

BEKER – WINGATE CREEK UNIT

Management Plan

APPROVED

**Florida Department Of Environmental Protection
Division Of Recreation And Parks**

DECEMBER 12, 2008

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INTRODUCTION

Wingate Creek, formerly known and managed as Beker B, was acquired with South Fork, formerly known and managed as Beker A, in 1988, through a process of mitigation by a phosphate mining enterprise known as Beker Phosphate Company. None of the land within Wingate Creek has been mined; but lands to the north are being mined. To date 614.57 total acres have been acquired.

Wingate Creek is located in Manatee County (see Vicinity Map) about 25 miles east of Bradenton. Access to the park is from State Road 64, ten miles east of the junction with State Road 675, (see Reference Map).

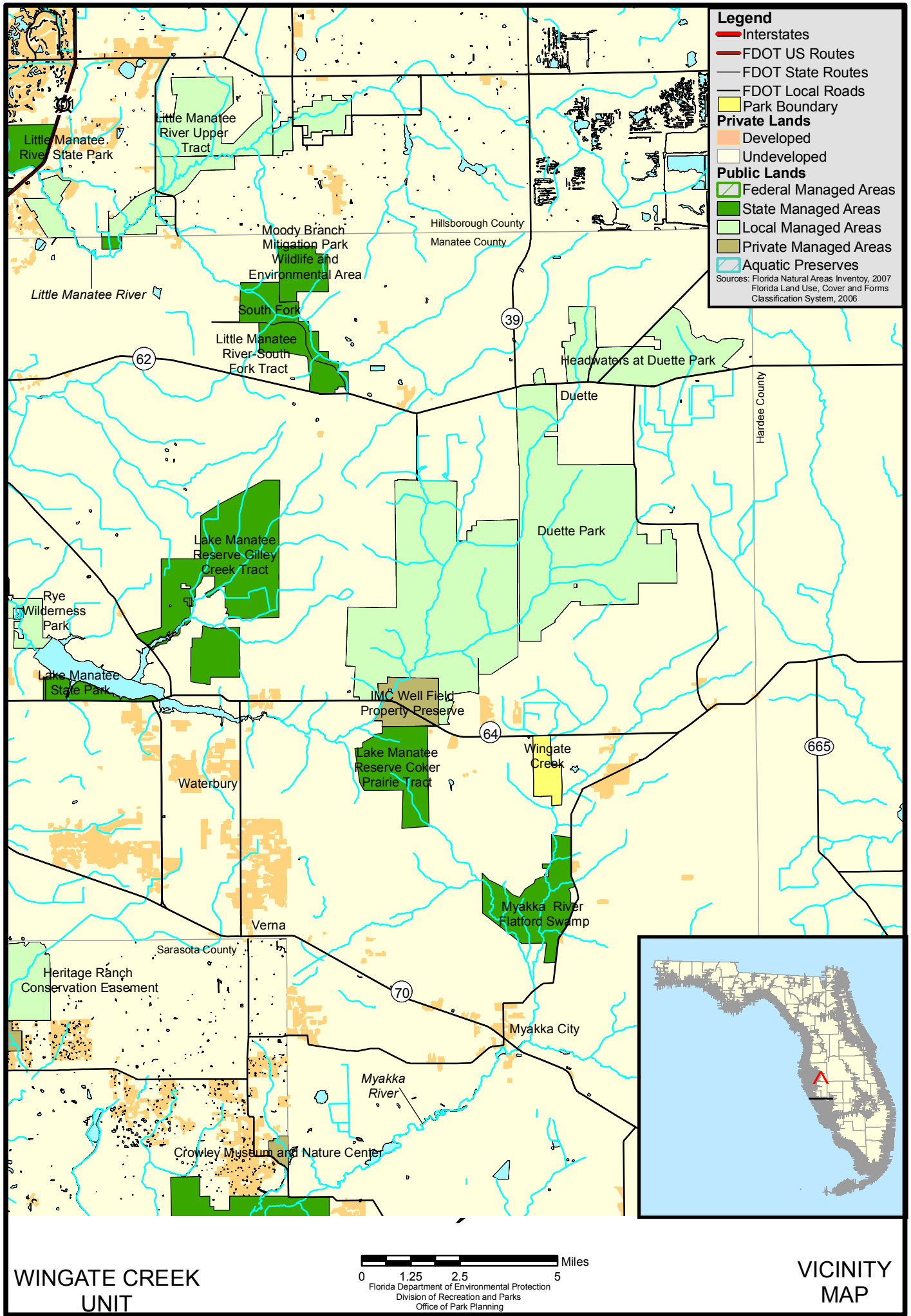
The Division's lease from the Trustees stipulates that all the property be utilized for public outdoor recreation and related purposes (see Addendum 1). At Wingate Creek, public outdoor recreation is the designated single use of the properties. There are no legislative or executive directives that constrain the use of this property.

PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Wingate Creek as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the March 20, 1998 approved plan of. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state, or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes, and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

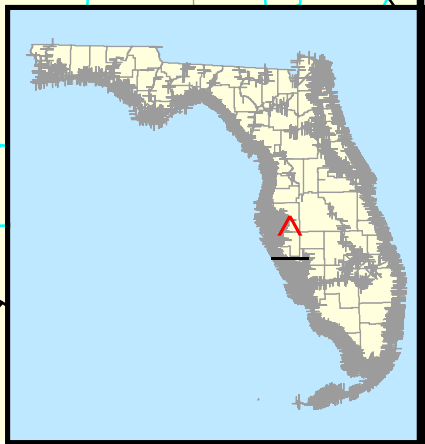
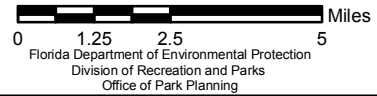
The plan consists of two interrelated components. Each component corresponds to a particular aspect of the administration of the park. The resource management component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management problems and needs are identified, and specific management objectives are established for each resource type. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, and restoration of natural conditions.

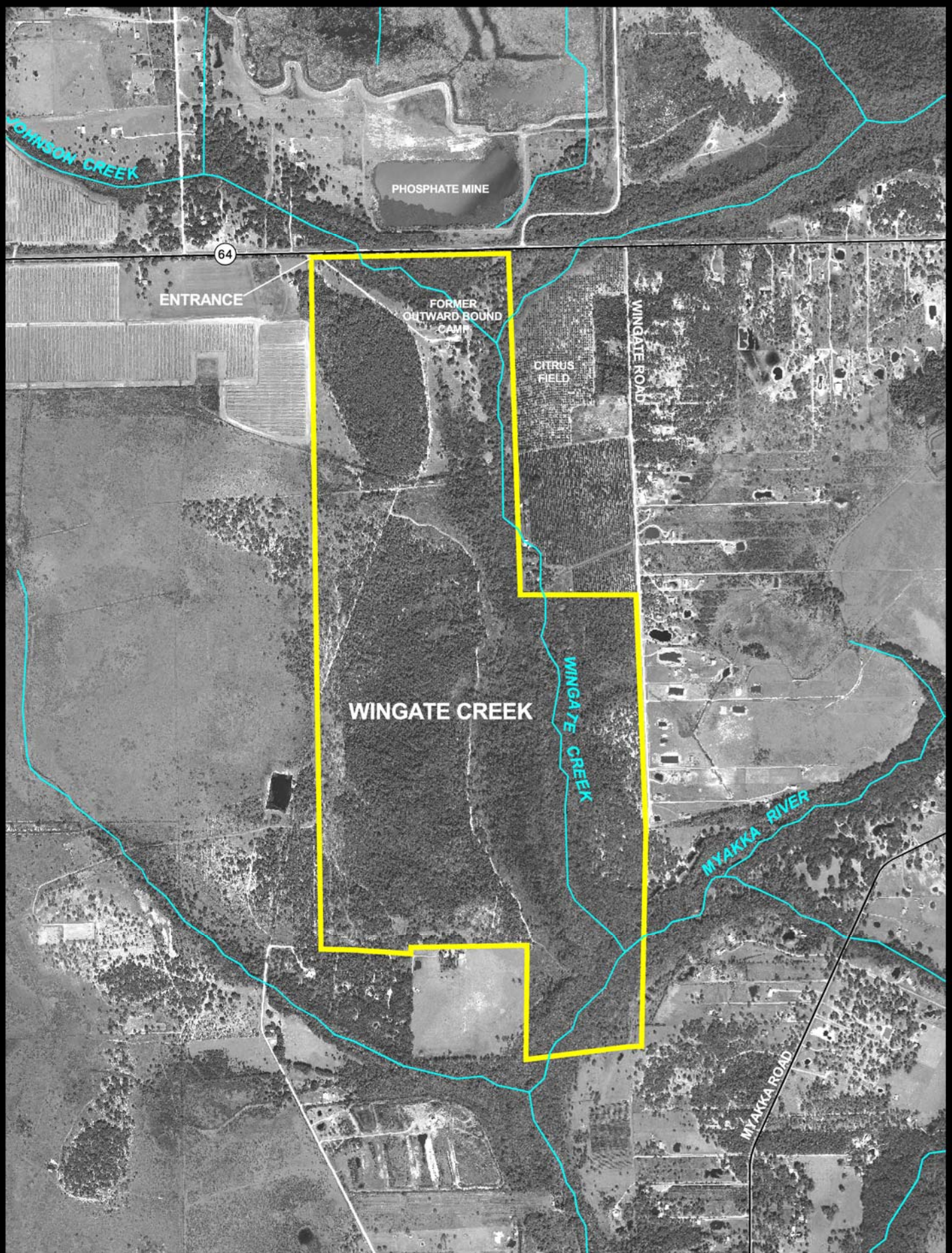
The land use component is the recreational resource allocation plan for the unit. Based on considerations such as access, population, and adjacent land uses, an optimum



