Lee County Board Of County Commissioners
Agenda Item Summary

Blue Sheet No. 20050839

1. ACTION REQUESTED/PURPOSE: Approve the Wild Turkey Strand Preserve (WTSP) Land Stewardship Plan.

2. WHAT ACTION ACCOMPLISHES: Approving of the WTSP Plan establishes guidelines for restoration and public use facilities at WTSP.

3. MANAGEMENT RECOMMENDATION: Approve the plan so Land Stewardship staff can begin implementation.

4. Departmental Category: C/I/C		**5. Meeting Date:** 06-28-2005
6. Agenda:	**7. Requirement/Purpose:** *(specify)*	**8. Request Initiated:**
X **Consent**	___ **Statute** ___	**Commissioner** ___
___ **Administrative**	___ **Ordinance** ___	**Department** Parks & Recreation
___ **Appeals**	___ **Admin. Code** ___	**Division** ___
___ **Public**	X **Other** ___	**By:** John Yarbrough, Director
___ **Walk-On**		

9. Background:

A Land Stewardship Plan is necessary for appropriate and planned restoration, management and public use facility development of any Conservation 20/20 Preserve. The CLASAC (Conservation Lands Acquisition and Stewardship Advisory Committee) unanimously passed a motion on May 12, 2005, accepting the Wild Turkey Strand Preserve Land Stewardship Plan.

The plan was available for public review on the internet, as well as at the Lee County Public Library and the nearby East County Regional Library. A public meeting was held June 6, 2005.

10. Review for Scheduling:

Department Director	Purchasing or Contracts	Human Resources	Other	County Attorney	Budget Services				County Manager/P.W. Director
					Analyst	Risk	Grants	Mgr.	
						6/13/05	6/13/05	6/13/05	

11. Commission Action:

_____ **Approved**
_____ **Deferred**
_____ **Denied**
_____ **Other**

RECEIVED BY COUNTY ADMIN: 9:13 AM
COUNTY ADMIN FORWARDED TO: 10 AM

Rec. by County
Date: 6-10-05
Time: 4:30
Forwarded To: C. Mgr. 6/10/05 4:45pm

Wild Turkey Strand Preserve

Land Stewardship Plan

Prepared by the Land Stewardship Section

Lee County Parks and Recreation

Approved by the Lee County Board of County Commissioners:_____

FCT Project #04-031-FF4

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LIST OF EXHIBITS

Vision Statement

It is the vision of the Lee County Parks and Recreation Department and the Conservation 20/20 Program to conserve, protect and restore Wild Turkey Strand Preserve to a productive, functional and viable ecosystem. The Preserve has the potential to become a tremendous haven for wildlife as restoration takes place and will serve as a critical component of a wildlife corridor stretching from east central Lee County into Collier County's Corkscrew Regional Ecosystem Watershed. The Preserve will also enhance water quality reaching Estero Bay via the interconnected Estero River Watershed and provide valuable scenic and ecological educational opportunities for visitors.

I. Executive Summary

The Wild Turkey Strand Preserve (WTSP) was purchased as two parcels, during 2001 and 2003, through Lee County's Conservation 20/20 Program (C20/20) for a total cost of over $9.3 million. In 1996, the C20/20 Program was established after Lee County voters approved a referendum that increased property taxes by up to .5 millage ($.50/$1000 in property value) for the purpose of purchasing and protecting environmentally sensitive lands. Over $2.5 million of grant funding was provided from Florida Communities Trust (FCT), which is funded by Florida Forever to assist with the purchase of this Preserve.

The purchase and perpetual preservation of this Preserve will provide protection for over 2,600 acres of cypress strand, dome swamps, flatwoods, freshwater marsh, and wet prairie that provide habitat and food for fish, amphibians, reptiles, mammals, and a wide variety of birds. WTSP is located in a Strategic Habitat Conservation Area for the Florida panther and red-cockaded woodpecker.

Southwest Florida has a humid, sub-tropical climate due to its maritime influence from the Caribbean Sea and the Gulf of Mexico. During 2004, three hurricanes passed over or near WTSP and some downed vegetation was noted. Long-term consequences may result from this naturally occurring disturbance such as wildfire severity in habitats with increased fuel loads. Based on the Lehigh Utilities rain gauge, which is less than 4 miles northeast of the Preserve boundary, the average annual rainfall over the last ten years was 66.39 inches.

Wild Turkey Strand Preserve is located in a portion of Florida that was created during the Pleistocene Epoch, between 1.8 million to 10,000 years ago, also known as the Ice Age. Through a series of several sea level fluctuations, the sediments became reworked and formed a series of five geological units. Throughout much of Lee County, including the area where WTSP is located, the Caloosahatchee and Fort Thompson geological units are somewhat indistinct and have been grouped together as Tertiary/Quaternary shell-bearing units, which consist of a quartz sand blanket covering limestone and clay. Elevations range from 30 feet (NGVD) at the north end and slope in a general southerly direction to 22 feet (NGVD) at the south end of the Preserve along Alico Road.

Over 60% of the soil types at WTSP have a wetland classification of either slough (sheet flow) or ponding (standing water). There are 23 soil types within the Preserve and they all have severe limitations for urban uses because of the high water table. Severe means "that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures." Felda Fine Sand, Depressional, covering 26% of the Preserve, is the most prevalent soil type found within cypress-dominated areas.

Of the Florida listed species, WTSP provides habitat for at least eleven (11) animal and eleven (11) plant species. Noteworthy endangered fauna and flora species include wood stork, snail kite, stiff-leafed wild pine, and giant wild pine. Important habitats include a mixture of ephemeral and permanent wetlands, which provide home and food sources for wildlife and plants as well as breeding areas for amphibians. Management practices at the Preserve will include invasive exotic plant and animal control, hydrologic restoration, agricultural field restoration, brush reduction, prescribed fire reintroduction, natural resource testing (water and soil), on-going plant and animal inventorying, trash removal, and installation of signs, fence and gates. All of these practices will all help with the protection of listed species.

WTSP has a long history of wide-ranging uses with lasting environmental impacts. Intense logging of slash pine from the late nineteenth century until the 1930's virtually eliminated all old growth stands of the southern mixed forest in South Florida. Agricultural farming attempts began in the 1940's, but were probably interrupted during WWII because of the military's nearby target practice activities designed for the flexible gunnery training operated from the Buckingham Army Air Field (presently the Lee County Mosquito/Hyacinth Control District). Remnant munitions buildings and concrete objects are still located at the extreme north end of the Preserve, just south of S.R. 82. An archaeological assessment survey will be performed to determine the historical and cultural resource significance.

In the mid 1950's, the Flint Brothers Cattle Company began grazing cattle throughout this property. Although the cattle continue to graze the land, they are contractually restricted to graze on only a 250-acre section of the Preserve. During the mid-1960's, the stumps of the logged slash pines were removed from the Preserve to extract turpentine from the wood. After having cleared the stumps, agricultural farming activities resumed, and expanded into other areas, continuing until operations ceased in 2002, when Lee County acquired the property.

Several easements and recent regional events are either located on or will influence WTSP in the future. In 1972, Florida Power and Light (FPL) started construction of the power line that runs in a northwest-southeast direction bisecting the Preserve. Then again in 1981, FPL began a second power line that bisected the Preserve. The Lee County Utilities Division has several testing wells around the Preserve that are associated with the adjacent Green Meadows Water Treatment Plant. In order to accelerate recovery operations from Hurricane Charley, many tons of mulched vegetation and ash from burned debris was spread over an abandoned row crop field at the southern end of the Preserve, north of Alico Road; the South Florida Water Management District approved this operation. Furthermore, it is quite probable that the future expansion of the Southwest Florida International Airport will affect a portion of the Preserve that is adjacent to a proposed second runway, which will require the

relocation of an existing FPL power line further south, thus impacting additional wetland areas.

The goal of this land stewardship plan is to identify Preserve resources, develop ways to protect those resources and implement restoration activities to restore WTSP to a viable, functioning, natural system while insuring the Preserve will be developed in accordance with Lee County Parks and Recreation's Land Stewardship Operations Manual. Restoration goals will strive to ultimately improve the quality of runoff reaching Estero Bay by restoring native plant communities and the hydroperiod of on-site and adjacent wetland habitats. A Management Action Plan has been established that divides the Preserve into 13 Management Units in order to organize and prioritize all goals for the Preserve. Numerous goals have been adopted that cover exotic plant control, brush reduction, hydrologic restoration, removal of debris, archaeological assessment survey, exotic animal control, termination of the cattle lease, prevention of illegal access, environmental testing, restoration of the improved pasture, implementing a prescribed fire program, and continuation of wildlife monitoring. A timetable and projected costs table are also included to direct restoration activities.

In addition to restoring and protecting the resources for wildlife and native plant communities, appropriate resource based public use will be created that provide enjoyable opportunities for the public and protect the Preserve's biologic integrity. As a Category 2 Intermediate Use Preserve (as described in the Land Stewardship Operations Manual) and the fact that 60% of the Preserve is classified as jurisdictional wetlands, a significant portion of the future trail system will necessitate construction of boardwalk sections to protect the restored natural resources, while allowing appropriate public access. Additional amenities will include an unpaved parking area, kiosk, observation decks, educational displays, picnic tables, bike racks, composting toilets, and wildlife proof trash receptacles.

All future literature and signage about Wild Turkey Strand Preserve will identify both Lee County's Conservation 20/20 Program and Florida Communities Trust as partners in the acquisition and restoration of the property and that it is a conservation area.

II. Introduction

The Wild Turkey Strand Preserve (WTSP) was acquired as two parcels, Site # 200 acquired on January 15, 2003, and Site # 90 acquired on August 8, 2001, both through the Conservation 20/20 Program for a total cost of over $9.3 million. Grant funding was provided by the Florida Communities Trust (FCT) to assist with the purchase of this Preserve. Although the parcels are not contiguous, there is a conservation easement on the land between the north and south portions that allows a continuous greenway corridor between the two parcels. The Preserve totals 2,629 acres and is located in southeastern Lee County, specifically east of I-75 and the Southwest Florida International Airport (SWFIA), south of S.R. 82, west of Green Meadows Road, and north of Alico Road (Figure 1).

Some of the major native plant communities of the Preserve include wet flatwoods, cypress strand swamps, dome swamps, mesic pine flatwoods, hydric pine flatwoods, freshwater marsh, and wet prairie. Nearly 60% of the Preserve is classified as jurisdictional wetlands under South Florida Water Management District (SFWMD) and/or United States Army Corp of Engineers (USACOE) wetland delineation guidelines.

Over 80% of the Preserve consists of plant communities that are disturbed in varying degrees, the major catalyst for this disturbance is several decades of agricultural (crops and livestock) usage on over 25% of the property and two FPL power lines that bissect ecosystems and flow ways. The results of these disturbances, as well as others, have interrupted hydrological flow-way patterns and hydroperiods and allowed the introduction of invasive exotic plants in most areas.

Land stewardship challenges for this Preserve are varied and multifaceted. Several listed species utilize the Preserve to varying degrees, including state and federal endangered species, wood stork (*Mycteria americana*) and snail kite (*Rostrhamus sociabilis*). The quantity and diversity of wildlife species will increase dramatically as restoration occurs. Hydrologic improvements may include filling drainage canals and ditches and retrofitting FPL roadways. Invasive exotic plant removal work will significantly support three restoration goals: habitat improvement, hydrological restoration, and fire management. The wildlife and overall ecosystem will benefit from enhanced, viable and functioning plant communities through invasive exotic plant removal/control, improved wetland hydroperiods, and restoration of an essential fire return interval with prescribed fire management.

Additional management activities will involve exotic animal control, various monitoring protocols, archaeological assessment survey, debris removal, cattle removal, boundary security, environmental testing (monitoring wells, surface water, and soil testing), and provide suitable public access and educational

opportunities. Public facilities will include parking, informational kiosk and a future trail system, which will consist of a series of boardwalks and observation decks to support the protection of the restored natural resources.

III. Location and Site Description

Wild Turkey Strand Preserve is located in east central Lee County, within Sections 11, 14, 23, 26, 27, 28, 33, Township 45, Range 26 and Section 4, Township 46, Range 26. WTSP is just south of Lehigh Acres and east of the Southwest Florida International Airport. WTSP is divided into two separate areas, Site #90 and Site #200 equaling 2629 acres as featured in a 2002 aerial photograph (Figure 2). Because of the proximity to one another (< 1000 feet), the sites were combined to become one Preserve. State Road 82 runs along the most northern boundary for approximately 3,000 feet, making it an appropriate public access point. An FPL power line easement from Green Meadows Road heads west through private property and then through the Preserve. The Green Meadows Water Treatment Plant and associated ground water wells are located at the southern end of Site #200. Alico Road runs along the southern most boundary for about 2000 feet. Single-family homes are scattered to the west along Rod & Gun Club Road. The remaining adjacent lands are mainly farmlands, which, if permitted, have the possibility of being turned into a rock mine.

Figure 1: Location Map

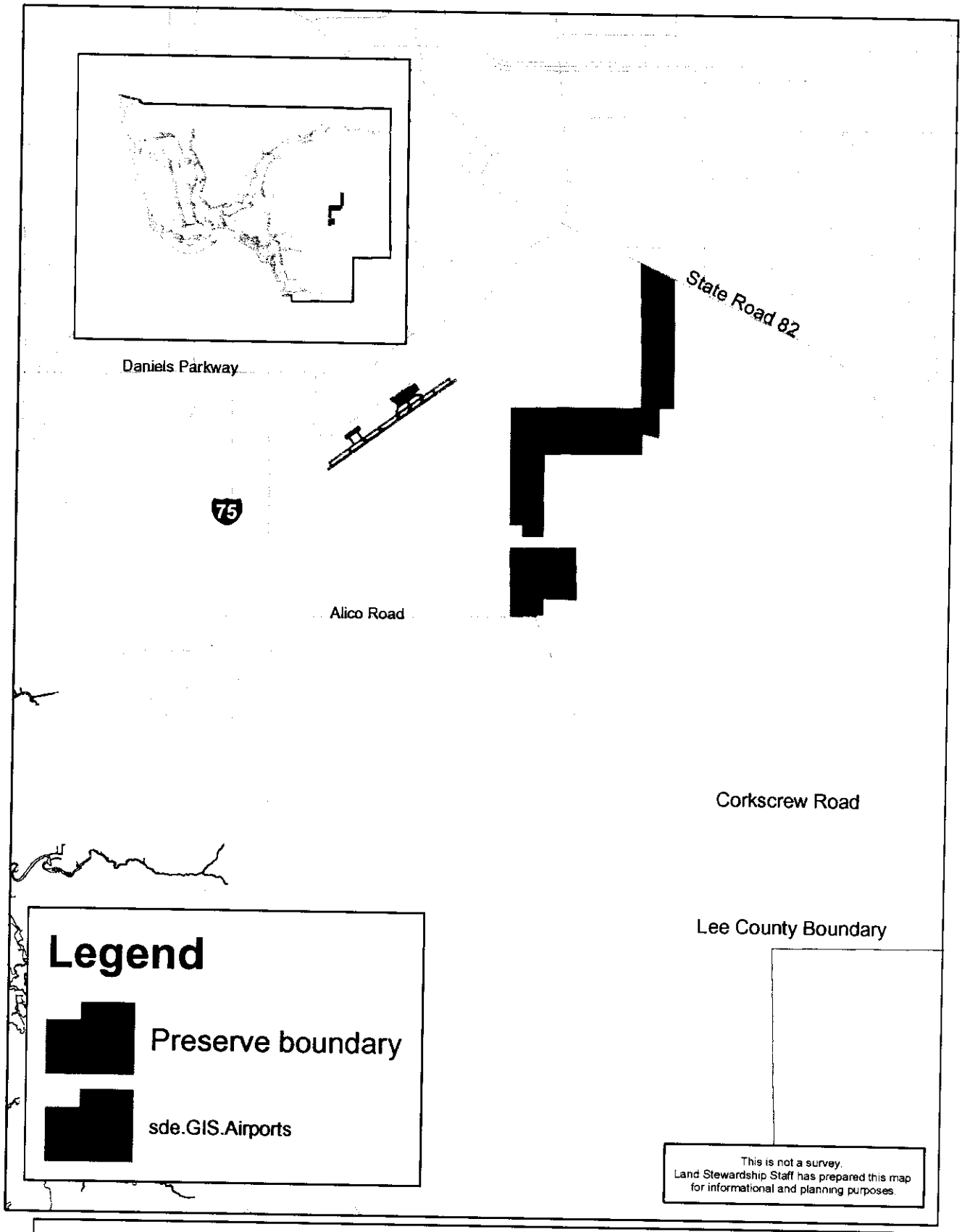
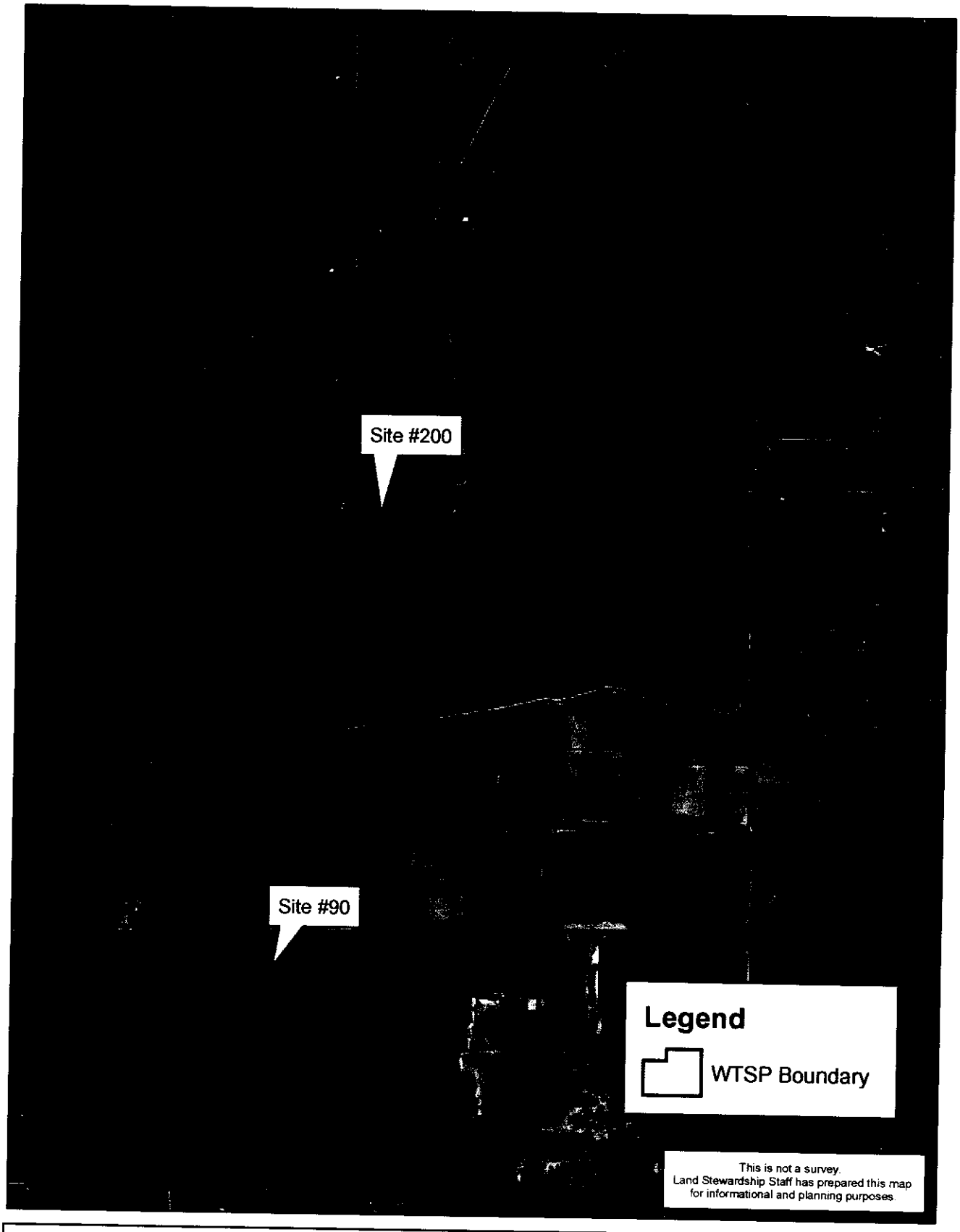


Figure 2: 2002 Aerial Photograph



IV. Natural Resources Description

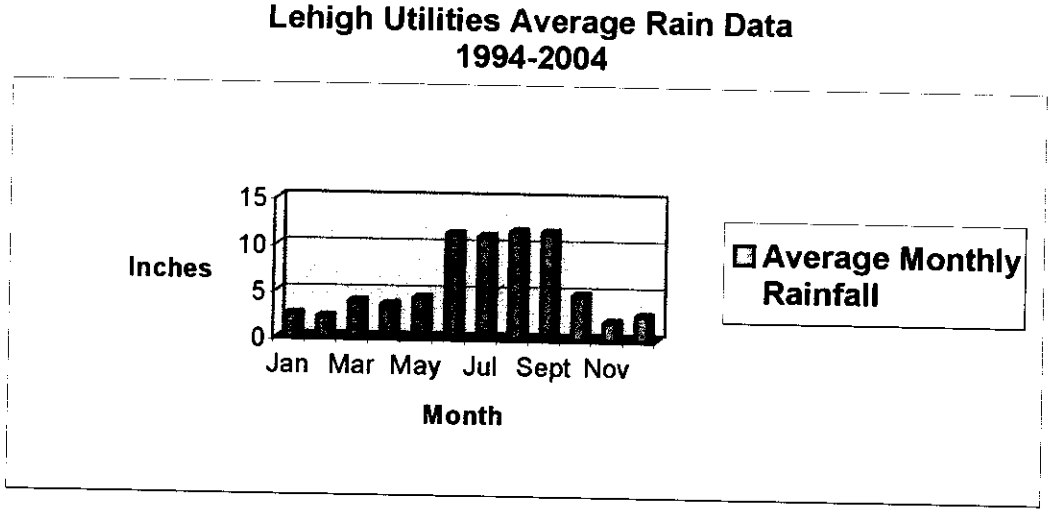
A. Physical Resources

a. Climate

Southwest Florida has a humid, sub-tropical climate due to its maritime influence from the Caribbean Sea and the Gulf of Mexico. The mild temperatures encourage winter residents and tourists to visit the area. Temperate climate influences are exerted as well, with infrequent but significant freezes occurring. These freezes prevent some of the more tropical plants from becoming established and occasionally damage the subtropical vegetation. Cold fronts regularly push cool, sometimes moist weather from the Southeastern U.S. to Southwest Florida during the winter. These cold fronts also encourage migratory birds to utilize the Preserve as either a stop-off point on a longer voyage, or as a winter roosting and feeding area.

Occasionally, major hurricanes pass through Southwest Florida and have a devastating impact on natural ecosystems and man-made infrastructures. Although these affects are believed by many to be short-term, depending on the severity of the storm, long-term consequences may result in plant canopy restructuring, invasive plant introduction and/or further dispersal, and increased wildfire severity to habitats from increased fuel loads (dead vegetation). The affect of hurricanes on natural systems is compounded by the already present human impacts. During 2004, three hurricanes passed over or near WTSP and at least one of these resulting factors is evident in the form of downed vegetation.

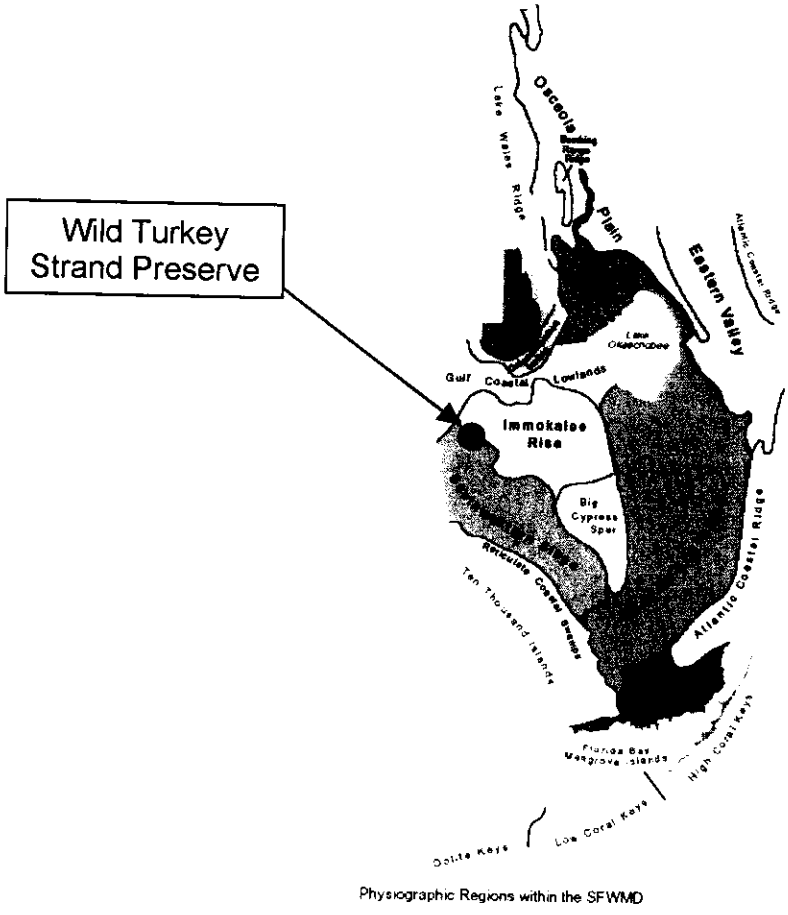
The graph below depicts the rainfall data collected by Lee County Division of Natural Resources on a daily basis from the Lehigh Utilities rain gauge, located near the Lee Road and Coolidge Avenue intersection in Lehigh Acres, which is less than 4 miles northeast of the Preserve boundary. Average annual rainfall over the last ten years was 66.39 inches.



b. Geology

Southwest Florida can be divided into ten major physiographic provinces, as described in the Southwest Florida Ecological Characterization Atlas (1984). The majority of Wild Turkey Strand Preserve lies within the Immokalee Rise, however the southern portion, Site #90, extends into the Southwestern Slope physiographic region (Natural, 2004).

Physiographic Regions



Physiographic Regions within the SFWMD

Map source (State, 2002)

The Immokalee Rise borders the Southwestern Slope to the southwest, the Big Cypress Spur to the south, the Gulf Coastal Lowlands to the north and functions as a border to the Everglades to the east. The Immokalee Rise generally sits around 25 feet in elevation and like the Atlantic Coastal Ridge south of West Palm Beach, is a southerly extension of Pamlico marine sand invading the Distal Zone (the southern part) of the Florida Peninsula from the sand dominated Central Zone to the north. However, unlike the Atlantic Coastal Ridge, the

Immokalee Rise shows little evidence of a Pamlico shoreline. It seems to have been built as a sub-marine shoal extending south from a mainland cape at the south end of the Desoto Plain much in the same way that the present offshore shoal extends southward from Cape Romano (White, 1970).

The Southwestern Slope borders the Immokalee Rise to the northwest, the Gulf Coastal Lowlands to the north, Pine Island Sound and Estero Bay to the west, the Reticulate Coastal Swamps to the southwest and the Everglades and the Big Cypress Spur to the south and southeast. It originated as a marine terrace during periods of higher sea level and varies in elevation from sea level to 25 feet (Natural, 2004).

The portion of Florida that Wild Turkey Strand Preserve is located within was created during the Pleistocene Epoch between 1.8 million to 10,000 years ago. This period is also known as the Ice Age, where huge ice sheets formed across Canada and the northern United States. When these ice sheets were formed, they consumed large quantities of seawater, dropping the current sea level 300 or more feet, which greatly increased the land area of Florida. As the glaciers shrank, sea levels rose, and the Florida peninsula was again flooded. During the peak warm periods, sea level reached 150 feet above the current sea level. The waves and currents during these high sea level periods reworked the sediments and formed a series of geological units (Caloosahatchee, Ft. Thompson, Anastasia, Miami Limestone and Key Largo Limestone). Each of these geological units is characterized by their unique compositions. The Pleistocene Epoch had four separate freezing and melting periods (Rupert, 1989). Previously, Lee County was divided into several different geologic units. However, throughout much of Lee County, including the area where WTSP is located, the Caloosahatchee and Fort Thompson units are somewhat indistinct and have been lumped together as undifferentiated Tertiary/Quaternary shell-bearing units. This unit consists of a quartz sand blanket covering limestone and clay. Fossils, including mollusks and corals, are very common and usually in excellent condition (Missimer & Scott, 2001).

c. Topography

Lee County is located within the Coastal Lowlands of Florida that extend around the coastal periphery of the state where elevations are generally below 100 feet (Stubbs, 1940; Cooke, 1945).

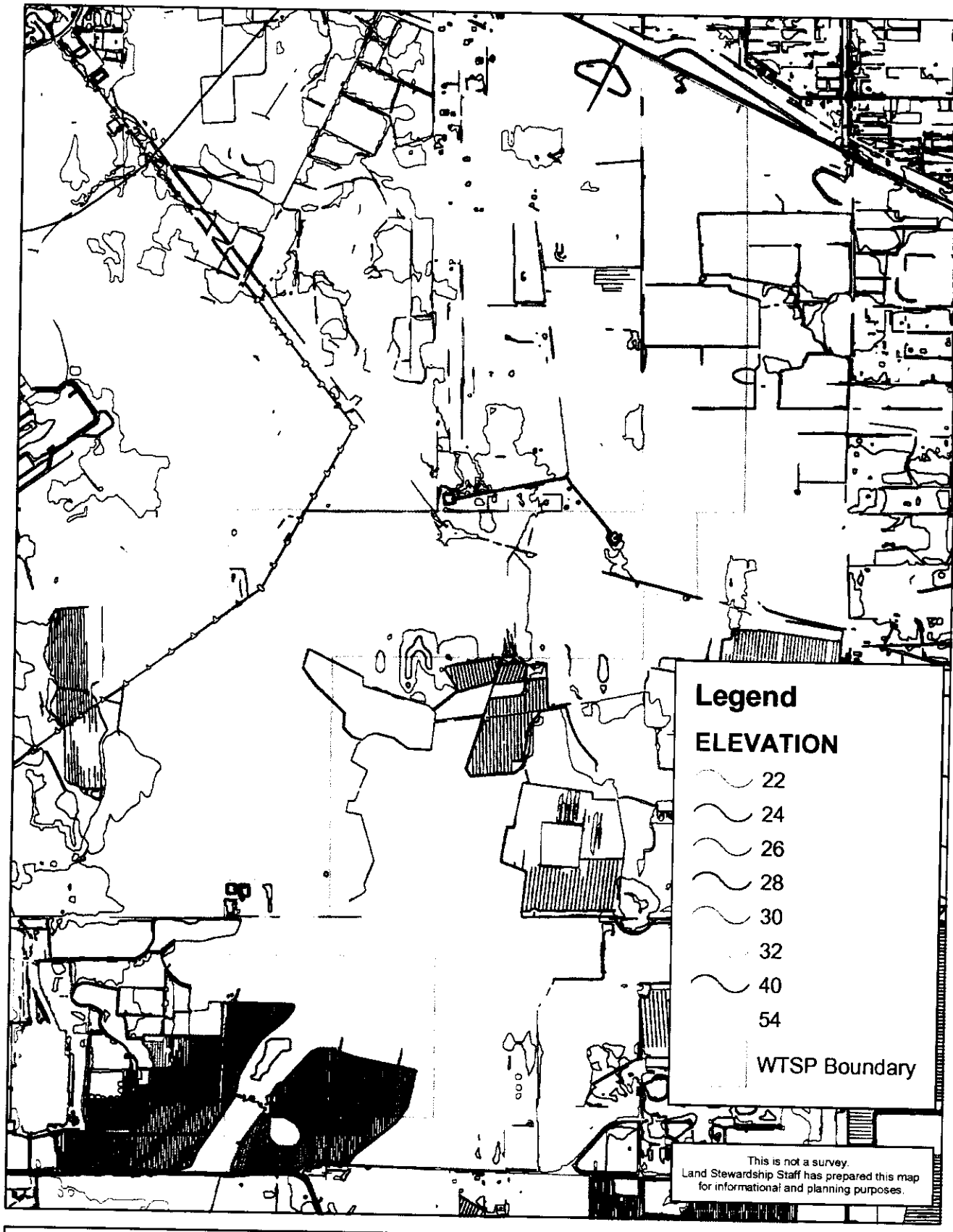
Natural elevations at WTSP range from 30' at the north end and slope in a general southerly direction to 22' at the south end of the Preserve along Alico Road (Figure 3). Man-made topographic features at the Preserve include ditches and berms associated with the following: historic agricultural activities located mainly in the northern portion of the Preserve as well as a few other smaller areas, an FPL power line easement bisecting the Preserve in a northwest-

southeast direction, another power line easement cutting through the western edge of the Preserve, a WWII rifle and air-to-ground target practice range, an oil exploration well and plow lines created to stop wildfires.

Each of the man-made features described above was constructed at different times spanning a period of 60 years from the 1940's until recently. On the 1966 aerials there is evidence of "stumping" (removal of pine stumps resulting from previous logging activity for the production of turpentine) throughout the Preserve (see Land Use History), which created localized topographic changes that in turn may have caused changes in plant communities and increased microhabitats. Row crop agriculture is first observed on the 1966 Lee County aerial along with the berms and ditches associated with these fields.

In addition, any time topography is altered, along with soil disturbance, in this sensitive subtropical environment, invasive exotic plant species are likely to establish and then spread into adjacent natural habitats.

Figure 3: Topography Map



d. Soils

The Soil Survey of Lee County, Florida (USDA/SCS, 1984) was designed for a diverse group of clients to be able to comprehend soil behavior, physical and chemical properties, land use limitations, potential impacts, and protection of the environment.

There are twenty-three (23) different soil types found at Wild Turkey Stand Preserve (Figure 4 and Table 1). A common relationship for all of these soil types is that their slopes' range from 0-2%. Slope is "the inclination of the land surface from the horizon." Essentially, it has been established that WTSP is fundamentally level. Table 1 and the descriptions below have been organized to quickly provide conservation managers with pertinent soils information for understanding restrictions and/or results regarding future habitat restoration and probable recreational plan limitations and expense.

There are eight (8) generalized range site categories in Lee County and three (3) are found on WTSP. Note that these categories are not Florida Natural Areas Inventory (FNAI) natural plant community designations, but rather they are used to group soil types and where they might occur. The 3 identified on the Preserve are:

- South Florida Flatwoods - Nearly level areas with scattered to numerous pine trees, saw palmetto, gallberry, and other woody plants.
- Slough - Open grassland where nearly level areas act as broad natural drainage courses in the flatwoods. Potential plant community is dominated by blue maidencane, chalky bluestem, and blue joint panicum.
- Freshwater marshes and ponds - Open grassland marshes or ponds (depressions) with the potential to produce significant amounts of various grasses, sedges, and rushes. Water fluctuates throughout the year.

Wetland classifications are used to identify locations that may retain water for an indeterminate amount of time.

- F-Flooding: Soil flooded by moving water from stream overflow, runoff or high tides.
- S-Slough (sheet flow): A broad nearly level, poorly defined drainage way that is subject to sheet-flow during the rainy season.
- P-Ponding: Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms. There are two hydrologic soil groups found on the Preserve:

- B - Soils having a moderate infiltration rate (low to moderate runoff potential) when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well-drained soils that have moderately fine texture to moderately coarse texture. Moderate rate of water transmission.
- D - Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist mainly of clays that have a high shrink-well potential, soils that have a permanent high water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. Very slow rate of water transmission.

Note that some of the soil types are shown as having dual hydrologic groups, such as B/D. A B/D listing means that under natural conditions the soil belongs to D, but by artificial methods the water table can be lowered sufficiently so that the soil fits in B. The Preserve has been impacted by an extensive level of hydrological alterations through a series of berms, ditching, agricultural rows, FPL right-of-way, and borrow pits. Since there are different degrees of drainage or water table control, an onsite evaluation would be needed to determine the exact hydrologic group of the soil at each particular impacted location.

Soil permeability is defined as "the quality of the soil that enables water to move downward through the profile." Permeability is measured as the number of inches per hour that water moves downward through the soil. The water table columns indicate the amount of time water may be present at specified depth ranges. Terms describing permeability are below:

Very slow	< 0.06 inch
Slow	0.06 – 0.2 inch
Moderately slow	0.2 – 0.6 inch
Moderate	0.6 – 2.0 inches
Moderately rapid	2.0 – 6.0 inches
Rapid	6.0 – 20 inches
Very rapid	> 20 inches

Soils affect the type, quality and quantity of food and cover for wildlife. Wildlife diversity and abundance are also influenced by distribution of food, cover, and water. Wildlife habitat may be created or improved by planting appropriate vegetation, maintaining existing plant communities and promoting the natural establishment of desired vegetation. The soils of Lee County occur in 4 different habitat types:

- Openland: Cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. Wildlife attracted includes quail, sandhill cranes, hawks, various birds, and rabbits.
- Woodland: Deciduous plants, coniferous plants, grasses, legumes, and wild herbaceous plants. Wildlife attracted includes wild turkeys, thrushes,

woodpeckers, squirrels, foxes, raccoons, deer, snakes, frogs, and bobcats.

- Wetland: Open, marshy or swampy shallow water areas. Wildlife attracted includes ducks, ibis, egrets, herons, shorebirds, snakes, frogs, alligators, and otters.
- Rangeland: Shrubs and wild herbaceous plants. Wildlife attracted includes deer, quail, opossums, and various birds.

The potential of the soil for wildlife habitat is rated as:

- Good - Easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected.
- Fair - Established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results.
- Poor - Limitations are severe as habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive.
- Very poor - Restrictions are very severe and unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.
- -- Soil was not rated.

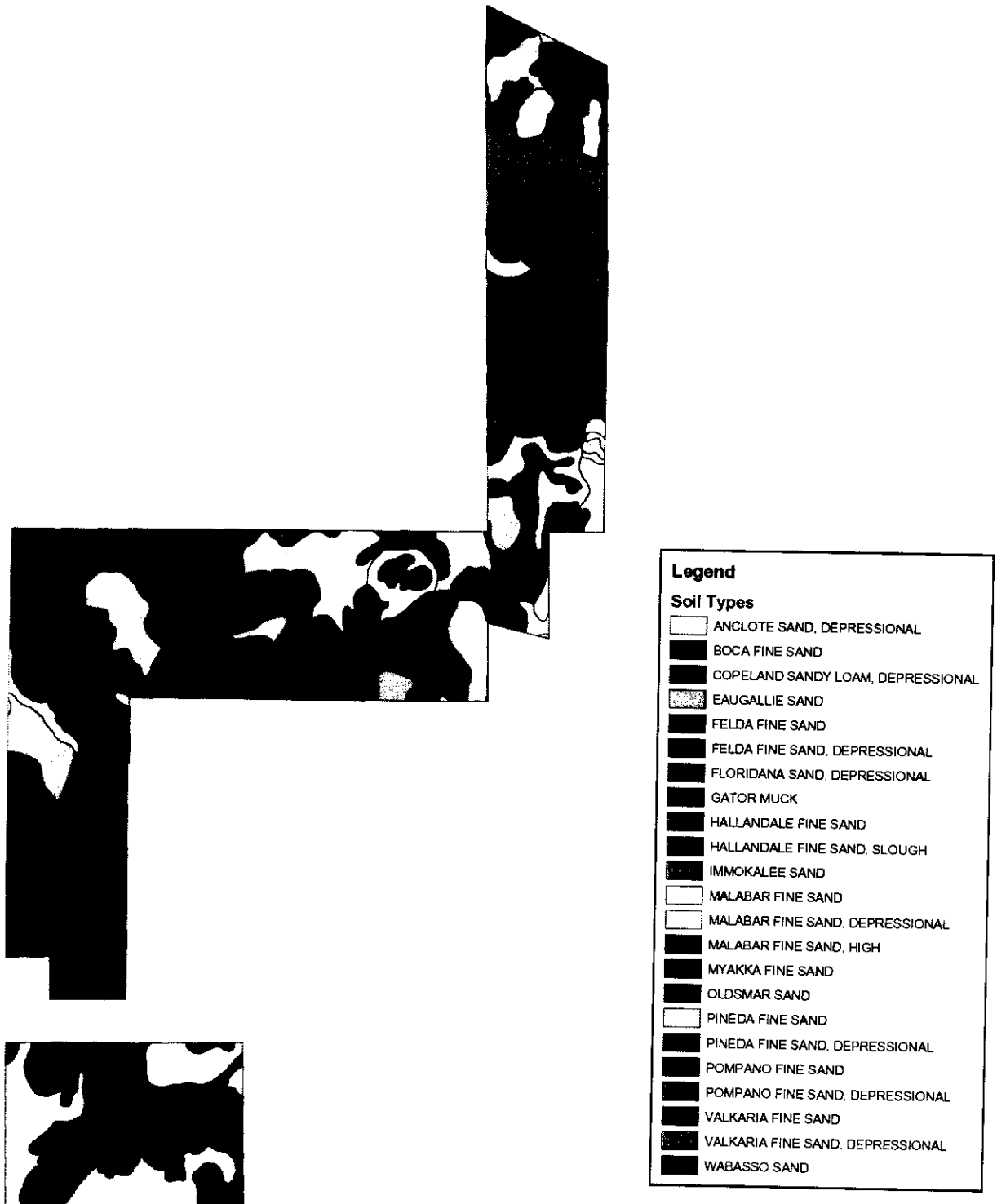
Staff considers soil limitations that affect their suitability for recreational development. Although the Soil Survey of Lee County has other categories under recreation, these are not under consideration for this Preserve. The soils within the Preserve have all been identified as having severe limitations. Severe means "that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures." In particular, paths and trails for "hiking and horseback riding should require little or no cutting and filling" plus "should not be subject to flooding more than once a year during the period of use." Therefore, as a guideline, the soil types at WTSP are fairly sensitive and restrictive and considerations by the impacts of hiking or management trails are addressed. Moreover, some recreational opportunities that are further discussed in the Public Access and Passive Recreation section, address the soil limitations and provide recommendations for the creation of appropriate public access.

Map Symbol	Total Acres	% of Preserve	Habitats (Range Site)	Physical Attributes: Wetland Class (1)	Hydrologic Group (2)	Surface Permeability	Subsurface Permeability	Water Table within 10" of surface	Water Table below 10-40" of surface	% Organic Matter	Biological Attributes: Potential as habitat for wildlife in-- Openland	Woodland	Wetland	Ran
13	69.57	2.63	flatwoods		B/D	rapid	rapid	2-4 months	6 months	1-3%	fair	poor	fair	goo
9	9.66	0.37	flatwoods		B/D	rapid	rapid	2-4 months	> 6 months	2-8%	poor	poor	poor	--
12	53.44	2.02	sloughs	S	B/D	rapid	rapid	2-4 months	~ 6 months	1-4%	fair	poor	fair	--
6	4.85	0.18	low, broad flatwoods		B/D	moderate, mod rapid		1-3 months	7 months	2-5%	poor	poor	fair	poo
75	0.01	0.00	sloughs, edge flatwoods	S	B/D	rapid		2-4 months	1-2 months	1-2%	poor	poor	fair	poo
28	166.4	6.30	flatwoods		B/D	rapid	rapid	1-3 months	2-6 months	1-2%	poor	poor	poor	--
34	180.7	6.84	sloughs, edge flatwoods	S	B/D	rapid	rapid	2-4 months	> 6 months	1-2%	poor	poor	fair	--
63	16.65	0.63	flatwoods		B/D	rapid	rapid		4-6 months	1-2%	fair	poor	fair	fair
11	97.31	3.68	broad flatwoods		B/D	rapid	rapid	1-3 months	2-6 months	<2%	fair	poor	poor	--
33	219.3	8.30	broad flatwoods		B/D	rapid	rapid	1-3 months	> 6 months	1-2%	fair	fair	poor	--
26	247.1	9.36	sloughs, edge flatwoods	S	B/D	rapid	rapid	2-4 months	> 6 months	.5-6%	fair	poor	fair	--
10	149.7	5.67	sloughs, edge flatwoods	S	B/D	rapid		2-4 months	6 months	1-5%	poor	poor	fair	--
14	92.26	3.49	sloughs, edge flatwoods	S	B/D	rapid		1-3 months	6 months	1-4%	poor	poor	good	--
35	14.78	0.56	flatwoods		B/D	rapid	rapid	2-4 months	> 6 months	1-4%	poor	fair	poor	--

nearly level, poorly defined drainage way that is subject to sheet-flow during the rainy season.
soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

ce of soil
iltration rate (low to moderate runoff potential) when thoroughly wet.
iltration rate (high runoff potential) when thoroughly wet.

