staggerbush			
Lyonia fruticosa	coastal plain staggerbush			
Lyonia lucida	fetterbush lyonia			
Magnolia virginiana	sweetbay magnolia			
Mecardonia procumbens	yellow-flowered waterhyssop			
Mikania scandens	climbing hempweed			
Mimosa quadrivalvis	fourvalve mimosa			
Mimosa quadrivalvis var. angustata	sensitive brier			
Momordica balsamina	balsam apple			
Morella cerifera	wax myrtle			
Myrcianthes fragrans	twinberry			
Myrica cerifera	Southern wax myrtle			
Myriophyllum	watermilfoils			
Nekemias arborea	pepper vine			
Nolina atopocarpa	Florida beargrass	N	T	S3/G3
Nuphar advena	spatterdock			
Nuphar lutea	yellow water-lily			
Nyssa biflora	swamp tupelo			
Nyssa sylvatica var. biflora	swamp tupelo			
Opuntia austrina	Florida pricklypear			
Osmunda regalis	royal fern			
Osmundastrum cinnamomeum	cinnamon fern			
Panicum hemitomon	maidencane			
Panicum virgatum	switchgrass			
Parthenocissus quinquefolia	Virginia creeper			
Penstemon multiflorus	manyflower beardtongue			
Persea palustris	swamp bay			
Persicaria punctatum	smartweed			
Phyla nodiflora	turkey tangle frogfruit			

Phytolacca americana	pokeberry			
Pinguicula pumila	small butterwort			
Pinus clausa	sand pine			
Pinus elliottii	slash pine			
Pinus palustris	longleaf pine			
Pistia stratiotes	water lettuce			
Pityopsis graminifolia	narrowleaf silkgrass			
Phlebodium aureum	cabbage palm fern / golden polypody			
Pleopeltis michauxiana	resurrection fern			
Platanthera nivea	snowy orchid		T	S3S4/G5
Pluchea baccharis	rosy camphorweed			
Pluchea camphorata	camporweed			
Pluchea foetida	stinking camphorweed			
Pluchea odorata	sweetscent			
Polygala lutea	orange milkwort			
Polygala nana	candyroot			
Polygala rugelii	yellow milkwort			
Polygala setacea	coastalplain milkwort			
Polypremum procumbens	rust weed			
Pontederia cordata	pickerelweed			
Portulaca pilosa	pink purselane			
Proserpinaca pectinata	combleaf mermaidweed			
Pteridium aquilinum	common bracken			
Pterocaulon pycnostachyum	dense-spike blackroot			
Pyrrhopappus carolinianus	Carolina desert-chicory			
Quercus chapmanii	Chapman's oak			
Quercus geminata	sand live oak			
Quercus hemisphaerica	laurel oak			
Quercus laurifolia	swamp laurel oak			
Quercus minima	dwarf live oak			
Quercus myrtifolia	myrtle oak			
Quercus nigra	water oak			
Quercus virginiana	live oak			
Quercus pumila	runner oak			
Rhexia alifanus	Savannah meadowbeauty			
Rhexia mariana	Maryland meadow beauty			
Rhexia nuttallii	Nuttall's meadowbeauty			
Rhus copallinum	winged sumac			
Rhynchospora inundata	narrowfruit horned beaksedge			