- Legend**
- Interstates
 - FDOT US Routes
 - FDOT State Routes
 - FDOT Local Roads
 - Park Boundary
 - Private Lands**
 - Developed
 - Undeveloped
 - Public Lands**
 - Federal Managed Areas
 - State Managed Areas
 - Local Managed Areas
 - Private Managed Areas
 - Aquatic Preserves
- Sources: Florida Natural Areas Inventory, 2007
Florida Land Use, Cover and Forms Classification System, 2006

WINGATE CREEK UNIT





WINGATE CREEK



REFERENCE MAP

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF RECREATION AND PARKS
OFFICE OF PARK PLANNING

allocation of the physical space of the park is made, locating use areas and proposing types of facilities and volume of use to be provided.

In the development of this plan, the potential of the park to accommodate secondary management purposes (“multiple uses”) was analyzed. These secondary purposes were considered within the context of the Division’s statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation, and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions, and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

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

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

The Trustees have also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division Operations Manual (OM) and cover such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of Wingate Creek, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a balance, that are both convenient and safe. Depletion of a resource by any recreational activity is not permitted. Program emphasis is on interpretation on the park's natural, aesthetic and educational attributes.

Park Goals and Objectives

The following park goals and objectives express the Division's long-term intent in managing the state park. At the beginning of the process to update this management plan, the Division reviewed the goals and objectives of the previous plan to determine if they remain meaningful and practical and should be included in the updated plan. This process ensures that the goals and objectives for the park remain relevant over time.

Estimates are developed for the funding and staff resources needed to implement the management plan based on these goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector, for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Park Goals and Objectives

1. Protect water quality in Wingate Creek and maintain historic hydroperiods.
 - A. Implement regular monitoring of water quality.
 - B. Investigate the feasibility of establishing a permanent water level recorder to monitor water levels.
2. Carry out prescribed burning in all natural communities.
 - A. Burn appropriate natural communities at the required intervals.
3. Control exotic plants and animals.
 - A. Eliminate climbing fern, *Lygodium microphyllum* and *L. japonicum*; Brazilian pepper, *Schinus terebinthifolius*; cogongrass, *Imperata cylindrica*; and other listed invasive exotic species.
 - B. Control feral hogs, *Sus scrofa*.
4. Identify optimum boundaries.
 - A. Acquire or otherwise preserve as much as possible of the Myakka River floodplain and Myakka River tributaries, in the vicinity of Wingate Creek.
5. Identify, monitor and protect all listed species.
 - A. Continue biological surveys to identify all vascular plant and vertebrate species, and map gopher tortoise burrows.
6. Instill an awareness of the park in the public mind.
 - A. Gain public support for protection and management through interpretation
 - B. Heighten awareness of the Myakka River ecosystem particularly the importance of maintaining the upper watershed in a healthy condition.
7. Restore disturbed land.
 - A. Restore improved pasture and former orange grove where and when it is feasible.