Figure 4: Soils Map



This is not a survey.
Land Stewardship Staff has prepared this map for informational and planning purposes.

Wild Turkey Strand Preserve

0 3,700 7,400 14,800

Feet

S:\esmc\2020 Archive\Wild Turkey Strand\mxd\Management plan\Soils.mxd
Map Prepared on: 11/19/04 by: shumans@leegov.com

e. Hydrology and Watershed

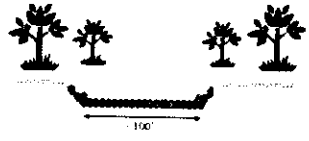
Wild Turkey Strand Preserve's freshwater wetlands consist of cypress strands, dome swamps, freshwater marshes, and ponds that vary in size from .27 acres (Snake Skin Pond) to 29 acres (Saddlebags Wetland) and are dispersed throughout the site (Figure 5). More information on the characteristics of these wetlands is found in the Natural Plant Communities section.

Agricultural ditches and berms exist throughout the site, which will require restoration to improve the hydroperiod of the affected herbaceous wetlands and improve the overall hydrology of the Preserve. All of the Management Units, except Unit 10, have at least one berm and associated ditch.

S.R. 82 borders WTSP on its north side and Alico Road on its south side. Moreover, it is bisected by two FPL power line easements and by a service road for Green Meadows Water Treatment Plant on the south side of Management Unit 11. These features have altered the Preserve's historical water flow patterns.

Hydrologic improvements at the Preserve may employ backfilling or plugging drainage ditches and removing melaleuca to increase wetland hydroperiod (Mazzotti, 1998). Possible restoration tactics employed for the various roadways may include installation of additional culverts or replacement of smaller culverts with larger diameter culverts and/or "geo-webbing." Typically, geo-webbing an FPL roadway would remove a section (usually 100' length) of existing roadway material to grade level, overlay/install plastic web like material (with openings/holes) over the removed roadway section, then fill the geo-webbed openings with rock/stone material. During the rainy season, the water will be able to flow freely through/over the removed/geo-webbed roadway section without erosion, while still allowing FPL vehicles, and land stewardship management vehicles, to drive over the geo-webbed section without getting stuck. Depending on the area, some roadway locations may become too deep for vehicles to drive through during the rainy season; therefore other methods would need to be employed.

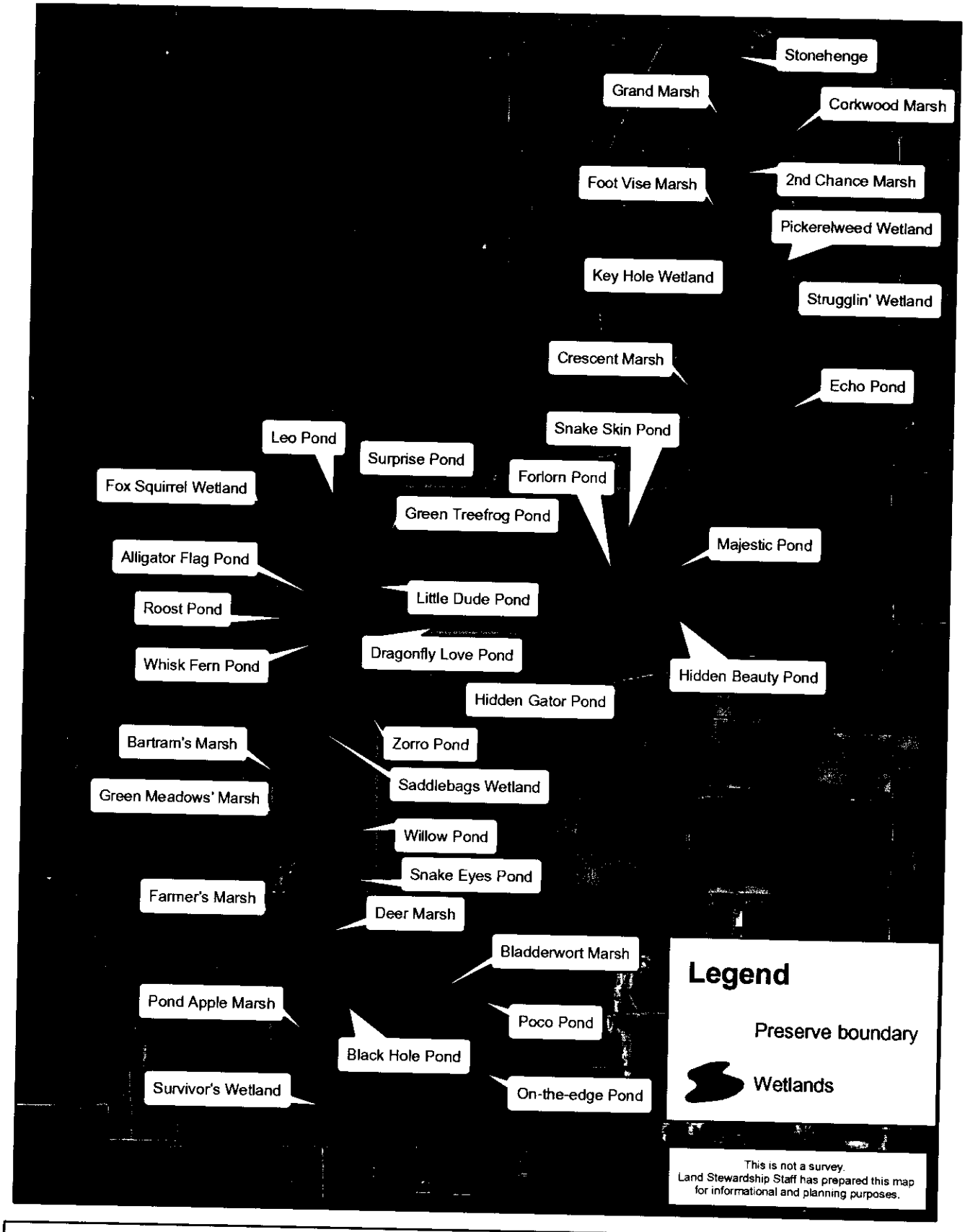
Geo-web diagram



An environmental/engineering consultant will be contracted to determine the most appropriate methodology for all hydrological restoration projects at the Preserve. The consultant will coordinate with FPL and/or other appropriate agencies representatives for all hydrological restoration matters. For details on hydrological restoration, see the Management Action Plan.

WTSP lies within the Estero River Watershed (shown in Figure 6), which is part of the Big Cypress Basin of the SFWMD's Lower West Coast Region. This watershed contains approximately 66 square miles of area and is approximately 15 miles in length and averages four miles in width. Rainfall flows from S.R. 82 on the northeast boundary in a general southwest direction to the Estero River and eventually into Estero Bay. The restoration work should assist with the overall health of the watershed and the interconnected Estero Bay (Estero, 2005).

Figure 5: Hydrologic Features Map



Wild Turkey Strand Preserve

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Feet

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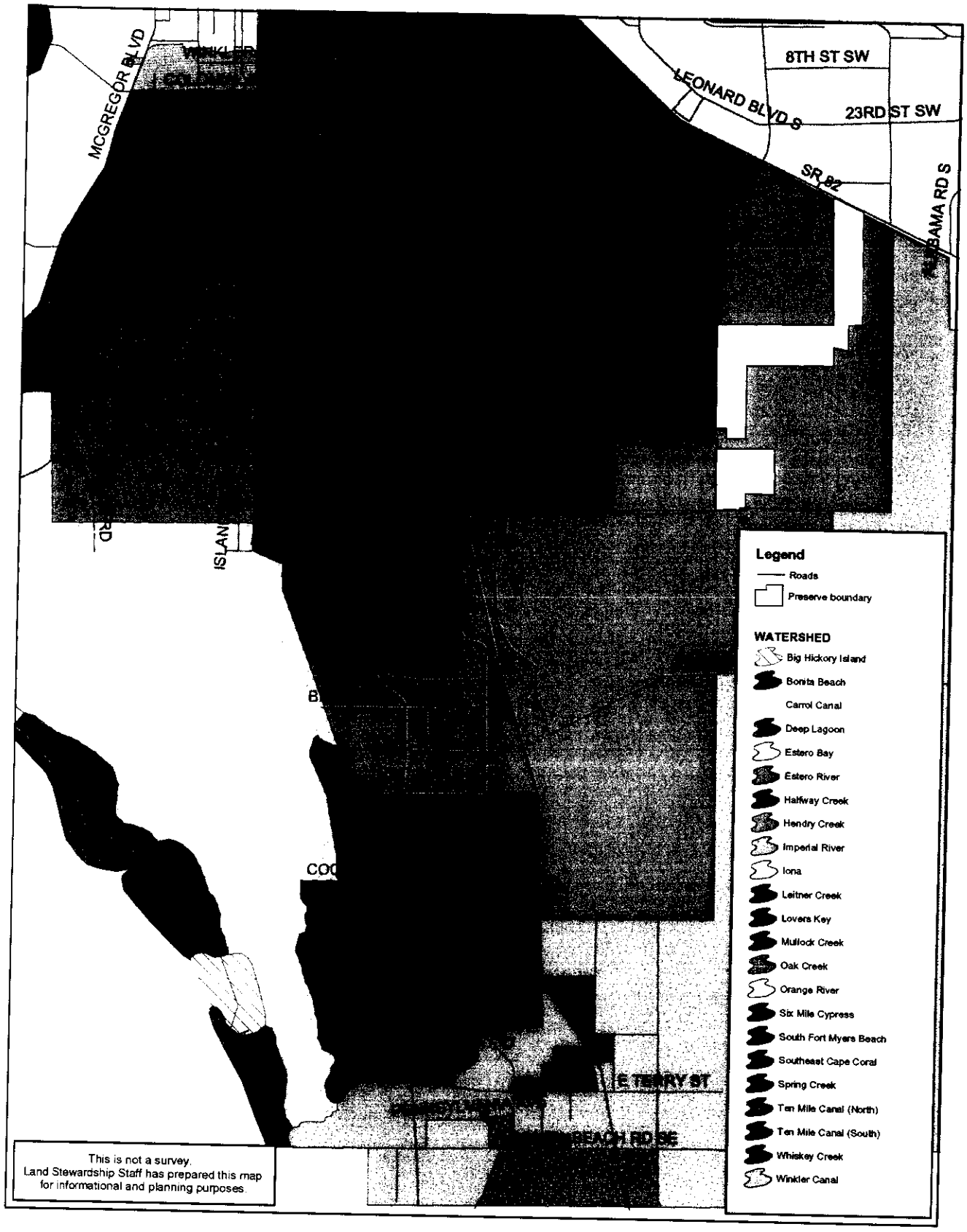
Map Prepared on: 01/12/15, by Sevans@leegov.com

Figure 6: Watershed Map



Wild Turkey Strand Preserve

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Map Prepared on 1/31/2006 by Sevans@leegov.com

B. Biological Resources

a. Ecosystem Function

The wetlands of South Florida are important to people and to a variety of wildlife. There are over 50 wetlands throughout Wild Turkey Strand Preserve that provide a place for birds to feed and for fish and frogs to live and breed. Additionally, people rely on the marshes to improve water quality. Seasonal changes profoundly affect the hydrology on natural lands like WTSP. During the late spring and summer months, the rain begins to fall and the wetlands fill to capacity. Fish populations begin to increase in number and biomass. In the fall when the rains end, the water recedes and the fish are concentrated in the shallow wetlands. The wading birds come in to feast and this aids the remaining fish by decreasing the density and increasing the availability of dissolved oxygen. The depressional marshes are also very important to some species of wading birds for their nesting success. For example, the white ibis (*Eudocimus albus)* chooses nesting sites near marshes that have appropriate drying conditions. Some herons and wood storks need specific falling water conditions over a prolonged four-month nesting season. The faster the marsh dries, the sooner nesting starts. If the water level rises, then nesting success declines (Myers and Ewel, 1990). This drying period is not only important to the fauna but also to the flora. Most aquatic plants cannot germinate under water and require a drying phase.

The pine flatwoods surrounding these marshes also serve as very important habitat. Several species of birds find shelter in the palmetto understory, nest in the tall pines and forage in the grasses. The oak toad (*Bufo quercicus*) will dig burrows in the sandy soil and hunt for spiders and insects. During a severe flood, the flatwoods serve as a water storage area to help protect adjacent land owners from flooding (Tiner, 1998). Florida has more thunderstorm days per year than anywhere else in the country and in turn one of the highest frequencies of lightning strikes of any region in the United States. Fire has many purposes in the flatwoods: creation of soil conditions suitable for germination of seeds of some species, turnover of litter, humus and nutrients, reduction of competition from hardwoods and increasing the hardiness of some species (Myers and Ewel, 1990). Following exotic removal, fire will be a very useful stewardship tool at WTSP.

Over 30% of WTSP contains cypress wetlands. These forested wetlands are very productive ecosystems, which is related to hydrologic conditions. Healthy cypress communities capable of sustainable reproduction occur in depressions with a hydroperiod of approximately 250-290 days and maximum water levels of one to two feet (Duever et al., 1986). The lower hydroperiod and water level ranges produce smaller cypress and the upper ranges produce larger ones. There is some debate in the scientific community whether these two extremes represent two species of cypress (pond cypress (*Taxodium ascendens*) are small

and bald cypress (*Taxodium distichum*) are large) or whether they represent the same species growing differently under different conditions.

The cypress trees occur in domes and strands throughout the Preserve. The cypress domes or heads are depressions in which the largest cypress trees occur in the center and get progressively smaller from the center. Water drains only through the water table. The conditions for growth (long hydroperiod) are much better in the center as opposed to the edges due to more organic soils. The strands are elongated depressions that support cypress systems with a broad, slow movement of water. As with the domes, the larger cypress trees populate the lower areas with longer hydroperiods. In the areas where the water is too deep for cypress, treeless ponds occur in both the domes and the strands supporting a myriad of plants and wildlife.

Animals count on the health and long-term viability of the cypress communities for nesting, breeding and feeding. The cottonmouth snake (*Agkistrodon piscivorus spp.*) will climb upon mats of debris in the swamp ferns for sunning platforms. Yellow-crowned night herons build their nests in the trees and white ibis and great egrets roost in the canopy. To sustain the health of the cypress communities, water quality and quantity must be protected.

b. Natural Plant Communities

The Wild Turkey Stand Preserve natural plant communities have been delineated and classified utilizing the Florida Land Use, Cover and Forms Classification System (FLUCCS) (FDOT, 1999). The number codes below refer to this classification system. Relevant details from the Florida Natural Area's Guide to the Natural Communities of Florida (FNAI/FDNR, 1990) are incorporated into the larger, indigenous natural vegetative community descriptions. In addition, the statewide baseline FLUCCS map created in 1995 was used for Site #90, while a detailed, ground-truth survey of vegetation communities was performed by an environmental consulting firm, Kevin L. Erwin Consulting Ecologist, Inc., for Site #200 (Kevin L. Erwin, 2002). A total of thirty-two (32) communities were documented and approximately 60% of the Preserve was acknowledged as jurisdictional wetlands. Figure 7 illustrates the location of each community within the Preserve.

Appendix A contains a complete list of plant species identified on numerous site inspections to WTSP, but not necessarily a comprehensive list for the entire Preserve. Experienced, knowledgeable botanists with the South Florida non-profit organization, Institute for Regional Conservation (IRC), have compiled the majority of this list. This list will be updated on a seasonal basis to identify plants in their inflorescence phase.

Agricultural (200) class category identifies lands that were cultivated to produce food crops and livestock.

- Improved Pasture (211) - 228.3 acres, 9% coverage of WTSP
Land has been cleared, tilled, reseeded with specific grass and periodically improved with brush control and fertilizer. This upland community is dominated by grass and sedge species that include Bahia grass (*Paspalum notatum*), common carpet grass (*Axonopus fissifolius*), crab grass, flat sedges, and dog fennel (*Eupatorium capillifolium*). Several bird species including the Northern harrier (*Circus cyaneus*), sharp-shinned (*Accipiter striatus*) and red-shouldered hawks (*Buteo lineatus*) and rodents have been observed foraging in these open pastures.

- Row Crops (214) - 279.2 acres, 11% coverage of WTSP
Corn, tomatoes, potatoes, etc. are typical crops grown in this region and the rows remain well defined after farming is abandoned; they continue to influence hydrological flow patterns. The last known crops cultivated at WTSP were tomatoes. Animal species such as mice, black racers (*Coluber constrictor priapus*), Carolina wren (*Thryothorus ludovicianus*), and Eastern phoebe (*Sayornis phoebe*) have been observed utilizing these areas.

- Fallow Farmland (261) - 53.7 acres, 2% coverage of WTSP
Fallow farmland is defined as previously harvested agricultural land that is not currently in crop production. This community is characterized by a mosaic of open areas with thick patches of Brazilian pepper (*Schinus terebinthifolius*) and wax myrtle (*Myrica cerifera*), usually along disturbed edges. Ground cover includes pasture grasses and sedge species that include Bahia grass, common carpet grass, crab grass, flat sedges, and dog fennel.

- Low Pasture (262) - 59.6 acres, 2% coverage of WTSP
Low pasture areas have been predominately identified in Management Unit 1, which is a wetland habitat. Dominant exotic/nuisance species include Bermuda grass (*Cynodon dactylon*), dog fennel, melaleuca (*Melaleuca quinquenervia*), and torpedo grass (*Panicum repens*). Additional species include frog-fruit (*Phyla nodiflora*), common carpet grass, coinwort (*Centella asiatica*), pennywort (*Piloblephis rigida*) and wax myrtle.

Rangeland (300) class category identifies lands where the potential vegetation is predominantly grasses, forbs or shrubs and is capable of being grazed.

- Palmetto Prairie, Disturbed (3219) - 29.1 acres, 1% coverage of WTSP
Areas in which saw palmetto (*Serenoa repens*), fetterbush, tar flower, gallberry (*Ilex glabra*), wire grasses, broom sedge, running oak, pawpaw, and beak rushes were the most noted native vegetation, while exotic melaleuca trees were scattered. These treeless areas are usually found on seldom-flooded dry sand sites.

Upland Forest (400) class category are upland areas which support a tree canopy closure of ten percent or more and include only xeric and mesic forest communities.

- Pine Flatwoods (411) - 201.2 acres, 8% coverage of WTSP
  Pine flatwoods typically contain slash pines (*Pinus elliottii*), saw palmetto, wax myrtle, gallberry, and a variety of herbs and shrubs.

- Pine Flatwoods, Disturbed (4119) - 247.8 acres, 9% coverage of WTSP
  A pine flatwoods community that has been disturbed, which presently includes the above listed native vegetation and is infested with invasive, exotic plants such as melaleuca, Brazilian pepper, and Caesar weed (*Urena lobata*).

FNAI identifies upland pine flatwoods communities as mesic flatwoods, which occur on relatively flat, moderately to poorly drained soils. Standing water is common for brief periods during the rainy season. Mesic flatwoods are characterized as having an open canopy with widely spaced pine trees and a dense ground cover of herbs and shrubs.

Typical plants growing in these communities at WTSP include slash pine, saw palmetto, staggerbush (*Lyonia fruticosa*), yellow-eye grass, and wax myrtle. Over half of the flatwoods found on the Preserve are disturbed with invasive exotic plants such as melaleuca and Brazilian pepper.

Some wildlife encountered in flatwoods at the Preserve consists of black racer, dusky pygmy rattlesnake (*Sistrurus miliarius barbouri*), bald eagle (*Haliaeetus leucocephalus*), palm warbler (*Dendroica palmarum*), raccoon (*Procyon lotor*), and bobcat (*Lynx rufus*).

- Brazilian Pepper (422) - 28.4 acres, 1% coverage of WTSP
  The invasive, exotic Brazilian pepper is typically found on disturbed sites, along borrow pits, levees, ditches, roadways, and old farm fields.

- Melaleuca (424) - 3.9 acres, <1% coverage of WTSP
  The invasive, exotic melaleuca tree in an almost pure impenetrable monoculture stand.

- Cabbage Palm, Disturbed (4289) - .5 acres, <1% coverage of WTSP
  This disturbed small island upland site still contains predominately cabbage Palms (*Sabal palmetto*) and wax myrtle, but includes Brazilian pepper.

Depending on the site-specific area, FNAI may identify these as being a prairie hammock community that is characterized as a cluster of tall cabbage palms and live oaks in the midst of prairie or marsh communities and occurs on slight rises

in relatively flat terrain. These areas may flood during extreme high water, but they are seldom inundated for more than 10 to 40 days. Drier sites tolerate occasional light ground fires, but more diverse hammocks rarely burn.

Common plants include wax myrtle, stoppers, poison ivy, orchids, and saw palmetto, while animals consist of box turtle, southern five-lined skink, black racer, and various rodents.

- Wax Myrtle/Willow, Disturbed (4291) - 19.0 acres, <1% coverage of WTSP
These disturbed sites use to be wet prairies, where wax myrtle and willow have become the dominant plant species. This is primarily due to reduced hydroperiod caused by agricultural canals and reduced fire frequency.

Water (500) locations are without emergent vegetation or observable submerged vegetation.

- Drainage Canal (514) - 2.5 acres, <1% coverage of WTSP
Although the produced FLUCCS map only identifies drainage canals as being 2.5 acres, this hydrological disturbance number may be much higher because the usage of aerial photography could not delineate the additional sites.

Wetlands (600) areas are locations where the water table is at, near or above the land surface for a significant time of the year. This hydrological regime allows aquatic or hydrophytic vegetation to become established.

- Mixed Wetland Hardwoods – Mixed Shrubs (6172) - 9.4 acres, <1% coverage of WTSP
Wetland community mixed with various hardwoods and shrubs.

- Willow and Elderberry (618) - 1.6 acres, <1% coverage of WTSP
This wetland community is dominated by willow and was found within a freshwater marsh community.

- Exotic Wetland Hardwoods (619) - 1.9 acres, <1% coverage of WTSP
An area dominated by invasive melaleuca and Brazilian pepper species and scattered patches of native swamp fern (*Blechnum serrulatum*).

- Brazilian Pepper, Hydric (6192) - 5.7 acres, <1% coverage of WTSP
Dominated by the invasive Brazilian pepper along the perimeter of freshwater marshes with scattered swamp fern and coinwort.

- Melaleuca, Hydric (6193) - 51.4 acres, 2% coverage of WTSP
These wetlands are dominated by near monocultures of the invasive melaleuca tree. Some remnant pine and/or cypress persist.

- Cypress (621) - 268.8 acres, 10% coverage of WTSP
This habitat is dominated by bald cypress with scattered willow, swamp fern, climbing hempvine (*Mikania scandens*), bladderwort, and several airplant species.

FNAI natural communities for WTSP cypress areas would be identified as strand and dome swamps. Strand swamps are shallow, forested, usually elongated depressions or channels dominated by bald cypress. Soils are peat and sand over limestone and normal hydroperiod is 200-300 days with water being the deepest and remaining the longest near the center where the trees are biggest. Strand swamps require fire on a cycle of perhaps 30 to 200 years and are essential for maintenance of this community. The largest trees on the deepest peat towards the center burn least frequently. Cypress are very tolerant of light surface fires, but muck fires can kill the trees, lower the ground surface, and transform a strand into a slough.

Additional strand swamp plants found include red maple (*Acer rubrum*), laurel oak (*Quercus laurifolia*), cabbage palm, swamp bay (*Persea palustris*), coastal plain willow (*Salix caroliniana*), orchids, wax myrtle, myrsine (*Rapanea punctata*), buttonbush (*Cephalanthus occidentalis*), leather fern, royal fern (*Osmunda regalis*), and floating heart (*Nymphoides aquatica*). Animals noted include Florida cottonmouth (*Agkistrodon piscivorus conanti*), opossum (*Didelphis virginiana*), raccoon, ribbon snake (*Thamnophis sauritus sackenii*), and Florida water snake (*Nerodia fasciata pictiventris*).

A smaller subset of WTSP cypress locations would be identified as dome swamps, which are characterized as shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow in the shallower waters at the outer edge, while taller trees grow in the center. Dome swamps may function as reservoirs that recharge the aquifer when adjacent water tables drop during drought periods. Normal hydroperiod is usually 200 to 300 days per year, deepest and longest in the center. Normal fire cycle might be as short as 3 to 5 years along the outer edge and as long as 100 to 150 years towards the center.

Representative dome swamp plants are cypress, slash pine, red maple, dahoon holly (*Ilex cassine*), wild pine, royal fern, maidencane (*Amphicarpum muhlenbergianum*), orchids, wax myrtle, sawgrass (*Cladium jamaicense*), and floating heart. Typical animals include oak toad, cricket frog (Acris gryllus dorsalis), pinewoods treefrog (*Hyla femoralis*), little grass frog, narrowmouth toad (*Gastrophryne carolinensis*), alligator (*Alligator mississippiensis*), striped mud turtle, Florida cottonmouth, wood stork, swallow-tailed kite (*Elanoides forficatus*), barred owl (*Strix varia*), and pileated woodpecker (*Dryocopus pileatus*).

- Cypress, cut (621C) - 1.9 acres, <1% coverage of WTSP
An area identified as previously having cypress trees that were cut along the

existing FPL power line. Ground cover vegetation includes frog-fruit, fleabane (*Erigeron spp.*), dog fennel, and dayflower (*Commelina diffusa*).

- Cypress – Melaleuca Infested (6218) - 141.0 acres, 5% coverage of WTSP

Wetland cypress locations that have become invaded with melaleuca.

- Cypress, Disturbed (6219) - 436.6 acres, 16% coverage of WTSP

Wetland cypress locations that have become invaded with Brazilian pepper and/or melaleuca. Although noted, but not to the extent of the more common exotics, are Old World climbing fern (*Lygodium microphyllum*), West Indian marsh grass (*Hymenachne amplexicaulis)*, watersprite, water fern (*Salvinia minima*), and water lettuce (*Pistia stratiotes*).

- Cypress-Pine-Cabbage Palm (624) - 38.9 acres, 1% coverage of WTSP

A transition between moist upland pine flatwoods to hydric cypress sites, this community has a combination of cypress, slash pine and/or cabbage palms. Additional plants include swamp fern, pink sundew (*Drosera capillaries*), little blue maidencane, gulfdune paspalum, and dahoon holly.

- Cypress-Pine-Cabbage Palm, Disturbed (6249) - 120.3 acres, 5% coverage of WTSP

A transition between moist upland and hydric sites, this community has a combination of cypress, pine and/or cabbage palms and includes invasive, exotic species due to a prior disturbance.

- Hydric Pine Flatwoods, Disturbed (6259) - 173.9 acres, 7% coverage of WTSP

A sparse to moderate canopy of slash pine and an understory of various grasses/rushes, saw palmetto, wax myrtle, dahoon holly, and myrsine and includes invasive, exotic melaleuca and Brazilian pepper species due to a prior disturbance.

The FNAI classification for hydric pine flatwoods would be wet flatwoods. These communities are found scattered throughout the Preserve with some locations heavily infested with melaleuca. Wet flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either thick shrubby understory and very sparse ground cover, or a sparse understory and a dense ground cover of hydrophytic herbs and shrubs. Wet flatwoods occur on relatively flat, poorly drained terrain and during the rainy season, water frequently stands on the surface, inundating the flatwoods for one or more months per year. Nearly all plants and animals inhabiting this community are adapted to periodic fire and natural fires probably occurred every 3 to 10 years during pre-Columbian times.

Characteristic plants include slash pine, spikerush, beakrush, gallberry, wax myrtle, and saw palmetto, while animals include oak toad, black racer, pygmy rattlesnake, red-shouldered hawk, bobcat, and white-tailed deer.

- Freshwater Marsh (641) - 81.9 acres, 3% coverage of WTSP
There are many freshwater marsh locations that contain several native plants such as sawgrass, bulrush, maidencane, and arrowhead.

- Freshwater Marsh, Disturbed (6419) - 80.1 acres, 3% coverage of WTSP
Many of these freshwater marsh locations contain exotics such as West Indian marsh grass, watersprite (*Ceratopteris thalictroides*), water lettuce, water fern, and Wright's nutsedge (*Scleria lacustris*).

The FNAI natural communities classification system identifies these freshwater marshes under two categories: depression and basin marsh, dependent on the size and shape of the wetland area. Depression marsh areas are characterized as shallow, usually rounded depressions in sand substrate with herbaceous vegetation often in concentric bands. Depression marshes are very similar to basin marshes, only smaller. Hydrological conditions vary; with most drying down in most years and hydroperiods range widely from as few as 50 days or less to more than 200 days per year. Fire is essential to restricting invasion of shrubs and trees as well as the formation of peat.

Common depression marsh plants include St. John's wort, spikerush, yellow-eyed grass, maidencane, wax myrtle, bloodroot, pickerelweed *(Pontederia cordata)*, arrowhead, and bladderwort. Depression marshes are considered extremely important in providing breeding or foraging habitat for such species as oak toad, cricket frog, pinewoods treefrog, squirrel treefrog (*Hyla squirella*), southern chorus frog, gopher frog (*Rana capito*), white ibis, wood stork, and sandhill crane.

An FNAI basin marsh is characterized as an herbaceous or shrubby wetland situated in a relatively large and irregular shaped basin. Basin marshes usually develop in depressions that were formerly shallow lakes as the bottom slowly filled up with sediments from surrounding uplands and soils are usually acidic peats. Hydroperiod is normally 200 days per year and fire maintains the open herbaceous community by restricting shrub invasion, normal fire interval is between 1 to 10 years.

Typical basin marsh plants include pennywort, redroot, soft rush, water primrose, arrowhead, coastal plain willow, saltbush (*Baccharis halimifolia*), spikerush, and elderberry (*Sambucus canadensis*). Generally animals expected include Florida water snake, great blue heron (*Ardea herodius*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*), tri-colored heron (Egretta tricolor), and Northern harrier.

- Wet Prairie (643) - 7.6 acres, <1% coverage of WTSP
Wet prairie areas are composed predominately of various grasses, sedges, rushes, yellow-eyed grass, and St. John's wort.

- Wet Prairie, Disturbed (6439) - 34.0 acres, 1% coverage of WTSP
These wet prairie areas are composed of the same native herbaceous species, but also include exotics such as melaleuca, Wright's nutsedge, West Indian marsh grass, and water lettuce.

FNAI and FLUCCS use the same name for the wet prairie community. Wet prairies are described by FNAI as a treeless plain with a ground cover of grasses and herbs including maidencane (*Panicum hemitomon*), spikerush, beaksedge (*Rhynchospora sp.*), meadowbeauty (*Rhexia sp.*), yellow-eyed grass (*Xyris sp.*) and St. John's wort (*Hypericum sp.*). Some disturbed locations of this community are becoming infested with melaleuca, climbing hemp vine, torpedo grass, and Brazilian pepper.

Wildlife expected in wet prairies includes Florida cricket frog (*Acris gryllus dorsalis*), yellow rat snake (*Elaphe obsolete quadrivittata*), killdeer (*Charadrius vociferus*) and marsh rabbit (*Sylvilagus palustris*).

Barren Land (700) has very little or no native vegetation and limited potential to support vegetative communities. In the case of WTSP, these areas have been altered by human activities and FNAI does not recognize or classify these altered areas.

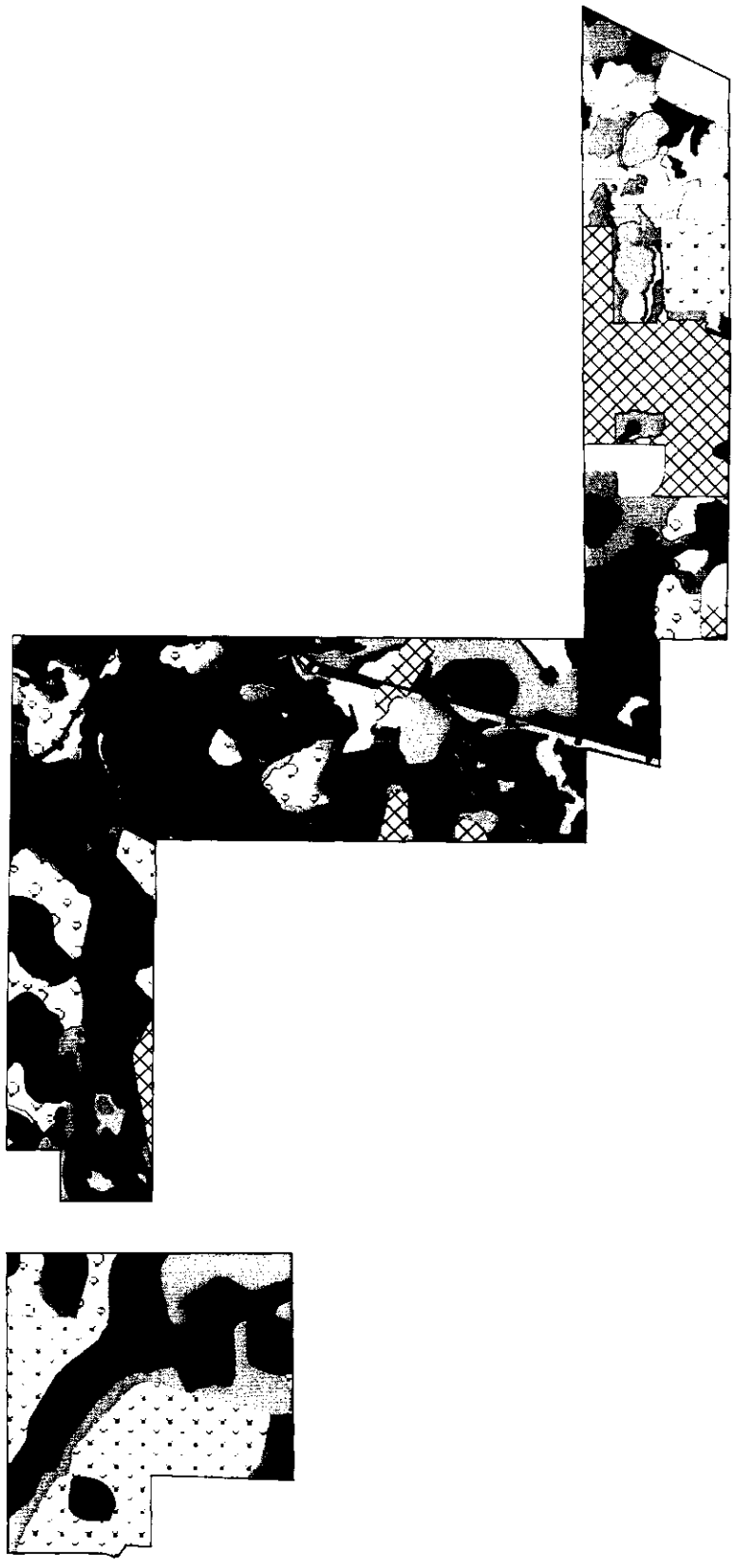
- Borrow Areas (742) - 8.9 acres, <1% coverage of WTSP
Borrow areas are sites that have been disturbed by humans to excavate a location for many purposes. Specifically, WTSP's borrow areas include the 2 pits at the central NW corner (adjacent to FPL roadway), at the oil exploratory well site, and the rifle range site at the northern end. Basically, these borrow areas appear as man-made ponds.

- Spoil Areas (743) - 21.3 acres, <1% coverage of WTSP
Typically, spoil areas contain the material dug from borrow areas, ditches, canals, etc. These locations include FPL access roads, a roadway to the oil exploratory well and the elevated pad, and the rifle range site.

- Cleared Areas (748) - .9 acres, <1% coverage of WTSP
These cleared areas are along the FPL roadway and were historically pine flatwoods habitat.

- Cleared Areas, Hydric (7481) - 4.7 acres, <1% coverage of WTSP
These cleared, hydric areas are along the FPL roadway and were historically a mixture of hydric pine flatwoods and cypress-pine-cabbage palm habitats.

Figure 7: Natural Plant Communities Map



Legend

Natural Plant Communities

- Borrow areas
- Brazilian pepper
- Brazilian pepper, hydric
- Cabbage palm, disturbed
- Cleared areas
- Cleared areas, hydric
- Cypress
- Cypress - Melaleuca infested
- Cypress, cut
- Cypress, disturbed
- Cypress-Pine-Cabbage palm
- Cypress-Pine-Cabbage palm, disturbed
- Drainage canal
- Exotic wetland hardwoods
- Fallow farmland
- Freshwater marsh
- Freshwater marsh, disturbed
- Hydric pine flatwoods, disturbed
- Improved pasture
- Low pasture
- Melaleuca
- Melaleuca, hydric
- Mixed wetland hardwoods - mixed shrubs
- Palmetto prairie, disturbed
- Pine flatwoods
- Pine flatwoods, disturbed
- Row crops
- Spoil areas
- Wax myrtle/Willow
- Wet prairie
- Wet prairie, disturbed
- Willow and Elderberry

This is not a survey.
Land Stewardship Staff has prepared this map for informational and planning purposes.

Wild Turkey Strand Preserve

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Feet

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Map Prepared on: 11/30/04 by sfurman@eagov.com

c. Fauna

Wild Turkey Strand Preserve provides a variety of habitats for wildlife. A diversity of mammals, birds, reptiles, amphibians and fish occur in the Preserve, some seasonally, some sporadically and some as permanent residents. See Appendix B for a complete list of wildlife documented at the Preserve. Wildlife species were recorded both during numerous site inspections and during the fieldwork associated with a student internship in conjunction with Florida Gulf Coast University. Future sightings through site inspections, grants and possible Lee County Bird Patrol volunteers will continue to be recorded.

There are also several exotic wildlife species that have been documented at the Preserve (Table 2). Of primary concern is the feral hog (*Sus scrofa*). Currently, Lee County Parks & Recreation does not have an on-going hog trapping program at the Preserve. Trapping at WTSP will become a routine maintenance activity. Additionally, staff will pursue allowing Florida Fish & Wildlife Conservation Commission (FWC) to conduct an annual or semi-annual weekend hunt while closing the Preserve to all other public uses. This will require staff going through the proper channels with the Lee County Board of County Commissioners to get temporary approval since this practice conflicts with Parks and Recreation's Ordinance 02-12. Other avenues will be sought to deal with the serious impact of hogs.

Table 2: Exotic Wildlife at Wild Turkey Strand Preserve

Scientific Name	Common Name
Eleutherodactylus planirostris planirostris	greenhouse frog
Osteopilus septentrionalis	Cuban treefrog
Anolis sagrei	brown anole
Sus scrufa	feral hog
Dasypus novemcinctus	nine-banded armadillo

Wildlife management at the Preserve will focus on providing optimal habitat. Removal of invasive exotic plants, application of prescribed fire and elimination of off road vehicles (ORV), except when absolutely necessary for management activities, will be critical restoration components.

d. Designated Species

There are a variety of listed animal and plant species found at Wild Turkey Strand Preserve. Although all native plant and animal species found at the Preserve are protected due to the preservation of this property, certain species need additional attention. For stewardship purposes, all plants and animals listed by the U.S. Fish and Wildlife Service (USFWS), FWC, Florida Department

of Agriculture and Consumer Services (FDA), FNAI and/or IRC will be given special consideration.

Typically, designated species will benefit from proper management of the biological communities in which they occur. However, some species may require additional measures to ensure their protection. Management practices at the Preserve including exotic plant removal, prescribed burning, trash removal, wildlife monitoring, feral animal control, restricting management related vehicular access in certain areas and enforcement of no littering, no weapons and no motorized vehicles regulations will all help with the protection of listed species. The public use facilities will include wildlife-proof trashcans and possible wildlife blinds at wetland observation decks that will allow the public to observe wildlife while minimizing any disturbance. Boardwalks will be constructed in wetland areas to protect these sensitive habitats and soils.

Table 3 documents listed species both known and expected to be found at WTSP, followed by a brief summary of each species explaining why they are in decline. The specific management recommendations that will be taken to protect them are located in Table 4. If more listed species are documented on the Preserve they will be added to these lists. A map with listed species locations has been created for personnel use only and will not be included in the plan.

Table 3: Listed Species Found at WTSP and Their Designated Status

Scientific Name	Common Name	IRC	USFWS	FWC	FNAI	FDA	Occurrence
AMPHIBIANS							
Rana capito	gopher frog			SSC	G3G4/S3		expected
REPTILES							
Alligator mississippiensis	American alligator		T S/A	SSC	G5/S4		confirmed
Gopherus polyphemus	gopher tortoise			SSC	G3/S3		confirmed
Drymarchon corais couperi	eastern indigo snake		T	T	G4T3/S3		expected
Crotalus adamanteus	eastern diamondback rattlesnake				G4/S3		expected
BIRDS							
Egretta caerulea	little blue heron			SSC	SSC		confirmed
Egretta tricolor	tricolored heron			SSC	G5/S4		confirmed
Egretta thula	snowy egret			SSC	G5/S3		confirmed
Aramus guarauna	limpkin			SSC	G5/S3		expected
Eudocimus albus	white ibis			SSC	G5/S4		confirmed
Ajaia ajaja	roseate spoonbill			SSC	G5/S2		confirmed
Mycteria americana	wood stork		E	E	G4/S2		confirmed
Grus canadensis pratensis	Florida sandhill crane			T	G5T2T3/S2S3		confirmed
Elanoides forficatus	swallow-tailed kite				G5/S2		confirmed
Rostrhamus sociabilis	Everglades snail kite		E	E	G4G5T2/S2		confirmed
Buteo brachyurus	short-tailed hawk				G4G5/S1		expected
Haliaeetus leucocephalus	bald eagle		T	T	G4/S3		confirmed
Falco sparverius paulus	southeastern American kestrel			T	G5T4/S3		expected
MAMMALS							
Corynorhinus rafinesquii	southeastern big-eared bat				G3G4/S2		expected
Neofiber alleni	round-tailed muskrat				G3/S3		expected
Sciurus niger avicennia	Big Cypress fox squirrel			T	G5T2/S2		confirmed
Puma concolor coryi	Florida panther		E	E	G5T1/S1		expected
Ursus americanus floridanus	Florida black bear			T	G5T2/S2		expected

Key

IRC-The Institute for Regional Conservation

SF1 = Critically Imperiled in South Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals)

USFWS-U.S. Fish & Wildlife Service
FWC-Florida Fish & Wildlife Conservation Commission
FDA-Florida Department of Agriculture & Consumer Services

E-Endangered
T-Threatened
T S/A-Threatened due to Similarity of Appearance
SSC-Species of Special Concern
C-Commercially Exploited

FNAI-Florida Natural Areas Inventory

G-Global rarity of the species
S-State rarity of the species
T-Subspecies of special population

1-Critically Imperiled
2-Imperiled
3-Rare, restricted or otherwise vulnerable to extinction
4-Apparently secure
5-Demonstrateably secure

Table 3: Listed Species Found at WTSP and Their Designated Status (con't.)