Rhynchospora latifolia	giant whitetop			
Rhynchospora microcarpa	southern beakrush			
Rhynchospora plumosa	wiry beaksedge			
Rhynchospora sp.	beakrush			
Rubus cuneifolius	sand blackberry			
Rubus pensilvanicus	sawtooth blackberry			
Rubus trivialis	Southern dewberry			
Sabal palmetto	cabbage palm			
Sabatia brevifolia	shortleaf rose gentian			
Sabatia grandiflora	largeflower rose gentian			
Saccharum giganteum	sugarcane plumegrass			
Sagittaria graminea	grassy arrowhead			
Sagittaria latifolia	duck potato			
Sagittaria sp.	arrowhead			
Sambucus	elderberry			
Sarracenia minor	hooded pitcher plant		T	S4/G4T4
Saururus cernuus	lizard's tail			
Schoenolirion albiflorum	white sunnybell			
Schoenoplectus tabernaemontani	soft-stem bulrush			
Scleria sp.	nutrush			
Scutellaria integrifolia	helmet skullcap			
Senna obtusifolia	sicklepod			
Serenoa repens	saw palmetto			
Sesbania vesicaria	bladderpod			
Setaria parviflora	knotroot foxtail			
Sideroxylon reclinatum	Florida bully			
Smilax auriculata	earleaf greenbrier			
Smilax Bona-nox	sawbriar			
Smilax laurifolia	laurel-leaf greenbrier			
Smilax tamnoides	bristly greenbrier			
Smilax walteri	coral greenbrier			
Solidago fistulosa	pine-barren goldenrod			
Sorghastrum secundum	lopsided indiangrass			
Spartina bakeri	sand cordgrass			
Spermacoce verticillata	shrubby false buttonweed			
Sphagneticola trilobata	trailing daisy			
Sphagnum molle	blushing peat moss			
Sphagnum strictum	pale bog-moss			
Sporobolus indicus	smutgrass			
Stillingia sylvatica	queen's delight			

Syagrus romanzoffiana	queen palm			
Syngonanthus flavidulus	yellow hatpins			
Taxodium ascendens	pond cypress			
Taxodium distichum	bald cypress			
Telmatoblechnum serrulatum	toothed midsorus fern			
Tephrosia spicata	spiked hoary-pea			
Tillandsia bartramii	Bartram's air-plant			
Tillandsia fasciculata	common wild pine	N	E	S3/G5
Tillandsia setacea	southern needleleaf			
Tillandsia simulata	Florida air-plant			
Tillandsia sp.	air plant			
Tillandsia usneoides	spanish moss			
Tillandsia utriculata	spreading airplant	N	E	S3/G5
Torenia crustacea	brittle false pimpernel			
Toxicodenron radicans	poison ivy			
Typha latifolia	cattail			
Ulmus americana	American elm			
Utricularia inflata	floating bladderwort			
Utricularia subulata	zigzag bladderwort			
Vaccinium myrsinites	shiny blueberry			
Vaccinium stamineum	deerberry			
Vigna luteola	wild cowpea			
Vitis aestivalis	summer grape			
Vitis sp.	grapevine			
Vittaria lineata	shoestring fern			
Wolffia brasiliensis	Brazilian watermeal			
Woodwardia areolata	netted chain fern			
Woodwardia virginica	chain fern			
Ximenia americana	hog plum			
Xyris brevifolia	shortleaf yellow-eyed grass			
Xyris caroliniana	yellow-eyed grass			
Xyris elliottii	Elliott's yellow-eyed grass			
Xyris jupicai	Richard's yellow-eyed grass			
Yucca filamentosa	common yucca			
Zeuxine strateumatica	centipede grass orchid			

Invasive Plants

Includes both Florida Invasive Species Council (FISC) Category I (natural community altering) and Category II (significant population expansion but not yet natural community altering) plants.

Scientific Name	Common Name
Abutilon theophrasti	velvetleaf; butterprint
Alocasia odora	taro
Amaranthus hybridus	slim amaranth; pigweed
Ardisia crenata	scratchthroat
Boehmeria nivea	ramie
Brassica juncea	india mustard; leaf mustard
Chenopodium album	lamb's-quarters
Cinnamomum camphora	camphortree
Commelina communis	asiatic dayflower
Commelina diffusa	common dayflower
Echinochloa crusgalli	barnyardgrass
Fumaria officinalis	drug fumitory; earthsmoke
Imperata cylindrica	cogongrass
Indigofera hirsuta	hairy indigo
Lantana camara	lantana; shrubverbena
Ludwigia peruviana	Peruvian primrosewillow
Lygodium japonicum	Japanese climbing fern
Lygodium microphyllum	old world climbing fern
Panicum repens	torpedo grass
Paspalum notatum	bahiagrass
Psidium cattleianum	strawberry guava
Pteris vittata	Chinese brake fern
Ricinus communis	castorbean
Rumex pulcher	fiddle dock
Sapium sebiferum	popcorntree; chinese tallowtree
Solanum viarum	tropical soda apple
Sorghum halepense	johnsongrass
Triadica sebifera	Chinese tallow
Urena lobata	caesarweed