Recreational Goals

1. Develop a trailhead area with parking and picnic shelter.
2. Provide outdoor resource based recreation and educational opportunities.
 - A. Develop relationships with local schools, environmental groups, for field trips, interpretive meetings, and park development.
 - B. Develop interpretive programs about the resource, including hydrology, wildlife, plants, and history of the site.
 - C. Develop ongoing communication with the community, to build relationships and a volunteer base, to educate and perpetuate knowledge and understanding of the park and to promote use of the resource.
3. Develop a self-interpreted trail system.
 - A. Identify signage needs, obtain and install signage.
 - B. Develop a shared-use trail system.
4. Renovate Outward Bound camp for state park uses.

Park Administration/Operations

1. Familiarize surrounding communities with the park and its opportunities.
2. Improve access to park for resource management activities, and visitors.
 - A. Stabilize sand road for better access.
3. Obtain a Park Ranger position.
 - A. A full-time employee is needed to aid in the management of Wingate Creek.
 - B. A Park Ranger dedicated to Wingate Creek is needed to meet the Natural and Cultural Resource Management Goals and Objectives for public access.

Management Coordination

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

The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses. The Southwest Florida Water Management District (SWFWMD) helps protect the water resources within the park as well as the region.

Public Participation

The Division provided an opportunity for public input by conducting a public meeting and an advisory group meeting to present the draft management plan to the public. A public meeting was held on August 26, 2008. An Advisory Group meeting was held August 27, 2008. The purpose of this meeting was to provide the Advisory Group members an opportunity to discuss the draft management plan.

Other Designations

Wingate Creek has not been designated as an area of critical State concern as defined in section 380.05, Florida Statutes. Currently it is not under study for such designation. The park is a component of the Florida Greenways and Trails System.

All waters within Wingate Creek have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Administered by the Department of Environmental Protection, this program was created by Section 403.061, Florida Statutes, and protects lakes, rivers and streams against degradation of existing

ambient water quality. Surface waters in Wingate Creek flow from the headwaters of Myakka River and are classified as Class III waters by DEP.

Wingate Creek is not designated as aquatic preserves under provision of the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes). Nor is it adjacent to aquatic preserves.

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

The Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The stated management measures in this plan are consistent with the Department's overall mission in ecosystem management. Cited references are contained in Addendum 2.

The Division's philosophy of resource management is natural systems management. Primary emphasis is on restoring and maintaining, to the degree practicable, the natural processes that shape the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management may be implemented when the recovery or persistence of a species is problematic provided it is compatible with natural systems management.

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

Because park units are often components of larger ecosystems, their proper management is often affected by conditions and occurrences beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program (to assess resource conditions, evaluate management activities, and refine management actions), review of local comprehensive plans, and review of permit applications for park/ecosystem impacts.

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Along the western side of Wingate Creek, the land is nearly level, rising to over 90 feet, mean sea level (msl) in the north and declining to approximately 80 feet msl, a mile to the south. From the east the land slopes downward to the bed of Wingate Creek which is below 65 feet msl where it enters at the north boundary. The creek falls rapidly to an elevation of less than 45 feet where it leaves the southern boundary, of the park.

Geology

Wingate Creek is situated on the southern extremity of a landform known as the Polk

Upland, near to where it meets the DeSoto Plain. A ridge line at 80-90 feet msl separates these two surface features. The surface sands rest on Miocene limestone whose upper stratum has come to be known as the Bone Valley Formation. It consists of phosphatic boulders and pebbles in a matrix of phosphatic sandy clays. This is the source of Florida's phosphate deposits.