Scientific Name	Common Name	IRC	USFWS	FWC	FNAI	FDA	Occurrence
PLANTS							
Agalinis obtusifolia	tenlobe false foxglove	SF1					confirmed
Anagallis minima	chaffweed	SF1					confirmed
Anagallis pumila	Florida pimpernel	SF1					confirmed
Bletia purpurea	pinepink					T	confirmed
Carex verrucosa	warty sedge	SF1					confirmed
Chamaecrista nictitans	sensitive-pea	SF1					confirmed
Encyclia tampensis	Florida butterfly orchid					C	confirmed
Gymnopogon brevifolius	slim or shortleaf skeleton grass	SF1					confirmed
Harrisella porrecta	needleroot airplant orchid				G4/S1	T	confirmed
Lachnocaulon minus	Small's bogbutton	SF1					confirmed
Lilium catesbaei	Catesby's lily, pine lily					T	confirmed
Micranthemum umbrosum	shade mudflower	SF1					confirmed
Najas wrightiana	Wright's waternymph	SF1					confirmed
Nephrolepis biserrata	giant sword fern					T	confirmed
Osmunda regalis var. spectabilis	royal fern					C	confirmed
Rhexia petiolata	fringed meadowbeauty	SF1					confirmed
Rhynchospora fernaldii	Fernald's beaksedge	SF1					confirmed
Rhynchospora rariflora	fewflower beaksedge	SF1					confirmed
Sacoila lanceolata	leafless beaked ladies'-tresses					T	confirmed
Scleria ciliata var. pauciflora	fewflower nutrush	SF1					confirmed
Spiranthes longilabris	long-lipped ladies'-tresses					T	confirmed
Tillandsia balbisiana	reflexed wild-pine, northern needleleaf					T	confirmed
Tillandsia fasciculata var.	stiff-leaved wild-pine, cardinal airplant					E	confirmed
Tillandsia utriculata	giant wild-pine, giant airplant					E	confirmed
Viola palmata	early blue violet	SF1					confirmed
Wolffiella gladiata	bog-mat, Florida mudmidget	SF1					confirmed

Key

IRC-The Institute for Regional Conservation

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USFWS-U.S. Fish & Wildlife Service
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The following are brief descriptions and life history needs of each species listed in Tables 3 and 4.

Amphibians and Reptiles

Gopher Frog

The gopher frog (*Rana capito*) is becoming increasingly rare throughout its range, primarily due to habitat loss and degradation, as well as the decline of the gopher tortoise, whose burrows often provide homes for this species. Gopher frogs depend on temporary breeding ponds, which rarely support large predatory fish, surrounded by healthy upland ecosystems. They are known to disperse up to a mile from their breeding ponds. In South Florida, gopher frogs may breed year round, but their main breeding season is from October through April when they migrate to ponds during heavy rains.

Although gopher frogs have not been recorded at Wild Turkey Strand Preserve, they are likely to occur due to the presence of gopher tortoises and appropriate habitat. Future frog call monitoring may be able to confirm their presence (but not their absence). If their presence is discovered, a 30-meter buffer zone around the wetlands should be established where there is no soil disturbance and herbicides are discontinued during breeding and tadpole development periods, which last 3-5 months (Bailey, 2003). Ending ORV traffic that travel in the wetlands will benefit this species by reducing pollutants and allowing vegetation on the edges of wetlands to recover. Finally, allowing fire to burn through the wetlands late in the dry season will maintain the breeding ponds as open, grassy habitats and prevent shrub encroachment.

American Alligator

American alligators (*Alligator mississippiensis*) have recovered dramatically since the 1960's. There are even some populations large enough to support limited harvests. Pollution and destruction of wetlands are currently the main threat to this species. Protecting wetlands from ditching, filling and pollution are the management recommendations for this species (Hipes et. al., 2000).

Gopher Tortoise

Gopher tortoises (*Gopherus polyphemus*) are in decline throughout their range due to loss and degradation of habitat. As a species dependant on dry, upland communities much of their habitat has been lost to urban and residential development, agriculture, citrus groves, mining and pine plantations. Additional threats include a highly contagious respiratory disease and human consumption.

Although no formal census has been conducted, gopher tortoises are uncommon at WTSP due to the hydrology of the site. They have been seen occasionally on the berm/road on the eastern boundary and two burrows were found on the western portion of the Preserve. Exotic plant removal and prescribed burning will benefit this species. Before restoration activities that utilize heavy equipment take place, land stewardship staff will conduct burrow surveys in areas where tortoise burrows could be present. The areas will be flagged off and the equipment operators will be advised to stay outside of those areas.

Eastern Indigo Snake

The Eastern indigo snake *(Drymarchon corais couperi)* is a large, iridescent black snake with a red, coral, or white throat (record length, 8.6 feet). This species is found in a large spectrum of habitats throughout Florida and southern Georgia, often associated with gopher tortoise burrows. The Eastern indigo is threatened throughout its range due to habitat loss, degradation and fragmentation. Although it is now illegal to possess this animal without the proper permits, the pet trade is another cause for decline of this species. The most common causes of mortality are human caused, either by people afraid of snakes or accidental highway mortality. The indigo snake utilizes a home range of approximately 125-250 acres, and the males are territorial during the breeding season. The indigo snake feeds diurnally on fish, frogs, toads, lizards, snakes, small turtles, birds, and small mammals, often around the edge of wetlands. The eastern indigo snake breeds from November through April, then lays 5-10 eggs in May or June (USFWS, 1982).

Eastern indigo snake has not been confirmed utilizing WTSP, but the size of the Preserve, habitats and abundance of prey makes them a likely resident. Additionally, public education about the ecological value of this and other species of snakes will help to protect them from visitors to the Preserve and from adjacent landowners.

Eastern Diamondback Rattlesnake

Although not a listed species, the eastern diamondback rattlesnake (*Crotalus adamanteus*) is commonly thought to be in decline throughout its range. Scientists believe that it requires 10,000 acres or more to sustain long-term viable populations (Hipes et. al., 2000). Additional threats to this species include indiscriminate killing because of fear, as well as for trade and being hit by cars.

Wading Birds

Little Blue Heron, Tricolored Heron, Snowy Egret

The little blue heron's (*Egretta caerulea*) and tricolored heron's (*Egretta tricolor*) decline are due to loss of freshwater wetlands and alteration of their natural hydroperiod. There is also some indication that pesticides and heavy metal contamination may affect this heron (Hipes et. al., 2000). Like these herons, the snowy egret (*Egretta thula*) is declining throughout its range, and has been since the 1950's. Scientists believe that the main reason for this decline is the loss and alteration of wetlands where they forage (Hipes et. al., 2000).

Limpkin

The limpkin (*Aramus guarauna*) is a large, long-billed, long-legged wader of swamps and marshes. Its bill is heavy and slightly decurved, allowing easy access to its preferred food, the apple snail (*Pomacea paludosa*). Pollution, hydrological disruptions, and an increase in invasive plants threaten the health of the apple snail population and hence the limpkin (Hipes et. al., 2000).

White Ibis, Roseate Spoonbill

Similar to the herons listed above, the white ibis (*Eudocimus albus*) and Roseate spoonbills (*Ajaia ajaja*) are declining throughout their range, due to the same reasons as the other wading birds, which includes the reduction and degradation of wetlands and human disturbances to their rookeries (Hipes et. al., 2000).

Wood Stork

Wood storks (*Mycteria americana*) are very sensitive to water levels in freshwater wetlands, as they require high concentrations of fish in fairly shallow water for foraging. Unnaturally high water levels during nesting seasons and extended droughts are both threats that wood storks face (Hipes et. al., 2000).

Florida Sandhill Crane

Florida sandhill cranes (*Grus canadensis pratensis*) and the migratory greater sandhill crane (*Grus canadensis tabida*) are indistinguishable from each other. There have been crane sightings at the Preserve during the summer (April-September) when the migratory greater sandhill cranes are not present. Threats to Florida sandhill cranes include loss and degradation of wetlands, fire suppression, free ranging dogs and cats, and entanglement in fencing (Rodgers et. al., 1996). Besides the management recommendations mentioned in Table 4, removal of all interior cattle fencing at the Preserve will greatly reduce the risk of entanglement to the birds.

Raptors

Swallow-tailed Kite

Swallow-tailed kites (*Elanoides forficatus*) migrate to Southwest Florida from South America in late February/early March for their nesting season that lasts through late July/early September. In the early 1900's, swallow-tailed kites were confirmed as nested in 21 states, today they are only found in 7 southeastern states. Habitat loss of nesting sites through development and conversion to agriculture are the major threats to this species (Hipes et.al., 2000).

This raptor has not been confirmed as nesting at WTSP, but nesting behavior has been observed. In the future if it is discovered that they are nesting on the property, the nest trees will be protected from disturbance during breeding season and planned management activities that could disturb the nesting pair(s) will be postponed.

Everglades Snail Kite

The Everglades snail kite (*Rostrhamus sociabilis plumbeus*), the subspecies of the snail kite in the United States, is endangered because many of the marshlands that serve as its habitat have been drained for development, which in turn has caused diminishing numbers of the kite's prey species, the apple snail. Success in locating apple snails is further obstructed by the introduction of exotic plants such as water lettuce, which hinders

foraging. Apple snails have also suffered from agricultural runoff, eutrophication, pesticides and other pollutants (Hipes et. al., 2000).

There were only 65 snail kites left when the Endangered Species Act was passed in 1973. The preservation of this species has managed a comeback resulting in a 1997 population of 995 birds. On June 19, 2004, a female snail kite was observed by land stewardship staff at Surprise Pond in Management Unit 7. On July 26, 2004, a male was seen in the Grand Marsh of Management Unit 1.

Short-Tailed Hawk

The short-tailed hawk's (*Buteo brachyurus)* Florida population is very small, with about 400 birds concentrated mainly in the southern part of the state. Although this species is found in other tropical lowlands, Florida's population has probably been isolated for hundreds or even thousands of years. Effects of loss of habitat to urbanization and deforestation are poorly known, but studies suggest that development poses a threat. Florida rehabilitators have treated birds for gunshot wounds and collisions with cars. Nesting habitat has been lost to cypress logging as these birds appear to have high fidelity to their breeding sites (Hipes et. al., 2000).

Bald Eagle

Bald eagle (*Haliaeetus leucocephalus*) numbers have steadily increased in Florida after a low of 120 active nests in 1973 (Hipes et.al., 2000). Still, loss of habitat and human disturbance due to development is a primary concern for this species.

Southeastern American Kestrel

The southeastern American kestrel (*Falco sparverius paulus)* is found in open pine habitats, woodland edges, prairies, and pastures throughout much of Florida. Nest sites are cavities in tall dead trees or utility poles generally with an unobstructed view of the surroundings. The availability of suitable nesting sites is paramount during breeding season. Open patches of grass or bare ground are needed in flatwoods settings, since thick palmettos prevent detection of prey.

Natural nesting and foraging habitats have declined, as sandhill and open flatwoods habitats are converted to intensive agricultural lands and residential development. Pastures may be used by the breeding species but often lack snags used for nesting sites. A key habitat feature necessary for breeding is a suitable cavity tree. Cavity trees are usually excavated in large pines and, less frequently, oaks by various woodpeckers (Hipes et. al., 2000). Additional management activities will permit leaving a reasonable number of tree snags to increase nesting opportunities.

Mammals

Southeastern Big-eared Bat

The southeastern big-eared bat (*Corynorhinus rafinesquii)* is a medium-sized bat with very long ears that extend to the center of the back when laid down. Its long ears distinguish

this species from all other Florida bats. It inhabits forested communities, particularly those associated with floodplains, supporting large, hollow trees used for roosting; also pine flatwoods and mixed oak-pine forests. This bat is known from less than a dozen locations in Florida, at least four of which are on public or private conservation lands (Hipes et. al., 2000).

Round-Tailed Muskrat

The round-tailed muskrat *(Neofiber alleni)* is nocturnal and constructs dens by weaving grasses and other marsh vegetation into domes of varying size. It lives in shallow marshes of variable size and plant species composition. It is distributed in patches across the state and is threatened by isolation of populations resulting from development and wetland drainage (Hipes et. al., 2000).

Occasional fires are needed to maintain the marsh habitat, but because vegetation needed for food and cover grows back more slowly after winter burns, growing-season burns may be preferred (Hipes et. al., 2000).

Big Cypress Fox Squirrel

The Big Cypress fox squirrel (*Sciurus niger avicennia*) is in decline throughout its range primarily due to loss and degradation of habitat (Hipes et. al., 2000). Although the number of this subspecies of fox squirrel in Florida is unknown, "based on the amount of known habitat loss, fox squirrel populations have undoubtedly declined at least 85% from pre-settlement levels" (Humphrey, 1992). Much of the fox squirrel's pine-oak forest has been converted to pine plantations, agriculture and development.

Regular burn regimes of 2-5 years during the growing season (April-July) are critical to maintain their habitat with an open canopy with minimal understory. In 2002, Kevin L. Erwin Consulting Ecologist, Inc. reported sighting fox squirrels in Management Units 3 and 8.

Florida Panther

The Florida panther (*Puma concolor coryi)* is extirpated in most of its historic range in the southeastern United States, but exists in small populations in South Florida. The panther's decline is due mainly to loss, fragmentation, and degradation of habitat. Other habitat related threats include inbreeding, insufficient numbers of large prey, disease, and mercury and other environmental contaminants. Institutional constraints and negative public perceptions also threaten the future survival of the Florida panther. The large cats require extensive areas of mostly forested communities. Large wetlands that are generally inaccessible to humans are important for diurnal refuge. They will tolerate improved areas in a mosaic of natural communities (Hipes et. al., 2000).

The presence of Florida panthers has not been confirmed in recent years at WTSP, but the Preserve is a Priority 2 land delineated in the Florida Panther Habitat Preservation Plan issued by the Florida Panther Inter-agency Committee, consisting of four state and federal wildlife agencies (see Appendix M, Strategic Habitat Conservation Area). Anecdotal information from residential neighbors indicate the panther's presence here in the past and large paw prints, possibly those of a panther were observed and photographed by staff in a

pine flatwoods area in Unit 6 on October 21, 2004. These photographs, including a scat sample from another area, need further expert assessment.

Florida Black Bear

The Florida black bear *(Ursus americanus floridanus)* is in decline due to the loss of core habitat and of corridors capable of handling their large ranges. A wide variety of forested communities are needed to support the varied seasonal diet of black bears. Forested wetlands are particularly important for diurnal cover (Hipes et. al., 2000).

Although staff has not confirmed the Florida black bear, its presence is expected due to the size of the Preserve, the mosaic of suitable habitat and the position in a preservation corridor south into Collier County.

Plants

Tenlobe False Foxglove

The tenlobe false foxglove *(Agalinis obtusifolia)* is classified by IRC as Critically Imperiled in South Florida because of extreme rarity. It is found in flatwoods habitats (Gann, et. al., 2002).

Chaffweed

Chaffweed (*Anagallis minima*) has been recognized as Critically Imperiled in South Florida by IRC and is usually found in moist, disturbed soils (Gann, et. al., 2002).

Florida Pimpernel

As of 2002, the Florida pimpernel (*Anagallis pumila*) is a plant that is not known to be in any conservation area and is listed by IRC as Critically Imperiled. Habitats that this plant may be located in include mesic flatwoods, pond margins, and riverbanks (Gann, et. al., 2002).

Pinepink

Pinepink (*Bletia purpurea*) is listed as Threatened by the FDA and has been found in Central and South Florida rockland pinelands and scrub habitats (Brown, 2002).

Warty Sedge

The warty sedge (*Carex verrucosa*) has been recognized as Critically Imperiled in South Florida by IRC and only noted in three counties. This perennial terrestrial herb can be found in freshwater swamps and marshes. This is a temperate species at the southern end of its range (Gann, et. al., 2002).

Less than 12 plants were located in Unit 10, its' major threats are hydrologic modifications and wetland invasive exotic plants.

Sensitive-pea

The sensitive-pea (*Chamaecrista nictitans*) has been recognized as Critically Imperiled in South Florida by IRC and only noted in three counties. This annual terrestrial herb can be found in flatwoods and disturbed sites (Gann, et. al., 2002).

Florida Butterfly Orchid

Although locally abundant (Brown, 2002), the Florida butterfly orchid (*Encyclia tampensis*) is designated as Commercially Exploited by the FDA. A plant that is designated as "Commercially Exploited" is considered to be threatened by commercial use.

Florida butterfly orchids are scattered in a few areas of WTSP. When creating any trails, consideration will be made to avoid areas where these plants are growing. If the plants will be damaged during restoration activities, a permit will be obtained from FDA to remove them before work commences. Plants growing on invasive exotic vegetation, to be destroyed, will be relocated on the site if economically feasible.

Shortleaf Skeleton Grass

Shortleaf skeleton grass (*Gymnopogon brevifolius*) has been recognized as Critically Imperiled in South Florida by IRC. This perennial terrestrial herb may be found in mesic flatwoods (Gann, et. al., 2002).

Needleroot Airplant Orchid

Needleroot airplant orchid (*Harrisella porrecta*) is also known as leafless harrisella and a local common name of "jingle bell orchid," because the fruits hang in little clusters (Brown, 2002). It is listed by FNAI as G4/S1 and by FDA as Threatened. General habitats found in include hardwood hammocks, sloughs, cypress domes, and old citrus trees.

Small's Bogbutton

Small's bogbutton (*Lachnocaulon minus*) has been recognized as Critically Imperiled in South Florida by IRC and found only within a couple of counties. This perennial terrestrial herb can be found in wet flatwoods and wet disturbed sites (Gann, et. al., 2002).

Catesby's Lily

Catesby's (or pine) lily (*Lilium catesbaei*) is listed as Threatened by FDA. There is concern that the population of this species is decreasing and is likely to become endangered in the near future. This wildflower is found throughout WTSP in moist flatwoods. As a plant found in a fire dependent plant community, it generally benefits from occasional fire (Lilies, 2004).

During exotic plant removal or construction of any public use areas, staff will survey the area before work commences to look for and mark, if necessary, areas to avoid.

Shade Mudflower

The shade mudflower (*Micranthemum umbrosum*) has been recognized as Critically Imperiled in South Florida by IRC and only distributed within three counties. This perennial terrestrial herb has also been noted at Six Mile Cypress Slough Preserve and can be found in cypress swamps, riverside swamp forests, river banks, and wet disturbed sites (Gann, et. al., 2002).

Wright's Waternymph

Wright's waternymph (*Najas wrightiana*) has been recognized as Critically Imperiled in South Florida by IRC. This annual aquatic herb has been found in cypress swamps, brackish creeks, and along canals (Gann, et. al., 2002).

Giant Sword Fern

Giant sword fern (*Nephrolepis biserrata*) is another Threatened species listed by FDA and is found in swamps and hydric hammocks.

Royal Fern

Royal fern (*Osmunda regalis var. spectabilis*) is listed as Commercially Exploited by FDA. It has been located in several of WTSP's cypress dominated habitats such as cypress swamps and domes (Nelson, 2000).

Fringed Meadowbeauty

Fringed meadowbeauty (*Rhexia petiolata*) has been recognized as Critically Imperiled in South Florida by IRC. It is found in wet flatwoods, wet prairies and cypress pond margins (Gann, et. al., 2002).

Fernald's Beaksedge

Fernald's beaksedge (*Rhynchospora fernaldii*) has been recognized as Critically Imperiled in South Florida by IRC. This perennial terrestrial herb is found in mesic flatwoods and probably dry prairies (Gann, et. al., 2002).

Fewflower Beaksedge

Fewflower beaksedge (*Rhynchospora rariflora*) has been recognized as Critically Imperiled in South Florida by IRC. This perennial terrestrial herb is found in mesic and wet flatwoods habitats (Gann, et. al., 2002).

Leafless Beaked Ladies'-tresses

Leafless beaked ladies'-tresses (*Sacoila lanceolata*) is another Threatened species listed by FDA. It is found in swamps and hydric hammocks.

Fewflower Nutrush

Fewflower nutrush (*Scleria ciliata var. pauciflora*) has been recognized as Critically Imperiled in South Florida by IRC. This perennial terrestrial herb is found in flatwoods habitats (Gann, et. al., 2002).

Long-lipped Ladies'-tresses

Long-lipped ladies'-tresses (*Spiranthes longilabris*) is another Threatened species listed by FDA. It is found in moist, grassy roadsides, and pine flatwoods habitats.

Northern Needleleaf

The northern needleleaf (*Tillandsia balbisiana*) is another Threatened species listed by FDA that is occasionally found in a variety of habitats including pinelands, hammocks and mangroves. It has been documented in several scattered areas of the Preserve. Threats to this species include the exotic Mexican bromeliad weevil (*Metamasius callizana*) and habitat destruction (Save, 2003).

During exotic plant removal or construction of any public use areas, staff will survey the area before work commences to look for and mark, if necessary, areas to avoid. Plants growing on invasive exotic vegetation, to be destroyed, will be relocated on-site if economically feasible. Currently, scientists are researching biological control agents for the exotic Mexican bromeliad weevil. Staff will keep current with the research developments and work with scientists in the future if it is determined that the weevils are affecting epiphytes and the United States Department of Agriculture (USDA) is in need of release sites.

Stiff-leaved Wild-pine

Stiff-leaved wild pine (*Tillandsia fasciculata var. densispica*) is an Endangered species listed by FDA and is also known as the cardinal airplant. It is found in hammocks, cypress swamps, and pinelands and has been documented in several portions of WTSP. Threats to this plant include illegal collecting, habitat destruction and the Mexican bromeliad weevil (Save, 2003).

Giant Airplant

Giant airplant (*Tillandsia utriculata*) is another bromeliad considered to have been quite common in Florida before the arrival of the Mexican bromeliad weevil and is now Endangered by FDA. Another common name for this bromeliad is giant wild-pine. Typical habitats to find this plant include hammocks and pinelands. In addition to the weevil, illegal collecting and habitat destruction threaten this species (Save, 2003).

Early Blue Violet

Early blue violet (*Viola palmata*) has been recognized as Critically Imperiled in South Florida by IRC. This perennial terrestrial herb is found in flatwoods habitats (Gann, et. al., 2002).

Florida Mudmidget

Florida mudmidget (*Wolffiella gladiata*) is also known as bog-mat and has been recognized as Critically Imperiled in South Florida by IRC. This short-lived aquatic herb is found in cypress swamps and ditches and is often overlooked because of its tiny stature (Gann, et. al., 2002).

Table 4: Management Recommendations for Designated Species

Fauna Species		Restoration Activities		Management Recommendations		
Common Name	Scientific Name	Exotic Removal	Hydrologic	Prescribed Fire	Mark Location	Relocation
Roseate spoonbill	*Ajaia ajaja*	x	x			
American alligator	*Alligator mississippiensis*	x	x		x (nests)	
Limpkin	*Aramus guarauna*	x	x			
Short-tailed hawk	*Buteo brachyurus*	x		x		
Southeastern big-eared bat	*Corynorhinus rafinesquii*	x		x		
Eastern diamondback	*Crotalus adamanteus*	x		x		
Eastern indigo snake	*Drymarchon corais couperi*	x		x		
Gopher tortoise	*Gopherys polyphemus*	x		x	x (burrows)	x
Florida sandhill crane	*Grus Canadensis pratensis*	x	x	x		
Little blue heron	*Egretta caerulea*	x	x			
Tricolored heron	*Egretta tricolor*	x	x			
Snowy egret	*Egretta thula*	x	x			
Swallow-tailed kite	*Elanoides forficatus*	x	x	x	x (nests)	
White Ibis	*Eudocimus albus*	x	x			
Southeastern American kestrel	*Falco sparverius paulus*	x		x		
Bald eagle	*Halieetus leucocephalus*	x		x	x (nests)	
Wood stork	*Mycteria americana*	x	x			
Round-tailed muskrat	*Neofiber alleni*	x	x	x		
Florida panther	*Puma concolor coryi*	x		x		
Gopher frog	*Rana capito*	x	x	x		
Everglades snail kite	*Rostrhamus sociabilis*	x	x			
Big Cypress fox squirrel	*Sciurus niger avicennia*	x		x	x (nests)	
Florida black bear	*Ursus americanus floridanus*	x		x		

Table 4: Management Recommendations for Designated Species (con't.)

Flora Species		Restoration Activities		Management Recommendations		
Common Name	Scientific Name	Exotic Removal	Hydrologic	Prescribed Fire	Mark Location	Relocation
Tenlobe false foxglove	*Agalinis obtusifolia*	x		x		
Chaffweed	*Anagallis minima*	x	x			
Florida pimpernel	*Anagallis pumila*	x	x	x		
Pinepink	*Bletia purpurea*	x				
Warty sedge	*Carex verrucosa*	x	x			
Sensitive-pea	*Chamaecrista nictitans*	x		x		
Florida butterfly orchid	*Encyclia tampensis*	x				x
Slim or shortleaf skeleton grass	*Gymnopogon brevifolius*	x		x		
Needleroot airplant orchid	*Harrisella porrecta*	x	x			
Small's bogbutton	*Lachnocaulon minus*	x	x	x		
Catesby's lily, pine lily	*Lilium catesbaei*	x		x		
Shade mudflower	*Micranthemum umbrosum*	x	x			
Wright's waternymph	*Najas wrightiana*	x	x			
Giant sword fern	*Nephrolepis biserrata*	x	x			
Royal fern	*Osmunda regalis var. spectabilis*	x	x			
Fringed meadowbeauty	*Rhexia petiolata*	x	x			
Fernald's beaksedge	*Rhynchospora fernaldii*	x		x	x	x
Fewflower beaksedge	*Rhynchospora rariflora*	x	x	x	x	x
Leafless beaked ladies'-tresses	*Sacoila lanceolata*	x	x		x	x
Fewflower nutrush	*Scleria ciliata var. pauciflora*	x		x		
Long-lipped ladies'-tresses	*Spiranthes longilabris*	x		x		
Reflexed wild-pine, northern needleleaf	*Tillandsia balbisiana*	x				
Stiff-leaved wild-pine, cardinal airplant	*Tillandsia fasciculata var. densispica*	x				x
Giant wild-pine, giant airplant	*Tillandsia utriculata*	x				x

Table 4: Management Recommendations for Designated Species (con't.)

Flora Species		Restoration Activities		Management Recommendations		
Common Name	Scientific Name	Exotic Removal	Hydrologic	Prescribed Fire	Mark Location	Relocation
Early blue violet	*Viola palmata*	x		x		
Bog-mat, Florida mudmidget	*Wolffiella gladiata*	x	x			

Restoration Activities:

Activities on the Preserve that will benefit and protect designated species for the long term.

Explanation of Management Recommendations:

Mark Location – location of individual plants, nest sites or burrows will be GPSed for land stewardship staff knowledge and protection during restoration activities.

Relocation – a permit will be obtained to relocate any plant that could be damaged during exotic removal, if it is economically feasible. Gopher tortoises will be relocated if burrows could be damaged/flooded.

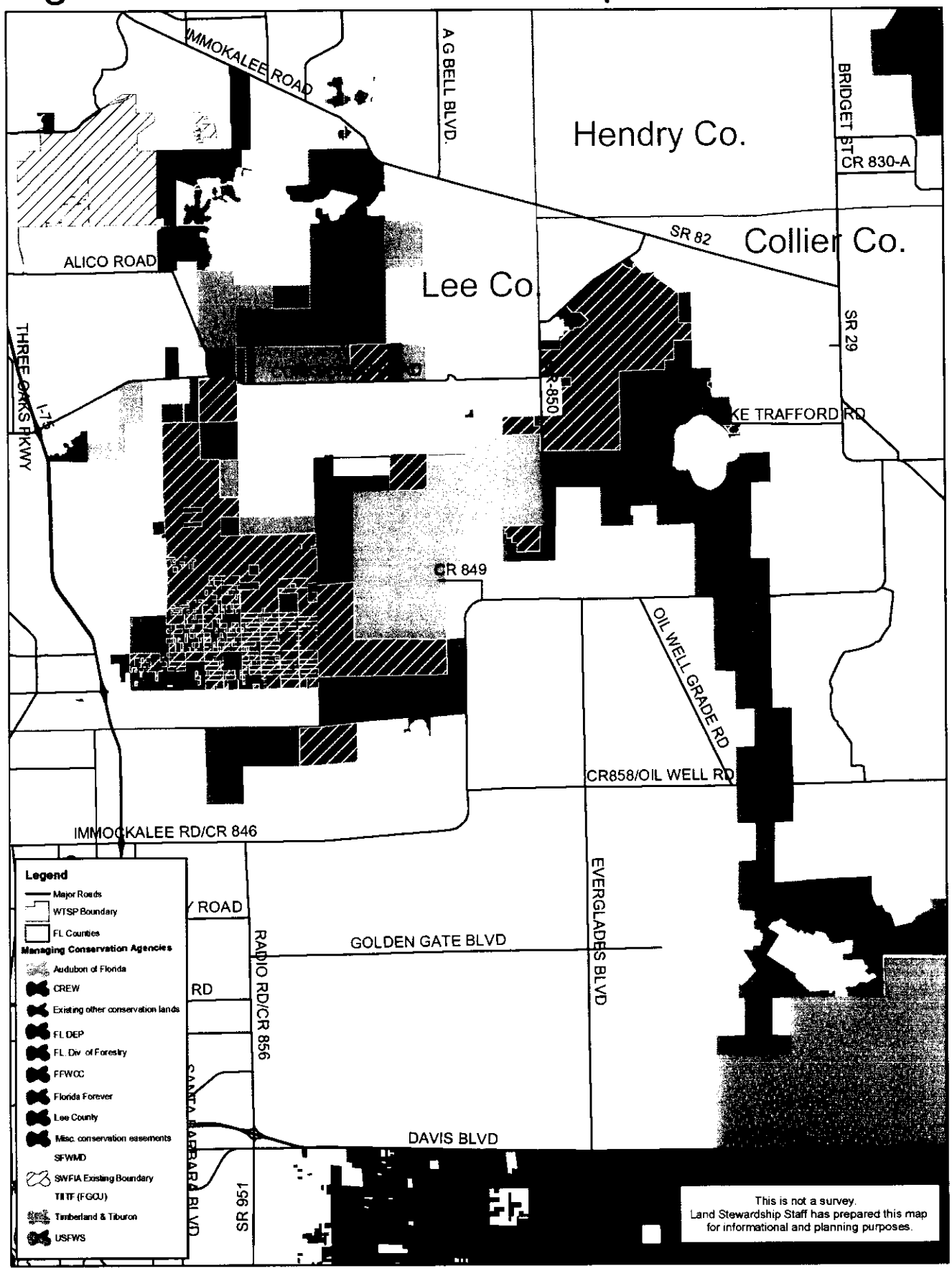
e. Biological Diversity

Biodiversity at Wild Turkey Strand Preserve varies depending on the habitat, but should increase significantly after several management activities have been put into practice (i.e. invasive exotic plant removal, hydrological restoration, prescribed fire). Currently there are >460 plant species (91 exotic) and 110 animal species (5 exotic). Of the nearly 20% of the plants that have been identified as exotic or doubtfully native, 25% (or 23 plants) are on the Florida Exotic Pest Plant Council's 2003 List of Invasive Species (Appendix H). Optimistically, after invasive plant removal work, the number of overall plant species may actually decrease. Theoretically, after all restoration and on-going stewardship activities have been integrated, the flora and fauna species numbers may expand. It will be interesting to compare the numbers for the 5-year revision.

Although only a 15-20 minute drive from human population centers, the Preserve remains a somewhat remote retreat for animal species that are quickly losing habitat. Additionally, the size of the Preserve at over 2,600 acres and its proximity to other conservation areas provides good habitat for species with large home ranges such as deer, panthers, wild turkey, bald eagles, sandhill cranes and wood storks. Conservation easements connect WTSP to the approximately 6,000 acre Port Authority Imperial Marsh Preserve extending south to Corkscrew Road which borders the 9,405 acre Flint Pen Strand, co-owned by Lee County and SFWMD and managed by SFWMD as part of the larger 60,000 acre Corkscrew Regional Ecosystem Watershed (C.R.E.W.) which extends into Collier County. Other conservation areas that are connected to this corridor include Gator Hole Preserve (175 acres) and Imperial Marsh Preserve (236 acres) owned by Lee County and acquired through the Conservation 20/20 Program, and the Corkscrew Mitigation Bank (640 acres) owned by SFWMD, operated by Mariner Properties, Inc. The extension of this corridor into Collier County starts with the C.R.E.W. lands which includes the Corkscrew Swamp Sanctuary and the Panther Island Mitigation Bank. Proposed acquisitions by the C.R.E.W. Land & Water Trust extends even further through Lake Trafford, the Camp Keais Strand, the Florida Panther National Wildlife Refuge and the Fakahatchee Strand Preserve State Park. The overall wildlife corridor is illustrated in Figure 8.

Many species of birds, reptiles, invertebrates, fish and mammals inhabit the Wild Turkey Strand Preserve. The numerous wetlands, surrounded by uplands, are one of the primary reasons that Wild Turkey Strand Preserve is so biologically diverse. Oak toads, eastern narrowmouth toads, barking (*Hyla gratiosa*) and squirrel treefrogs spend more time in surrounding uplands, utilizing the wetlands strictly for breeding (Jensen, per. comm.). Additionally, barking treefrogs and oak toads breed almost exclusively in seasonal wetlands. Because of the short hydroperiod, larger predatory fish like Florida largemouth bass (*Micropterus salmoides floridanus*) and bluegill (*Lepomis macrochirus*) are unable to become established and feed on the developing tadpoles. As these temporary wetlands slowly dry, the fish, tadpoles and aquatic invertebrates become quite concentrated, providing an excellent food source for the numerous wading birds that utilize the Preserve. There are a few scattered wetlands that hold water year-round that the majority of wildlife utilizes during the dry season.

Figure 8: Wildlife Corridor Map



Wild Turkey Strand Preserve

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Map Prepared on 8/21/05 by sturman@leegov.com

The integrity and diversity of WTSP must be protected when and where possible. Land stewardship staff will perform the following actions in this regard:

- Control of invasive exotic vegetation followed by annual maintenance to provide more suitable habitat for native aquatic and terrestrial species.
- Secure the boundaries to protect the wetlands and other fragile plant communities from off-road vehicle use and other harmful unauthorized uses.
- Removal of any interior cattle fencing, debris and prevention of future dumping on site.
- Hydrologic restoration that will include plugging some of the numerous ditches to slow water drainage to help resume natural hydroperiods.
- Implement a prescribed fire program to closely mimic the natural fire regimes for the different plant communities to increase plant diversity and insure the canopies remain open.
- Control invasive exotic animal populations to reduce their impacts on the herbaceous plants, native animals, and soils.
- Conduct on-going species surveys through volunteers and staff to help catalogue and monitor the diversity that is present.
- Provide educational opportunities for visitors through nature trails and programs with interpretive signs.

C. Cultural Resources

a. Archaeological

In 1987, Piper Archaeological Research, Inc. (PARI) conducted an archaeological site inventory of Lee County. They were able to identify 53 sites increasing the total number of known archaeological sites in Lee County to 204. By 2004, this number has increased to over 2000-recorded archaeological and historical sites. In addition, PARI created a site predictive model and archaeological sensitivity map for the county that highlighted potential areas likely to contain additional archaeological sites. Approximately ¼ of Wild Turkey Strand Preserve lies within the study's "Sensitivity Level 2" area (Figure 9). The study defines this level as "areas that contain known archaeological sites that have not been assessed for significance and/or conform to the site predictive model in such a way that there is a high likelihood that unrecorded sites of potential significance are present. If these areas are to be impacted, then they should be subjected to a cultural resource assessment survey by a qualified professional archaeologist in order to 1) determine the presence of any archaeological sites in the impact area and/or 2) assess the significance of these sites" (Austin, 1987).

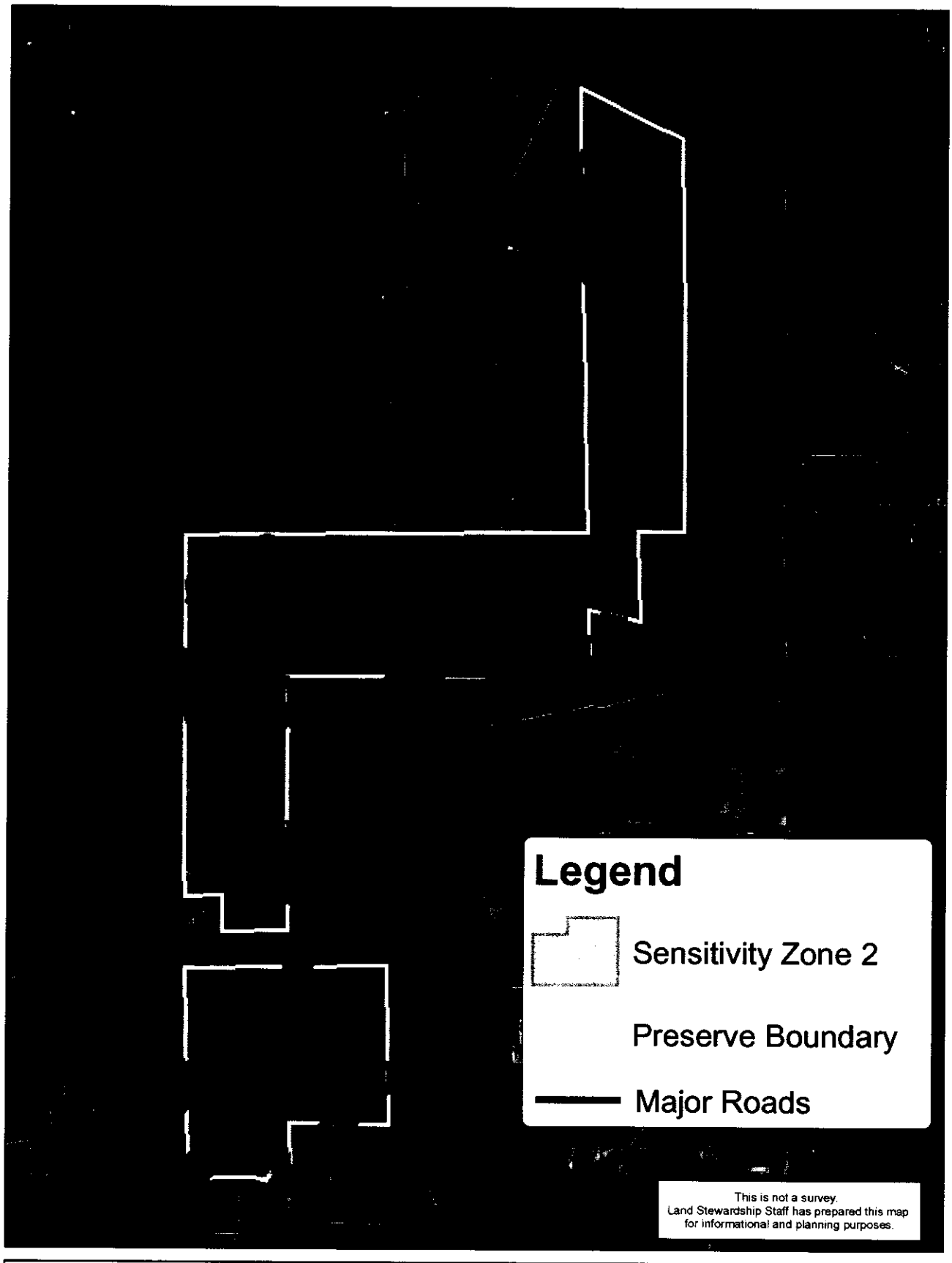
The Environmental Site Assessment Report (WRS, 2002) identified a WWII rifle range and small concrete munitions buildings along with several concrete poles and possible concrete machine gun foundations at the northern end of the Preserve. Historical aerials from 1944 (Figure 10), 1953 (Figure 11), and 1958 (Figure 12) clearly delineate the general location of these objects including formations (skeet ranges) on land adjacent to the east and west. This target range (Freeman, 2004) was part of the military's rifle range and flexible gunnery air-to-ground training school operated from the Buckingham Army Air

Field (BAAF) (Schlosstein, 2004). Gunnery Road's historic function was as the road from Buckingham Army Air Field to the rifle ranges. Reportedly, this military airfield operated from 1942 until September 1945 and is presently the Lee County Mosquito/Hyacinth Control District. Furthermore, it is quite feasible that these remnant concrete objects, together with the site's military role, would be considered historical and cultural resources from the WWII era. See Appendix C for historical photographs related to BAAF.

Although this WWII associated site is not within a Lee County historic district, it should be possible to have this site added to the Florida Master Site File (FMSF) and/or receive grant funding (state, local, or private) to have the site further developed into a WWII historical resource as an educational interpretive program. The Lee Plan's (Lee County's comprehensive plan) definition of historic resource is "Any prehistoric or historic district, site, building, object, or other real or personal property of historical, architectural, or archaeological value. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state (s.267.021 (3), F.S. 1986)" (Lee County, 2003). The Lee County Planning Division has been contacted regarding this potential historic site and recommends that C20/20 hire a professional archaeologist to perform the numerous tasks related with the site.

Regardless of the concrete objects' historical significance, if there will be any major soil disturbance during restoration of the Preserve or during the development of public use facilities, a professional archaeologist will be hired to conduct a survey of the area to be impacted. If evidence of shell middens or other artifacts are found in the area, the Division of Historical Resources will be immediately contacted and protection procedures will comply with the provision of Chapter 267, Florida Statutes, Sections 267.061 2(a) and (b). Collection of artifacts and/or any disturbance of the archaeological site will be prohibited unless prior authorization has been obtained from the Department of State, Division of Historical Resources. Also, the site will be managed in coordination with recommendations from the Division of Historical Resources and, if necessary, the site will be kept confidential with periodic monitoring for impacts. If any significant archaeological resources are found and confidentiality is not found to be necessary, they will be incorporated into the public education program.

Figure 9: Archaeological Sensitivity Zone Map



b. Land Use History

According to aerial photography dating back to 1944 (Figure 10), this property has been used for various agricultural activities, logging, stumping for turpentine, row crop farming and most recently cattle grazing.

Intense logging of slash pine from the late nineteenth century until the 1930's virtually eliminated all virgin stands of the southern mixed forest in South Florida. Between 1966 and 1968 the stumps of the logged slash pines were removed from this Preserve. This activity, referred to as "*stumping,*" was conducted to extract turpentine from the wood. Both of these activities have had impacts on the landscape at WTSP. The former activity dramatically reduced slash pine densities and age of the pine flatwoods forest throughout the Preserve, according to the historical aerials. The latter activity has created numerous depressions in the soil, which primarily creates a microhabitat where soil moisture is higher for longer periods than adjacent habitat at grade. For this reason, different plant species are likely to occur in these depressions.

In the 1940's, a WWII rifle range and small concrete munitions buildings along with several concrete poles and possible concrete machine gun foundations were built at the northern end of the Preserve (see Archaeological section).

Row crop farming on the Preserve took place from the 1960's until 2002, according to historical aerials. There are several different abandoned farm fields on the Preserve that were farmed at different times. The most northern farm field (Unit 1) has been fallow since approximately 1972 and has since, through natural succession, recovered with wax myrtle and numerous species of native grasses (see Figure #16). Exotic vegetation does occur in this field but at a low density, less than 25% of all vegetation cover. The farm field located just south of Corkwood Marsh (Unit 1) was abandoned approximately in 1974. Brazilian pepper has managed to taken over this entire area at a 100% infestation.

The agricultural fields in Unit 2 were farmed from 1966 until 1990 (the southern portion) and 1993 (the northern portion). Now the northern field mainly consists of native grasses and very few Brazilian peppers. The southern portion consists of large Brazilian peppers along the berms and some native grasses, dog fennel, dayflower, and Caesar weed. In the center of Unit 3, there is an older, barely discernable, agricultural field that was farmed for a short period of time in the 1940's. In 1968, the agricultural field in the eastside of Unit 3 began to be farmed and then in 1974 farming activity ceased in the part of the field inside the Preserve boundary. In Unit 4, there is a small area that was cleared for farming in 1970 and now is mainly native grasses and wax myrtle.