Birds

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Accipiter cooperii	Cooper's Hawk			
Accipiter striatus	Sharp-shinned Hawk			
Agelaius phoeniceus	Red-winged Blackbird			
Aix sponsa	Wood Duck			
Ammodramus savannarum	Grasshopper Sparrow			
Anhinga anhinga	Anhinga			

Anthus rubescens	American Pipit			
Antigone canadensis pratensis	Sandhill Crane			
Antrostomus carolinensis	Chuck-will's-widow			
Antrostomus vociferus	Eastern Whip-poor-will			
Archilochus colubris	Ruby-throated Hummingbird			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Baeolophus bicolor	Tufted Titmouse			
Bombycilla cedrorum	Cedar Waxwing			
Bubo virginianus	Great Horned Owl			
Bubulcus ibis	Cattle Egret			
Buteo brachyurus	Short-tailed Hawk	N	N	S1/G4G5
Buteo jamaicensis	Red-tailed Hawk			
Buteo lineatus	Red-shouldered Hawk			
Butorides virescens	Green Heron			
Cairina moschata	Muscovy Duck			
Cardinalis cardinalis	Northern Cardinal			
Cathartes aura	Turkey Vulture			
Catharus guttatus	Hermit Thrush			
Chaetura pelagica	Chimney Swift			
Charadrius vociferus	Killdeer			
Chordeiles minor	Common Nighthawk			
Circus hudsonius	Northern Harrier			
Cistothorus stellaris	Sedge Wren			
Coccyzus americanus	Yellow-billed Cuckoo			
Colaptes auratus	Northern Flicker			
Colinus virginianus	Northern Bobwhite			
Columbina passerina	Common Ground Dove			
Contopus virens	Eastern Wood-Pewee			
Coragyps atratus	Black Vulture			
Corthylio calendula	Ruby-crowned Kinglet			
Corvus brachyrhynchos	American Crow			
Corvus ossifragus	Fish Crow			
Cyanocitta cristata	Blue Jay			
Dendroica palmarum	Palm Warbler			
Dryobates pubescens	Downy Woodpecker			
Dryobates villosus	Hairy Woodpecker	N	N	S3/G5
Dryocopus pileatus	Pileated Woodpecker			
Dumetella carolinensis	Gray Catbird			
Egretta caerulea	Little Blue Heron	N	ST	S4/G5

Egretta thula	Snowy Egret	N	N	S3/G5
Egretta tricolor	Tricolored Heron	N	ST	S4/G5
Elanoides forficatus	Swallow-tailed Kite	N	N	S2/G5
Eudocimus albus	White Ibis	N	N	S4/G5
Falco columbarius	Merlin	N	N	S2/G5
Falco sparverius	American Kestrel			
Gallinago delicata	Wilson's Snipe			
Gallinula galeata	Common Gallinule			
Geothlypis trichas	Common Yellowthroat			
Grus canadensis pratensis	Florida Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	N	N	S3/G5
Hirundo rustica	Barn Swallow			
Lanius ludovicianus	Loggerhead Shrike			
Larus delawarensis	Ring-billed Gull			
Leiothlypis celata	Orange-crowned Warbler			
Leucophaeus atricilla	Laughing Gull			
Megaceryle alcyon	Belted Kingfisher			
Megascops asio	Eastern Screech-Owl			
Melaeagris gallopavo osceola	Osceola Turkey			
Melanerpes carolinus	Red-bellied Woodpecker			
Melanerpes erythrocephalus	Red-headed Woodpecker			
Meleagris gallopavo	Wild Turkey			
Melospiza georgiana	Swamp Sparrow			
Mimus polyglottos	Northern Mockingbird			
Mniotilta varia	Black-and-white Warbler			
Mycteria americana	Wood Stork	T	FT	S2/G4
Myiarchus crinitus	Great Crested Flycatcher			
Nannopterum auritum	Double-crested Cormorant			
Numida meleagris	Helmeted Guineafowl			
Pandion haliaetus	Osprey	N	N	S3S4/G5
Parkesia motacilla	Louisiana Waterthrush	N	N	S2/G5
Parkesia noveboracensis	Northern Waterthrush			
Passerculus sandwichensis	Savannah Sparrow			
Passerina caerulea	Blue Grosbeak			
Passerina cyanea	Indigo Bunting			
Peucaea aestivalis	Bachman's Sparrow	N	N	S3/G3
Picoides pubescens	Downy Woodpecker			
Pipilo erythrophthalmus	Eastern Towhee			
Piranga rubra	Summer Tanager			