Soils

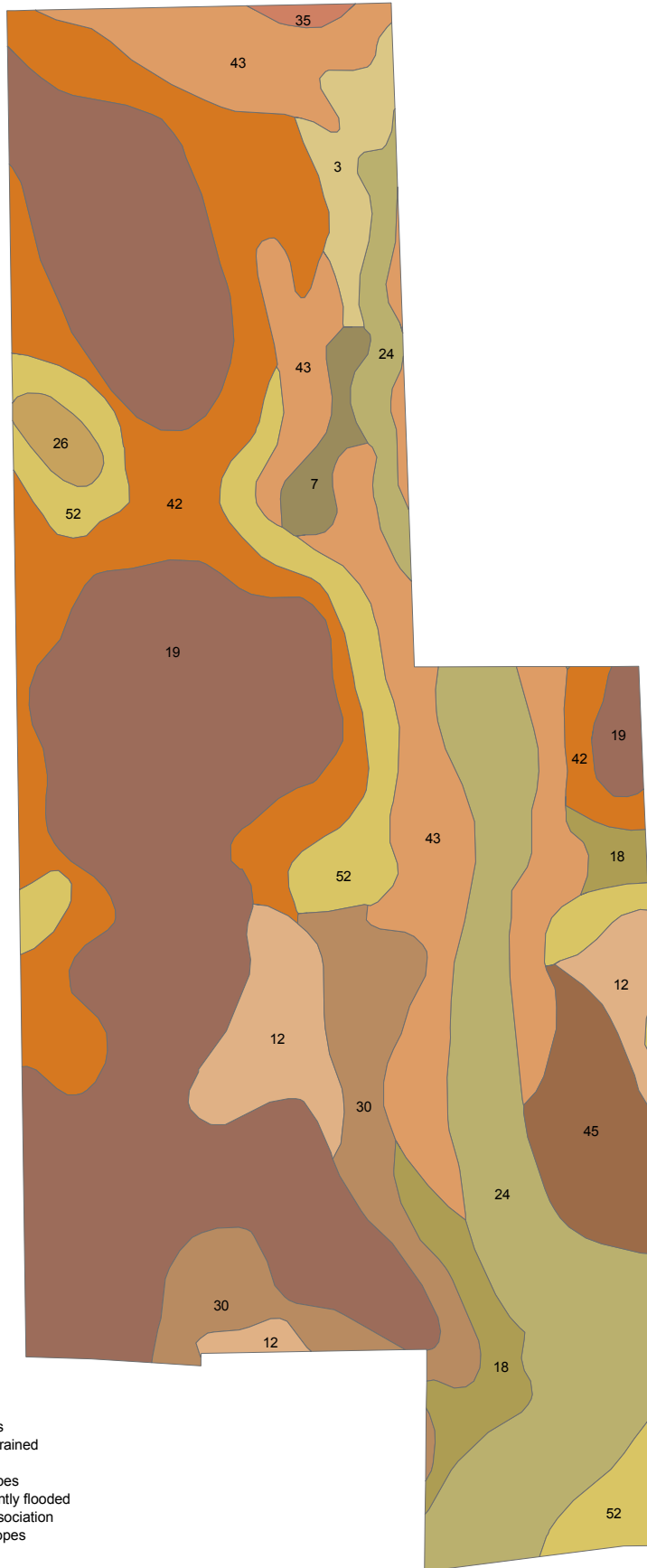
The soil types at Wingate Creek, as mapped in the USDA survey published in 1981, are closely aligned with its natural communities (see Soil Map). Addendum 3 contains detailed soil descriptions for this park. Wingate Creek flows southward near the eastern border of the park. To the west of the creek the land slopes up rather sharply for a short distance and then levels off. Rain falling on the sandy, porous soil of these uplands rapidly percolates downward to seep out and moisten the surface of the land sloping toward the creek. The moisture gradient at or near the soil surface strongly influences the plant cover, with mesic types common toward the upper elevations and species tolerant of wetter conditions becoming more apparent on the lower slope.