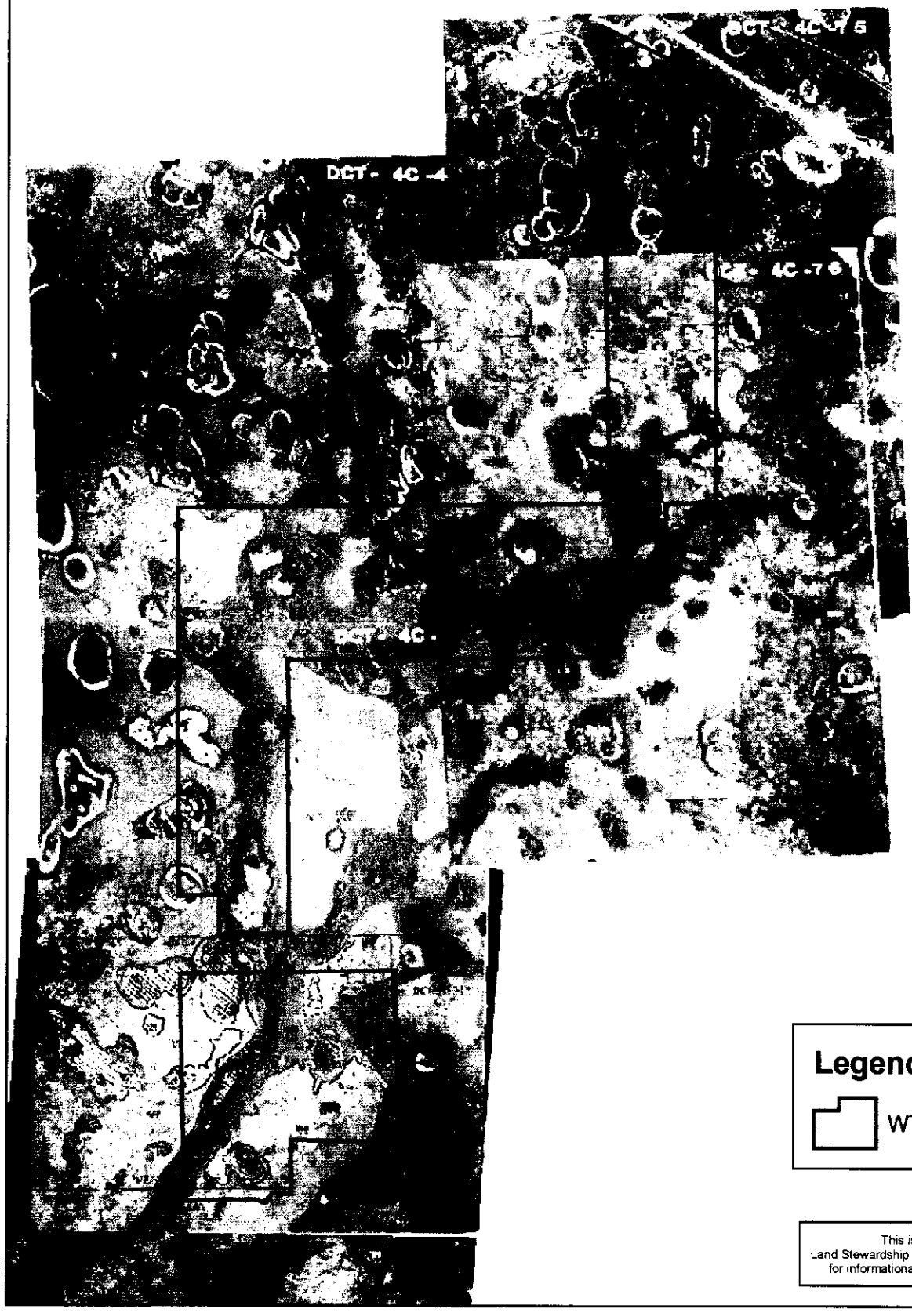
To the southeast of Unit 6, a field was cleared for agriculture in 1977, around the same time a field in the southeast portion of Unit 9 and was cleared and farmed up until 2002. Both fields are surrounded by Brazilian pepper and contain mostly grasses and dog fennel. In the eastern portion of Unit 11 farming occurred from 1968 until 1984 and now it is mainly torpedo grass with Brazilian pepper around the edge. In Units 12 and 13, the fields were farmed from 1968 to 1972 and now are mainly grasses, dog fennel and various weeds. When these fields were created, the farmer also dug a ditch around the cypress dome in Unit 12. This cypress dome is now completely surrounded by thick, large, impenetrable Brazilian peppers.

In the mid 1900's, the local Flint Brothers Cattle Company began grazing cattle throughout this property. Grazing continued across the property until it was purchased by Lee County. Land stewardship staff felt that there should be limited grazing on the Preserve due to the long hydroperiod and sensitivity of the numerous wetlands. The cattle lease was drawn up to only include approximately 250 acres of upland areas, in Management Unit 2. The Flint Brothers agreed to the lease, but it is logistically not feasible unless adjacent property owners fence their boundaries to prevent cattle from roaming back onto WTSP in more sensitive areas.

In 1972, FPL started construction of the power line that runs in a northwest-southeast direction bisecting the Preserve. Culverts were installed in a few places, but it still had an effect on the hydrology of the Preserve by slowing and redirecting the historic sheet flow. Then in 1981, FPL started to construct the second power line on the Preserve. Two borrow pits (Leo's Pond and Fox Squirrel Wetland in Unit 8) were dug for fill to create the northeast-southwest power line.

The Lee County Utilities Division has several testing wells around the Preserve that are associated with the adjacent Green Meadows Water Treatment Plant.

Figure 10: Historical Aerial, 1944



Wild Turkey Strand Preserve

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Feet

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Map Prepared on: 12/14/04 by sturner@eegov.com

Figure 11: Historical Aerial, 1953

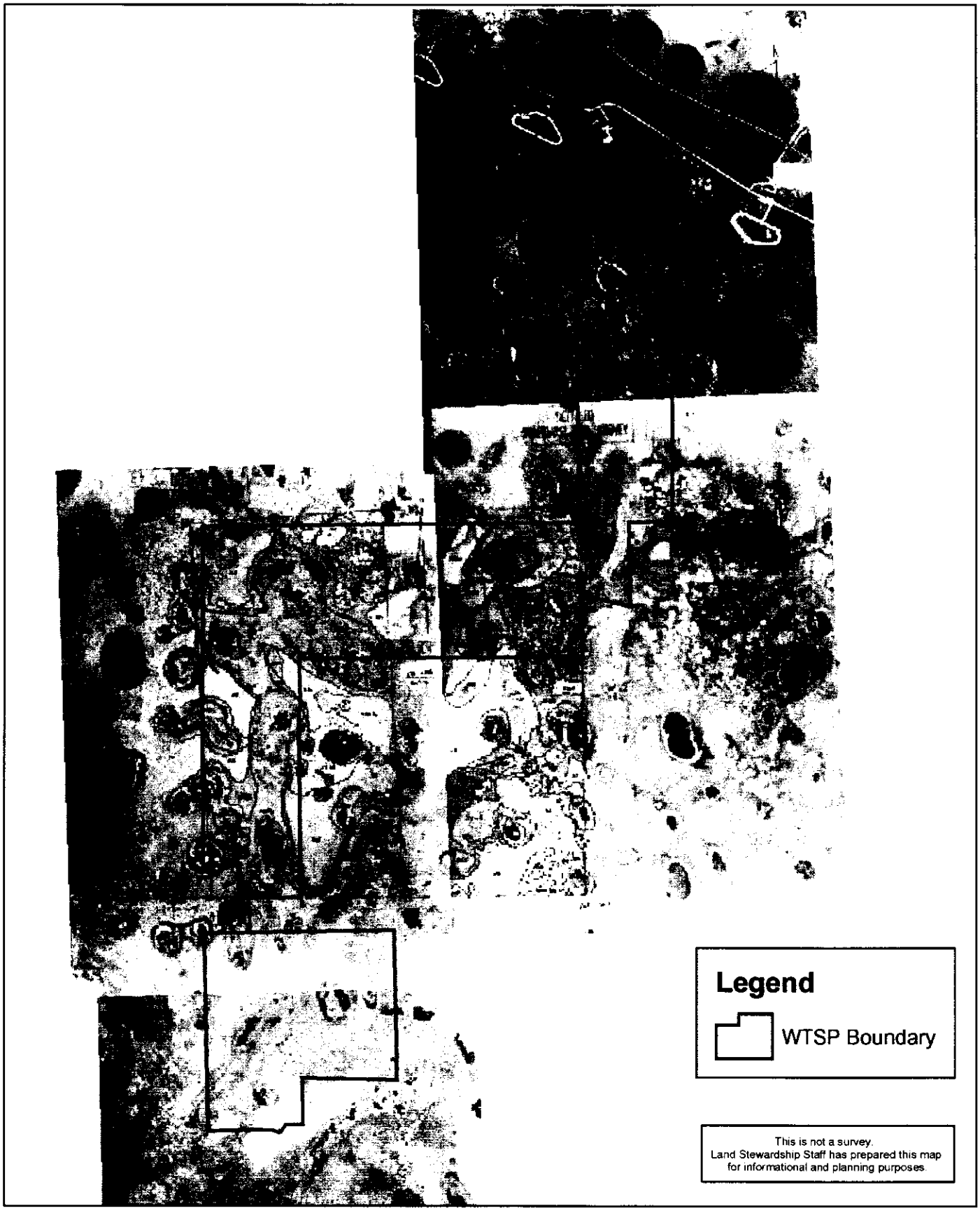
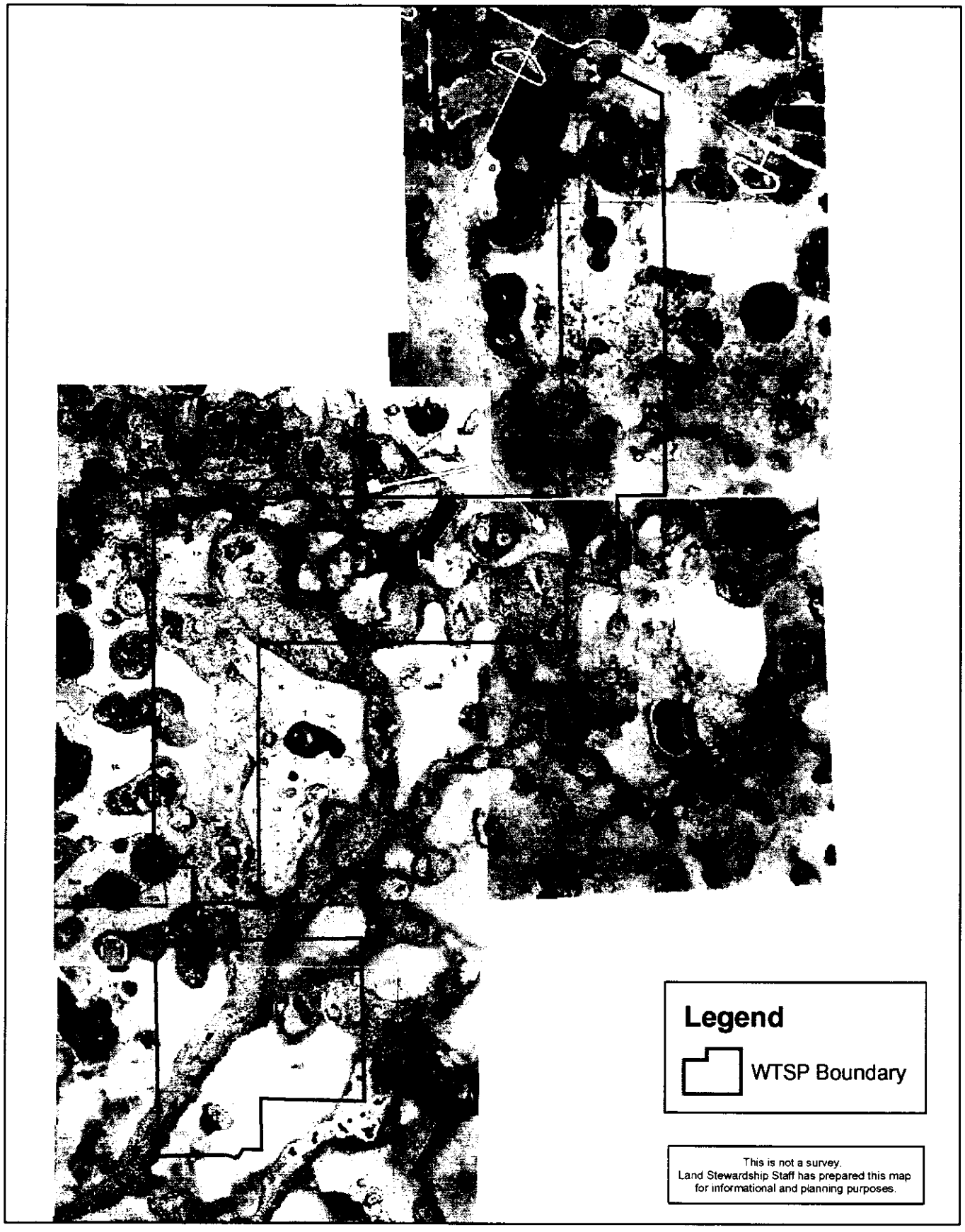


Figure 12: Historical Aerial, 1958



c. Public Interest

Conservation 20/20 staff has received very few requests from local citizens to access the Preserve; one individual called for permission to drive ATVs on-site with his family and neighbors. This activity is not appropriate or permitted on any Lee County Preserves or Parks (Lee County, 2002).

In March 2004, the Jamerson Farms Operations, LLC requested to lease 160-acres (disturbed row crops and improved pasture) adjacent to their existing farming operations. In exchange they would pay $16,000/year, agree to leave an equal amount of their land undisturbed (existing wetlands), and potentially provide an opportunity to exchange 183-acres of their property for the acreage Lee County allowed them to farm, if an existing option with another party wasn't exercised by the summer of 2005. Presently, the Jamerson Farm has become the site of the Green Meadows Rock Mine IPD rezoning application that was filed with Lee County (refer to External Influences section).

Staff anticipates ongoing field trips with community groups including the Audubon Society of Southwest Florida, to educate the public on the importance of conservation lands for wildlife and its significance to the Estero River watershed. While the Preserve contains mainly wetland soils and habitats, there are opportunities for resource based recreational facilities such as a nature trail, boardwalks, and wildlife observation decks planned for the northern section of the Preserve that would service the growing Gateway/Lehigh Acres communities.

V. Factors Influencing Management

A. Natural Trends and Disturbances

Natural trends influencing stewardship at WTSP include hurricanes, flooding, wildfires, and the pattern of wet and dry seasons. Construction of facilities will need to take into consideration the possibility of a tropical storm, wildfire and seasonal flooding. A significant storm could damage the vegetation and it may be necessary to bring in heavy equipment to remove vegetation from trails and fence lines after a storm.

Wildfires caused by lightning are a natural occurrence in Florida. An agreement between the Florida Division of Forestry (DOF) and Lee County Parks and Recreation on wildfire fighting protocol has been accomplished. In the case of a wildfire, DOF would be notified. The agreement with DOF includes the following stipulation: if the fire is in a melaleuca free unit where fire lines are well maintained, the fire could be allowed to burn within the unit and fire-fighting equipment will stand by until there is potential for the fire to escape to hazard areas. Such an agreement is important for the proper management and protection of the Preserve due to the potential damage fire-fighting dozers can cause to natural habitats. Land stewardship staff will follow-up on the agreement with periodic site visits with DOF staff to familiarize them with the Preserve and the Preserve's management goals. A preserve-wide prescribed fire plan will help keep the impact of wildfires down. The timing of prescribed burning will be influenced by seasonal rain and wind patterns.

The pattern of wet and dry seasons will be most influential on exotic plant control projects, when heavy rains could cause herbicide runoff or flood areas and delay projects. The Land Stewardship Operations Manual's exotic plant prescription form will be used to stipulate the conditions under which the control will take place. Heavy equipment will only be able to access most areas of the Preserve during the dry season.

B. Internal Influences

There are numerous human influences that have impacted WTSP (see Appendix L). Ditches and borrow pits were dug for agricultural drainage and for FPL utility easements, whereas the unwanted soils created roads, berms and mounds of spoil that continue to adversely affect local hydrology. Interior trails and old DOF plow lines continue to redirect water from the natural flow ways. There are several locations with moderate levels of debris primarily left over from agricultural operations. An abandoned oil exploratory well, several irrigation wells, and remnants of a WWII military firing range exist. There is an active cattle lease on a portion of the Preserve and interior fencing for this purpose. Illegal access from ORV and hunters needs to be eliminated. Invasive exotic animals are negatively affecting native animals and habitats. This intrusive level of man-made activities has permitted aggressive invasive exotic plant species to thrive and further disrupt native plant communities. This section will help explain these issues further and specify stewardship measures to reduce or eliminate these problems.

An environmental consultant may need to be hired to collect hydrological data and provide specific recommendations for restoration protocols on some ditches and berms that may affect water flow to adjacent properties. Permits from SFWMD will need to be obtained before on-site restoration work can begin.

There are several locations with moderate levels of debris from military, commercial, agricultural operations. Some of these larger items include broken farm equipment, household items, scrap metal culverts, wood from an abandoned commercial billboard, and discarded cattle fencing. Unnecessary fencing, feeders, and pens from cattle operations will need to be removed once the lease is terminated or before restoration work begins. The Lee County Solid Waste Division may be able to assist staff with trash removal efforts, if the site is accessible.

In 1953, an oil exploration well was drilled (Unit 4) with reportedly <150 gallons of oil extracted. Shortly afterwards, this well was plugged. During the Phase II Environmental Site Assessment, the environmental consultant's subcontractor drilled monitoring wells to test for potential saltwater migration and concluded that the water quality parameters (temperature, conductivity, pH, and dissolved chlorides) were within the background levels found in each aquifer (WRS, 2003). Several irrigation and/or water supply wells exist throughout areas of the Preserve. Most of the wells have been capped, while water quality monitoring analyses may be performed from others.

The abandoned WWII rifle range with remnant munitions buildings and other concrete items are affiliated with the Buckingham Army Air Field (see Archaeology section) and maybe determined at a later date to be a historical and cultural resource. Although noted

in the ESA Phase I report, Water Resources Solution's engineers didn't believe it warranted additional field analyses. The amount of spent bullets that may lie within the mound of dirt near the munitions buildings is unknown. Most ammunition used by the military, at least during WWII, was partially composed of lead and it is possible that this contaminant has leached into the soil and potentially in surrounding surface or ground waters.

While some resources state that ground water may be contaminated, others conclude that lead will stay within a couple of inches of the soil and not contaminate the ground water. The Lee County Division of Natural Resources conducts regular water quality analyses from nearby surface water monitoring stations and significant levels of lead contaminant have not been observed. Land stewardship staff recommends that samples of the surrounding soil and surface waters be tested specifically for this metal contaminant to ensure the safety of residents, wildlife, and the environment.

An active cattle lease remains in the northern portion of Management Unit 2, which primarily consists of improved pasture and abandoned row crop fields. Cattle have been observed in nearly all thirteen (13) Management Units and are impacting habitats by deepening cattle trails (further channelize surface waters and contribute to soil compaction), wading through natural wetlands and ditches, polluting waterways with increased levels of nutrients from cattle manure, trampling and overgrazing native wetland vegetation, and spreading invasive exotic plant seeds. Moreover, some of the interior fence lines are not being maintained to prevent cattle from roaming from the area designated for grazing and because the Preserve's boundary is not completely fenced, cattle are free to travel outside Preserve boundaries. Staff recommends that the lease not be renewed and in addition, cattle removal is also an FCT requirement. A notice of termination will be sent to the cattleman prior to October 2005.

Although not a severe issue yet, illegal access from ORV and hunters needs to be eliminated. Nearly all entry is gained through the FPL access road easements and some of these access points are not maintained with locked gates. Improvements to restrict access at problem locations will include signage, heavy-duty gates, locks, and/or fencing and increased law enforcement presence. Permission will need to be obtained from an adjacent landowner whose property one of the gates will reside on, which will actually be a replacement gate.

Feral hogs consume ground-nesting bird eggs and disturb soil and sensitive vegetation during rutting activities, which invites invasive exotic plant growth. A licensed trapper and/or state sponsored hunts organized by FWC are possible methods for hog removal. A Lee County student intern has placed several 2" PVC pipes as an attractant for frogs and approximately 63% have been utilized by Cuban treefrogs. Supplementary pipes may be installed and periodically checked for exotic frogs and those individuals exterminated when found. Other methods of removal may be considered for problematic invasive exotic animals found on the Preserve.

Several upland habitats are severely overgrown due to previous fire suppression activities. Old DOF plow lines were noted at several locations and within different habitat types. Once restoration projects are completed in Management Units that contain fire dependent habitats, a prescribed fire management program will be implemented. This will aid conservation measures by inhibiting exotic plant regrowth and return an essential fire

regime for all fire dependent plants and animals for long-term sustainability. Implementing an appropriate fire regime within the landscape will help prevent the sometimes-devastating affects of wildfires and possibly avoid the need for DOF to intervene with bulldozers and plows.

C. External Influences

There are several adjacent external influences that affect the management and natural resources of the Preserve. Some of these external pressures are not currently present, but if the proposed plans are implemented, they will have long-lasting detrimental environmental impacts. See Figure 13 for a visual representation of these impacts.

The property to the east of the Preserve is owned by Jamerson Farms and is currently being farmed. In March of 2004, they requested to lease a portion of WTSP (Unit 2) for farming. A large section of the future trail system will be constructed in Unit 2 and will necessitate the creation of several boardwalk areas. Because of the future restoration and public use (see the Public Access and Passive Recreation section) on this portion of the Preserve, the proposed agricultural lease will not be a compatible use.

William McDaniel owns the mineral rights associated with the Jamerson Farms property and he currently has a rezoning application in to Lee County to mine the area for limestone rock. Rezoning the adjacent Jamerson property to Industrial Planned Development (IPD) would change the original desirability of WTSP, for which the BOCC spent over $9.3M to acquire as a preserve with low impact surrounding land use. Staff commented on the proposed mine and determined because of the many conflicts to the Lee Plan and potential detrimental affects to WTSP that if the rezoning should be approved extensive water level monitoring will need to take place prior to any extraction activities (Appendix D) to minimize impacts to the Preserve through buffers and plantings. To that end, the consulting hydrogeologist for Mr. McDaniel has prepared a Water Level Monitoring Plan that has been conceptually approved by Lee County staff and is currently under review by the Department of Community Development. Land Stewardship staff has hired consulting ecologist, Kevin L. Erwin to comment on the proposed mine due to his expertise in the area of mining and possible water resource impacts (Appendix E).

Many of WTSP's boundaries consist of wetlands containing cypress and would be difficult, if feasible at all, to fence. Once the cattle lease has been terminated it is the responsibility of the adjacent "cattle approving" landowner to keep cattle contained and off WTSP according to Lee County Ordinance #88-49, XII: Prohibiting animals from roaming at-large. "It shall be unlawful for any person owning or having possession, charge, custody or control of any animal: domestic, livestock, farm, wildlife or fowl raised in captivity, to permit or allow the animal to stray, run, go or roam-at-large in or upon any public street, sidewalk, school grounds, beaches, parks or on the private property of other without the consent of the owner of such property."

The LCPA manages the adjoining SWFIA and before acquisition of Site #200, informed C20/20 representatives of the probable restrictions that may be placed on a triangular portion in the northwest corner of S28/T45S/R26E (229± acres). A portion of this area

may fall within a projected future Runway 24L Runway Protection Zone and some of the limitations may include (W. B. Horner, personal communication, August 27, 2001):

- Land use restrictions (Noise Overlay Zone 3).
- Tree height maintenance.
- Periodic tree trimming.
- Possible additional future land acquisition for expansion of airport, including the relocation of existing FPL power lines.

As land stewardship staff recently began coordinating with LCPA representatives on the specifics concerning the Airport Layout Plan, within a subsequent letter dated February 21, 2005, (see Appendix N) it doesn't appear that they will need to acquire any portion of WTSP. Although, there are no definite plans in place, more than likely the relocation of the western FPL transmission line will take place. The relocation site is unknown for now. Lee County understands it will need to reimburse FCT 40% of the affected area, only if FCT feels there was not adequate mitigation for the new easement and remediation for the removal of the old easement

If the LCPA's Airport Layout Plan is approved (by all local, state and federal authorities) and implemented, the Preserve may be significantly impacted. In the interim, land stewardship staff will abstain from making recommendations on the possible impacts pending approval of this Plan. Understanding the public safety constraints that the LCPA is required to adhere to, land stewardship staff will coordinate with the LCPA as much as possible during the planning and design of the infrastructure listed above to protect the Preserve. Refer to Figure 14 for the SWFIA Impacts Map identifying probable affected Preserve locations.

Adjacent to the south-central portion of the Preserve, the Green Meadows Water Treatment Plant is a 9 million gallon per day water facility, in operation for the pre-treatment of consumable water as opposed to post-treatment of wastewater. The plant is supplied by ground water drawn from the surficial and sandstone aquifers from Lee County's Green Meadows Well Fields. The water is first aerated to remove hydrogen sulfide and to oxidate iron and manganese. Lime is then added to the water, which forms a carbonate hardness, resulting in a lower hardness total and to adjust the final pH. Aluminum is added to enhance color removal and to coagulate particles to aid in the settling of particulate matter. The water is then chlorinated and filtered through 4 mixed media filters (gravel, anthracite and sand). Chlorine disinfects and filtration removes the particulate matter. Before filtration the addition of ammonia is necessary for long lasting disinfection. From there the water is sent into the distribution system to customers and storage tanks (Lee County, 2005).

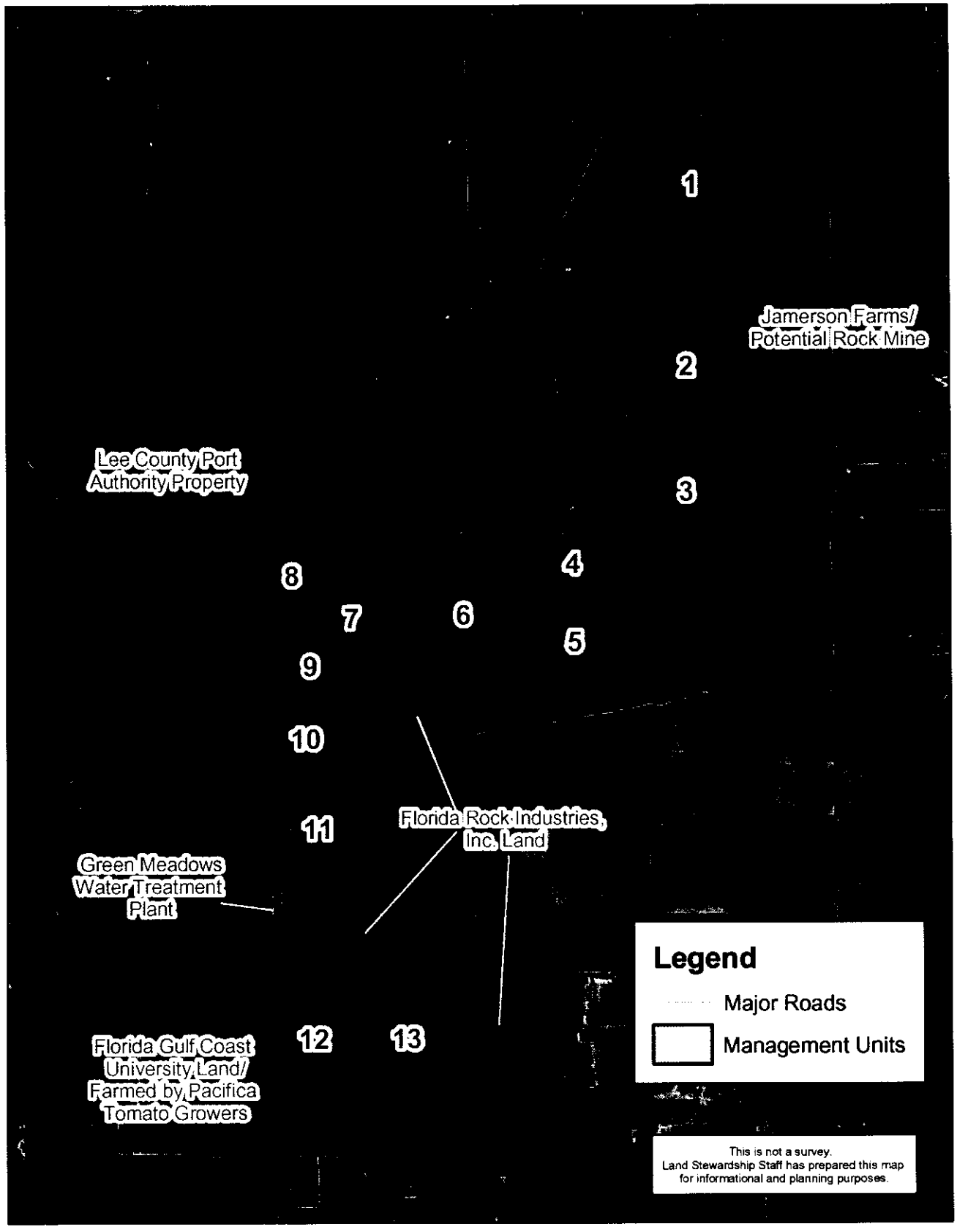
The water treatment ponds adjacent to the Preserve could potentially leach into the wetlands of WTSP. Monitoring wells have been set up strategically around the treatment ponds and are tested annually. Staff will coordinate with the utilities staff to get any information that pertains to the Preserve. So far, there is no evidence of discernable adverse affects from the plant to the Preserve.

The property to the west of Unit 12 is owned by Florida Gulf Coast University, but farmed by Pacifica Tomato Growers. There has been a history of off-road vehicles accessing the Preserve from this property. Most recently there have been ditches installed on the

Preserve to move water from their property. To counteract and further prevent this problem, a fence with boundary signs will be installed and Pacifica Tomato Growers have been notified that they are not to trespass or dig ditches on the Preserve.

The property, just to the east of Units 5, 9, 10, 11, and 13, and between Units 11 and 12, is owned by Florida Rock Industries, Inc. Portions of this property are under a conservation easement that was permitted through the Army Corps of Engineers on August 1, 2003. In a memorandum dated February 15, 2005, Lee County Utilities has informed C20/20 staff of their existing easements on Florida Rock's property and of their intention to utilize this easement for the placement of additional surficial and sandstone aquifer groundwater production wells and raw water pipelines to serve the Green Meadows Water Treatment Plant. It is anticipated that this will occur in 5-10 years.

Figure 13: External Influences Map



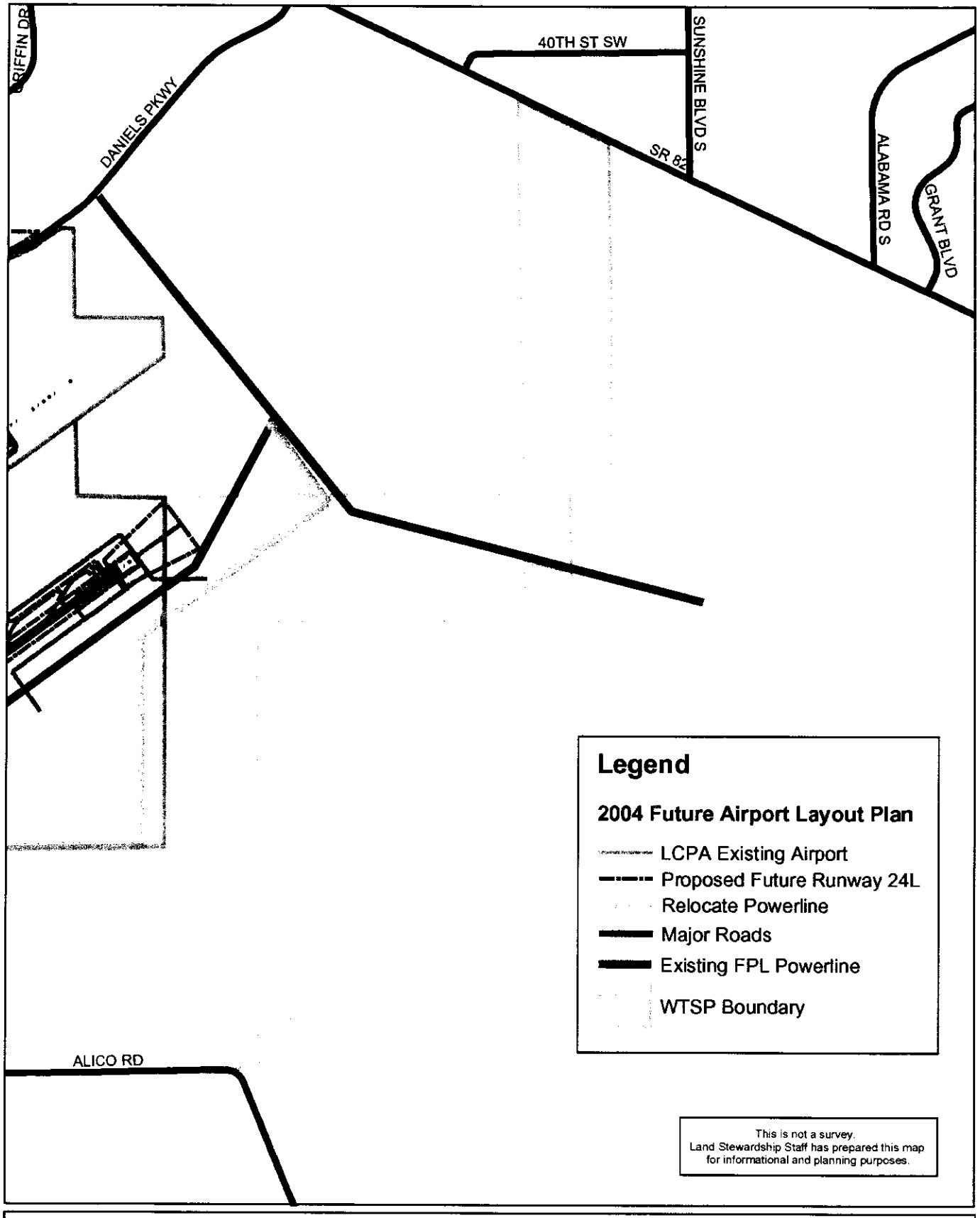
Wild Turkey Strand Preserve

0 2,750 5,500 11,000

Feet

S:\esri\2020 ArcView\Wild Turkey Strand\management plan\External Influences.mxd
Map Prepared on: 01/25/05 by Sevans@leegov.com

Figure 14: SWFIA Impacts Map



Wild Turkey Strand Preserve

0 2,875 5,750 11,500 Feet

Additional GIS Data Layers are files received from LCPA: RSW - ALP Final 2004

While Lee County Parks & Recreation (LCPR) utilizes the most recent and up to date information, this map was created for informational purposes only. Although LCPR has made every effort to provide current and correct information, LCPR cannot warrant or guarantee the accuracy of the data supplied.

I:\esri\c2020\ArcView\Wild Turkey Strand\management plan\SWFIA_impact.mxd
Map Prepared on 4/1/05 by sturman@leegov.com

D. Legal Obligations and Constraints

a. Permitting

Land stewardship activities at WTSP may involve obtaining permits from appropriate agencies. Agencies requiring permits within upland portions of the Preserve include DOF to conduct prescribed fires and FWC if gopher tortoises need to be relocated on-site for a restoration project or facilities development to take place. Exotic plant removal, hydrological and agriculture field restoration, and possible public use amenities in the wetland portions of the Preserve will require permits to be obtained from various agencies, including the Florida Department of Environmental Protection (FDEP), SFWMD, and/or USACOE. A consultant will be hired to assist with the permitting process, particularly for construction of any facilities, such as boardwalks and observations decks. Construction of facilities in either upland or wetland portions of the Preserve will require additional permitting as well as approval through the Lee County Development Order process.

b. Other Legal Constraints

Restoration activities that may pose additional legal constraints include the filling of agricultural ditches and canals, geo-webbing or the installation of additional culverts under FPL roadways, and transformation of pasture/agricultural fields into suitable native habitats. Some of these activities may improve water quality, flow-way, and localized water recharge. Staff may be required to coordinate with FPL representatives if hydrological modifications will affect their transmission maintenance roadways that bisect the Preserve at two locations.

At the locations that require hydrological restoration measures, C20/20 staff has considered the potential for flooding issues on adjacent properties. In examining the Natural Resources' Flow Ways GIS data layer, it does not appear that neighboring properties would be affected by removing these hydrologically impeding berms, spoil piles, and ditches. In order to be confident of possible hydrological impacts (on- and off-site), an environmental consulting firm should be contracted for these projects. The hired firm would deliver recommendations for the methodologies on any restoration work, coordinate with relevant permitting agencies, apply for the appropriate permits, and oversee the contractor(s) performing these restoration efforts on-site.

Just to the west of WTSP is Lee County Port Authority property that is part of the Southwest Florida International Airport. In a letter dated August 27, 2001, the Port Authority advised the C20/20 program of their future expansion plans. Based on existing airport plans, Unit 8 may be needed for portions of the Runway Protection Zone (RPZ) for the future south Runway 24L. The area to the east of this area might require tree height maintenance to comply with FAR Part 77 safety regulations. Due to the location of the projected future Runway 24L, the FPL power line may need to be realigned to the south (refer External Influence section and Figure 14). These changes will dramatically impact the Preserve's functionality as a wildlife refuge and water resource protection area.

With regards to another LCPA letter, concern was expressed about historical problems of nearby cattle straying on operational lands of the airport and that the county should

terminate any existing cattle grazing leases to "head off the problem" (G. S. Hagen, personal communication, February 20, 2002).

While an existing cattle lease is located in Management Unit #2 of the Preserve, it is nowhere near the SWFIA property, although cattle have been noted along both FPL easements. The lease with Flint Brothers Cattle Co. began in January 2003 and has already been renewed for a period of one year. All Lee County cattle leases have been reorganized to expire during September of subsequent years to simplify coordination between all parties involved. As a consideration of the Cattle Lease Agreement (Lee County Parks & Rec., 2003), this lease may be terminated with a 30-day written notice to the Licensee. The cattle have become a two-fold issue for this Preserve: harmful environmental impacts and liability for public safety. C20/20 staff recommend that the lease continue until September 2005 and notice be given during the summer of 2005 the county's intention not to renew. Moreover, the FCT Grant Contract stipulated, "cattle grazing will be eliminated" (refer to Appendix I).

Two separate boundary surveys were conducted for each parcel in which both identified several recorded easements. For Site #90, there is a roadway and public utility easement along the southern boundary of the property, adjacent to Alico Road. For Site #200 there are easements for FPL power lines, a few wells, a right-of-way easement (western boundary of Section 33, above Green Meadows Water Treatment), and a "utility, motor vehicle and pedestrian ingress egress" easement along the eastern boundary of Sections 14 and 23.

c. Relationship to Other Plans

The Lee Plan, Lee County's comprehensive plan, is designed to depict Lee County, as it will appear in the year 2020. Several themes have been identified as having "great importance as Lee County approaches the planning horizon" (Lee County, 2003).

- The growth patterns of the County will continue to be dictated by the Future Land Use map.
- The continued protection of the County's natural resource base.
- The diversification of the County's traditional economic base.
- The expansion of cultural, educational and recreational opportunities.
- A significant expansion in the County's physical and social infrastructure.

The entire Lee Plan can be found on the Internet at: http://www.lee-county.com/dcd1/Leeplan/Leeplan.pdf. Currently, the three chapters that affect the management of WTSP are Chapter IV – Community Facilities and Services, Chapter V – Parks, Recreation and Open Space and Chapter VII – Conservation and Coastal Management. Although, it may be determined that a fourth chapter, Chapter IX – Historic Preservation, would affect the Preserve's management if later it is established that a historical resource is on-site.

- Under **Chapter IV: Community Facilities and Services**, the planned restoration or refurbishment of ditches, canals, berms, and FPL roadways will follow **Policy 40.1.3** "the country will incorporate, utilize, and where practicable restore natural surface water flow-ways and associated habitats" and **Policy 40.1.4** "the county will

examine steps necessary to restore principal flow-way systems, if feasible, to assure the continued environmental function, value and use of natural surface water flow-ways and associated wetland systems."

- Under **Chapter V: Parks, Recreation and Open Space**, land stewardship staff will ensure that any public use facilities and recreational opportunities will comply with **Goal 60: Park Planning and Design**, which requires that parks are planned, designed and constructed to comply with the best professional standards of design, landscaping, planning and environmental concern. Staff will also work to provide, whenever staffing and funding permit, appropriate environmental programs to the public in order to meet **Goal 61: Environmental and Historic Programs**, to provide programs and information to promote knowledge and understanding of Lee County's unique environmental and cultural heritage.

- Under **Chapter VII: Conservation and Coastal Management**, land stewardship staff will ensure the protection, conservation, and critical restoration of the natural resources to provide a more viable ecosystem for all of Lee County inhabitants. There are several relevant Goals, Objectives and Policies within Chapter VII that will assist with the essential stewardship management of WTSP.

Goal 77: Resource Protection. To manage the county's wetland and upland ecosystems so as to maintain and enhance native habitats, floral and faunal species diversity, water quality, and natural surface water characteristics.

Objective 77.1: Resource Management Plan, **Policy 77.1.1**, **Section 4e**, states that this Stewardship Plan is written for the long-term maintenance and enhancement of the Preserve's health and environmental integrity. Included within this plan are measures to address any necessary people management (e.g., fences and signage to prevent incompatible uses); surface water management and restoration; habitat restoration; litter removal; fire management; invasive exotic plant and animal control; and recreational opportunities.

Objective 77.3: Wildlife, land stewardship staff is directed to maintain and enhance the fish and wildlife diversity for the benefit of a balanced ecological system by following **Policy 77.3.1** preserving uplands in and around preserved wetlands to provide habitat diversity, enhance edge effect and promote wildlife conservation. Removing invasive exotic plants and implementation of a prescribed burn regime within appropriate fire dependant habitats will follow this policy.

Objective 77.4: Endangered and Threatened Species in General, land stewardship staff will protect habitats of endangered and threatened species and species of special concern in order to maintain or enhance existing population numbers and distributions of listed species by assisting in **Policy 77.4.1** by continuing to identify, inventory, and protect flora and fauna with restorative and protective land stewardship activities. This includes providing important data to the designated county planner who enforces ordinances and regulations through the zoning and development review process.

Objective 77.8: Gopher Tortoises, staff will follow **Policy 77.8.1** to protect gopher tortoise burrows wherever they are found. In accordance with FWC, if a habitat

restoration project impacts an active burrow, then the affected gopher tortoise will be relocated to a more suitable on-site location.

Objective 77.10, Policy 77.10.1 and **77.10.2 WOOD STORK**, land stewardship staff will continue to document wood stork utilization of the Preserve and ensure that this stewardship plan follows USFWS's "Habitat Management Guidelines for the Wood Stork in the Southeast Region."

Objective 77.11, Policy 77.11.1, Policy 77.11.4 and **POLICY 77.11.6 Florida Panther and Black Bear,** land stewardship staff will maintain and update data on sightings and habitat for the black bear and Florida panther. Staff will continue to support expansion of land acquisition for areas connecting the Corkscrew Regional Ecosystem Watershed, a nearby greenway with priority panther habitat, with areas adjacent to Flint Pen Strand and WTSP. Where appropriate, WTSP's habitat restoration projects plant lists will include species that provide forage for the prey of the Florida panther and forage for the black bear due to its close proximately to these frequented panther habitat locations.

Goal 87: Water Resources. To conserve, manage, and protect the natural hydrologic system of Lee County to insure continued water resource availability.

Objective 87.1: Water Supplies, land stewardship staff will follow **Policy 87.1.1** to identify, protect, restore and enhance wetland features of the Preserve that are essential for retention, detention, purification, runoff, recharge, and maintenance of stream flows and groundwater levels.

Currently, there are no established historical/cultural resource sites on WTSP. See the Archaeological section for more information. However, if after an archaeological assessment survey is performed and concludes that a cultural site is present, then land stewardship staff will follow pertinent guidelines under **Chapter IX: Historic Preservation**.

E. Management Constraints

The main management constraints for this Preserve are limited funding and the brief dry season. WTSP has received a grant from the Florida Communities Trust to reimburse half of the cost of acquisition for the Preserve. These funds will be used to help with the design and construction of public use facilities as well as with restoration activities. Efforts to obtain additional funding through grants and other sources will continue.