Plegadis falcinellus	Glossy Ibis	N	N	S3/G5
Poecile carolinensis	Carolina Chickadee			
Polioptila caerulea	Blue-gray Gnatcatcher			
Progne subis	Purple Martin			
Quiscalus major	Boat-tailed Grackle			
Quiscalus quiscula	Common Grackle			
Regulus calendula	Ruby-crowned Kinglet			
Regulus satrapa	Golden-crowned Kinglet			
Sayornis phoebe	Eastern Phoebe			
Scolopax minor	American Woodcock			
Setophaga americana	Northern Parula			
Setophaga caerulescens	Black-throated Blue Warbler			
Setophaga castanea	Bay-breasted Warbler			
Setophaga coronata	Yellow-rumped Warbler			
Setophaga discolor	Prairie Warbler			
Setophaga dominica	Yellow-throated Warbler			
Setophaga fusca	Blackburnian Warbler			
Setophaga magnolia	Magnolia Warbler			
Setophaga palmarum	Palm Warbler			
Setophaga petechia	Yellow Warbler			
Setophaga pinus	Pine Warbler			
Setophaga ruticilla	American Redstart	N	N	S2/G5
Sialia sialis	Eastern Bluebird			
Sitta pusilla	Brown-headed Nuthatch			
Sphyrapicus varius	Yellow-bellied Sapsucker			
Spinus tristis	American Goldfinch			
Spizella passerina	Chipping Sparrow			
Streptopelia decaocto	Eurasian Collared-dove			
Strix varia	Barred Owl			
Sturnella magna	Eastern Meadowlark			
Sturnus vulgaris	Common Starling			
Tachycineta bicolor	Tree Swallow			
Thryothorus ludovicianus	Carolina Wren			
Toxostoma rufum	Brown Thrasher			
Tringa melanoleuca	Greater Yellowlegs			
Troglodytes aedon	House Wren			
Turdus migratorius	American Robin			
Tyrannus tyrannus	Eastern Kingbird			
Vireo flavifrons	Yellow-throated Vireo			
Vireo griseus	White-eyed Vireo			
Vireo olivaceus	Red-eyed Vireo			

Vireo solitarius	Blue-headed Vireo			
Zenaida macroura	Mourning Dove			

Reptiles

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Agkistrodon conanti	Florida cottonmouth			
Alligator mississippiensis	American alligator	SAT	FT(S/A)	S4/G5
Anolis carolinensis	Green anole			
Anolis sagrei	Brown anole			
Apalone ferox	Florida softshell turtle			
Aspidoscelis sexlineatus	Six-lined racerunner			
Chelydra serpentina	Common snapping turtle			
Coluber constrictor	Black racer			
Crotalus adamanteus	Eastern diamondback rattlesnake	UR	N	S3/G3
Deirochelys reticularia	Chicken turtle			
Kinosternon baurii	Three striped mud turtle			
Pantherophis guttata	Corn snake			
Pantherophis alleghaniensis	Eastern rat snake			
Gopherus polyphemus	Gopher tortoise	N	ST	S3/G3
Micrurus fulvius	Harlequin coral snake			
Nerodia fasciata pictiventris	Florida watersnake			
Ophisaurus ventralis	Eastern glass lizard			
Pantherophis alleghaniensis	Eastern ratsnake			
Pseduemys nelsoni	Florida redbelly turtle			
Pseduemys peninsularis	Peninsula cooter			
Sistrurus miliarius barbouri	Dusky pygmy rattlesnake			
Terrapene carolina bauri	Florida box turtle			
Thamnophis sirtalis sirtalis	Eastern garter snake			

Amphibians

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Acris gryllus	Southern cricket frog			