Duette fine sand can be identified by its cover of scrub vegetation. The water table fluctuates during the year from 48 to 72 inches below the surface. The scrubby flatwoods community is situated on Cassia fine sand whose water table varies from 40 to 60 inches. Pomello fine sand is also associated with the scrubby flatwoods. It has a water table that rises to within 24 inches of the surface during the rainy season.

Myakka fine sand and Waveland fine sand are both typical of broad mesic flatwoods. At Wingate Creek both these soils support longleaf pine and saw palmetto vegetation. Waveland fine sands are wetter, having water on the surface in the summer and during heavy rains. In the northern portion of the park, where mesic flatwoods once bordered the west bank of the creek, Braden fine sand is prevalent. This is a nearly level to very gently sloping, somewhat poorly drained, soil on stream terraces that are well above normal overflow. The original vegetation on this soil has been much disturbed and now consists largely of wax myrtle thickets.

Where the mesic flatwoods begin to slope downward toward the creek, and where gallberry and loblolly bay trees make an appearance, these features are a reliable sign of St. Johns fine sand, a gently sloping, poorly drained soil on seepy slopes adjacent to drainageways. Consequently, St. Johns fine sand usually appears on the maps in a long, narrow configuration.

Between Johnson and Wingate Creeks, at the north park boundary at the location of a former orange grove, there is an area of nearly level poorly drained Ona fine sand,



LEGEND

- 3-Branden fine sand
- 7-Canova, Anclote, and Okeelanta soils
- 12-Cassia fine sand, moderately well drained
- 18-Delray-Pomona complex
- 19-Duette fine sand, 0 to 5 percent slopes
- 24-Felda-Wabasso association, frequently flooded
- 26-Floridana-Immokalee-Okeelanta association
- 30-Myakka fine sand, 0 to 2 percent slopes
- 35-Ona fine sand, ortstein substratum
- 42-Pomello fine sand, 0 to 2 percent slopes
- 43-St. Johns fine sand, 2 to 5 percent slopes
- 45-Tavares fine sand, 0 to 5 percent slopes
- 52-Waveland fine sand

WINGATE CREEK
UNIT



SOILS
MAP

orstein substratum. Prior to agricultural activities this would have been an area of flatwoods.

The upland area that was developed for the Outward Bound facilities near Johnson and Wingate Creeks on lands previously used for pasture are on Braden fine sand, a remnant stream terrace. Most of this area is ruderal with remnant slash pines, live oaks and saw palmetto.

The bottomland hardwood forest dominating the creek floodplain grows from the Felda-Wabasso soil association, a type consistently identified with the floodplains of larger streams in Manatee County. The Felda soils form the lower stratum of this association while the Wabasso soils are more elevated.

The Delray-Pomona soil complex underlies a grassy seepage slope community on the eastern side of the creek. Also on the eastern side of the creek is an expanse of Tavares fine sand where the original vegetation may have been a sandhill community, but if so it was completely eliminated. The second growth forest includes pignut hickory, laurel oak, myrtle oak and sand live oak.

Soil and water resources will be conserved at Wingate Creek by using best management practices (BMP) to prevent soil erosion and negative impacts to water resources.

Minerals

Minerals of economic value at Wingate Creek include high silica sand, peat and phosphate. Peat is present in small quantities, and silica sand comprises the surface layer throughout much of the uplands. Phosphate ore probably underlies Wingate Creek; it is currently being mined across the highway from the north boundary of the park.

Hydrology

Wingate Creek is a small tributary of the upper Myakka River, which it joins at the southern extremity of the park. At this juncture the Myakka River itself is only a small creek. At the northern end of the park, Johnson Creek enters Wingate Creek. A unit of the park system at this geographic location affords a protective foothold of public land to protect water quality in the upper reaches of the Myakka River watershed. The phosphate mine poses the greatest potential threat to the surface waters of this site. For that reason it will be important to monitor the quality of water entering the park. Ground water irrigation has caused a large scale change in the hydrology of this watershed. A large scale tree die-off, attributed to an increase of water in this system, has occurred less than a mile downstream from this unit.