WTSP is very wet most of the year. February through April are typically the driest months. Most restoration efforts will be limited to these months. If access is necessary for management when water levels are high, vehicles such as ATVs will be used.

Prescribed burning will be a vital tool in the management at WTSP. Scattered pine flatwoods and some of the wetlands will need to be burned. The part of the Preserve that borders the SWFIA and the neighborhood off Rod & Gun Club Road will present the most challenges with urban interface. Mechanical work in these areas to reduce fuel loads before burning may be necessary.

When restoration activities are in progress that could be dangerous to visitors, signs will be installed at the entrance and on the trail near the management activity to warn the public that the area is temporarily closed. It is anticipated that habitat restoration activities will be completed before the site is open to public access.

Coordination with other agencies and adjacent landowners will also be an important part of managing the Preserve. There is a possibility that parcels adjacent to the Preserve could be purchased by the Conservation 20/20 program and added to the boundary.

Coordination with other County departments and other governmental agencies that may conduct mitigation projects at the Preserve will be vital to ensure the projects adhere to the Management Action Plan of this Land Stewardship Plan.

F. Public Access and Passive Recreation

Historically, a marginal amount of recreational activity has occurred at Wild Turkey Strand Preserve, although most has been from unlawful trespassers. In recent decades, the Preserve was utilized for both row crops and cattle ranching and the associated fencing prevented most of the general public from entering. Since Lee County has purchased the Preserve, evidence of both hunting and ORVs use has been documented. The Parks and Recreation Ordinance, 02-12 (http://www.lee-county.com/ordinances/PDF/2002/02-12.pdf) prohibits both of these activities.

Not only are ORVs prohibited, they are extremely destructive to the sensitive habitats found at WTSP, especially the wetlands. ORV traffic can impact the wetland communities in a number of different ways. The plants growing in these areas typically do not tolerate a large amount of soil disturbance and rapidly decline. Subsequently fire, which would normally carry through these plants, preventing shrubs from growing further into the wetland, is stopped. Turbidity in the water affects the phytoplankton at the base of the food chain and alters pond fauna. Additionally, the sedimentation degrades the fish habitat and causes a number of negative impacts including reduced reproductive success, gill damage and an impeded ability to detect prey. Amphibian larvae experience these same negative effects and their adult counterparts loose the edge habitats they often depend on for breeding purposes. Consequently, the reduction of fish and amphibian species affect the numerous wetland birds and mammals that depend on these aquatic animals in their natural diets (Defenders, 2002).

Land stewardship staff is researching the possibility of partnering with FWC to conduct an occasional feral hog hunt, while closing the Preserve to all other public uses, during such special hunting events. With that possible exception, any other hunting activities would not be compatible with the protection of the Preserve or with the safety of its visitors.

Presently, there is no public access point or parking for visitors. Since the Preserve is mostly wetlands with susceptible soils, staff doesn't recommend any additional recreational activities beyond hiking, bird watching, nature photography and nature study that are allowed at all Conservation 20/20 Preserves. In accordance with the Land Stewardship Operations Manual (LSOM), WTSP will become a Category 2 Intermediate Use Preserve.

The future trail system will necessitate creating several substantial boardwalk sections to assist in the protection of the restored natural resources, while allowing appropriate public access.

Public use facilities and resource-based recreation at WTSP would be concentrated at the extreme north end for several reasons:

- ✓ Borders S.R. 82, most suitable public access point.
- ✓ A pervious parking area for cars may be constructed on already disturbed fallow farmland that will be enclosed by a split rail fence.
- ✓ The majority of the trail system would be within previously disturbed areas (past uses: military, agricultural, and invasive exotic plants).
- ✓ A diverse level of habitats (natural and restored) could be viewed.
- ✓ Allow visitors access to several different habitat restoration projects and their particular methodologies.
- ✓ All boardwalk sections would be limited to previously disturbed wetland systems.
- ✓ Prevents liability by not allowing the trail to cross through the FPL utility easement.
- ✓ Leaves central and southern areas remote with natural wetland areas strictly as wildlife habitat.

Future public recreational opportunities may include an entrance kiosk that introduces visitors to WTSP and illustrates the different habitat types, location of wildlife observation decks/blinds, the mileage of the nature trails and their connected boardwalk sections. Habitat restoration signs will be posted along the trails to educate visitors about land stewardship activities that have occurred to assist restoration of the ecosystem. In addition, a potential cultural resource display may be created near the remnant munitions buildings, if it is determined to be historically or culturally important.

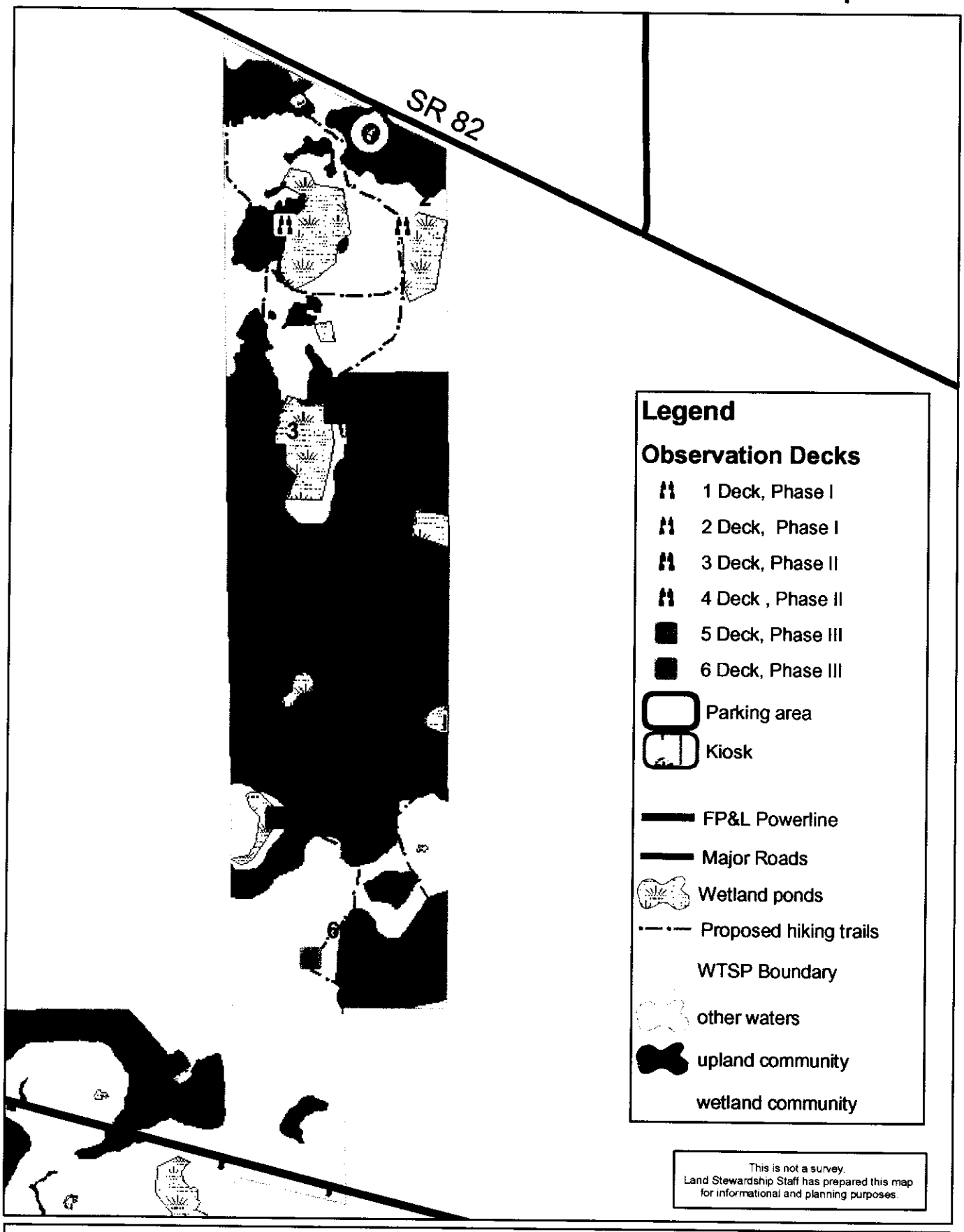
It is probable that a trail system may be created in three phases, each consisting of two (2) observation decks and appropriate boardwalk sections in wetland locations. The separate phases will be necessary for two reasons: the financial expense involved with building boardwalks and observation decks in wetland areas and timing involved with keeping visitors out of areas undergoing active habitat and/or hydrological restoration projects. Each phase would bring a new experience for visitors. The Phase I would begin at the parking area and consist of ~ 1.4 miles of trail. Phase II adds ~ 2.3 miles, while Phase III would complete the nature trail system with an additional ~ 2.1 miles for a total of 5.8 miles of boardwalk and trails. While Phase I will occur, the other two Phases will depend on increased public usage requiring the expansion of the Preserve's trail system and obtaining the necessary funding.

Wildlife blinds may be constructed at some wetland observation decks, which would allow visitors to get a better view of the wildlife while minimizing the disturbance to the animals. Figure 15 shows the Conceptual Master Site Plan. Additional amenities such as picnic tables, bike racks, composting toilets, and wildlife proof trash receptacles will be located in the vicinity of the entrance parking area.

As finances and/or staff time permits, other interpretive panels will be designed and constructed and environmental education programs could be developed. Staff will attempt to provide for the needs of the public, keeping in consideration the lack of daily staff to protect and maintain public use amenities. A strong volunteer group will be critical to

assist staff with trail creation, trail maintenance, wildlife monitoring and other land stewardship projects, such as writing grants for funding.

Figure 15: Conceptual Master Site Plan Map



G. Acquisition

Wild Turkey Strand Preserve consists of 2 separate nominations purchased through Lee County's Conservation 20/20 Program. The first, nomination #90, consists of 588 acres and was first nominated to the Program by Fred Burson in July 1997 and previously owned by Patrick Cullen and JoAnne Chard, Trustees. The property was purchased at the beginning of August 2001 for $3,100,000. The second 2041-acre nomination, #200, was previously owned by Louise Schewe, Trustee, and purchased for $6,246,130 in January 2003 after being nominated to the Program in July 2001. The Preserve's future land use codes have been changed to "Conservation Lands" (Appendix F). While the Preserve is currently zoned "Agriculture," the plan is to modify it to "Environmentally Critical."

Three other properties have been nominated close to WTSP. Nomination #24, a 970-acre parcel, was nominated on July 2, 1997. The Board of County Commissioners (BoCC) approved the Conservation Lands and Stewardship Advisory Committee's (CLASAC) recommendation to pursue it for acquisition. It was sold to Jamerson Farms Enterprises, LLC before the County could buy it. Nomination #176, a 5-acre tract, was nominated on November 30, 2000. CLASAC did not select it to be pursued for acquisition. Nomination #220, a 160-acre tract, was nominated February 19, 2002. The BoCC approved the CLASAC recommendation to pursue it for acquisition; unfortunately, it was sold to another party before Lee County could buy it.

There is additional undeveloped land in the vicinity of WTSP that would be beneficial to pursue for acquisition. Just to the north of Units 6 and 8 of the Preserve is 3,132 acres of undeveloped land owned by one person, Richard Bennet. Staff members Lynda Riley and Laura Wewerka, have both sent letters making him aware of the opportunity to nominate his land. Also along Rod & Gun Club Road, Iroquios Builders, Inc. owns 336 acres adjacent to WTSP. A letter was sent to Ms. Muraro of Iroquois Builders, Inc informing her of the potential opportunity to nominate their land. Unfortunately, County Lands has not received any word from either landowner. See Appendix G for the locations of these nominations and potential future nominations.

VI. Management Action Plan

The northern portion of Wild Turkey Strand Preserve (Site #200) has been divided into 11 Management Units and the southern portion (Site #90) was divided into 2 Management Units to better organize and achieve management goals. Figure 16 delineates the units that were created based on existing trails and habitat types.

- Management Unit 1 (246.8 acres) boundaries are State Road 82 to the north, row crop and improved pasture land associated with Jamerson Farms on Green Meadows Road to the east, Unit 2 to the south, and private property bordering Rod & Gun Club Road to the west. This unit is dominated by 4 freshwater marshes. A WWII rifle range and small concrete munitions buildings along with several concrete poles and possible concrete machine gun foundations are located at the northern end of the Preserve. The marshes are Grand Marsh (17.98 acres), named because of its large size, Corkwood Marsh (9.75 acres), named for its large population of

corkwood (*Stillingia aquatic*), Foot Vise Marsh (15.62 acres), named for an experience in which staff became temporarily stuck during initial exploration, and Second Chance Marsh (1.02 acres), named for its small size and because after viewing aerials, staff could not find it on the first pass and then found it on the second one. There is an additional very small marsh on the northern border adjacent to SR 82 called Stonehenge Marsh (0.22 Acres), named for the collection of concrete pillars that have been deposited there. Just south of Stonehenge Marsh, there is a small borrow mound named Mount Turkey, because it is the highest point in the Wild Turkey Strand Preserve. There is an agricultural berm running along the northern border of Corkwood Marsh to the northeast corner of Grand Marsh and then turning north to SR 82.

- Management Unit 2 (259.1 acres) is south of Unit 1 with the same east and west boundary features. Its southern border is Unit 3. Fallow fields and improved pasture dominate this unit. There are three disturbed wetland locations: Pickerelweed Wetland (3.28 acres), named for a few remaining native pickerelweeds, Key Hole Wetland (1.75 acres), named because it is shaped like a key hole and Strugglin' Wetlands (1.64 acres), named for its great effort to survive from exotic plants and hydrological impacts.

- Management Unit 3 (237.3 acres) is south of Unit 2 with the same east boundary feature. It is bordered to the south by FPL power line easement and to the west by private property and Unit 4. Unit 3 contains the Crescent Marsh (3.67 acres), named for its crescent shaped wet prairie and Echo Pond (0.13 acres), named for the echo one can hear while vocalizing inside its cypress edge. There is a berm running in a north-south direction through the center of this unit and extensive pine flatwoods.

- Management Unit 4 (139.5 acres) is bordered to the north by private property associated with Rod and Gun Club Road, to the east by Unit 3, and to the south and west by the FPL power line easement and Units 5 and 6. It contains the abandoned oil exploratory well and access road to the northwest, Snake Skin Pond (.27 acres), named for the cottonmouth skin found there on initial exploration, improved pasture and some disturbed pine flatwoods.

- Management Unit 5 (171.6 acres) is bordered to the north by the FPL power line easement and Unit 4, to the east and south by Florida Rock Industries Incorporation property and to the west by a narrow dirt road leading to an improved pasture. Unit 5 is dominated by disturbed cypress with some pine flatwoods areas. It contains the cypress edged Majestic Pond (8.13 acres), named for its large scale allure, Hidden Beauty Pond (3.9 acres), named for being a stunning natural feature visually eclipsed by Majestic Pond when viewed from the FPL easement, Hidden Gator Pond (1.15 acres), named for a secretive alligator that surprised staff on initial exploration, and Forlorn Pond (0.31 acres), named for the multiple invasive exotic plants found within.

- Management Unit 6 (319.4 acres) is bordered to the north by private property, to the east by Unit 5, to the south by property owned by Florida Rock and to the west by another FPL power line easement and the transition from pine flatwoods to cypress

communities, marking the boundary of Unit 7. Unit 6 is dominated by hydric and mesic pine flatwoods.

- Management Unit 7 (130 acres) is bordered to the north and east by Unit 6, to the south by property owned by Florida Rock and to the west by a narrow band of mesic pine flatwoods and the FPL easement. Unit 7 is dominated by cypress and contains Surprise Pond (4.23 acres), named for an encounter between staff and a fleeing sow and piglets on initial exploration, Green Treefrog Pond (2.65 acres), named for the chorus of green treefrogs greeting exploring staff, Little Dude Pond (0.13 acres), named for its small size and Dragonfly Love Pond (0.95 acres), named for its mating dragonflies.

- Management Unit 8 (70.5 acres) is bordered to the north by private property, to the east and south by the FPL power line easement, and to the west by Lee County Port Authority property. Unit 8 is dominated by disturbed pine flatwoods and contains two borrow ponds, Leo Pond (3.28 acres), named for a common cat name and the rumored presence of Florida Panthers (*Puma concolor coryi*) in the preserve, and Fox Squirrel Wetland, (4 acres), named for a report of Big Cypress fox squirrels (*Sciurus niger avicennia)* in the vicinity.

- Management Unit 9 (133.2 acres) is bordered to the northwest by the FPL power line easement, to the northwest by Unit 7, to the east by property owned by Florida Rock, to the south by a transition from cypress to pine flatwoods continuing due east to the property line, and to the west by Lee County Port Authority property. Unit 9 is dominated by cypress with some pine flatwoods and a fallow field. It contains Roost Pond (10.28 acres), named for a roosting and nesting area of great egrets, and Whisk Fern and Alligator Flag Ponds (both .42 acres), named after native vegetation noted in the wetland areas.

- Management Unit 10 (132.8 acres) is bordered to the north by Unit 9, to the east by property owned by Florida Rock, to the south by a transition from freshwater marsh to pine flatwoods continuing due east to the property line, and to the west by property owned by the Lee County Port Authority. Unit 10 contains cypress, pine flatwoods and freshwater marsh. It contains Saddlebags Wetland (28.99 acres), named for its numerous Carolina saddlebags dragonflies (*Tramea carolina),* and Zorro Pond (1.84 acres), named for the sideways Z shape of the pond in the aerials.

- Management Unit 11 (213.2 acres) is bordered to the north by Unit 10, to the east and south by property owned by Florida Rock, to the southwest by the Green Meadows Water Treatment Plant, and to the west by Lee County Port Authority property. Unit 11 has various habitats of cypress, pine flatwoods, wet prairie, freshwater marsh and fallow field. It contains Bartram's Marsh South (11.02 acres) and Bartram's Marsh North (16.69 acres), named after William Bartram, noted Florida naturalist (1739-1823) and the presence of the wildflower named after him, Bartram's rosegentian (*Sabatia bartramii*). The unit also contains Green Meadows' Marsh (7.5 acres), named for the adjacent water treatment plant, Willow Pond (7.58 acres), named for a concentration of Carolina willows (*Salix caroliniana)* in its center, and Snake Eyes Pond (2.44 acres), named for the observation of two cottonmouth snakes upon initial exploration.

- Management Unit 12 (335 acres) is bordered to the north by Florida Rock Industries, Inc., to the east by Unit 13, to the west by land owned by FGCU and leased to Pacifica Tomato Growers, and to the south by Alico Road. Unit 12 has various habitats of cypress, pine flatwoods, wet prairie, mixed hardwoods-shrubs, and row crops with some level of disturbance in all habitats. The unit contains Farmer's Marsh (2.12 acres), named because it is surrounded on 3-sides by farm fields, Deer Marsh (15.5 acres), named for the White-tailed deer seen drinking from the marsh, Pond Apple Marsh (2.77 acres), named for the several pond apples (*Annona glabra)* noted, Black Hole Pond (.18 acres), so named because the aerial view looks like a black hole with tall cypress on the edges, and Survivor's Wetland (4.91 acres) named for its miraculous struggle to survive from being totally enclosed by an agricultural ditch and berm.

- Management Unit 13 (253 acres) is bordered to the north, east, and south by Florida Rock Industries, Inc. and to the west by Unit 12. Unit 13's habitats include row crops, freshwater marsh, cypress, pine flatwoods, mixed hardwoods-shrubs, melaleuca, and wet prairie with various levels of disturbance. The unit contains Bladderwort Marsh (4.9 acres), named for the many floating bladderworts *(Utricularia inflate)*, Poco Pond (.41 acres), the Italian translation for "small," and On-the-edge Pond (.55 acres), named for its close proximity to the boundary's edge.

A. Goals and Strategies

While the following is our longterm goals for the Preserve we currently do not have the funding to conduct all of these activities. Grants and/or monies budgeted for mitigation of any governmental infrastructure projects in Lee County will be used to supplement our operations budget to meet our goals in a timely manner.

Natural Resource Management

- ✓ Exotic plant control and maintenance
- ✓ Hydrologic restoration
- ✓ Restoring improved pastures to a natural plant community
- ✓ Prescribed fire management
- ✓ Mechanical brush reduction
- ✓ Monitoring well testing
- ✓ Monitor and protect listed species
- ✓ Photo point installation and monitoring
- ✓ Supplemental soil & surface water testing
- ✓ Water quality testing
- ✓ Targeted exotic animal removal
- ✓ Annual Stewardship Report for FCT grant award

Outside Consultants

- ✓ Environmental/engineering
- ✓ Archaeological assessment
- ✓ Facilities design
- ✓ Boundary re-survey & stake

Overall Protection

- ✓ Debris removal and prevent dumping
- ✓ Boundary fence installation and interior fence removal
- ✓ Boundary sign installation
- ✓ Removal of cattle
- ✓ Change zoning category

Public Use

- ✓ Facilities construction
- ✓ Educational sign installation

Volunteers

- ✓ Form volunteer group

The following is a description of how each of these goals will be carried out, the success criteria used to measure accomplishment of each goal and a projected timetable outlining which units each activity will take place in and when.

Natural Resource Management

Exotic plant control and maintenance

The dominant invasive exotic plants at WTSP are melaleuca and Brazilian pepper. Most of the wetlands on this Preserve are disturbed and additional invasive exotic plants such as West Indian marsh grass, Wright's nutsedge, and water lettuce have invaded at some level. The Florida Exotic Pest Plant Council's List of Invasive Species (Appendix H) will be consulted in determining the invasive exotic plants to be controlled in every management unit. The goal is to completely remove/control these plants and other targeted invasive exotic species, followed with semi-annual or as needed treatments of resprouts and new seedlings. This goal will be implemented on a per management unit basis, where each unit will be brought to a maintenance level, defined as less than 5% invasive exotic plant coverage.

Prior to each invasive exotic plant control project at WTSP a Prescription Form (located in the LSOM) will be filled out by land stewardship staff, reviewed by the contractor(s) and filed appropriately. All contractors involved in these projects will be required to fill out the Daily Report Control Form (located in the LSOM) and filed appropriately by staff.

- Uplands with light to moderate infestations:

  In areas where invasive exotics are sporadic and below 50% of the vegetation cover, handwork will be utilized for control. Specific methodology will depend on stem size, plant type and seasonality but generally the stem will be cut near ground and the stump sprayed with appropriate herbicide, or a foliar application made to entire plant. Hand pulling should be utilized when possible and with appropriate species to minimize herbicide use. Cut stems will be piled as necessary to facilitate future potential burning, chipping or removal from site. No replanting will be needed

in these areas due to significant presence of native vegetation and native seed bank.

- Uplands with moderate to heavy infestations:

  In areas where the exotics occur as monotypic stands or are higher than 50% of the vegetation cover the use of heavy equipment will be utilized in appropriate habitats and during suitable seasonal conditions. The type of heavy equipment used should minimize soil disturbance and compaction. In areas along ditches where the hydrology and soils may not be conducive for heavy equipment, hand crews will be used to cut down and remove these plants. For follow-up treatment of these areas an application of an appropriate herbicide mixture to the foliage of any resprouts or seedlings will be made. Land Stewardship staff will evaluate replanting on a case-by-case basis.

- Wetlands with heavy infestations:

  At suitable locations, some lightweight equipment may be utilized during dry, winter periods or hand crews will need to hike in on foot and either foliar, girdle, or cut-stump treat the exotics with the appropriate herbicide. Follow-up treatments will need to be done on an annual basis and may eventually decrease to every 2 years. Where feasible or necessary, biomass may be removed from wetland sites to be piled & burned and/or mulched.

- Wetlands with light to moderate infestations:

  Hand crews will need to hike in on foot and either foliar, girdle, or cut-stump treat the exotics with the appropriate herbicide. Follow-up treatments will need to be done on an annual basis and may eventually decrease to every 2 years. Where feasible or necessary, biomass may be removed from wetland sites to be piled & burned and/or mulched.

Hydrologic restoration

An engineering consultant will need to be contracted to provide specific recommendations for restoration methods on the ditches and berms that may affect water flow onto adjacent properties. A restoration proposal will be presented to SFWMD to determine the feasibility of the project and decide what permits will be required.

In general, to accomplish this work, exotic vegetation would first be removed from the berms along the ditches. This will be accomplished with a combination of hand crews and mechanical equipment using the appropriate herbicide. This work must be completed when the water table height is low enough to minimize rutting by heavy equipment. The backfill shall not include vegetation particularly in the bottom of the ditch to prevent "piping." Replanting with native species will be evaluated after ample time has been given for native recruitment.

Restoring the improved pasture to a natural plant community

To add habitat diversity to the Preserve a native plant community will be established to replace improved pastures. Restoration of this field will require several months of data collection to make decisions on what plant community would be most successful. Deep soil samples will be taken and analyzed in several portions of the pasture. A rain gauge and additional monitoring wells will be set up in strategic areas to monitor water levels over an entire rainy season and a portion of the dry season. Once that data is analyzed, appropriate plans for native plantings will be developed that could include using seeds and/or plants. To prepare the pasture for plantings it will be necessary to eliminate the pasture grasses. This will be accomplished by repeated disking followed by treating the exotic pasture grasses with an appropriate herbicide. Once the exotic plants are under control, the established planting plan will be executed. Unit 2 may need to be subdivided to implement this project in smaller sections and possibly increase chances for success.

Prescribed fire management

A prescribed fire program will be implemented to closely mimic the natural fire regimes for the different plant communities to increase plant diversity and insure the canopies remain open. Once restoration projects are completed in management units that contain fire dependent habitats, a prescribed fire management program should be implemented after the creation of appropriate fire lines/breaks. The timing of prescribed burning will be influenced by seasonal rain and wind patterns. The Conservation 20/20 Burn Team Coordinator is coordinating with the DOF and FWC to develop a C20/20-wide Fire Management Plan that will apply to all Preserves.

Mechanical brush reduction

Before a prescribed fire is conducted in the pine flatwoods of the Preserve, fuel loads may need to be reduced mechanically. Also in some areas pines may need to be thinned mechanically to achieve desired habitat results, so that a crown fire does not occur during a wildfire or prescribed fire.

Monitor and protect listed species

The Preserve will be managed in a manner that protects and enhances habitat for listed wildlife species that utilize or could potentially utilize the project site, including the Florida panther and black bear. This plan will be reviewed by FWC's Office of Environmental Services to ensure the preservation and viability of listed and non-listed native wildlife species and their habitat. As discussed in the Designated Species section, there are several listed species that have been documented utilizing the Preserve. For the most part, these species will benefit from restoration activities, such as hydrologic improvements and the removal of invasive exotic plants. During restoration activities, efforts will be made to minimize any negative impact to listed species. Specific examples of this will be using heavy equipment in the cooler months near gopher tortoise burrows when tortoises are less active and avoid or relocate listed plant species found on the Preserve.

WTSP is part of a countywide quarterly site inspection program conducted for all Conservation 20/20 Preserves. A copy of the site inspection form is available in the Land Stewardship Operations Manual. These inspections allow staff to monitor for any impacts and/or changes to each preserve and includes lists of all animal sightings and new plant species that are found. If, during these inspections, staff finds FNAI listed species, they will be reported using the appropriate forms located in Appendix K.

Photo point installation

A minimum of 3 photo points will be established, at some restoration project sites, before work begins. A pre-restoration photo will be taken, followed by post restoration photos. Additional follow up restoration photos will be taken during the growing season for 5 years from completion of the project to document transformations, with photos taken as needed from then on.

- ✓ Unit 2 – Improved pasture and hydrological restoration.
- ✓ Unit 9 – Within a cypress strand area: for exotic plant removal & hydrological restoration efforts.
- ✓ Unit 12 – Incorporates 4 monitoring objectives: Improved pasture restoration, hydrological restoration & exotic plant removal work surrounding a detached cypress area, and mulched vegetation debris from Hurricane Charley.

Monitoring well testing

Water Resource Solutions, Inc. (WRS) completed a Phase II investigation of Site #200 in December of 2002. This investigation was designed to assess if saltwater from deep aquifers has migrated to shallower aquifers through the abandoned oil exploration well identified on the Preserve. At the time no problems were found, but WRS suggested that the wells be tested annually (WRS, 2003). Therefore, staff will take the necessary steps to make sure the testing occurs as recommended.

Supplemental soil & surface water testing

Although the historical WWII target practice range has not been used since the mid-1940s, to ensure environmental soundness of the area surrounding the location, soil and surface water samples will be collected and analyses performed before any public facilities are constructed.

Water quality testing

Land stewardship staff will coordinate with staff at the Lee County Green Meadows Water Treatment Plant to conduct yearly water quality testing. Several test wells have been installed on the Preserve to insure that no leaching has occurred from the adjacent water treatment plant. Staff will ask for annual water quality test results.

Targeted exotic animal removal

- Feral hogs

Currently the only acceptable method of hog removal on Conservation 20/20 Preserves is trapping. An active hog-trapping program will be implemented for the Preserve. Land stewardship staff will pursue the possibility of working with Florida Fish and Wildlife Conservation Commission to allow periodic hog hunts on WTSP. Removing all hogs is an unreasonable goal; therefore a removal program will need to be continuous on a long-term basis. Traps will be placed along FPL easement roadways for trapper's vehicle and trailer access.

- Exotic amphibians and reptiles

Further research needs to be done to determine if it is necessary or feasible to control these animals (i.e. Cuban treefrog, brown anole) on the Preserve. Methodology will be determined at that time.

Annual Stewardship Report

As part of complying with the Florida Communities Trust grant contract for WTSP (Appendix I), land stewardship staff will be responsible for preparing an Annual Stewardship Report, due on January 30th of each year, which evaluates the implementation of the Land Management Plan. Land stewardship staff will seek FCT's approval for any proposed modification to the Land Management Plan and/or prior to undertaking any site alterations or physical improvements that are not addressed in this approved Land Management Plan.

Outside Consultants

Environmental/engineering

Environmental and/or engineering contractors will need to be hired to perform all or most aspects for the hydrological and pasture restoration projects.

Archaeological assessment

The Lee County Division of Planning recommended that C20/20 hire an archaeologist to perform the various tasks associated with the probable WWII site. If there will be any major soil disturbance during restoration of the Preserve or during the development of public use facilities, a professional archaeologist will need to be hired to conduct a survey of the area to be impacted.

Facilities design

Hire a firm to develop engineering design plans, apply for appropriate permits, oversee construction of public facilities, and installation of additional items listed within the Public Access and Passive Recreation section.

Boundary re-survey & stake

If C20/20 staff are not able to locate a sufficient level of boundary survey markers, a surveyor may need to be hired to install additional/replacement markers at unconfirmed perimeter boundary locations. This will need to be completed before any work can begin.

Overall Protection

Debris removal and Prevent dumping

Debris removal will be an ongoing project at WTSP. During quarterly site inspections, small objects that are encountered will be removed. There is existing debris present in management Units 2 and 12 that will need to be removed with heavy equipment. If necessary, additional debris clean-ups will be organized with the Parks and Recreation Land stewardship staff and volunteers.

Land stewardship staff recognize that new debris may be dumped in the Preserve periodically and depending on the nature of this debris it will be dealt with accordingly.

Boundary fence installation and interior fence removal

Currently, most of the Preserve is fenced to prevent activities such as dumping and use of motorized vehicles on the Preserve. Additional boundary fencing and signage will be added as necessary to further protect the Preserve. Some of the existing fencing is in disrepair and will be repaired on a priority schedule and when time permits. As restoration takes place, fence repairs will be made. The interior fence that is currently used for the existing cattle license will be removed once the lease is terminated.

Boundary sign installation

Boundary signs will be installed to further protect the Preserve. Signs missing or damaged will be replaced. Per LSOM, to make our boundary posting legally enforceable, signs will be placed every 200-300' and the lettering size of the word "BOUNDARY" will be 2 inches.

Removal of cattle

An active cattle lease remains in Management Unit 2 of the Preserve, which primarily consists of improved pasture and abandoned row crop fields. Besides staff recommendations that once the lease expires, it not be renewed; there is an FCT requirement to remove the cattle from WTSP. A notice of termination will be sent to the cattleman. Refer to the Internal Influences and Legal Obligations and Constraints sections for additional details.

Change zoning category

Staff will coordinate with Lee County Division of Planning representatives to change the status from "Agricultural" to "Environmentally Critical."

Public Use

Facilities construction

Facilities will include parking, hiking trails, boardwalks, observation decks, kiosk, and additional amenities such as picnic tables, bike racks, composting toilets, and wildlife proof trash receptacles will be located in the vicinity of the entrance parking area.

Educational sign installation

At the entrance to the public use facilities, a Preserve sign (minimum size of 4' x 6') will be installed that welcomes visitors to the Preserve, shows the shape of the Preserve, a trail map, some of the plants and animals found on the Preserve and lists the general rules of the Preserve. Additionally, the sign will identify Florida Communities Trust as a partner in the funding of the project (including the FCT logo), and the acquisition year.

Habitat restoration signs will be posted along the trails to educate visitors about land stewardship activities that have occurred to assist restoration of the ecosystem. A photo point "model" will be installed along the hiking trail within view of a wetland pond's observation deck. Unit 1's photo point is expected to be incorporated into an environmental education interpretive program to allow visitors a view of the area "before" exotic plant removal work was performed with the current "after" view as what the area has been restored to. This may potentially enlist volunteers interested in performing some tasks for the land stewardship staff. In addition, a potential cultural resource display may be created near the remnant munitions buildings, if it is determined to be historically or culturally important.

Volunteers

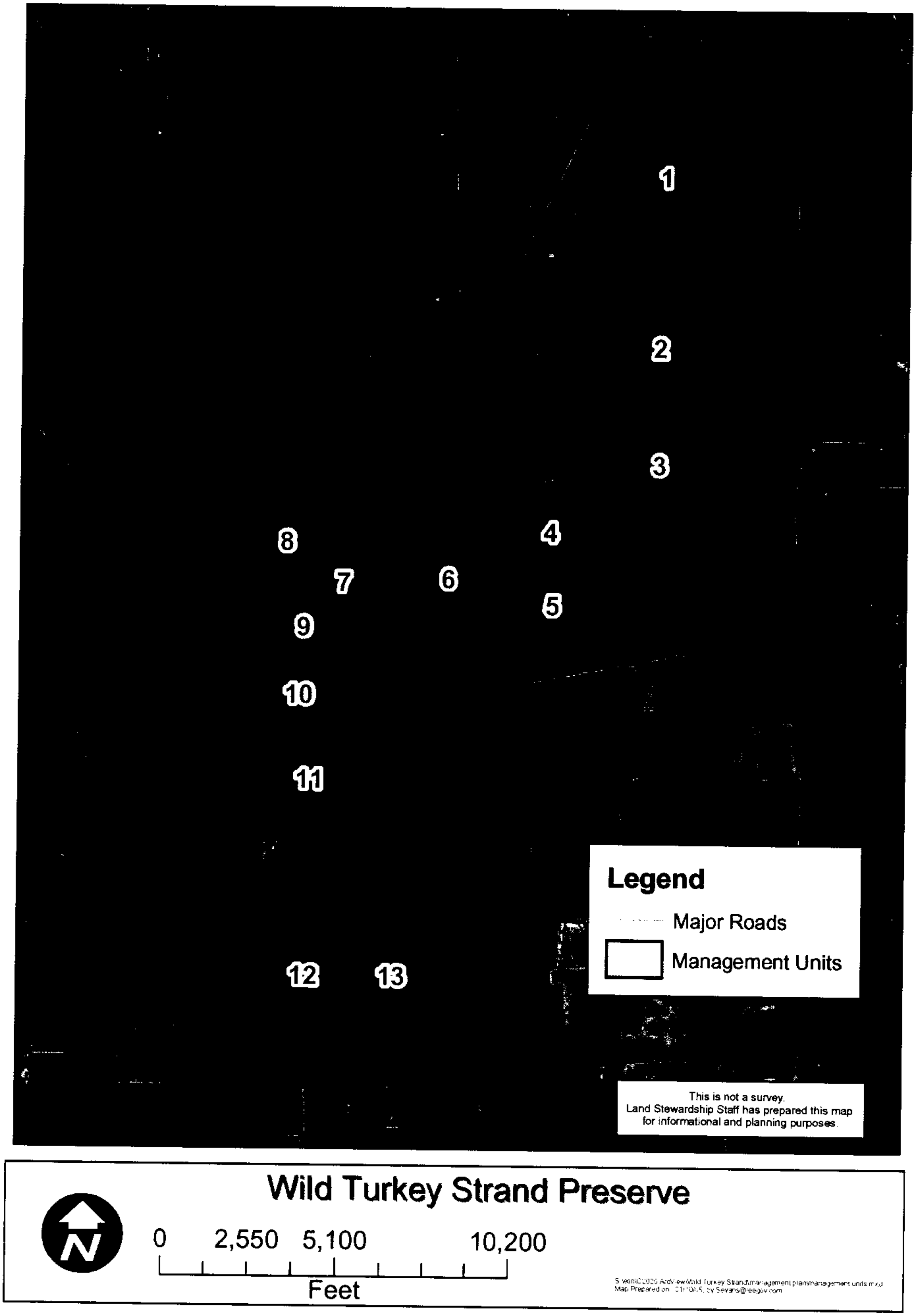
Form volunteer group

The LSOM identifies the Land Stewardship Volunteer Program's mission statement as:

> *To aid in the management and preservation of Lee County resource-based public parks and preserves and to provide volunteers with rewarding experiences in nature.*

Staff will attempt to organize a strong volunteer group for the WTSP to assist with the many diverse stewardship activities that will be associated with this Preserve such as trail creation, trail maintenance, wildlife monitoring, and other land stewardship projects.

Figure 16: Management Units Map



VII. Prioritized Projected Timetable for Implementation

Prioritized Projected Timetable for Implementation of the Management Action Plan (June 2005 – March 2010)

Natural Resource Management																				
Exotic Plants																				
Initial Exotic Plant Control											1, 2	4, 5			7-9	10-11			3, 12	6, 13
Supplemental Plantings																		5, 11		
Hydrology																				
Hydrologic Restoration - FPL Roads																E&W r-o-w				
Hydrologic Restoration - Other Ditches & Berms															1				2-6	7-9, 11-13
Pasture Restoration																				
Improved Pasture Restoration – Data Collection									2,3,6,9, 12-11	→	→	→	→							
Improved Pasture Restoration - Grass Removal															2	3,6,9			12-13	
Improved Pasture Restoration – Plantings																	2	3,6,9		
Fire																				
Prescribed Fire Management				Plan done											Prep burn unit	Begin Rx fire			X	X
Create fire breaks							X													
Mechanical Brush Reduction											4, 6, 8, 11	→								
Maintenance (On-going/Annual)																				
Follow Up exotic plant treatment															1,2,4,5				7-11	
Exotic animal removal					research info	amph. plan	Hogs @ 4	Hogs @12	Hogs @ 4	Hogs @ 12	Re-eval areas									
Monitoring well testing			4				4				4				4				4	
Water quality testing		10-11				10-11				10-11				10-11				10-11		
Supplemental soil & surface water testing								1												
Quarterly site inspections	1-3	4-6	10-13	7-9	4-6	10-13	1-3	7-9	10-13	1-3	7-9	3-6	7-9	10-13	4-6	1-3	1-3	7-9	4-6	10-13
Flora & fauna monitoring	On-going	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Photo point monitoring surveys	Install PP in 9								Install PP 2 & 12	Install 1				9	2	9	2		2, 12	9, 12
Annual Stewardship Report			X				X				X				X				X	

Outside Consultants																				
Environmental Consultant									Hire for pasture			Hire for hydro.								
Permitting											pasture	PA & facilities	hydro.							
Archaeological Assessment							Hire arch.	submit report to DHR												
Facilities design									Hire firm		design plans									
Boundary re-survey & stake				X																
Overall Protection																				
Debris removal – General				Initial cleanup	On-going	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Improvements on fencing & gates			Estab. lines	Install where needed																
Boundary sign installation	X			X																
Cattle removal		End Lease																		
Change zoning category											X									
Public Use																				
Creation of Public Access & Parking															X	→				
Create trail														Phase I						
Boardwalk installation															Phase I	→				
Educational sign installation																X				
Installation of additional items																	X			
Volunteers																				
Form volunteer group																	X			

Numbers correspond to Management Units and details on each management activity are found in the Management Action Plan.

VIII. Financial Considerations

There is a management fund established in perpetuity for all Conservation 20/20 preserves. Monies from this fund will be available for all aspects of designing and constructing the public use facilities, as well as for planned restoration projects and management in perpetuity, at WTSP. Monies will be supplemented through pursuing appropriate grants or other sources of funding, such as but not limited to; grants from the Florida Department of Environmental Protection Bureau of Invasive Plant Management for the exotic control projects, a Capital Improvement Project fund will be established and/or a grant from the Florida Recreation Development Assistance Program (FRDAP) could be sought for the public use facilities. FCT funds will be utilized for habitat restoration activities. Projected costs and funding sources are listed in Appendix J.

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X. Appendices

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Appendix A.