Anaxyrus quercicus	Oak toad			
Anaxyrus terrestris	Southern toad			
Eleutherodactylus planirostris	Greenhouse frog			
Hyla cinerea	Green Treefrog			
Hyla crucifer	Spring peeper			
Hyla femoralis	Pinewoods Treefrog			
Hyla gratiosa	Barking Treefrog			
Hyla squirella	Squirrel Treefrog			
Lithobates capito	Gopher frog	UR	N	S3/G2G3
Lithobates sphenocephalus	Southern leopard frog			
Pseudacris ocularis	Little grass frog			
Rana catesbeiana	Bullfrog			
Rana grylio	Pig frog			

Fish

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Alosa aestivalis	blueback herring			
Alosa mediocris	hickory shad			
Ameiurus brunneus	snail bullhead			
Ameiurus nebulosus	brown bullhead			
Amia calva	bowfin			
Elassoma zonatum	Everglades pygmy sunfish			
Erimyzon sucetta	lake chubsucker			
Fundulus chrysotus	golden topminnow			
Gambusia affinis	mosquitofish			
Heterandria formosa	least killifish			
Lepomis gulosus	warmouth			
Lepomis macrochirus	bluegill			
Lepomis microlophus	redear sunfish			
Lepomis punctatus	spotted sunfish			
Micropterus salmoides	largemouth bass			
Oreochromis aureus	blue tilapia			
Pomoxis nigromaculatus	black crappie			
Umbra pygmaea	eastern mudminnow			

Mammals

Scientific Name	**Common Name**	**Species Status**

		USFWS	FWC	FNAI
Dasypus novemcinctus	Nine-banded armadillo			
Dedelphis virginiana	Opossum			
Lasiurus borealis	Eastern red bat			
Lasiurus intermedius	Northern yellow bat			
Lynx rufus	Bobcat			
Myotis austroriparius	Southeastern myotis			
Nycticeius humeralis	Evening bat			
Odocoileus virginianus	White-tailed deer			
Perimyotis subflavus	Tricolored bat			
Procyon lotor	Racoon			
Sciurus carolinensis	Eastern gray squirrel			
Sciurus niger niger	Southern fox squirrel	N	SSC	S3/G5T5
Sus scrofa	Feral hog			
Sylvilagus floridanus	Eastern cottontail rabbit			
Tadarida brasiliensis	Brazilian free-tailed bat			
Ursus americanus floridanus	Florida black bear	N	N	S4/G5T4

Invertebrates

Scientific Name	**Common Name**	**Species Status**		
		USFWS	**FWC**	**FNAI**
Anartia jatrophae	White peacock			
Calycopis cecrops	Red-banded hairstreak			
Dione vanillae	Gulf fritillary			
Dytiscidae	Predaceous diving beetle			
Enallagma signatum	Orange bluet			
Gyrinidae	Whirligig beetles			
Laphria saffrana	Robber fly			
Leptoglossus phyllopus	Eastern leaf-footed bug			
Liriomyza schmidti	Leaf miner			
Orthemis ferruginea	Roseate skimmer			
Pachydiplax longipennis	Blue dasher			
Plecia nearctica	Common lovebug			
Procambarus alleni	Everglades crayfish			
Romalea microptera	Eastern lubber grasshopper			
Typocerus zebra	Zebra longhorn			

FNAI GLOBAL RANKING

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).

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

FEDERAL LEGAL STATUS
C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
E = Endangered: species in danger of extinction throughout all or a significant portion of its range.
T = Threatened: species likely to become Endangered within the foreseeable future throughout all or
a significant portion of its range.
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
PE = Proposed for listing as Endangered species.
PT = Proposed for listing as Threatened species.
SC = Not currently listed but considered a "species of concern" to USFWS.
N = Not currently listed, nor currently being considered for listing as Endangered or Threatened.

STATE LEGAL STATUS
Animals:
FT(S/A) = Threatened due to similarity of appearance
FEL = L**i**sted as Endangered Species at the Federal level by the USFWS
FT = Listed as Threatened Species at the Federal level by the USFWS
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or

isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
SSC = Listed as a Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.
N = Not currently listed, nor currently being considered for listing.
Plants:
E = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
T = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.