Plant List

Preliminary List of Vascular Plants for Wild Turkey Strand Preserve, Lee County, FL

List compiled from field observations made in October and December 2004 by Steven W. Woodmansee and Keith A. Bradley

December 15 2004

The Institute for Regional Conservation, Miami, FL

Scientific Name	Common Names	Native Status	IRC Status	State Status	FNAI state status	FNAI global status	FL EPPC
Abrus precatorius	Rosary-pea, Crab-eyes	A					I
Acacia auriculiformis	Earleaf acacia	A					I
Acacia farnesiana	Sweet acacia	N					
Acer rubrum	Red maple	N					
Aeschynomene americana	Shyleaf	N					
Aeschynomene indica	Indian joint-vetch	A					
Agalinis obtusifolia	Tenlobe false foxglove	N	SF1				
Alternanthera philoxeroides	Alligatorweed	A					II
Alternanthera sessilis	Sessile joyweed	A					
Alysicarpus ovalifolius	False moneywort, Alyce-clover	A					
Amaranthus viridis	Slender amaranth	A					
Ambrosia artemisiifolia	Common ragweed	N					
Ammannia latifolia	Pink redstem, Toothcup	N					
Amphicarpum muhlenbergianum	Blue-maidencane	N					
Anagallis minima	Chaffweed	N	SF1				
Anagallis pumila	Florida pimpernel	N	SF1				
Andropogon glomeratus var. glaucopsis	Purple bluestem	N					
Andropogon glomeratus var. pumilus	Common bushy bluestem	N					
Andropogon gyrans	Elliott's bluestem	N					
Andropogon ternarius	Splitbeard bluestem	N					
Andropogon virginicus	Broomsedge bluestem	N					
Andropogon virginicus var. glaucus	Chalky bluestem	N					
Annona glabra	Pond-apple	N					
Aristida beyrichiana	Southern wiregrass	N					
Aristida palustris	Longleaf threeawn	N					
Aristida purpurascens	Arrowfeather threeawn	N					
Aristida spiciformis	Bottlebrush threeawn	N					
Asclepias pedicellata	Savannah milkweed	N					
Asimina reticulata	Common pawpaw, Netted pawpaw	N					
Aster carolinianus	Climbing aster	N					
Aster dumosus	Rice button aster	N					
Aster elliottii	Elliott's aster	N					
Aster subulatus	Annual saltmarsh aster	N					
Axonopus fissifolius	Common carpetgrass	N					

Scientific Name	Common Names	Native Status	IRC Status	State Status	FNAI state status	FNAI global status	FL EPPC
Axonopus furcatus	Big carpetgrass	N					
Azolla caroliniana	Carolina Mosquito Fern	N					
Baccharis glomeruliflora	Silverling	N					
Baccharis halimifolia	Saltbush, Groundsel tree, Sea-myrtle	N					
Bacopa caroliniana	Lemon hyssop, Lemon bacopa, Blue waterhyssop	N					
Bacopa monnieri	Water hyssop, Herb-of-grace	N					
Bartonia verna	White screwstem	N					
Bejaria racemosa	Tarflower	N					
Berchemia scandens	rattan vine, Alabama supplejack	N					
Bidens alba var. radiata	Spanish-needles	N					
Bigelowia nudata subsp. australis	Southern pineland rayless goldenrod	N					
Blechnum serrulatum	Swamp fern, Toothed midsorus fern	N					
Bletia purpurea	Pinepink	N		T			
Boehmeria cylindrica	Button-hemp, False nettle, Bog hemp	N					
Boltonia diffusa	Smallhead Doll's-daisy	N					
Bothriochloa pertusa	Pitted bluestem, Pitted beardgrass	A					
Buchnera americana	American bluehearts	N					
Burmannia capitata	Southern bluethread	N					
Callicarpa americana	American beautyberry	N					
Campyloneurum phyllitidis	Long strap fern	N					
Caperonia castaneifolia	Chestnutleaf Falsecroton	N					
Carex longii	Long's sedge	N					
Carex verrucosa	Warty sedge	N	SF1				
Carphephorus corymbosus	Florida paintbrush, Coastalplain chaffhead	N					
Carphephorus odoratissimus var. subtropicanus	Pineland purple, False vanillaleaf	N					
Cassytha filiformis	Lovevine, Devil's gut	N					
Cenchrus incertus	Coastal sandbur	N					
Centella asiatica	Coinwort, Spadeleaf	N					
Centrosema virginianum	Spurred butterfly-pea	N					
Cephalanthus occidentalis	Common buttonbush	N					
Ceratopteris thalictroides	Watersprite	A					
Chamaecrista nictitans	Sensitive-pea	N	SF1				
Chamaecrista nictitans var. aspera	Hairy partridge-pea, Hairy sensitive-pea	N					

Scientific Name	Common Names	Native Status	IRC Status	State Status	FNAI state status	FNAI global status	FL EPPC
Chamaesyce hirta	Hairy spurge, Pillpod sandmat	N					
Chamaesyce hypericifolia	Eyebane, Graceful sandmat	N					
Chamaesyce hyssopifolia	Eyebane, Hyssopleaf sandmat	N					
Chaptalia tomentosa	Woolly sunbonnets, Pineland daisy	N					
Chenopodium album	Lamb's-quarters	A					
Chenopodium ambrosioides	Mexican tea	A					
Chrysobalanus icaco	Coco-plum	N					
Cirsium horridulum	Purple thistle	N					
Cirsium nuttallii	Nuttall's thistle	N					
Cladium jamaicense	Saw-grass, Jamaica swamp sawgrass	N					
Clematis baldwinii	Pine-hyacinth	N					
Cnidoscolus stimulosus	Tread-softly, Finger-rot	N					
Commelina diffusa	Common dayflower	A					
Commelina gambiae	Gambian dayflower	A					
Conoclinium coelestinum	Blue mistflower	N					
Conyza canadensis var. pusilla	Dwarf Canadian horseweed	N					
Coreopsis floridana	Florida tickseed	N					
Coreopsis leavenworthii	Leavenworth's tickseed	N					
Crotalaria lanceolata	Lanceleaf rattlebox	A					
Crotalaria pallida var. obovata	Smooth rattlebox	A					
Crotalaria rotundifolia	Rabbitbells	N					
Crotalaria spectabilis	Showy rattlebox	A					
Cucumis sativus	Garden cucumber	A					
Cuphea carthagenensis	Colombian waxweed	A					
Cynodon dactylon	Bermuda grass	A					
Cyperus compressus	Poorland flatsedge	N					
Cyperus croceus	Baldwin's flatsedge	N					
Cyperus distinctus	Distinct flatsedge, Swamp flatsedge	N					
Cyperus esculentus	Yellow nut-grass, Chufa flatsedge	A					
Cyperus flavescens	Yellow flatsedge	N					
Cyperus haspan	Haspan flatsedge	N					
Cyperus iria	Ricefield flatsedge	A					
Cyperus ligularis	Swamp flatsedge	N					
Cyperus odoratus	Fragrant flatsedge	N					
Cyperus polystachyos	Manyspike flatsedge	N					
Cyperus pumilus	Low flatsedge	A					
Cyperus retrorsus	Pinebarren flatsedge	N					
Cyperus rotundus	Nut-grass	A					

Scientific Name	Common Names	Native Status	IRC Status	State Status	FNAI state status	FNAI global status	FL EPPC
Cyperus surinamensis	Tropical flatsedge	N					
Dactyloctenium aegyptium	Crow's-foot grass, Durban crowfootgrass	A					
Desmodium incanum	Beggar's-ticks	N					
Desmodium triflorum	Threeflower ticktrefoil	A					
Dichanthelium aciculare	Needleleaf witch grass	N					
Dichanthelium dichotomum	Cypress witchgrass	N					
Dichanthelium ensifolium	Cypress witchgrass	N					
Dichanthelium ensifolium var. unciphyllum	Cypress witchgrass	N					
Dichanthelium leucothrix	Rough witchgrass	N					
Dichanthelium portoricense	Hemlock witchgrass	N					
Dichanthelium strigosum var. glabrescens	Glabrescent roughhair witchgrass	N					
Digitaria bicornis	Asia crabgrass	A					
Digitaria ciliaris	Southern crabgrass	N					
Digitaria longiflora	Indian crabgrass	A					
Digitaria serotina	Blanket crabgrass, Dwarf crabgrass	D					
Diodia teres	Poor joe, Rough buttonweed	N					
Diodia virginiana	Buttonweed, Virginia buttonweed	N					
Drosera capillaris	Pink sundew	N					
Drymaria cordata	West Indian chickweed, Drymary	N					
Dyschoriste oblongifolia	Common twinflower, Oblongleaf twinflower	N					
Echinochloa colona	Jungle-rice	A					
Echinochloa crus-galli	Barnyardgrass	A					
Echinochloa walteri	Coast cockspur	N					
Eclipta prostrata	False-daisy	N					
Eleocharis acutangula	Acute spikerush	A					
Eleocharis baldwinii	Baldwin's spikerush, roadgrass	N					
Eleocharis cellulosa	Gulf Coast spikerush	N					
Eleocharis flavescens	Yellow spikerush, Pale spikerush	N					
Eleocharis geniculata	Canada spikerush	N					
Eleocharis interstincta	Knotted spikerush	N					
Elephantopus elatus	Florida elephant's-foot, Tall elephant's-foot	N					
Eleusine indica	Indian goose grass	A					
Elionurus tripsacoides	Pan-American balsamscale	N					
Emilia fosbergii	Florida tasselflower	A					

Scientific Name	Common Names	Native Status	IRC Status	State Status	FNAI state status	FNAI global status	FL EPPC
Encyclia tampensis	Florida butterfly orchid	N		C			
Eragrostis atrovirens	Thalia love grass	A					
Eragrostis ciliaris	Gophertail love grass	A					
Eragrostis elliottii	Elliott's love grass	N					
Eragrostis virginica	Coastal love grass	N					
Erechtites hieracifolia	Fireweed, American burnweed	N					
Erigeron quercifolius	Southern-fleabane, Oakleaf fleabane	N					
Erigeron vernus	Early whitetop fleabane	N					
Eriocaulon compressum	Flattened pipewort	N					
Eriocaulon decangulare	Tenangle pipewort	N					
Eryngium baldwinii	Baldwin's eryngo	N					
Eryngium yuccifolium	Button snakeroot, Button rattlenakemaster	N					
Eulophia alta	Wild-coco	N					
Eupatorium capillifolium	Dog-fennel	N					
Eupatorium leptophyllum	Falsefennel	N					
Eupatorium mohrii	Mohr's thoroughwort	N					
Euphorbia polyphylla	Pineland euphorbia, Lesser Florida spurge	N					
Eustachys glauca	Prairie fingergrass, Saltmarsh fingergrass	N					
Eustachys petraea	Common fingergrass, Pinewoods fingergrass	N					
Euthamia caroliniana	Slender goldenrod	N					
Evolvulus sericeus	Silver dwarf morningglory	N					
Ficus aurea	Strangler fig, Golden fig	N					
Ficus microcarpa	Laurel fig, Indian laurel	A					I
Fimbristylis autumnalis	Slender fimbry	N					
Fimbristylis cymosa	Hurricane sedge, Hurricanegrass	A					
Fimbristylis puberula	Hairy fimbry	N					
Fimbristylis schoenoides	Ditch fimbry	A					
Fraxinus caroliniana	Water ash, Carolina ash, Pop ash	N					
Fuirena pumila	Dwarf umbrellasedge	N					
Fuirena scirpoidea	Southern umbrellasedge	N					
Galactia elliottii	Elliott's milkpea	N					
Galactia regularis	Eastern milkpea	N					
Gaura angustifolia	Southern gaura, Southern beeblossum	N					
Gaylussacia dumosa	Dwarf black-huckleberry, Dwarf huckleberry	N					

Scientific Name	Common Names	Native Status	IRC Status	State Status	FNAI state status	FNAI global status	FL EPPC
Gnaphalium obtusifolium	Rabbit's tobacco, Sweet everlasting	N					
Gomphrena serrata	Globe-amaranth	A					
Gratiola hispida	Rough hedgehyssop	N					
Gratiola ramosa	Branched hedgehyssop	N					
Gymnopogon brevifolius	Slim skeleton grass, Shortleaf skeleton grass	N	SF1				
Habenaria floribunda	Rein orchid, Toothpetal false reinorchid	N					
Habenaria quinqueseta	Longhorn false reinorchid	N					
Harrisella porrecta	Needleroot airplant orchid	N		T	S1	G4?	
Hedyotis corymbosa	Flattop mille graines	A					
Hedyotis procumbens	Innocence, Roundleaf bluet	N					
Hedyotis uniflora	Clustered mille graine	N					
Helenium pinnatifidum	Southeastern sneezeweed	N					
Heliotropium polyphyllum	Pineland heliotrope	N					
Hemarthria altissima	Limpograss	A					
Heterotheca subaxillaris	Camphorweed	N					
Hieracium megacephalon	Coastal plain hawkweed	N					
Hydrocotyle umbellata	Manyflower marshpennywort	N					
Hydrolea corymbosa	Skyflower	N					
Hymenachne amplexicaulis	Trompetilla	A					I
Hypericum brachyphyllum	Coastalplain St. John's-wort	N					
Hypericum cistifolium	Roundpod St. John's-wort	N					
Hypericum fasciculatum	Sandweed, Peelbark St. John's wort	N					
Hypericum gentianoides	Pineweeds, Orangegrass	N					
Hypericum hypericoides	St. Andrew's-cross	N					
Hypericum reductum	Atlantic St. John's-wort	N					
Hypericum tetrapetalum	Fourpetal St. John's-wort	N					
Hypoxis juncea	Fringed Yellow stargrass	N					
Hyptis alata	Musky mint, Clustered bushmint	N					
Hyptis spicigera	Marubio	A					
Hyptis verticillata	John Charles	A					
Ilex cassine	Dahoon holly, Dahoon	N					
Ilex glabra	Gallberry, Inkberry	N					
Imperata brasiliensis	Congongrass, Brazilian satintail	N					
Imperata cylindrica	Congongrass, Cogongrass	A					I
Indigofera hirsuta	Hairy indigo	A					
Ipomoea indica var. acuminata	Ocean-blue morningglory	N					
Ipomoea sagittata	Everglades morningglory	N					
Iresine diffusa	Bloodleaf, Juba's bush	N					

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Iva microcephala	Piedmont marshelder	N					
Juncus marginatus	Shore rush, Grassleaf rush	N					
Juncus megacephalus	Bighead rush	N					
Justicia angusta	Narrow-leaved waterwillow	N					
Kyllinga brevifolia	Shortleaf spikesedge	A					
Kyllinga odorata	Fragrant spikesedge	N					
Kyllinga pumila	Low spikesedge	N					
Lachnanthes caroliana	Bloodroot, Carolina redroot	N					
Lachnocaulon anceps	Whitehead bogbutton	N					
Lachnocaulon minus	Small's bogbutton	N	SF1				
Lantana camara	Shrubverbena	A					I
Lechea torreyi	Piedmont pinweed	N					
Leersia hexandra	Southern cutgrass	N					
Lemna valdiviana	Valdivia duckweed	N					
Leptochloa fascicularis	Bearded spangletop, Bearded sprangletop	N					
Liatris garberi	Garber's gayfeather	N					
Licania michauxii	Gopher-apple	N					
Lilium catesbaei	Catesby's lily, Pine lily	N		T			
Lindernia crustacea	Malaysian false-pimpernel	A					
Lindernia grandiflora	Savannah false-pimpernel	N					
Lipocarpha aristulata	Awned halfchaff sedge	A					
Lipocarpha micrantha	Smallflower halfchaff sedge	N					
Lobelia glandulosa	Glade lobelia	N					
Ludwigia curtissii	Curtiss's primrosewillow	N					
Ludwigia linifolia	Southeastern primrosewillow	N					
Ludwigia maritima	Seaside primrosewillow	N					
Ludwigia microcarpa	Smallfruit primrosewillow	N					
Ludwigia octovalvis	Mexican primrosewillow	N					
Ludwigia peruviana	Peruvian primrosewillow	A					
Ludwigia repens	Creeping primrosewillow	N					
Luziola fluitans	Water grass, Southern watergrass	N					
Lycopus rubellus	Taperleaf waterhoarhound	N					
Lygodium microphyllum	Small-leaf climbing fern	A					I
Lyonia fruticosa	Coastalplain staggerbush	N					
Macroptilium lathyroides	Wild-bean, Wild bushbean	A					
Mecardonia acuminata subsp. peninsularis	Axilflower	N					
Melaleuca quinquenervia	Punktree	A					I
Melilotus albus	White sweetclover	A					
Melochia corchorifolia	Chocolateweed	A					
Melochia spicata	Bretonica peluda	N					
Melothria pendula	Creeping-cucumber	N					

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Micranthemum glomeratum	Manatee mudflower	N					
Micranthemum umbrosum	Shade mudflower	N	SF1				
Mikania scandens	Climbing hempweed, Climbing hempvine	N					
Mitreola sessilifolia	Mitrewort, Swamp hornpod	N					
Muhlenbergia capillaris	Muhlygrass, Hairawnmuhly	N					
Murdannia nudiflora	Nakedstem dewflower	A					
Murdannia spirata	Asiatic dewflower	A					
Myrica cerifera	Wax myrtle, Southern Bayberry	N					
Najas wrightiana	Wright's waternymph	N	SF1				
Nephrolepis biserrata	Giant sword fern	N		T			
Nephrolepis exaltata	Wild Boston fern	N					
Nephrolepis multiflora	Asian sword fern	A					I
Nymphaea elegans	Blue waterlily, Tropical royalblue waterlily	N					
Nymphoides aquatica	Big floatingheart	N					
Oeceoclades maculata	African ground orchid, Monk orchid	A					II
Ophioglossum petiolatum	Stalked adder's tongue fern	N					
Opuntia ficus-indica	Spineless cactus	A					
Osmunda regalis var. spectabilis	Royal fern	N		C			
Oxalis corniculata	Lady's-sorrel, Common yellow woodsorrel	N					
Oxypolis filiformis	Water dropwort, Water cowbane	N					
Panicum dichotomiflorum	Fall panic grass	N					
Panicum dichotomiflorum var. bartowense	Hairy fall panic grass	N					
Panicum hemitomon	Maidencane	N					
Panicum hians	Gaping panicum	N					
Panicum maximum	Guineagrass	A					
Panicum repens	Torpedo grass	A					I
Panicum rigidulum	Redtop panicum	N					
Panicum tenerum	Bluejoint panicum	N					
Panicum virgatum	Switchgrass	N					
Parthenocissus quinquefolia	Virginia-creeper, Woodbine	N					
Paspalidium geminatum	Egyptian paspalidium	N					
Paspalum conjugatum	Sour paspalum, Hilograss	N					
Paspalum dissectum	Mudbank crowngrass	A					
Paspalum floridanum	Florida paspalum	N					
Paspalum laeve	Field paspalum	N					
Paspalum monostachyum	Gulfdune paspalum	N					
Paspalum notatum	Bahia grass	A					

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Paspalum praecox	Early paspalum	N					
Paspalum repens	Water paspalum	N					
Paspalum setaceum	Thin paspalum	N					
Paspalum urvillei	Vasey grass	A					
Paspalum vaginatum	Seashore paspalum	N					
Passiflora suberosa	Corkystem passionflower	N					
Pectis prostrata	Spreading cinchweed	N					
Persea palustris	Swamp bay	N					
Phlebodium aureum	Golden polypody	N					
Phyla nodiflora	Frog fruit, Turkey tangle fogfruit, Capeweed	N					
Phyllanthus caroliniensis subsp. saxicola	Rock Carolina leafflower	N					
Phyllanthus urinaria	Chamber bitter	A					
Phytolacca americana	American pokeweed	N					
Piloblephis rigida	Wild pennyroyal	N					
Pinguicula pumila	Small butterwort	N					
Pinus elliottii var. densa	South Florida slash pine	N					
Piriqueta caroliniana	Pitted stripeseed	N					
Pistia stratiotes	Water-lettuce	A					I
Pityopsis graminifolia	Narrowleaf silkgrass	N					
Pleopeltis polypodioides var. michauxiana	Resurrection fern	N					
Pluchea odorata	Sweetscent	N					
Pluchea rosea	Rosy camphorweed	N					
Polygala grandiflora	Candyweed, Showy milkwort	N					
Polygala lutea	Orange milkwort	N					
Polygala nana	Candyroot	N					
Polygala rugelii	Big yellow milkwort	N					
Polygala setacea	Coastalplain milkwort	N					
Polygonum densiflorum	Denseflower knotweed	N					
Polygonum hydropiperoides	Mild water-pepper, Swamp smartweed	N					
Polygonum pensylvanicum	Pennsylvannia smartweed	A					
Polygonum punctatum	Dotted smartweed	N					
Polypremum procumbens	Rustweed, Juniperleaf	N					
Pontederia cordata	Pickerelweed	N					
Portulaca oleracea	Purslane, Little hogweed	N					
Proserpinaca palustris	Mermaid weed, Marsh mermaidweed	N					
Proserpinaca pectinata	Mermaid weed, Combleaf mermaidweed	N					
Psidium guajava	Guava	A					I

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Psilotum nudum	Whisk-fern	N					
Pteridium aquilinum var. caudatum	Lacy braken fern	N					
Pteridium aquilinum var. pseudocaudatum	Tailed braken fern	N					
Pteris vittata	China brake	A					II
Pterocaulon pycnostachyum	Blackroot	N					
Ptilimnium capillaceum	Mock bishopsweed, Herbwilliam	N					
Quercus laurifolia	Laurel oak, Diamond oak	N					
Quercus minima	Dwarf live oak	N					
Quercus virginiana	Virginia live oak	N					
Rapanea punctata	Myrsine, Colicwood	N					
Rhexia cubensis	West Indian meadowbeauty	N					
Rhexia mariana	Pale meadowbeauty, Maryland meadowbeauty	N					
Rhexia nuttallii	Nuttall's meadowbeauty	N					
Rhexia petiolata	Fringed meadowbeauty	N	SF1				
Rhodomyrtus tomentosa	Downy myrtle, Rose myrtle	A					I
Rhus copallinum	Winged sumac	N					
Rhynchelytrum repens	Rose Natalgrass	A					II
Rhynchospora colorata	Starrush whitetop	N					
Rhynchospora divergens	Spreading beaksedge	N					
Rhynchospora fascicularis	Fascicled Beaksedge	N					
Rhynchospora fernaldii	Fernald's beaksedge	N	SF1				
Rhynchospora filifolia	Threadleaf beaksedge	N					
Rhynchospora inundata	Narrowfruit horned beaksedge	N					
Rhynchospora microcarpa	Southern beaksedge	N					
Rhynchospora nitens	Shortbeak beaksedge	N					
Rhynchospora plumosa	Plumed beaksedge	N					
Rhynchospora rariflora	Fewflower beaksedge	N	SF1				
Rhynchospora tracyi	Tracy's beaksedge	N					
Richardia scabra	Rough Mexican clover	A					
Rorippa teres	Southern marsh yellowcress	N					
Rotala ramosior	Toothcup, Lowland rotala	N					
Rubus trivialis	Southern dewberry	N					
Rudbeckia hirta	Blackeyed susan	N					
Sabal palmetto	Cabbage palm	N					
Sabatia brevifolia	Shortleaf rosegentian	N					
Sabatia stellaris	Rose-of-Plymouth	N					
Saccharum giganteum	Sugarcane plumegrass	N					
Sacciolepis indica	Indian cupscale	A					
Sacciolepis striata	American cupscale	N					

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Sacoila lanceolata	Leafless beaked lady's-tresses	N		T			
Sagittaria graminea	Grassy arrowhead	N					
Sagittaria graminea var. chapmanii	Chapman's arrowhead	N					
Sagittaria lancifolia	Bulltongue arrowhead	N					
Salix caroliniana	Coastal Plain willow	N					
Salvinia minima	Water spangles	A					
Sambucus canadensis	Elderberry, American elder	N					
Samolus valerandi subsp. parviflorus	Pineland pimpernel, Seaside brookweed	N					
Sarcostemma clausum	Whitevine, White twinevine	N					
Schinus terebinthifolius	Brazilian-pepper	A					I
Schizachyrium rhizomatum	Rhizomatous bluestem	N					
Scleria baldwinii	Baldwin's nutrush	N					
Scleria ciliata	Fringed nutrush	N					
Scleria ciliata var. pauciflora	Fewflower nutrush	N	SF1				
Scleria hirtella	Riverswamp nutrush	N					
Scleria lacustris	Wright's nutrush	A					
Scleria reticularis	Netted nutrush	N					
Scleria verticillata	Low nutrush	N					
Scoparia dulcis	Sweetbroom, Licoriceweed	N					
Senna pendula var. glabrata	Valamuerto	A					I
Serenoa repens	Saw palmetto	N					
Sesbania herbacea	Danglepod	N					
Setaria parviflora	Knotroot foxtail, Yellow bristlegrass	N					
Sida acuta	Common wireweed, Common fanpetals	N					
Sida rhombifolia	Cuban jute, Indian hemp	N					
Sideroxylon reclinatum	Recline Florida bully	N					
Smilax auriculata	Earleaf greenbrier	N					
Smilax laurifolia	Catbrier, Laurel greenbrier, Bamboo vine	N					
Solanum americanum	Common nightshade, American black nightshade	N					
Solanum tampicense	Aquatic soda-apple	A					I
Solidago fistulosa	Pinebarren goldenrod	N					
Solidago gigantea	Giant goldenrod	N					
Solidago stricta	Narrow-leaved goldenrod, Wand goldenrod	N					
Sorghastrum secundum	Lopsided Indian grass	N					
Sorghum bicolor	Grain sorghum	A					
Spartina bakeri	Sand cordgrass	N					

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Spermacoce assurgens	Woodland false buttonweed	N					
Spermacoce prostrata	Prostrate false buttonweed	N					
Spermacoce verticillata	Shrubby false buttonweed	A					
Spiranthes longilabris	Longlip lady's-tresses	N		T			
Spiranthes odorata	Fragrant lady's-tresses, Marsh lady's-tresses	N					
Spirodela polyrhiza	Common duckweed	N					
Sporobolus indicus	Smut grass	A					
Sporobolus indicus var. pyramidalis	West Indian dropseed	A					
Sporobolus junceus	Pineywoods dropseed	N					
Stenandrium dulce	Pinklet	N					
Stillingia aquatica	Corkwood, Water toothleaf	N					
Stillingia sylvatica	Queensdelight	N					
Syngonanthus flavidulus	Yellow hatpins	N					
Syzygium cumini	Jambolan-plum, Java-plum	A					I
Taxodium ascendens	Pond cypress	N					
Tephrosia rugelii	Rugel's hoarypea	N					
Thalia geniculata	Alligatorflag, Fireflag	N					
Thelypteris interrupta	Interrupted maiden fern, Hottentot fern	N					
Thelypteris kunthii	Southern shield fern	N					
Thelypteris palustris var. pubescens	Marsh fern	N					
Tillandsia balbisiana	Reflexed wild-pine, Northern needleleaf	N		T			
Tillandsia fasciculata var. densispica	Stiff-leaved wild-pine, Cardinal airplant	N		E			
Tillandsia paucifolia	Twisted wild-pine, Potbelly airplant	N					
Tillandsia recurvata	Ball-moss	N					
Tillandsia setacea	Thin-leaved wild-pine, Southern needleleaf	N					
Tillandsia usneoides	Spanish-moss	N					
Tillandsia utriculata	Giant wild-pine, Giant airplant	N		E			
Tridax procumbens	Brittleweed, Coatbuttons	A					
Typha domingensis	Southern cat-tail	N					
Urena lobata	Caesarweed	A					II
Urochloa mutica	Paragrass	A					I
Urochloa subquadripara	Signal grass, Tropical signalgrass	A					
Utricularia cornuta	Horned bladderwort	N					
Utricularia foliosa	Leafy bladderwort	N					

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Utricularia gibba	Cone-spur bladderwort, Humped bladderwort	N					
Utricularia inflata	Floating bladderwort	N					
Utricularia purpurea	Eastern purple bladderwort	N					
Utricularia resupinata	Small purple bladderwort	N					
Utricularia simulans	Fringed bladderwort	N					
Utricularia subulata	Zigzag bladderwort	N					
Vaccinium myrsinites	Shiny blueberry	N					
Vernonia cinerea	Little ironweed	A					
Vicia acutifolia	Sand vetch, Fourleaf vetch	N					
Vigna luteola	Cow-pea, Hairypod cowpea	N					
Viola lanceolata	Bog white violet	N					
Viola palmata	Early blue violet	N	SF1				
Vitis rotundifolia	Muscadine	N					
Vittaria lineata	Shoestring fern	N					
Waltheria indica	Sleepy morning	N					
Wolffiella gladiata	Bog-mat, Florida mudmidget	N	SF1				
Woodwardia virginica	Virginia chain fern	N					
Xyris ambigua	Coastalplain yelloweyed grass	N					
Xyris brevifolia	Shortleaf yelloweyed grass	N					
Xyris caroliniana	Carolina yelloweyed grass	N					
Xyris difformis var. floridana	Florida yelloweyed grass	N					
Xyris elliottii	Elliott's yelloweyed grass	N					
Xyris flabelliformis	Savannah yelloweyed grass	N					
Xyris jupicai	Richard's yelloweyed grass	A					
Xyris smalliana	Small's yelloweyed grass	N					
Zizaniopsis miliacea	Southern wild-rice, Giant cut-grass	N					
	Total # of Plants	461					
	Total # of Natives	370					
	Total # of Exotics or doubtfully native	91					
	Total # of SF1 ranked Plants	15					
	Total # of State Listed Plants	11					
	Total # of FNAI Listed Plants	1					
	Total # of FL EPPC Plants	23					
Native Status							
N = Native							
A = Exotic (non native)							
IRC Status							
SF1 = Critically Imperiled in South Florida because of extreme rarity (5 or fewer occurrences or less than							

Scientific Name	Common Names	Native Status	IRC Status	State Status	FNAI state status	FNAI global status	FL EPPC
State Status							
T = Threatened							
E = Endangered							
C = Commercially Exploited							
FNAI status							
S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000							
G4? = tentatively apparently secure globally (may be rare in parts of range)							
Florida EPPC Status							
I = species that are invading and disrupting native plant communities							
II = species that have shown a potential to disrupt native plant communities							

Appendix B.

Wildlife Sightings

Wildlife Sightings at Wild Turkey Strand

		Designated Status FWC	FWS
AMPHIBIANS			
Family: Leptodactylidae (tropical frogs)			
Eleutherodactylus planirostris planirostris	greenhouse frog		
Family: Bufonidae (toads)			
Bufo terrestris	southern toad		
Bufo quercicus	oak toad		
Family : Hylidae (treefrogs)			
Acris gryllus dorsalis	Florida cricket frog		
Hyla cinerea	green treefrog		
Hyla gratiosa	barking treefrog		
Hyla femoralis	pine woods treefrog		
Hyla squirella	squirrel treefrog		
Osteopilus septentrionalis	Cuban treefrog		
Family: Microhylidae (narrowmouth toads)			
Gastrophryne carolinensis	eastern narrowmouth toad		
Family: Ranidae (true frogs)			
Rana grylio	pig frog		
Rana utricularia	southern leopard frog		
DRAGONFLIES			
Family: Libellulidae (dragonflies)			
Tramea carolina	Carolina saddlebags		
GRASSHOPPERS			
Family: Acrididae (grasshoppers)			
Romalea guttata	eastern lubber grasshopper		
REPTILES			
Family: Alligatoridae (alligator and caimans)			
Alligator mississippiensis	American alligator	SSC	T S/A
Family: Emydidae (box and water turtles)			
Pseudemys floridana peninsularis	peninsula cooter		
Deirochelys reticularia chrysea	Florida chicken turtle		
Family: Testudinidae (gopher tortoises)			
Gopherus polyphemus	gopher tortoise	SSC	
Family: Trionychidae (softshell turtles)			
Apalone ferox	Florida softshell		
Family: Polychrotidae (Anoles)			
Anolis carolinensis	green anole		
Anolis sagrei	brown anole		
Family: Anguidae (glass lizards and alligator lizard)			
Ophisaurus ventralis	eastern glass lizard		
Family: Colubridae (colubrids)			
Nerodia fasciata pictiventris	Florida water snake		
Family: Colubridae (colubrids)			
Thamnophis sauritus sackenii	peninsula ribbon snake		
Coluber constrictor priapus	southern black racer		

Wildlife Sightings at Wild Turkey Strand

		Designated Status FWC	FWS
REPTILES CONTINUED			
Family: Viperidae (vipers)			
Subfamily: Crotalinae (pit vipers)			
Agkistrodon piscivorus piscivorus	eastern cottonmouth		
Agkistrodon piscivorus conanti	Florida cottonmouth		
Sistrurus miliarius barbouri	dusky pygmy rattlesnake		
MAMMALS			
Family: Didelphidae (opossums)			
Didelphis virginiana	Virginia opossum		
Family: Mephitidae (skunks)			
Spilogale putorius	eastern spotted skunk		
Family: Procyonidae (raccoons)			
Procyon lotor	northern raccoon		
Family: Suidae (pigs and worthogs)			
Sus scrofa	feral hog		
Family: Cervidae (deer)			
Odocoileus virginianus	white-tailed deer		
Family: Sciuridae (squirrels)			
Sciurus niger avicennia	Big Cypress fox squirrel	T	
Family: Muridae (mice and rats)			
Peromyscus gossypinus	cotton mouse		
Sigmodon hispidus	hispid cotton rat		
Family: Leporidae (rabbits)			
Sylvilagus floridanus	eastern cottontail		
BUTTERFLIES			
Family: Heliconiidae			
Subfamily: Heliconiinae (longwings and fritillaries)			
Heliconius charitonius	zebra longwing		
Family: Nymphalidae (fritillaries and orange patterend butterflies)			
Limenitis archippus	viceroy		
Family: Nymphalidae (brushfoots)			
Anartia jatrophae	white peacock		
FISHES			
Family: Cyprinidae (minnows)			
Notemigonus crysoleucas	golden shiner		
Family: Ictaluridae (bullhead catfishes)			
Ameiurus nebulosus	brown bullhead		
Family: Fundulidae (topminnows and killfishes)			
Fundulus chrysotus	golden topminnow		
Lucania goodei	bluefin killifish		
Family: Poeciliidae (livebearers)			
Gambusia affinis	mosquitofish		
Heterandria formosa	least killifish		
Family: Centrarchidae (sunfishes and basses)			
Lepomis gulosus	warmouth		
Lepomis marginatus	dollar sunfish		

Wildlife Sightings at Wild Turkey Strand

		Designated Status FWC	FWS
SHRIMP			
Family: Palaemonidae (lobsters and shrimp)			
Palaemonetes vulgaris	grass shrimp		
CRUSTACEANS			
Family: Cambaridae (crayfishes)			
Fallicambarus devastator	crayfish		
BIRDS			
Family: Podicipedidae (grebes)			
Podilymbus podiceps	pied-billed grebe		
Family: Anhingidae (anhingas)			
Anhinga anhinga	anhinga		
Family: Ardeidae (herons, egrets, bitterns)			
Ardea herodius	great blue heron		
Egretta caerulea	little blue heron	SSC	
Egretta tricolor	tricolored heron	SSC	
Ardea alba	great egret		
Egretta thula	snowy egret		
Bubulcus ibis	cattle egret		
Nycticorax nycticorax	black-crowned night-heron		
Nyctanassa violacea	yellow-crowned night-heron		
Butorides virescens	green heron		
Ixobrychus exilis	least bittern		
Family: Threskiornithidae (ibises and spoonbills)			
Plegadis falcinellus	glossy ibis		
Eudocimus albus	white ibis	SSC	
Ajaia ajaia	roseate spoonbill	SSC	
Family: Ciconiidae (storks)			
Mycteria americana	wood stork	E	E
Family: Gruidae (cranes)			
Grus canadensis pratensis	Florida sandhill crane	T	
Family: Anatidae (swans, geese, ducks)			
Subfamily: Merginae (mergansers)			
Lophodytes cucullatus	hooded merganser		
Family: Cathartidae (new world vultures)			
Cathartes aura	turkey vulture		
Coragyps atratus	black vulture		
Family: Accipitridae (hawks, kites, accipiters, harriers and eagles)			
Subfamilies: Elaninae and Milvinae (kites)			
Elanoides forficatus	swallow-tailed kite		
Rostrhamus sociabilis	snail kite	E	E
Subfamily: Accipitrinae (accipiters)			
Accipiter striatus	sharp-shinned hawk		
Circus cyaneus	northern harrier		
Subfamily: Buteoninae (buteos)			
Buteo jamaicensis	red-tailed hawk		
Buteo lineatus	red-shouldered hawk		

Wildlife Sightings at Wild Turkey Strand

		Designated Status FWC	FWS
BIRDS CONTINUED			
Subfamily: Buteoninae (eagles)			
Haliaeetus leucocephalus	bald eagle	T	T
Family: Falconidae (falcons)			
Falco sparverius	American kestrel		
Family: Phasianidae (pheasants, grouse, turkey, and allies)			
Subfamily: Meleagridinae			
Meleagris gallopavo	wild turkey		
Family: Charadriidae (plovers)			
Charadrius vociferus	killdeer		
Family: Scolopacidae (sandpipers)			
Gallinago gallinago	common snipe		
Family: Columbidae (pigeons and doves)			
Zenaida macroura	mourning dove		
Columbina passerina	common ground-dove		
Families: Strigidae and Tytonidae (true and barn owls)			
Strix varia	barred owl		
Family: Alcedinidae (kingfishers)			
Ceryle alcyon	belted kingfisher		
Family: Picidae (woodpeckers)			
Dryocopus pileatus	pileated woodpecker		
Melanerpes carolinus	red-bellied woodpecker		
Picoides pubescens	downy woodpecker		
Family: Tyrannidae (tryant flycatchers)			
Myiarchus crinitus	great crested flycatcher		
Sayornis phoebe	eastern phoebe		
Family: Hirundinidae (swallows)			
Hirundo rustica	barn swallow		
Tachycineta bicolor	tree swallow		
Family: Paridae (chickadees and titmice)			
Baeolophus bicolor	tufted titmouse		
Family: Troglodytiae (wrens)			
Thryothorus ludovicianus	Carolina wren		
Family: Sylviidae			
Subfamily: Polioptilinae (gnatcatchers)			
Poloiptila caerulea	blue-gray gnatcatcher		
Family: Turdidae (thrushes)			
Turdus migratorius	American robin		
Family: Mimidae (mockingbirds and thrashers)			
Dumetella carolinensis	gray catbird		
Mimus polyglottos	northern mockingbird		
Family: Corvidae (crows, jays, etc.)			
Cyanocitta cristata	blue jay		
Family: Vireonidae (vireos)			
Vireo griseus	white-eyed vireo		

Wildlife Sightings at Wild Turkey Strand

		Designated Status FWC	FWS
BIRDS CONTINUED			
Family: Parulidae (wood-warblers)			
Dendroica coronata	yellow-rumped warbler		
Setophaga ruticilla	American redstart		
Dendroica pinus	pine warbler		
Dendroica palmarum	palm warbler		
Geothlypis trichas	common yellowthroat		
Family: Cardinalidae (cardinals)			
Cardinalis cardinalis	northern cardinal		
Family: Icteridae (blackbirds, orioles, etc.)			
Quiscalus quiscauls	common grackle		
Quiscalus major	boat-tailed grackel		
Agelaius phoeniceus	red-winged blackbird		

Key

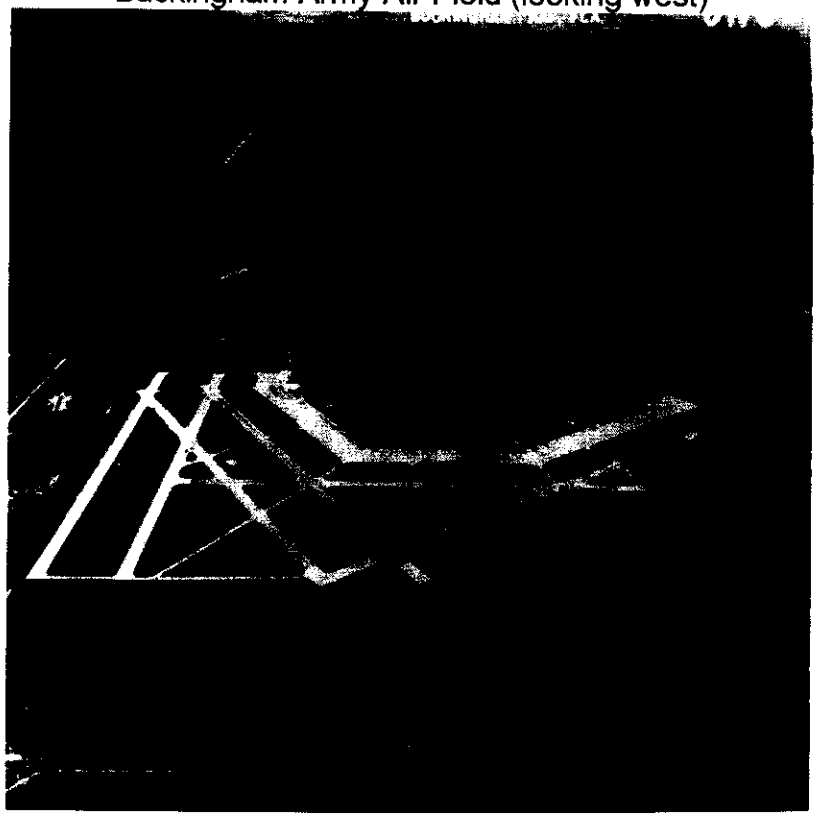
FWC= Florida Fish & Wildlife Conservation Commission
FWS= U.S. Fish & Wildlife Service

SSC= Species of Special Concern
T= Threatened
E= Endangered

Appendix C.

Local Historical WWII Military Photographs

Buckingham Army Air Field (looking west)



The Flexible Gunnery School was said to be one of the largest gunnery schools in the country and all types of aerial gunnery were taught there, using the most modern methods of instruction.

B-24 BAAF, 1944

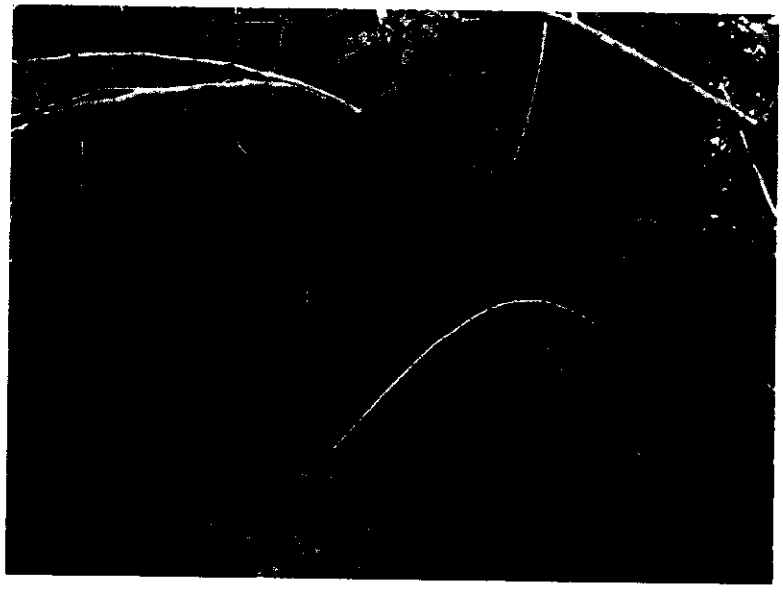
An illustration of the military skeet range and objects that once existed at these off-site facilities. Most are still visible from 2002 Aerial photographs.

Military personnel training with a rifle, 30 & 50 caliber machine guns, and a make shift aircraft turret.

Women, from all over the country, served under the Women's Army Corps (WACS) and supported various base operation activities at BAAF during WWII.

All photographs are courtesy of the Southwest Florida Museum of History.

The above photographs are connected to locally stationed WWII military personnel and the training operations that occurred at the Buckingham Army Air Field (currently the Lee County Mosquito/Hyacinth Control District) and off-site target practice ranges. The recent photograph below is one of an existing WWII munitions building at the northern end of the Preserve being hidden by Brazilian pepper shrubs.



Appendix D.

Staff Comments on Proposed Mine

Land Stewardship Staff Comments
Green Meadow IPD Project
7-6-04

Lee County purchased nomination #200 (now known as Wild Turkey Strand Preserve, WTSP) because it met all of the criteria listed in Section 4, items G. and H., paraphrased below, of Ordinance 96-12, provided as addendum A. The land has critical and sensitive conservation value in regards to size, unique/rare habitat, contributes positively to surface water management, water supply wildlife habitat and appropriate public use. The land is consistent with the Lee County Comprehensive Plan as being appropriate for conservation of natural resources and public recreation.

The Board of County Commissioners (BOCC) appointed committee, known as CLASAC, is responsible for reviewing and recommending to BOCC nominations suitable for acquisition. Recommendations are made based on Secondary Review Criteria approved by the BOCC in Resolution 01-01-35. Criteria D.3. Land Manageability, provided as part of aforementioned Resolution as addendum B, looks at surrounding Future Land Use to determine whether a nomination is suitable for acquisition as a preserve. At the time nomination #200 was reviewed and recommended for acquisition greater than 75% of the lands surrounding #200 were of low impact, which is defined in aforementioned Resolution; surrounding Future Land Uses consisted of Wetlands and Density Reduction/Groundwater Resource. Rezoning the adjacent Jaimerson property to IPD would change the original desirability of nomination #200, now WTSP, for which the BOCC spent over $6.3M to acquire as a preserve with low impact surrounding land use.

There are several conflicts with the proposed mine to The Lee Plan in regards to WTSP.

Policy 7.1.2: Industrial developments requiring rezoning and meeting Development of County Impact (DCI) thresholds must be developed as Planned Developments designed to arrange uses as an integrated and cohesive unit in order to:

- Promote compatibility and screening;
- Reduce dependence on the automobile;
- Promote pedestrian movement within the development;
- Utilize joint parking, access and loading facilities;
- Avoid negative impacts on surrounding land uses and traffic circulation;
- Protect natural resources; and
- Provide necessary facilities and services where they are inadequate to serve the propose use. (Amended by Ordinance No. 94-30, 98-09, 00-22)

In regard to "promote compatibility and screening", the proposed berm (B-B) is insufficient for screening. The northern portion of WTSP is planned to be the trailhead and parking area for the future public access at the Preserve. The is the only possible access point for visitors since this north boundary is adjacent to a main road. Although the height of berm B-B is not specified, it

appears from exhibit 6-C to be significantly lower than the 10' berm A-A. A visitor to a conservation area would not be viewing "compatible" development, nor would their view be screened from this development.

Concession: Land Stewardship staff requests at least the minimum buffer zone between WTSP and the berm/mining operation using the usual county standards, as long as they are not less that 322 feet from the freshwater marshes and 550 feet from cypress swamp, hammock and flatwood plant communities located on WTSP. These standards were established by the Southwest Florida Water Management District in their SWIM Ordinance Model Project (addendum C). A map that illustrates the location of these plant communities at WTSP is also attached (addendum D).

In regard to "avoid negative impacts on surrounding land uses" and "protect natural resources", the Green Meadow IPD application states in exhibit 6-I that "The request will not adversely affect environmentally critical areas...". However, there have not been any studies conducted to the impacts of the proposed mine project on WTSP. Blasting, which is proposed for this mine, could have detrimental effects on wildlife at WTSP, which exhibits numerous listed species:

- American alligator (*Alligator mississippiensis*)
    - USFWS- Threatened Due to Similarity of Appearance
    - FWC- Species of Special Concern
- gopher tortoise (*Gopherus polyphemus*)
    - FWC- Species of Special Concern
- snowy egret (*Egretta thula*)
    - FWC- Species of Special Concern
- little blue heron (*Egretta caerulea*)
    - FWC- Species of Special Concern
- tricolored heron (*Egretta tricolor*)
    - FWC- Species of Special Concern
- white ibis (*Eudocimus albus*)
    - FWC- Species of Special Concern
- roseate spoonbill (*Ajaia ajaja*)
    - FWC- Species of Special Concern
- wood stork (*Mycteria americana*)
    - USFWS- Endangered
    - FWC- Endangered
- snail kite (*Rostrhamus sociaboilis plumbeus*)
    - USFWS- Endangered
    - FWC- Endangered
- Florida sandhill crane (*Grus canadensis pratensis*)
    - FWC- Threatened
- Big Cypress fox squirrel (*Sciurus niger avicennia*)
    - FWC- Threatened

This is likely not a complete indication of all the listed species utilizing WTSP. The above list was compiled from cursory observations during quarterly site inspections and a Property Evaluation Report conducted by Kevin L. Erwin Consulting Ecologist, Inc. (addendum E). The majority of these listed species depend on healthy wetland habitats, often with very specific hydroperiods, for their survival.

Concession: Land Stewardship staff requests an environmental impact study of WTSP on the impact of the Green Meadow IPD project that would be conducted by an independent biologist that is not an employee or affiliate of a company engaged in construction materials mining activity. The findings of the study would then be, reviewed by County Staff as well as wildlife experts from the United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. The findings from this study and recommendations of the reviewers would be included in the final permits for the project.

Goal 10: Natural Resource Extraction: To protect areas containing identified natural resources from incompatible urban development, while insuring that natural resource extraction operations minimize or eliminate adverse effects on surrounding land use and natural resources. (Amended by Ordinance No. 02-02)

Objective 10.1: Designate through the rezoning process sufficient lands suitable for providing fill material, limerock and other natural resource extraction materials to meet the county's needs and to export to other communities, while providing adequate protection for the county's natural resources." that do not appear to adhere to the goal. (Amended by Ordinance No. 02-02)

Policy 10.1.1 Natural resource extraction operations intending to with draw groundwater for any purpose must provide a monitoring system to measure groundwater impacts. (Amended by Ordinance No. 02-02)

Based upon the groundtruthing conducted during the Property Evaluation Report (addendum E) approximately 63.1% of WTSP is likely to be considered jurisdictional wetlands by the COE and/or SFWMD with an additional 11.4 acres of jurisdictional surface waters. These areas are highlighted on the WTSP plant community map (addendum D).

Concession: Land Stewardship staff requests the monitoring system to include the wetlands at WTSP within a set distance, yet to be determined, of the Green Meadow IPD. The mining company would pay for the monitoring, that would be overseen by an independent person that is not an employee or affiliate of a company engaged in construction materials mining activities. If impacts are discovered, the mining activities will immediately stop until a cause is discovered and can be mitigated.

Policy 10.1.2: Applications for natural resource extraction permits for new or expanding areas must include an environmental assessment. The assessment will include (but not be limited to) consideration of air emissions, impact on environmental and natural resources, effect on nearby land uses, degradation of water quality, depletion of water quantity, drainage, fire, safety, noise, odor, visual impacts transportation, sewage disposal and solid waste disposal. (Amended by Ordinance No. 00-22, 02-02)

Of primary concern with WTSP is the air emissions, impact on environmental and natural resources, effect on nearby land uses, degradation of water quality, depletion of water quantity, drainage, noise, odor, transportation and visual impacts. No considerations on the effects the Green Meadow IPD to WTSP were listed in their application. The environmentally critical habitats of the preserve and numerous listed species documented all have potential for being disturbed by this proposal. Additionally, the proposed public use of this Preserve will be highly affected in the areas of noise, odor, transportation, visual impacts and air emissions. The dust, as well as the noise from both blasting and the 324 truck trips passing by the Preserve every day, will have a tremendous impact on visitors to the Preserve. This project plans on having all processing located adjacent to SR82, which is where the only possible parking for the Preserve is located. Although we do not know how many visitors WTSP will have, Six Mile Cypress Slough Preserve, located less than 10 miles away in a growing residential neighborhood, with wildlife viewing opportunities and off a main road has over 80,000 visitors per year. Although the Preserve is currently not providing parking and other amenities, it certainly will be a well-established recreational area within a few years, and considering projected growth in the area, will have considerable visitation. The activities of the mine are proposed for the next 25 years, which will conflict with the visitors experience to visiting a nature preserve.

Concession: In addition to the environmental and water monitoring systems listed above, staff requests an assessment from an expert in the field of acoustics and noise control to determine if the buffer zones listed above would be adequate to shield visitors from the noise of the blasting and heavy truck traffic, or if additional buffering is required. Once again, this will be an independent expert that is not an employee or affiliate of a company engaged in construction materials mining activities. The findings of this study must be followed if additional buffering is required.

Policy 10.1.4: Natural resource extraction activities (and industrial uses which are ancillary to natural resource extraction) may be permitted in areas indicated on the Future Land Use Map as Rural, Open Lands, and Density Reduction/Groundwater Resources, provided they have adequate fire protection, transportation facilities, wastewater treatment and water supply, and provided further that they have no significant adverse effects such as dust and noise on surrounding land uses and natural resources...

The Land Use category of WTSP is "Conservation Lands". As mentioned in the previous pages, no studies have been conducted to determine the effects of the proposed mine on the wildlife-including several listed species, health of the ecosystem, impacts to the wetlands and experience for the visitors to the preserve.

Objective 52.3: New developments must use innovative open space design to preserve existing native vegetation, provide visual relief, and buffer adjacent uses and proposed and/or existing rights-of-way. This objective and subsequent policies are to be implemented through the zoning process. (Added by Ordinance No. 02-02)

The clearing and installing berm B-B on the property line between the proposed mine and WTSP does not meet this objective. This is an additional reason why staff is requesting the planted buffer zone between the Preserve and the mining activities.

POLICY 77.2.2: Continue to provide regulations and incentives to prevent incompatible development in and around environmentally sensitive lands (as defined in Policy 77.1.1.4.b.). (Amended by Ordinance No. 94-30)

Wild Turkey Strand Preserve was bought through the Conservation 20/20 Program because it was determined environmentally sensitive land, land use category "Conservation Land", and is directly adjacent to the proposed mine site. Land Stewardship staff is concerned that the Green Meadow IPD Project is an incompatible development due to the impacts that will occur to the preserve, its wildlife and visitors caused by the dust, noise, lighting, traffic, and groundwater pollution.

POLICY 77.2.3: Prevent water management and development projects from altering or disrupting the natural function of significant natural systems.

This mine could cause alteration and disruption of the natural function of the wetlands on Wild Turkey Strand Preserve. "Extensive premature decline and death of pond-cypress trees in central Florida have been attributed to hydroperiod alterations due to excessive withdrawals of ground water from the Florida aquifer", (addendum F). Fractures in the ground could cause the wetlands on the preserve to be drained and alter the hydroperiod, which could cause the cypress to die.

Concession: the mining company needs to pay to have a ground penetrating radar test to determine if there are any fractures in the ground that could result in drainage to the wetlands at WTSP. These results must be compiled by an independent company and/or person that is not an employee or affiliate of a company engaged in construction materials mining activities and be reviewed by Lee County staff. If it is found that the mining activities would disrupt the natural function of WTSP's wetlands it will not be permitted.

POLICY 77.2.10: Development adjacent to aquatic and other nature preserves, wildlife refuges, and recreation areas must protect the natural character and public benefit of these areas including, but not limited to, scenic values for the benefit of future generations. (Amended by Ordinance No. 00-22)

The Green Meadow IPD project will severely decrease the scenic value of WTSP. With no setback buffer, the noise and dust will carry over onto the preserve and the traffic from the trucks could pose a safety problem for visitors entering and leaving the access area off of State Road 82. The project is proposing to actively mine for 25 years, thus affecting the scenic value for future generations (addendum G). Of particular concern is the area adjacent to south boundary of the preserve area in Phase 3. There is a slight thickening of the berm B-B where the plant community is "Wet Prairie" and "Melaleuca Wetlands". Adjacent to this area on WTSP is a stunning cypress pond. Although the Preserve has numerous cypress ponds spread throughout it, this is the only one in the northern section of the Preserve. The master site plan for WTSP has not been written at this point, but the trail system would certainly take in this feature to give

visitors a small glimpse of this type of plant community. Clearing, berming and blasting the area next to this cypress pond (addendum G) would destroy the natural character of that area.

Concession: Land Stewardship staff requests at least the minimum buffer zone between WTSP and the berm/mining operation using the usual county standards, as long as they are not less that 322 feet from the freshwater marshes and 550 feet from cypress swamp, hammock and flatwood plant communities located on WTSP. These standards were established by the Southwest Florida Water Management District in their SWIM Ordinance Model Project (addendum C). In the case that the buffer includes row crops, it will need to be replanted with plants that are present in the adjacent plant community at WTSP. The plants should include trees (a minimum of 60% should be over 6 feet), shrubs, and herbaceous groundcover. Both the plant list and location of plants must be approved by Land Stewardship staff and planted randomly to simulate a natural plant community. Some of the adjacent plant communities are fallow farm fields and pastures. In those cases, the company will restore their fields with the same restoration methods that will be established with the WTSP Land Stewardship Plan. A map that illustrates these plant communities at WTSP is also attached (addendum D). Additionally, staff requests that the Preserve area in phase 3 be extended to include the pine flatwoods, wet prairie and cypress plant communities.

OBJECTIVE 77.4: ENDANGERED AND THREATENED SPECIES IN GENERAL. Lee County will continue to protect habitats of endangered and threatened species and species of special concern in order to maintain or enhance existing population numbers and distributions of listed species.

Land Stewardship staff has concerns with the Green Meadow IPD project adversely affecting many listed species that utilize this area for foraging and breeding.

In 1993, the Florida Panther Interagency Committee issued the Habitat Preservation Plan (HPP) identifying 1,253,000 acres of panther habitat on private land deemed essential for maintaining a self-sustainable population of panthers in south Florida. WTSP and the Green Meadow IPD project areas were ranked as Priority 2 (less frequently used or lower quality habitat) area and were recommended for acquisition and protection (addendum H). In 1999, USFWS confirmed the importance of the HPP's findings and formed a subcommittee called the Multi-Species/Ecosystem Recovery Implementation Team (MERIT) to implement a recovery plan. In 2001, MERIT Panther Subteam approved a map of primary and secondary panther habitat. WTSP and the Green Meadow IPD project areas were in both the primary and secondary habitat zones (addendum I). USFWS has found that permitting of inappropriate development projects adjacent to lands used by the panther degrades their habitat. Thus, even if there is no significant physical alteration of a habitat area, nearby human activity including roads and mines can render a protected area useless to the panther. By permitting this type of a project, Lee County could be in violation of the Endangered Species Act Section 7 and 9 (addendum J). Although Florida panthers have not been confirmed utilizing WTSP, a scat sample was collected in December of 2003 and staff is currently in search of an expert to evaluate the possibility of it coming from a Florida panther.

Wood storks and other wading birds are other listed species that have been recorded using WTSP. Any land use change in or around these nesting and foraging areas will have direct effects on the health of these bird population and the wetland ecosystems on which they depend. Wood storks use open, shallow wetlands (2-15 inches deep), which tend to be open marshes, cypress ponds and sloughs, shallow man-made ponds, or ditches (addendum K). The 45-foot deep lakes proposed by the Green Meadow IPD project do not fit this criteria. See map (addendum L) that shows foraging areas for wading birds and woodstorks. The Green Meadow IPD project is within woodstork and wading birds forage areas.

Land Stewardship staff has water quantity and quality concerns with the proposed up to 45 foot deep mine directly adjacent to healthy cypress dome and cypress strand communities. Changes in overall hydroperiod and introduction of pollutants into the system could have a deleterious chain reaction on the system beginning with the aquatic invertebrates on up the food chain. For example: Apple snails (*Pomacea paludosa*), as aquatic macro invertebrates make good wetland health indicator species because they live in the water for all or most of their life, stay in areas suitable for their survival, and they differ in their tolerance to amount and types of pollution. These snails are currently abundant in the cypress communities of the Preserve and represent at least 90% of the food source for Snail Kites. A decrease in apple snail densities would certainly impact snail kites using the Preserve.

Concession: Refer to the concession on page 3 (Environmental Impact Study).

POLICY 77.4.3: Require detailed inventories and assessments of the impacts of development where it threatens habitat of endangered and threatened species and species of special concern.

As explained under POLICY 7.1.2, we feel that the mining company should conduct an environmental impact study of WTSP on the impact of the Green Meadow IPD project, reviewed by County Staff as well as wildlife experts from the United States Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. The findings and recommendations from this study would be included in the final permits for the project.

Appendix E.

Kevin L. Erwin Comments on Proposed Mine

To: Anik Smith

From: Kevin Erwin

Date: October 22, 2004

Re: DC12003 – 0076 Green Meadows IPD, Comments on Application Information
KLECE Project #LEEWT102

I have now completed a review of the application including the Supplemental Information submitted by the applicant on October 8, 2004. The following comments are provided to give an overview of those areas where the applicant has not demonstrated the reasonable assurances necessary to protect and maintain the quality of the Wild Turkey Strand Preserve (WTSP)

Hydrogeologic Report

There are significant concerns regarding the immediate and long-term hydrological impacts the proposed mine will have on water levels and hydroperiods within those wetlands on the WTSP. The report prepared by ECT (Sept. 04) reviewed existing site-specific data as well as published information concerning the geology of the immediate area. The information presented in this report has little relevance to developing an understanding of the surface (wetland) hydrology on the site and within the WTSP. There is no mention of the response of wetland water levels in these areas to the proposed mining. The proposed Groundwater Monitoring Plan (Appendix C) does not address monitoring baseline, mining or post mining conditions within the onsite and offsite wetland preserve areas. Surface water and shallow groundwater levels should be monitored bi-monthly in response to rainfall for a minimum of one year. Piezometers should be installed along transects within and adjacent to wetlands on the project site and the WTSP to establish baseline conditions.

Planning/Environmental

Specific and comprehensive conditions will need to be placed in the IPD to require the applicant restore, monitor, and perpetually manage the onsite preserve areas. It would be far better to require the applicant to modify the application and provide these details now prior to the scheduled hearing. For instance the proposed B-B setbacks should be increased to 500 ft. with native habitat restoration within the entire buffer. Future monitoring may establish the need for more or less buffer to protect the WTSP wetlands. The restoration details to be provided by applicant must reflect current restorations standards and techniques. For instance, trees and shrubs should be planted on 9 ft. centers (exclusive), watered-in, and irrigated as necessary to insure survival. The detailed plan should cover use of topsoil, management and monitoring conditions and success criteria (e.g. 10 years of > 80% survival and acceptable growth for each mine phase).

The potential post-mining residential development issue should be addressed. Appropriate conservation easements or title transfer on all preserve areas should be required at a minimum and a funding mechanism for restoration and perpetual management provided prior to approval of the application. Consideration should be given to transferring ownership of all lands and lakes to the public after mining is completed. Properly designed lakes and restored natural features, as discussed below, would have significant public recreational value.

The currently proposed mine reclamation plan is not sufficient to provide acceptable post-mining water quality, fish and wildlife habitat. A detailed reclamation plan should be provided that includes 100 ft. wide littoral shelves utilizing properly stockpiled native topsoil (A and B horizon). Littoral shelves should be planted on 3 ft. centers with appropriate species of wetland plants, shrubs, and trees. Only native species of vegetation should be used for stabilization purposes at the completion of each mining phase. This plan should include appropriate monitoring and success criteria and require that these criteria be met prior to commencing the next phase of mining activity.

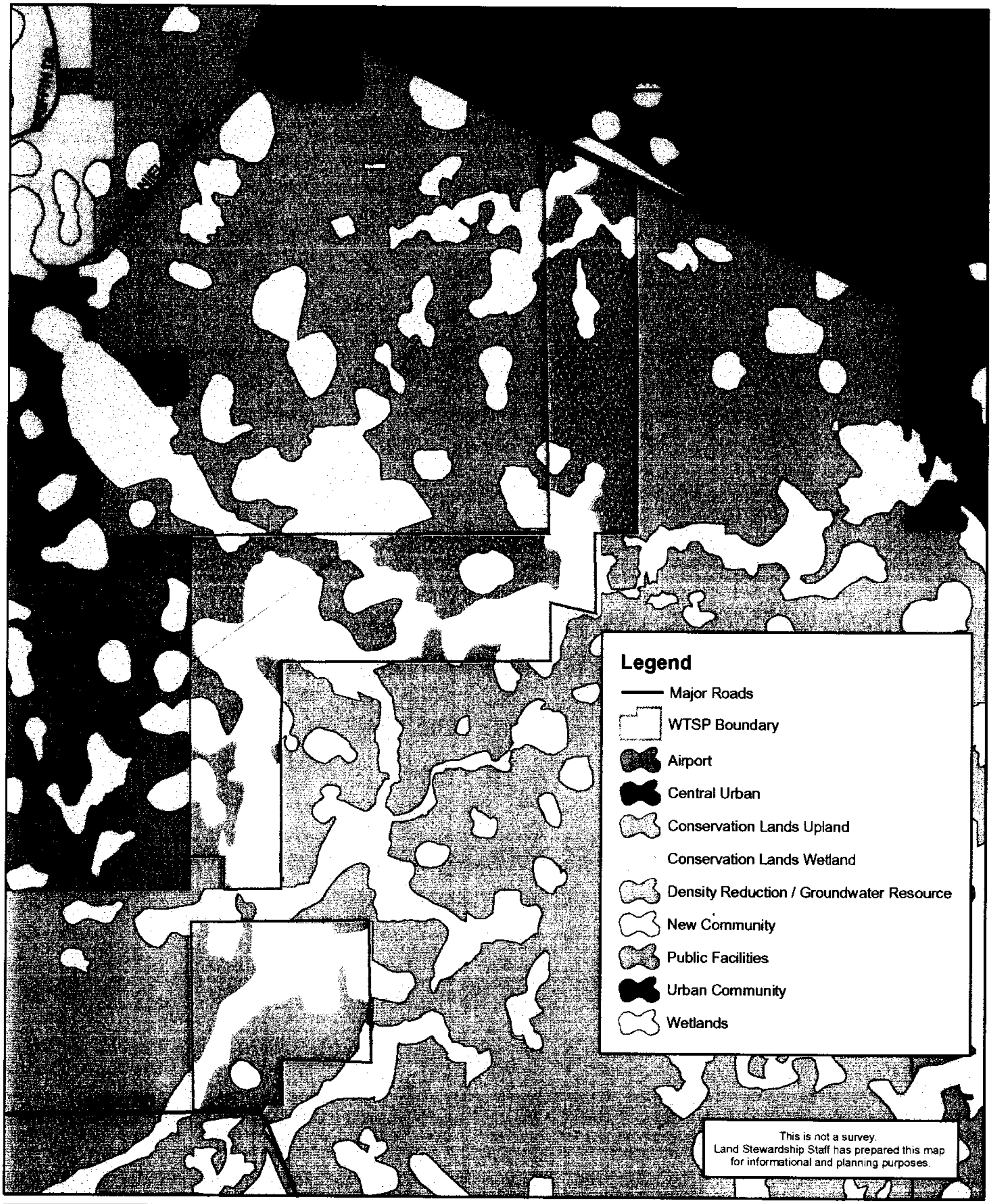
Accurate Level III FLUCFCS mapping should be provided that follows the methodology utilized in mapping the WTSP. This information should be overlaid on surveyed topography extending 500 feet offsite.

The proposed $10,000.00 lump sum payment to the Land Stewardship Program is not adequate to monitor the mine's long term impacts on the WTSP. An appropriate amount should be placed in escrow to cover the cost of baseline, construction, and post-construction monitoring of ground and surface water levels, wetland hydrological conditions, exotic and problematic plant species and wildlife impacts. Bonding should be considered to cover the cost of mitigating future problems that may be identified as a result of this long term monitoring.

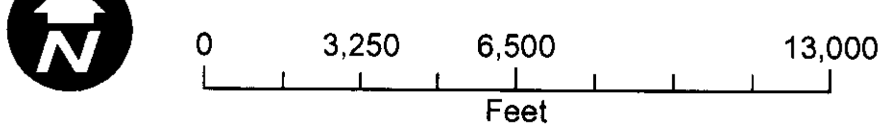
Appendix F.

Future Land Use Map

Appendix F: Future Land Use Map



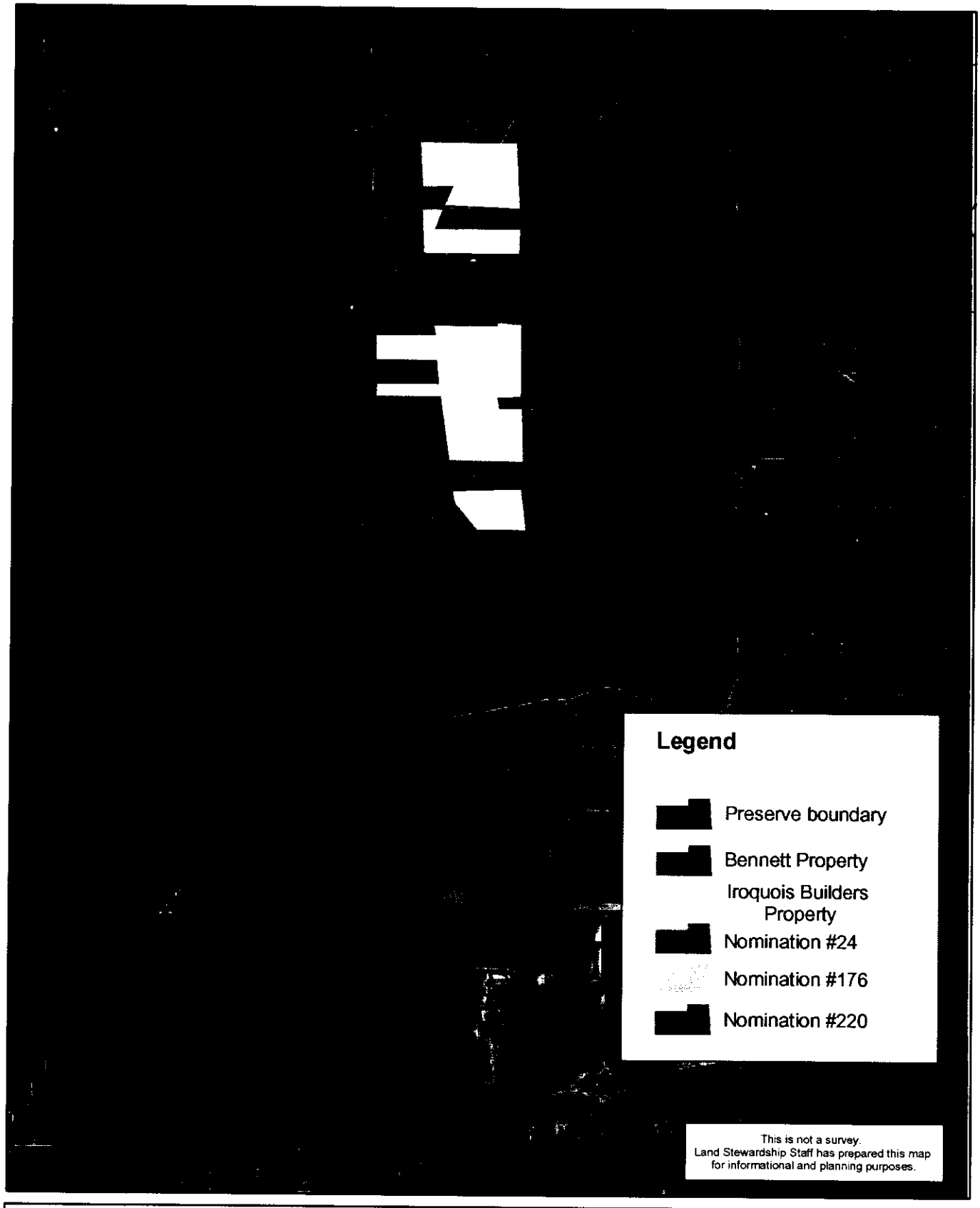
Wild Turkey Strand Preserve



Appendix G.

Past and Potential Nominations Map

Appendix G. Past and Potential Nominations Map



Appendix H.

Florida Exotic Pest Plant Council's 2003 List of Invasive Species

: *Exotic*—a species introduced to Florida, purposefully or accidentally, from a natural range
a. *Native*—a species whose natural range included Florida at the time of European contact
uralized exotic—an exotic that sustains itself outside cultivation (it has not "become"
exotic –an exotic that not only has naturalized but is expanding on its own in Florida plant

ısed: for "Gov. List": **P** = Prohibited by Fla. Dept. of Environ. Protection, **N** = Noxious
'la. Dept. of Agriculture & Consumer Services, **U** - Noxious Weed listed by U.S. Dept. of
"Reg. Dis.": N = north, C = central, S = south, referring to each species' current distribution
ıs of Florida (not its potential range in the state). See map.

ED BY THE *Florida*
Plant Council's

LIST COMMITTEE:

Institute for Regional Conservation, 22601 S.W. 152nd Ave., Miami, FL 33170
lurks (CHAIR), Invasive Plant Management, Florida Dept. of Environmental Protection,
ımmonwealth Blvd., MS 705, Tallahassee, FL 32399
, Botanist Emeritus, Division of Plant Industry, Florida Dept. of Agriculture and Consumer Services,
I.W. CR-2054, Alachua, FL 32615
iel, Florida Park Service, Fla. Dept. of Environmental Protection, P.O. Box 487, Key Largo, FL 33037
The Nature Conservancy, 1413 Boulevard of the Arts, Sarasota, FL 34236
ıvate Consulting Botanist, 3666 N.W. 13th Place, Gainesville, FL 32605
, Miami-Dade Parks Department, Castellow Hammock Nature Center, 22301 S.W. 162nd Ave.,
FL 33030
land, Center for Aquatic and Invasive Plants, IFAS, University of Florida, 7922 N.W. 71st St.,
ille, FL 32606
ton, Agricultural Research Station, U.S. Department of Agriculture, 2305 College Ave.,
lerdale, FL 33314
)epartment of Botany, 220 Bartram Hall, University of Florida, Gainesville, FL 32611
rlin, Institute for Systematic Botany, Department of Biological Sciences, University of South Florida,
FL 33620

ation on invasive exotic plants, including links to related web pages, visit the
da **EPPC** web site: http://www.fleppc.org

Category I - Invasive exotics that are altering native plant communities by displacing native species, cha
structures or ecological functions, or hybridizing with natives. *This definition does not rely on the economic*
geographic range of the problem, but on the documented ecological damage caused.

Scientific Name	Common Name	Reg. Dis.	Gov. List
Abrus precatorius	rosary pea	C, S	
Acacia auriculiformis	earleaf acacia	S	
Albizia julibrissin	mimosa, silk tree	N, C	
Albizia lebbeck	woman's tongue	C, S	
Ardisia crenata	coral ardisia	N, C	
Ardisia elliptica	shoebutton ardisia	S	
Asparagus densiflorus	asparagus-fern	C, S	
Bauhinia variegata	orchid-tree	C, S	
Bischofia javanica	bischofia	C, S	
Calophyllum antillanum	santa maria ("mast wood," "Alexandrian laurel" used in cultivation)	S	
Casuarina equisetifolia	Australian pine	NCS	**P**
Casuarina glauca	suckering Australian pine	C, S	**P**
Cinnamomum camphora	camphor tree	NCS	
Colocasia esculenta	taro, wild taro	NCS	
Colubrina asiatica	latherleaf	S	
Cupaniopsis anacardioides	carrotwood	C, S	**N**
Dioscorea alata	winged yam	NCS	**N**
Dioscorea bulbifera	air-potato	NCS	**N**
Eichhornia crassipes	water-hyacinth	NCS	**P**
Eugenia uniflora	Surinam-cherry	C, S	
Ficus microcarpa	laurel fig	S	
Hydrilla verticillata	hydrilla	NCS	**P, U**
Hygrophila polysperma	green hygro	NCS	**P, U**
Hymenachne amplexicaulis	West Indian marsh grass	C, S	
Imperata cylindrica	cogon grass	NCS	**N, U**
Ipomoea aquatica	water-spinach	C	**P, U**
Jasminum dichotomum	Gold Coast jasmine	C, S	
Jasminum fluminense	Brazilian jasmine	C, S	
Lantana camara	lantana	NCS	
Ligustrum lucidum	glossy privet	N, C	
Ligustrum sinense	Chinese privet	NCS	
Lonicera japonica	Japanese honeysuckle	NCS	

Scientific Name	Common
Lygodium japonicum	Jap. climb
Lygodium microphyllum	Old Worl climbi
Macfadyena unguis-cati	cat's-claw
Manilkara zapota	sapodilla
Melaleuca quinquenervia	melaleuca
Melia azedarach	Chinaberr
Mimosa pigra	catclaw m
Nandina domestica	heavenly
Nephrolepis cordifolia	sword fer
Nephrolepis multiflora	Asian sw
Neyraudia reynaudiana	Burma re
Paederia cruddasiana	sewer vin
Paederia foetida	skunk vin
Panicum repens	torpedo g
Pennisetum purpureum	Napier gr
Pistia stratiotes	water-lett
Psidium cattleianum	strawberr
Psidium guajava	guava
Pueraria montana	kudzu vin
Rhodomyrtus tomentosa	downy ro
Ruellia brittoniana	Mexican
Sapium sebiferum	Chinese t
Scaevola sericea	beach nau
Schefflera actinophylla	schefflera
Schinus terebinthifolius	Brazilian
Senna pendula	Christmas
Solanum tampicense	wetland nightsh
Solanum viarum	tropical s
Syngonium podophyllum	arrowhea
Syzygium cumini	Java plum
Tectaria incisa	incised ha fern
Thespesia populnea	seaside m
Tradescantia fluminensis	white-flo wander
Tradescantia spathacea	oyster pla
Urochloa mutica	Pará grass

vasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to Category I species. *These species may become ranked as Category I, if ecological damage is demonstrated.*

	Common Name	Reg. Dis.	Gov. List
na	red sandalwood	S	
	sisal hemp	C, S	
	tung oil tree	N, C	
a	devil-tree	S	
	alligator weed	NCS	**P**
	coral vine	NCS	
s	calico flower	N, C	
	Ganges primrose	C, S	
	wax begonia	N, C	
	paper mulberry	N, C	
	inch plant	C, S	
	Australian pine	C, S	**P**
	trumpet tree	S	
	day jessamine	C, S	
:ii	bamboo palm	S	
	rubber vine	C, S	
s	umbrella plant	C, S	
is-			
	dwarf papyrus	C	
	Indian rosewood	C, S	
	silverthorn	N, C	
m	pothos	C, S	
	false banyan, council tree	S	
	governor's plum	S	
a	limpo grass	C, S	
	mahoe	C, S	
I.	shrub morning-glory	C, S	**P**
a)			
	Arabian jasmine	S	
	life plant	C, S	
s	flamegold	C, S	

Scientific Name	Common Name	Reg. Dis.	Gov. List
Leucaena leucocephala	lead tree	NCS	
Limnophila sessiliflora	Asian marshweed	NCS	**P**
Livistona chinensis	Chinese fan palm	C, S	
Merremia tuberosa	wood-rose	S	
Murraya paniculata	orange-jessamine	S	
Myriophyllum spicatum	Eurasian watermilfoil	NCS	**P**
Nymphoides cristata	snowflake	C, S	
Panicum maximum	Guinea grass	C, S	
Passiflora biflora	2-flowr. passion v.	S	
Pennisetum setaceum	green fountain grass	S	
Phoenix reclinata	Senegal date palm	C, S	
Phyllostachys aurea	golden bamboo	N, C	
Pteris vittata	Chinese brake fern	NCS	
Ptychosperma elegans	solitaire palm	S	
Rhynchelytrum repens	Natal grass	NCS	
Ricinus communis	castor bean	NCS	
Sansevieria hyacinthoides	bowstring hemp	C, S	
Sesbania punicea	purple sesban	NCS	
Solanum diphyllum	2-leaf nightshade	NCS	
Solanum jamaicense	Jamaica nightshade	C	
Solanum torvum	turkey berry	NCS	**N, U**
Syagrus romanzoffiana (= Arecastrum romanzoffianum)	queen palm	C, S	
Syzygium jambos	rose-apple	C, S	
Terminalia catappa	tropical almond	C, S	
Terminalia muelleri	Australian almond	C, S	
Tribulus cistoides	puncture vine	NCS	
Urena lobata	Caesar's weed	NCS	
Wedelia trilobata	wedelia	NCS	
Wisteria sinensis	Chinese wisteria	N,C	
Xanthosoma sagittifolium	elephant ear	NCS	

Application for Membership in the *Florida* Exotic Pest Plant Council

Annual Membership Levels (CIRCLE ONE)

Individual		**Institutional**	
Student	$10	Library	$100
General	$20	Contributor	$500
Contributor	$50	Donor	$501 - $10,000
Donor	over $50	Patron	over $10,000

Name

Organization

Mailing Address

City, State, Zip

Telephone

Fax

E-mail

Mail application & dues to:

Kris Serbesoff-King
3301 Gun Club Rd.
West Palm Beach, FL 33406

(Or sign up on-line at www.fleppc.org .)

Flor

Exotic Pest Pla
2003 L
Invasive

PURPOSE OF THI

To focus attention
effects exotic pest pl
on Florida's native b
functioning of native
2) the habitat losses fr
infestations, 3) the imp
species via habitat los
the need to prevent ha
pest-plant manageme
economic impacts of
increased wildfires in
changes in the serio
pest plants over time,
provide information
area managers set pr
programs.

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Appendix I.

FCT Grant Contract

Florida Communities Trust

January 18, 2005

Ms. Anik Smith
Land Stewardship Supervisor
3410 Palm Beach Blvd.
Ft. Myers, FL 33916

RE: FCT Project Number: 04-031-FF4
Lee County
Wild Turkey Strand Preserve

Dear Mr. Smith:

Enclosed please find a fully executed original of the Grant Contract for the above-referenced Florida Communities Trust Project.

If you have any questions, please contact me at (850) 922-2207 (SunCom 292-2207).

Sincerely,

Bryan Wirick
OMCI

bw\

Enclosures

FCT Contract Number 05-CT-EF-04-FF4-A1-031
FLORIDA COMMUNITIES TRUST
04-031-FF4
WILD TURKEY STRAND PRESERVE
CSFA # 52002

GRANT CONTRACT

THIS AGREEMENT is entered into by and between the FLORIDA COMMUNITIES TRUST ("FCT"), a non-regulatory agency within the State of Florida Department of Community Affairs, and LEE COUNTY, a local government of the State of Florida ("Recipient").

THIS AGREEMENT IS ENTERED INTO BASED ON THE FOLLOWING FACTS:

WHEREAS, the intent of this Agreement is to impose terms and conditions on the use of the proceeds of certain bonds, hereinafter described, and the lands acquired with such proceeds ("Project Site"), that are necessary to ensure compliance with applicable Florida law and federal income tax law and to otherwise implement the provisions of Sections 259.105, 259.1051 and Chapter 380, Part III, Florida Statutes;

WHEREAS, Chapter 380, Part III, Fla. Stat., the Florida Communities Trust Act, creates a non-regulatory agency within the Department of Community Affairs ("Department") which will assist local governments in bringing into compliance and implementing the conservation, recreation and open space, and coastal elements of their comprehensive plans or in conserving natural resources and resolving land use conflicts by providing financial assistance to local governments and nonprofit environmental organizations to carry out projects and activities authorized by the Florida Communities Trust Act;

WHEREAS, FCT is funded through either Section 259.105(3)(c), Fla. Stat. of the Florida Forever Act, which provides for the distribution of twenty-two percent (22%), less certain reductions, of the net Florida Forever Revenue Bond proceeds to the Department, or any other revenue source designated by the Florida Legislature to provide land acquisition grants to local governments and nonprofit environmental organizations for the acquisition of community-based projects, urban open spaces, parks and greenways to implement local comprehensive plans;

WHEREAS, the Florida Forever Revenue Bonds are issued as tax-exempt bonds, meaning the interest on the bonds is excluded from the gross income of bondholders for federal income tax purposes;

WHEREAS, Rule Chapter 9K-7, Florida Administrative Code ("F.A.C.") sets forth the procedures for the evaluation and selection of lands proposed for acquisition and Rule Chapter 9K-8, F.A.C. sets forth the acquisition procedures;

WHEREAS, on September 1, 2004 the FCT Governing Board scored, ranked and selected projects to receive approval for funding;

WHEREAS, the Recipient's project, described in an application submitted for evaluation, was selected for funding in accordance with Rule Chapter 9K-7, F.A.C., and by executing this Agreement the Recipient reaffirms the representations made in its application;

WHEREAS, Rule 9K-7.009(1), F.A.C. authorizes FCT to impose conditions for funding on those FCT applicants whose projects have been selected for funding;

WHEREAS, Rule 9K-7.003(5) F.A.C., recognizes real property owned by the Recipient and included in the application as part of the Project Site as an eligible source of Match, provided that the real property owned was acquired by the Recipient within 24 months prior to the application deadline for which the application was made. The date of this application deadline was **MAY 5, 2004**;

WHEREAS, the Recipient acquired fee simple title to the entire Project Site on 01-15-03 (*Insert date[s]*) from Louise Schewe, Trustee (*Insert Seller name[s]*);

WHEREAS, the Recipient will request disbursement of FCT Florida Forever Bond proceeds for the reimbursement of Project Costs expended by the Recipient for the acquisition of the Project Site; and

WHEREAS, the purpose of this Agreement is to set forth the conditions that must be satisfied by the Recipient prior to the disbursement of any FCT Florida Forever funds awarded, as well as the restrictions that are imposed on the Project Site subsequent to reimbursing the Recipient for Project Costs.

NOW THEREFORE, FCT and the Recipient mutually agree as follows:

I. PERIOD OF AGREEMENT

1. This Agreement shall begin upon the Recipient's project being selected for funding and shall end **MARCH 1, 2005** ("Expiration Date"), unless extended as set forth below or unless terminated earlier in accordance with the provisions of Article XIII of this Agreement.

2. FCT may extend this Agreement beyond the Expiration Date if the Recipient demonstrates that significant progress is being made toward Project Plan approval or that extenuating circumstances warrant an extension of time. A request for an extension shall fully explain the reason for the delay and why the extension is necessary and shall be provided to FCT in accordance with paragraph V.1. prior to the Expiration Date. If the Recipient does not request an extension, or if a requested extension is not granted by FCT, the Recipient's award shall be rescinded and this Agreement shall terminate.

II. MOFIDICATION OF AGREEMENT

1. Either party may request modification of the provisions of this Agreement at any time. Changes which are mutually agreed upon shall be valid only when reduced to writing and duly signed by each of the parties hereto. Such amendments shall be incorporated into this Agreement.

III. DEADLINES

1. At least two original copies of this Agreement shall be executed by the Recipient and returned to the FCT office at 2555 Shumard Oak Boulevard, Tallahassee, FL 32399-2100, as soon as possible and before **DECEMBER 1, 2004**. If the Recipient requires more than one original document, the Recipient shall photocopy the number of additional copies needed and then execute each as an original document. Upon receipt of the signed Agreements, FCT shall execute the Agreements, retain one original copy and return all other copies that have been executed to the Recipient.

2. The Recipient and its representatives shall know of and adhere to all project deadlines and devise a method of monitoring the project. Deadlines stated in this Agreement, as well as deadlines associated with any FCT activity relating to the project, shall be strictly enforced. Failure to adhere to deadlines may result in delays in the project, allocation of time or resources to other recipients that respond timely or the termination of this Agreement by FCT.

3. The Recipient shall submit the documentation required by this Agreement to FCT as soon as possible so that the Project Costs may be reimbursed in an expeditious manner.

4. The Recipient shall provide a monthly status report to FCT of its progress towards reimbursement of the Project Costs.

5. The Recipient shall provide the appraisal(s) required by 9K-8.007, F.A.C. to FCT for review by a date not to exceed ninety (90) days after the Recipient's project is selected for funding. The appraisals shall be reviewed and, upon approval, the Maximum Approved Purchase Price ("MAPP"), as provided in Rule 9K-8.007(5) and (6), F.A.C., shall be determined.

IV. FUNDING PROVISIONS

1. The FCT Florida Forever award granted to the Recipient ("FCT Award") will in no event exceed the lesser of Forty Percent (40%) of the final Project Costs, as defined in Rule 9K-7.002(29), F.A.C., or Two Million Five Hundred Thirty Thousand Eight Hundred Four Dollars And Ninety Eight Cents ($2,530,804.98), unless FCT approves a different amount after determination of the MAPP, which shall be reflected in an addendum to this Agreement.

The FCT Award is based on the Recipient's estimate of final Project Costs in its application, as well as the Limitation of Award provided in Rule 9K-7.003(3), F.A.C. and advertised in the Notice of Application. When disbursing the FCT Award, FCT shall recognize only those Project Costs consistent with the definition in Rule 9K-7.002(29), F.A.C. FCT shall participate in the land cost at

either the actual purchase price or the MAPP, whichever is less, multiplied by the percent stated in the above paragraph.

2. The FCT Governing Board selected the Recipient's application for funding in order to acquire the entire Project Site identified in the Application. FCT reserves the right to withdraw or adjust the FCT Award if the acreage that comprises the Project Site is reduced or the project design is changed so that the objectives of the acquisition cannot be achieved. FCT shall consider any request for Project Site boundary modification in accordance with the procedures set forth in Rule 9K-7.010, F.A.C.

3. The FCT Award shall be delivered either in the form of Project Costs prepaid by FCT to vendors or in the form of a State of Florida warrant to the Recipient. The FCT Award shall only be delivered after FCT approval of the Project Plan and Project Site acquisition terms. FCT shall prepare a grant reconciliation statement prior to the reimbursement that evidences the amount of Match provided by the Recipient, if any is required, and the amount of the FCT Award. Funds expended by FCT for Project Costs shall be recognized as part of FCT Award on the grant reconciliation statement.

4. If a Match is required, it shall be delivered in an approved form as provided in Rule 9K-7.002(22), F.A.C. If the value of Pre-acquired land, as defined by Rule 9K-7.002(28), or donated land is the source of the Match, the MAPP shall determine the value of the Match. Funds expended by the Recipient for Project Costs shall be recognized as part of the Match on the grant reconciliation statement.

5. By executing this Agreement, the Recipient affirms that it is ready, willing and able to provide a Match, if any is required.

6. FCT's performance and obligation to pay under this Agreement is contingent upon an annual appropriation by the Florida Legislature, and is subject to any modification in accordance with Chapter 216, Fla. Stat. or the Florida Constitution.

V. NOTICE AND CONTACT

1. All notices provided under or pursuant to this Agreement shall be in writing and delivered either by hand delivery or first class, certified mail, return receipt requested, to:

Florida Communities Trust
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100

2. All contact and correspondence from FCT to the Recipient shall be through the key contact. Recipient hereby notifies FCT that the following administrator, officer or employee is the authorized key contact on behalf of the Recipient for purposes of coordinating project activities for the duration of the project:

Name: Anik Smith

Title: Land Stewardship Supervisor

Address: 3410 Palm Beach Blvd
Fort Myers, FL 33916

Phone: (239) 461-7455 Fax: (239) 461-7460

E-mail: smitha@leegov.com

3. The Recipient authorizes the administrator, employee, officer or representative named in this paragraph to execute all documents in connection with this project on behalf of the Recipient, including, but not limited to, the Grant Contract or any addenda thereto, grant reconciliation statement, statements submitted as a part of the Project Plan and Declaration of Restrictive Covenants.

Name:

Title: Dhairman, Board of County Commissioners

Address: P.O. Box 398
Fort Myers, FL 33902

Phone: 239.335-2227 Fax:

Email: Dist2@leegov.com

4. In the event that different representatives or addresses are designated for either paragraph 2. or 3. above after execution of this Agreement, notice of the changes shall be rendered to FCT as provided in paragraph 1. above.

5. The Recipient hereby notifies FCT that the Recipient's Federal Employer Identification Number(s) is 59-6000-702.

VI. PROJECT PLAN APPROVAL; PRE-CLOSING REQUIREMENTS

1. Prior to the final disbursement of the FCT Award, the Recipient shall submit to FCT and have approved a Project Plan that complies with Rule 9K-8.011, F.A.C. The Project Plan shall

not be considered by FCT unless it is organized with a table of contents and includes all of the following documents to ensure that the interest of the State of Florida will be protected:

a. Closing documents associated with the parcel(s):

(1) A copy of the Purchase Agreement(s) for sale and purchase of the parcel(s) between the Recipient and Louise Schewe, Trustee (Insert name[s] of Seller[s]).

(2) A copy of closing statements from Buyer(s) and Seller(s) for the purchase of the parcel(s).

(3) A copy of the recorded deed(s) evidencing conveyance of title to the parcel(s) to the Recipient.

(4) Certified survey(s) of the parcel(s) that meets the requirements of Rule 9K-8.006, F.A.C., and is dated within ninety (90) days of the date of acquisition of the parcel(s) by the Recipient.

(5) A copy of the title insurance policy(s) evidencing marketable title in Recipient to the parcel(s) and effective the date of acquisition of the parcel(s) by the Recipient, including a statement from the title insurer as to the minimum promulgated rate if premium was paid by Recipient, and all documents referenced in the title policy(s).

(6) Environmental site assessment(s) of the parcel(s) certified to the Recipient, which meets the standards and requirements of ASTM Practice E 1527, and with a date of certification within ninety (90) days of the date of acquisition of the parcel(s) by Recipient, together with the statement required by Rule 9K-8.012(4), F.A.C.

b. A letter from FCT indicating approval of the Management Plan written in accordance with Rule 9K-7.011, F.A.C., and as described in Article VII below.

c. A statement of the Project Costs.

d. A statement of the amount of the award being requested from FCT.

e. Supporting documentation that the conditions imposed as part of this Agreement have been satisfied.

f. A signed statement by the Recipient that the Recipient is not aware of any pending criminal, civil or regulatory violations imposed on the Project Site by any governmental agency or body.

g. A signed statement by the Recipient that all activities under this Agreement comply will all applicable local, state, regional and federal laws and regulations, including zoning ordinances and the applicable adopted and approved comprehensive plan.

h. Additional documentation as may be requested by FCT to provide Reasonable Assurance, as set forth in paragraph VII.4. below.

2. FCT shall approve the terms under which the interest in land is acquired pursuant to Section 380.510(3), Fla. Stat. Such approval is deemed given when FCT approves the Project Plan containing a copy of the document(s) vesting title to the Project Site in the Recipient.

3. **All real property shall be obtained through a Voluntarily-Negotiated Transaction, as defined in Rule 9K-7.002(41). The use of or threat of condemnation is not considered a Voluntarily-Negotiated Transaction.**

4. All invoices for Project Costs, with proof of payment, shall be submitted to FCT and be in a detail sufficient for a proper audit thereof.

5. The Recipient may, and is strongly encouraged to, request a courtesy review of its Project Plan prior to its submission for approval.

6. Reimbursement for Project Costs shall not occur until after FCT approval of the Project Plan.

VII. MANAGEMENT PLAN; ANNUAL STEWARDSHIP REPORT

1. Prior to approval of the Project Plan and final disbursement of the FCT Award, the Recipient shall submit to FCT and have approved a Management Plan that complies with Rule 9K-7.011, F.A.C. and addresses the criteria and conditions set forth in Articles VII, VIII, IX, X, and XI herein.

2. The Management Plan explains how the Project Site will be managed to further the purposes of the project and meet the terms and conditions of this Agreement. The Management Plan shall include the following:

a. An introduction containing the project name, location and other background information relevant to management.

b. The stated purpose for acquiring the Project Site as proposed in the application and a prioritized list of management objectives.

c. The identification of known natural resources including natural communities, listed plant and animal species, soil types, and surface and groundwater characteristics.

d. A detailed description of all proposed uses including existing and proposed physical improvements and the impact on natural resources.

e. A detailed description of proposed restoration or enhancement activities, if any, including the objective of the effort and the techniques to be used.

f. A scaled site plan drawing showing the project site boundary, existing and proposed physical improvements and any natural resource restoration or enhancement areas.

g. The identification and protection of known cultural or historical resources and a commitment to conduct surveys prior to any ground disturbing activity, if applicable.

h. A description of proposed educational displays and programs to be offered, if applicable.

i. A description of how the management will be coordinated with other agencies and public lands, if applicable.

j. A schedule for implementing the development and management activities of the Management Plan.

k. Cost estimates and funding sources to implement the Management Plan.

3. If the Recipient is not the proposed managing entity, the Management Plan shall include a signed agreement between the Recipient and the managing entity stating the managing entity's willingness to manage the site, the manner in which the site will be managed to further the purpose(s) of the project and the identification of the source of funding for management.

In the event that the Recipient is a partnership, the Recipient shall also provide FCT with the interlocal agreement that sets forth the relationship among the partners and the fiscal and management responsibilities and obligations incurred by each partner for the Project Site as a part of its Project Plan.

4. To ensure that future management funds will be available for the management of the site in perpetuity pursuant to Section 259.105 and Chapter 380, Part III, Fla. Stat., the Recipient(s) shall be required to provide FCT with Reasonable Assurance, pursuant to Rule 9K-7.002(32), F.A.C., that it has the financial resources, background, qualifications and competence to manage the Project Site in perpetuity in a reasonable and professional manner. Where the Recipient does not

include at least one Local Government, FCT may require the Recipient to do one, or more, of the following: post a performance or other bond in an amount sufficient to ensure that the Project Site shall be reasonably and professionally managed in perpetuity; establish an endowment or other fund in an amount sufficient to ensure performance; provide a guaranty or pledge by the Local Government, in whose jurisdiction the Project Site is located, which shall require the Local Government to take over the responsibility for management of the Project Site in the event the Recipient is unable to, and may require the Local Government to be a named co-signer on the Declaration of Restrictive Covenants; or provide such other assurances as the Governing Board may deem necessary to adequately protect the public interest.

5. The Recipient shall, through its agents and employees, prevent the unauthorized use of the Project Site or any use thereof not in conformity with the Management Plan approved by FCT.

6. All buildings, structures, improvements and signs shall require the prior written approval of FCT as to purpose. Further, tree removal, other than non-native species, and major land alterations shall require the written approval of FCT. The approvals required from FCT shall not be unreasonably withheld upon sufficient demonstration that the proposed structures, buildings, improvements, signs, vegetation removal or land alterations will not adversely impact the natural resources of the Project Site. FCT's approval of the Recipient's Management Plan addressing the items mentioned herein shall be considered written approval from FCT.

7. As required by Rule 9K-7.013, F.A.C., each year after FCT reimbursement of Project Costs the Recipient shall prepare and submit to FCT an annual stewardship report that documents the progress made on implementing the Management Plan.

VIII. SPECIAL MANAGEMENT CONDITIONS

In addition to the Management Plan conditions already described in this Agreement, which apply to all sites acquired with FCT funds, the Management Plan shall address the following conditions that are particular to the Project Site and result from either commitments made in the application that received scoring points or observations made by FCT staff during the site visit described in Rule 9K-7.009(1), F.A.C.:

1. Two or more resource-based outdoor recreational facilities including a nature trail and wildlife observation platform shall be provided. The facilities shall be developed in a manner that allows the general public reasonable access for observation and appreciation of the natural resources on the project site without causing harm to those resources.

2. A permanent recognition sign, a minimum size of 4' x 6', shall be maintained in the entrance area of the project site. The sign shall acknowledge that the project site was purchased with funds from the Florida Communities Trust Florida Forever Program and Lee County.

3. Interpretive signage shall be provided to educate visitors about the natural resources on the Project Site.

4. A survey of the natural communities and plant species on the project site shall be conducted prior to the development of the project site. The survey shall be used during development of the site to ensure the protection, restoration, and preservation of the natural communities on the project site.

5. The natural communities that occur on the project site shall be preserved and appropriately managed to ensure the long-term viability of these communities.

6. The project site shall be managed in a manner that protects and enhances habitat for listed wildlife species that utilize or could potentially utilize the project site, including the Florida Panther and red cockaded woodpecker. The development of the management plan shall be coordinated with the Fish and Wildlife Conservation Commission's Office of Environmental Services to ensure the preservation and viability of listed and non-listed native wildlife species and their habitat. Periodic surveys shall be conducted of listed species using the project site.

7. A vegetation analysis of the project site shall be performed to determine which areas of the project site need a prescribed burning regime implemented to maintain natural fire-dependent vegetative communities. The development of the prescribed burn program shall be coordinated the Division of Forestry and the Florida Fish and Wildlife Conservation Commission.

8. The water quality of the on-site wetlands shall be protected and the natural hydrology of the project site shall be restored to a more natural function and shall include the restoration of areas impacted by agricultural activities. The development of the restoration plan shall be coordinated with the South Florida Water Management District.

9. A comprehensive landscaping plan will be developed for the project site. The landscaping plan will make significant use of native plants.

10. Approximately 20 percent of the project site or 400 acres of disturbed wetlands shall be restored to a natural condition in terms of biological composition and ecological function. Invasive exotic vegetation will be removed, cattle grazing will be eliminated, drainage ditches will be modified to restore a more natural flow and hydroperiod, and the area replanted with native vegetation.

11. An ongoing monitoring and control program for invasive vegetation including exotic (non-native) and nuisance native plant species shall be implemented at the project site. The objective of the control program shall be the elimination of invasive exotic plant species and the maintenance of a diverse association of native vegetation. The management plan shall reference the Exotic Pest Plant Council's List of Florida's Most Invasive Species to assist in identifying invasive exotics on the project site.

12. A feral animal removal program shall be developed and implemented for dogs, cats, hogs, and other non-native wildlife that may be found on the project site.

13. Prior to the commencement of any proposed development activities, measures will be

taken to determine the presence of any archaeological sites. All planned activities involving known archaeological sites or potential site areas shall be closely coordinated with the Department of State, Division of Historic Resources in order to prevent the disturbance of significant sites.

14. The location and design of the parking facility, boardwalk, and wetland observation deck shall be designed to have minimal impacts on natural resources. The parking area shall incorporate pervious material wherever feasible.

15. The project site shall be protected and managed as part of linked conservation lands and wildlife corridor.

16. The requirements imposed by other grant program funds that may be sought for activities associated with the project site shall not conflict with the terms and conditions of this award.

IX. DECLARATION OF RESTRICTIVE COVENANTS REQUIREMENTS IMPOSED BY CHAPTER 259 AND CHAPTER 380, PART III, FLA. STAT.

1. Each parcel in the Project Site to which the Recipient acquires title shall be subject to a Declaration of Restrictive Covenants describing the parcel and containing such covenants and restrictions as are, at a minimum, sufficient to ensure that the use of the Project Site at all times complies with Sections 375.051 and 380.510, Fla. Stat.; Section 11(e), Article VII of the Florida Constitution; the applicable bond indenture under which the Bonds were issued; and any provision of the Internal Revenue Code or the regulations promulgated thereunder that pertain to tax exempt bonds. The Declaration of Restrictive Covenants shall contain clauses providing for the conveyance of title to the Project Site to the Board of Trustees of the Internal Improvement Trust Fund ("Trustees"), or a nonprofit environmental organization or government entity, upon failure to comply with any of the covenants and restrictions, as further described in paragraph 3. below.

2. The Declaration of Restrictive Covenants shall also restate the conditions that were placed on the Project Site at the time of project selection and initial grant approval. The Declaration of Restrictive Covenants shall be executed by FCT and the Recipient at the time of reimbursement of Project Costs and shall be recorded by the Recipient in the county(s) in which the Project Site is located.

3. If any essential term or condition of the Declaration of Restrictive Covenants is violated by the Recipient or by some third party with the knowledge of the Recipient, the Recipient shall be notified of the violation by written notice given by personal delivery, registered mail or registered expedited service. The recipient shall diligently commence to cure the violation or complete curing activities within thirty (30) days after receipt of notice of the violation. If the curing activities can not be reasonably completed within the specified thirty (30) day time frame, the Recipient shall submit a timely written request to the FCT Program Manager that includes the status of the current activity, the reasons for the delay and a time frame for the completion of the curing activities. FCT shall submit a written response within thirty (30) days of receipt of the request and approval shall not be unreasonably withheld. It is FCT's position that all curing activities shall be completed within one hundred twenty (120) days of the Recipient's notification of the violation.

However, if the Recipient can demonstrate extenuating circumstances exist to justify a greater extension of time to complete the activities, FCT shall give the request due consideration. If the Recipient fails to correct the violation within either (a) the initial thirty (30) day time frame or (b) the time frame approved by FCT pursuant to the Recipient's request, fee simple title to all interest in the Project Site shall be conveyed to the Trustees unless FCT negotiates an agreement with another local government, nonprofit environmental organization, the Florida Division of Forestry, the Florida Fish and Wildlife Conservation Commission, the Department of Environmental Protection or a Water Management District, who agrees to accept title and manage the Project Site. FCT shall treat such property in accordance with Section 380.508(4)(e), Fla. Stat.

X. GENERAL OBLIGATIONS OF THE RECIPIENT AS A CONDITION OF PROJECT FUNDING

1. The interest acquired by the Recipient in the Project Site shall not serve as security for any debt of the Recipient.

2. If the existence of the Recipient terminates for any reason, title to the Project Site shall be conveyed to the Trustees unless FCT negotiates an agreement with another local government, nonprofit environmental organization, the Florida Division of Forestry, the Florida Fish and Wildlife Conservation Commission, the Department of Environmental Protection or a Water Management District who agrees to accept title and manage the Project Site.

3. Following the reimbursement of Project Costs, the Recipient shall ensure that the future land use designation assigned to the Project Site is for a category dedicated to open space, conservation or outdoor recreation uses, as appropriate. If an amendment to the applicable comprehensive plan is required, the amendment shall be proposed at the next comprehensive plan amendment cycle available to the Recipient subsequent to the reimbursement of Project Costs.

4. FCT staff or its duly authorized representatives shall have the right at any time to inspect the Project Site and the operations of the Recipient at the Project Site.

5. The Project Site shall permanently contain one sign, provided by FCT, recognizing FCT's role in the acquisition of the Project Site. The cost of shipping the sign shall be deducted from the FCT Award, as reflected on the grant reconciliation statement. For a Project Site where the FCT Award is divided into more than one closing, the cost of the sign shall be deducted from the grant reconciliation statement containing the first parcel to close. The sign shall be displayed at the Project Site within ninety (90) days of the final disbursement of the FCT award. A photograph of the sign installed at the Project Site shall be provided to FCT within the same ninety (90) day timeframe.

XI. OBLIGATIONS OF THE RECIPIENT RELATING TO THE USE OF BOND PROCEEDS

1. FCT is authorized by Section 380.510, Fla. Stat. to impose conditions for funding on the Recipient in order to ensure that the project complies with the requirements for the use of Florida

Forever Bond proceeds including, without limitation, the provisions of the Internal Revenue Code and the regulations promulgated thereunder as the same pertain to tax exempt bonds.

2. The Recipient agrees and acknowledges that the below listed transactions, events, and circumstances, collectively referred to as the "disallowable activities," may be disallowed on the Project Site as they may have negative legal and tax consequences under Florida law and federal income tax law. The Recipient further agrees and acknowledges that these disallowable activities may be allowed up to a certain extent based on guidelines or tests outlined in the Federal Private Activity regulations of the Internal Revenue Service:

a. any sale or lease of any interest in the Project Site to a non-governmental person or organization;

b. the operation of any concession on the Project Site by a non-governmental person or organization;

c. any sales contract or option to buy or sell things attached to the Project Site to be severed from the Project Site with a non-governmental person or organization;

d. any use of the Project Site by a non-governmental person other than in such person's capacity as a member of the general public;

e. any change in the character or use of the Project Site from that use expected at the date of the issuance of any series of Bonds from which the disbursement is to be made;

f. a management contract for the Project Site with a non-governmental person or organization; or

g. such other activity or interest as may be specified from time to time in writing by FCT to the Recipient.

3. If the Project Site, after its acquisition by the Recipient and/or the Trustees, is to remain subject to any of the disallowable activities, the Recipient shall provide notice to FCT, as provided for in paragraph V.1., at least sixty (60) calendar days in advance of any such transactions, events or circumstances, and shall provide to FCT such information as FCT reasonably requests in order to evaluate for approval the legal and tax consequences of such disallowable activities.

4. In the event that FCT determines at any time that the Recipient is engaging, or allowing others to engage, in disallowable activities on the Project Site, the Recipient shall immediately cease or cause the cessation of the disallowable activities upon receipt of written notice from FCT. In addition to all other rights and remedies at law or in equity, FCT shall have the right to seek temporary and permanent injunctions against the Recipient for any disallowable activities on the Project Site.

DELEGATIONS AND CONTRACTUAL ARRANGEMENTS BETWEEN THE RECIPIENT AND OTHER GOVERNMENTAL BODIES, NONPROFIT ENTITIES OR NON GOVERNMENTAL PERSONS FOR USE OR MANAGEMENT OF THE PROJECT SITE WILL IN NO WAY RELIEVE THE RECIPIENT OF THE RESPONSIBILITY TO ENSURE THAT THE CONDITIONS IMPOSED HEREIN ON THE PROJECT SITE AS A RESULT OF UTILIZING BOND PROCEEDS TO ACQUIRE THE PROJECT SITE ARE FULLY COMPLIED WITH BY THE CONTRACTING PARTY.

XII. RECORDKEEPING; AUDIT REQUIREMENTS

1. The Recipient shall maintain financial procedures and support documents, in accordance with generally accepted accounting principles, to account for the receipt and expenditure of funds under this Agreement. These records shall be available at all reasonable times for inspection, review or audit by state personnel, FCT and other personnel duly authorized by FCT. "Reasonable" shall be construed according to the circumstances, but ordinarily shall mean the normal business hours of 8:00 a.m. to 5:00 p.m., local time, Monday through Friday.

2. If the Recipient expends a total amount of State financial assistance equal to or in excess of $500,000 in any fiscal year of such Recipient, the Recipient must have a State single or project-specific audit for such fiscal year in accordance with Section 215.97, Fla. Stat., the applicable rules of the Executive Office of the Governor and the Comptroller and Chapter 10.550 (local government entities) or Chapter 10.650 (nonprofit organizations), Rules of the Auditor General. In determining the State financial assistance expended in its fiscal year, the Recipient shall consider all sources of State financial assistance, including State funds received from FCT, other state agencies and other non-state entities. State financial assistance does not include Federal direct or pass-through awards and resources received by a non-state entity for Federal program matching requirements. The funding for this Agreement was received by FCT as a grant appropriation.

In connection with the audit requirements addressed above, the Recipient shall ensure that the audit complies with the requirements of Section 215.97(7), Fla. Stat. This includes submission of a reporting package as defined by Section 215.97(2)(d), Fla. Stat. and Chapter 10.550 (local government entities) or 10.650 (nonprofit organizations), Rules of the Auditor General.

3. If the Recipient expends less than $500,000 in State financial assistance in its fiscal year, an audit conducted in accordance with the provisions of Section 215.97, Fla. Stat. is not required. If the Recipient elects to have an audit conducted in accordance with the provisions of Section 215.97, Fla. Stat., the cost of the audit must be paid from non-State funds (i.e., the cost of such an audit must be paid from Recipient funds not obtained from a State entity).

4. The annual financial audit report shall include all management letters, the Recipient's response to all findings, including corrective actions to be taken, and a schedule of financial assistance specifically identifying all Agreement and other revenue by sponsoring agency and agreement number. Copies of financial reporting packages required under this Article shall be submitted by or on behalf of the Recipient directly to each of the following:

Department of Community Affairs (at each of the following addresses):
Office of Audit Services
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

and

Florida Communities Trust
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

State of Florida Auditor General at the following address:
Auditor General's Office
Room 401, Claude Pepper Building
111 West Madison Street
Tallahassee, Florida 32302-1450

5. If the audit shows that any portion of the funds disbursed hereunder were not spent in accordance with the conditions of this Agreement, the Recipient shall be held liable for reimbursement to FCT of all funds not spent in accordance with the applicable regulations and Agreement provisions within thirty (30) days after FCT has notified the Recipient of such non-compliance.

6. The Recipient shall retain all financial records, supporting documents, statistical records and any other documents pertinent to this Agreement for a period of five years after the date of submission of the final expenditures report. However, if litigation or an audit has been initiated prior to the expiration of the five-year period, the records shall be retained until the litigation or audit findings have been resolved.

7. The Recipient shall have all audits completed in accordance with Section 215.97, Fla. Stat. performed by an independent certified public accountant ("IPA") who shall either be a certified public accountant or a public accountant licensed under Chapter 473, Fla. Stat. The IPA shall state that the audit complied with the applicable provisions noted above.

XIII. DEFAULT; REMEDIES; TERMINATION

1. If the necessary funds are not available to fund this Agreement as a result of action by the Florida Legislature or the Office of the Comptroller, or if any of the events below occur ("Events of Default"), all obligations on the part of FCT to make any further payment of funds hereunder shall, if FCT so elects, terminate and FCT may, at its option, exercise any of its remedies set forth herein, but FCT may make any payments or parts of payments after the happening of any Events of Default without thereby waving the right to exercise such remedies, and without becoming liable to make any further payment. The following constitute Events of Default:

a. If any warrant or representation made by the Recipient in this Agreement, any previous agreement with FCT or in any document provided to FCT shall at any time be false or misleading in any respect, or if the Recipient shall fail to keep, observe or perform any of the terms or covenants contained in this Agreement or any previous agreement with FCT and has not cured such in timely fashion, or is unable or unwilling to meet its obligations thereunder;

b. If any material adverse change shall occur in the financial condition of the Recipient at any time during the term of this Agreement from the financial condition revealed in any reports filed or to be filed with FCT, and the Recipient fails to cure said material adverse change within thirty (30) days from the date written notice is sent to the Recipient by FCT;

c. If any reports or documents required by this Agreement have not been timely submitted to FCT or have been submitted with incorrect, incomplete or insufficient information.

d. If the Recipient fails to perform and complete in timely fashion any of its obligations under this Agreement.

2. Upon the happening of an Event of Default, FCT may, at its option, upon thirty (30) calendar days from the date written notice is sent to the Recipient by FCT and upon the Recipient's failure to timely cure, exercise any one or more of the following remedies, either concurrently or consecutively, and the pursuit of any one of the following remedies shall not preclude FCT from pursuing any other remedies contained herein or otherwise provided at law or in equity:

a. Terminate this Agreement, provided the Recipient is given at least thirty (30) days prior written notice of such termination. The notice shall be effective when placed in the United States mail, first class mail, postage prepaid, by registered or certified mail-return receipt requested, to the address set forth in paragraph V.2. herein;

b. Commence an appropriate legal or equitable action to enforce performance of this Agreement;

c. Withhold or suspend payment of all or any part of the FCT Award;

d. Exercise any corrective or remedial actions, including, but not limited to, requesting additional information from the Recipient to determine the reasons for or the extent of non-compliance or lack of performance or issuing a written warning to advise that more serious measures may be taken if the situation is not corrected; or

e. Exercise any other rights or remedies which may be otherwise available under law, including, but not limited to, those described in paragraph IX.3.

3. FCT may terminate this Agreement for cause upon written notice to the Recipient. Cause shall include, but is not limited to: fraud; lack of compliance with applicable rules, laws and regulations; failure to perform in a timely manner; failure to make significant progress toward Project Plan and Management Plan approval; and refusal by the Recipient to permit public access to any document, paper, letter, or other material subject to disclosure under Chapter 119, Fla.Stat., as amended. Appraisals, and any other reports relating to value, offers and counteroffers are not available for public disclosure or inspection and are exempt from the provisions of Section 119.07(1), Fla. Stat. until a Purchase Agreement is executed by the Owner(s) and Recipient and conditionally accepted by FCT, or if no Purchase Agreement is executed, then as provided for in Sections 125.355(1)(a) and 166.045(1)(a), Fla. Stat.

4. FCT may terminate this Agreement when it determines, in its sole discretion, that the continuation of the Agreement would not produce beneficial results commensurate with the further expenditure of funds by providing the Recipient with thirty (30) calendar days prior written notice.

5. The Recipient may request termination of this Agreement before its Expiration Date by a written request fully describing the circumstances that compel the Recipient to terminate the project. A request for termination shall be provided to FCT in a manner described in paragraph V.1.

XIV. LEGAL AUTHORIZATION

1. The Recipient certifies with respect to this Agreement that it possesses the legal authority to receive funds to be provided under this Agreement and that, if applicable, its governing body has authorized, by resolution or otherwise, the execution and acceptance of this Agreement with all covenants and assurances contained herein. The Recipient also certifies that the undersigned possesses the authority to legally execute and bind the Recipient to the terms of this Agreement.

XV. STANDARD CONDITIONS

1. This Agreement shall be construed under the laws of the State of Florida, and venue for any actions arising out of this Agreement shall lie in Leon County. If any provision hereof is in conflict with any applicable statute or rule, or is otherwise unenforceable, then such provision shall be deemed null and void to the extent of such conflict and shall be severable, but shall not invalidate any other provision of this Agreement.

2. No waiver by FCT of any right or remedy granted hereunder or failure to insist on strict performance by the Recipient shall affect or extend or act as a waiver of any other right or remedy of FCT hereunder, or affect the subsequent exercise of the same right or remedy by FCT for any further or subsequent default by the Recipient. Any power of approval or disapproval granted to FCT under the terms of this Agreement shall survive the terms and life of this Agreement as a whole.

3. The Recipient agrees to comply with the Americans With Disabilities Act (Public Law 101-336, 42 U.S.C. Section 12101 et seq.), if applicable, which prohibits discrimination by public and private entities on the basis of disability in the areas of employment, public accommodations, transportation, State and local government services, and in telecommunications.

4. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime or on the discriminatory vendor list may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit lease bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with a public entity, and may not transact business with any public entity in excess of Category Two for a period of thirty-six (36) months from the date of being placed on the convicted vendor list or on the discriminatory vendor list.

5. No funds or other resources received from FCT in connection with this Agreement may be used directly or indirectly to influence legislation or any other official action by the Florida Legislature or any state agency.

This Agreement embodies the entire agreement between the parties.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement.

LEE COUNTY

By: _____
Print Name: Douglas St. Cerny
Title: Chairman

Date: 11/23/04

Approved as to Form and Legality:
By: _____
Print Name: _____

FLORIDA COMMUNITIES TRUST

By: _____
Janice Browning
Division Director of Housing & Community Development

Date: 1/18/05

Approved as to Form and Legality:
By: _____
Kelly A. Martinson
Trust Counsel

Appendix J.

Projected Costs and Funding Sources

Appendix J. - Projected Costs and Funding Sources Table

Structures & Improvements

Phase 1		
Item	Possible Funding Sources	Estimated Cost
Hire Consultant for Design and Permitting of Facilities	Conservation 20/20, Florida Recreation Development Assistance Program (FERDAP), and other appropriate grants.	$30,000
2 Wildlife Observation Areas		$50,000
Crushed Shell at Main Trailhead		$2,500
Picnic Tables		$800
Clearing for 1.4 miles of New Trails		in house
1 mile of Boardwalk		$1,500,000
Restroom (Clivus Multrum composting)		$15,000
Wildlife Proof Trash Bins		$2,000
Bike Rack		$2,000
Main Entrance (grass lot, parking stops, post and rail fence and automatic gates)		$19,800
		$1,622,100

Phase 2		
Item	Possible Funding Sources	Estimated Cost
Consultant for D and P of Facilities	Conservation 20/20, Florida Recreation Development Assistance Program (FERDAP), and other appropriate grants.	$15,000
2 Wildlife Observation Areas		$50,000
Clearing for 2.3 miles of New Trails		in house
0.5 miles of Boardwalk		$750,000
		$815,000

Phase 3		
Item	Possible Funding Sources	Estimated Cost
Consultant for D and P of Facilities	Conservation 20/20, Florida Recreation Development Assistance Program (FERDAP), and other appropriate grants.	$15,000
2 Wildlife Observation Areas		$50,000
Clearing for 2.1 miles of New Trails		in house
0.5 miles of Boardwalk		$750,000
		$815,000

Resource Enhancement & Protection

Item	Possible Funding Sources	Estimated Cost
Initial Invasive Exotic Plant Removal of Natural Areas	Conservation 20/20 and/or DEP - Bureau of Invasive Plant Management	$7,000,000
Improved Pasture Restoration		$10,000,000
Mechanical brush reduction		$130,000
Fence Repairs		$15,000
Survey Boundary		$17,500
Fence Installation (45,500lft)		$227,500
Removal of Large Trash		$5,000
Removal of Interior Fencing		$1,000
Fire Break Construction		$20,000
Archaeological Resource Protection		$20,000
		$17,436,000

Signage

Item	Possible Funding Sources	Estimated Cost
Information Kiosk and Other Educational Signs	Conservation 20/20 and/or Lee County Parks and Recreation	$20,000
Trail Markers		$1,500
Multi-use Trail signs		$200
Boundary Signs		$2,000
Closed Trail Signs		$1,000
		$24,700

TOTAL COST ESTIMATE **$20,712,800**

Site Management & Maintenance

Item	Possible Funding Sources	Estimated Cost
Exotic Plant Control	Conservation 20/20 and/or DEP - Bureau of Invasive Plant Management	$100,000 per year
Prescribed Fire Regime	Conservation 20/20 and/or Lee County Parks & Recreation	in house
Trail Maintenance		$10,000 per year
Repairs From Vandalism of Facilities		$3,000 per year

Yearly Maintenance Estimate **$113,000**

All costs are rough estimates based on information currently available.
Every effort will be made to not exceed this budget by more than 10%.

Appendix K.

FNAI Field Report Forms for Rare Plants and Animals

FLORIDA NATURAL AREAS INVENTORY
FIELD REPORT FORM FOR RARE PLANTS

Thank you for taking the time to complete and mail this form. Information from knowledgeable individuals such as yourself makes an important contribution to the FNAI Biological Conservation Database. If you need help with this form, or would like additional information, please call the FNAI Botanist at 850-224-8207.

Scientific name: _____Common name:

Basis for identification/manual used: _____ Date(s) seen:

Photograph taken? _____Specimen deposited at a herbarium?_____Name of herbarium:

Quad name: _____ County: _____Site or managed area name:_____Directions (please mark site on copy of USGS 7.5 minute quad map and attach to this form, or draw a detailed map on back of this page, or give GPS coordinates):

Describe the site where the plant was seen: habitat/plant community; topography; hydrology; dominant species in tree, shrub, and ground layers:

Estimated Size of Population (no. of individuals & size of area occupied):

Flowering? Yes__ No__ Fruiting? Yes__ No__ In bud? Yes__ No__ In leaf? Yes__ No__ Dormant? Yes__ No

Comments

Have you seen this species at the same location in the past? Yes__ No__If yes, give dates: _____If yes, describe changes, if any, to site and population since last visit

Are there disturbances or threats (e.g. vehicle use, trash dumping, fire suppression, exotic species invasion) to the population? If yes, please describe: _____Is there evidence (e.g., fire breaks, scorching) of fire at the site? Yes___No___if yes, describe and give dates of recent fires, if known

Other useful information concerning the population, its ecological conditions, management history, management needs, names of individuals who might be helpful, etc.:

Your name: _____ Tel no.: _____E-mail:
Address:

Please include any additional information on the back of this sheet. Please send this form to: Botanist, Florida Natural Areas Inventory, 1018 Thomasville Rd., Suite 200-C, Tallahassee, FL 32303. THANK YOU!

FLORIDA NATURAL AREAS INVENTORY FIELD REPORT FORM - **OCCURRENCES OF SPECIAL ANIMALS**

Scientific Name:_____ County: _____
Common Name: _____ Date observed: _____
Basis for Identification:_____ Investigator: _____

Location of Animal (*please attach map and give specific directions; if possible, mark site on copy of USGS 7.5 minute topo map or draw detailed map on back of this page*):

_____

_____

_____

Describe habitat/plant community, list dominant species:

_____

_____

_____

Extent of this habitat at site that may support animal (e.g., acres, miles) _____
Number of individuals (or nests, burrows, etc.) seen:

_____

Estimated no. of individuals in population:

_____

Age/population structure (adults, young,
etc.)_____

Ecological/behavioral notes (e.g., reproductive stage, activity type, feeding, flying, nesting):

_____

_____

_____

Have you seen this species at the same location in the past? Yes _____ No _____
If yes, please give date(s): _____ Previous condition: ___
Is there evidence of disturbance at the site? Yes _____ No _____
If yes, please describe:

_____

_____

_____

Owner(s) of site: _____
Is owner protecting this animal? Yes ___ No _____
Conservation/Management
Needs_____

_____

Comments (other useful information concerning this animal and site - e.g., names and addresses of individuals who might be helpful, publications, museum specimen numbers, etc_____

_____

(*please include any additional information on the back of this sheet.*)
Additional forms may be obtained upon request. Please send completed field report forms to:

Submitted by: _____
Affiliation: _____
Address: _____
_____
Phone (H) _____ Date: _____

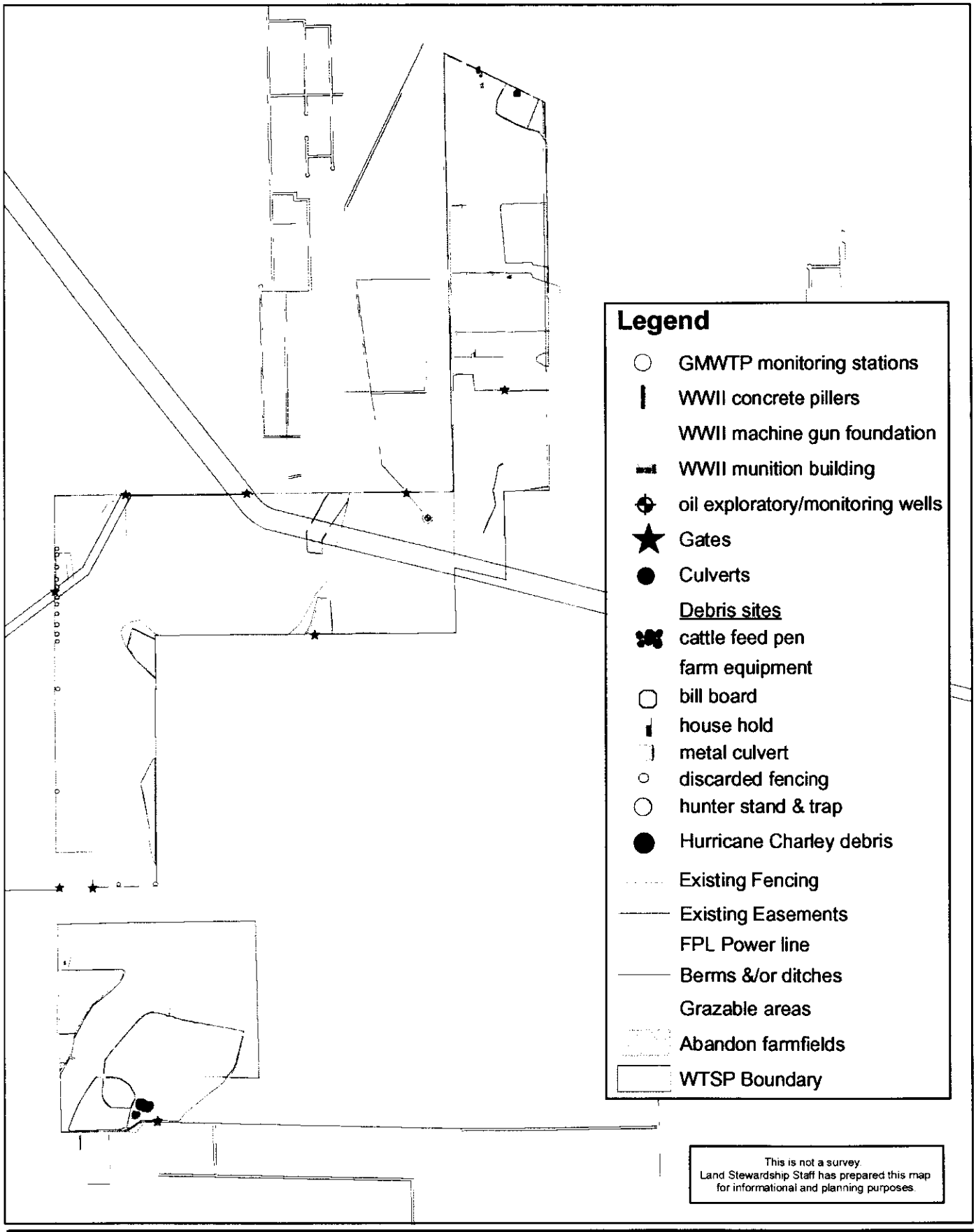
Zoologist
Florida Natural Areas Inventory
1018 Thomasville Road, Suite 200C
Tallahassee, FL 32303
Fax (850) 681-9364

** note: *each form should include only one species, one locality, and one date*

Appendix L.

Internal Influences Map

Appendix L . Internal Influences Map



Wild Turkey Strand Preserve

0 2,500 5,000 10,000

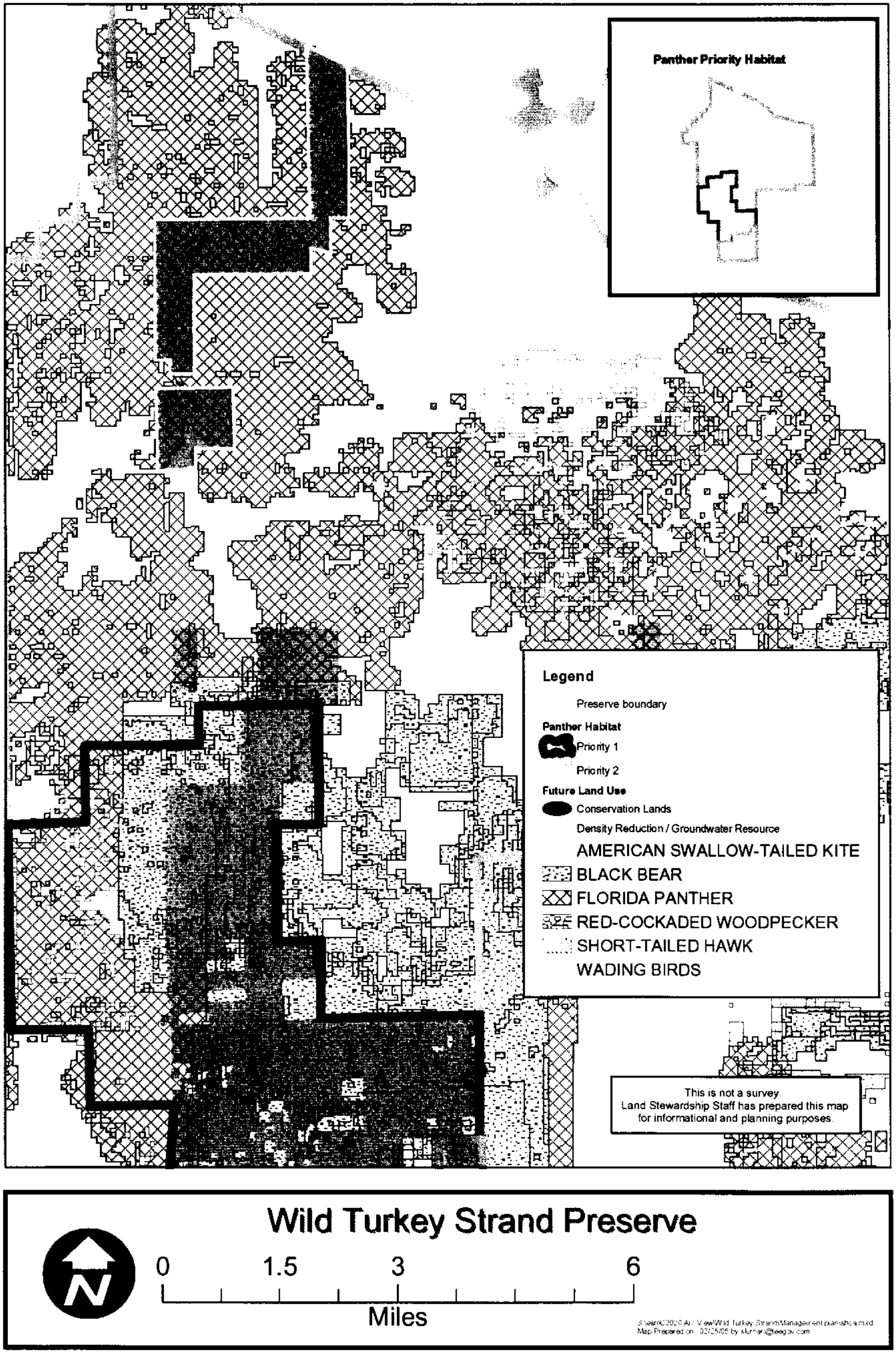
Feet

S:\esri\C2020 ArcView\Wild Turkey Strand\management plan\FCT_existing_physical_improvements.mxd
Map Prepared on 02/18/05 by slurman@leegov.com

Appendix M.

Strategic Habitat Conservation Area Map

Appendix M. Strategic Habitat Conservation Area


Panther Priority Habitat
Legend
Preserve boundary
Panther Habitat
Priority 1
Priority 2
Future Land Use
Conservation Lands
Density Reduction / Groundwater Resource
AMERICAN SWALLOW-TAILED KITE
BLACK BEAR
FLORIDA PANTHER
RED-COCKADED WOODPECKER
SHORT-TAILED HAWK
WADING BIRDS
This is not a survey.
Land Stewardship Staff has prepared this map
for informational and planning purposes.
Wild Turkey Strand Preserve
N
0
1.5
3
6
Miles

Appendix N.

Letter from the Lee County Port Authority

Lee County Port Authority

Direct (239) 768-4377
Fax (239) 768-4912

February 21, 2005

Anik Smith
Land Stewardship Supervisor
Lee County Parks & Recreation
Conservation 20/20
3410 Palm Beach Blvd.
Ft. Myers, FL 33916

Dear Ms. Smith,

Thank you for coordinating with the Port Authority on your grant application and land management plan for Wild Turkey Strand Preserve. After staff review of your draft impact map, we have determined that the land designated for future acquisition on our current Airport Layout Plan (ALP) that impacts Wild Turkey Strand Preserve should be omitted from the future land acquisition area. Therefore, your grant submittal should include these areas for reimbursement and your impact map for Southwest Florida International Airport (SWFIA) should not be necessary. We will coordinate with FAA and FDOT to update the ALP for SWFIA to show the changes described above.

We appreciate your ongoing coordination with adjacent properties as we undergo future development at the airport. If you need any addition information please, don't hesitate to contact me.

Thank you again.

LEE COUNTY PORT AUTHORITY

Sarah B. Jamieson
Senior Manager

SJ sbj