There are no data available on the groundwater resources for Wingate Creek. In general, water entering the porous uplands via rainfall on the western portions of the

properties, percolates downward, some of it probably reaching the surface where the land slopes downward toward the river.

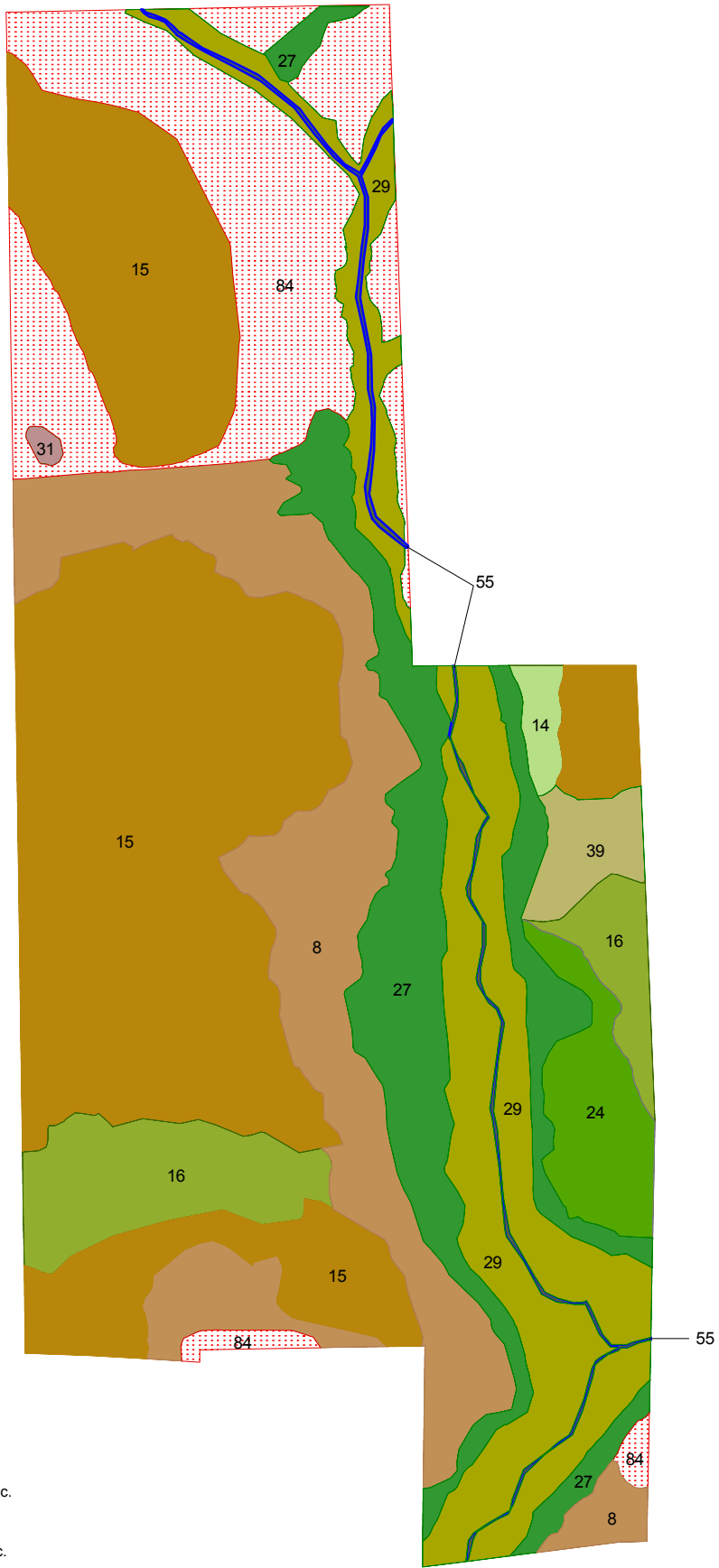
Natural Communities

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

The park contains ten distinct natural communities (see Natural Communities Map) in addition to ruderal and developed areas. The Natural Communities Map is a graphic representation of the existing vegetative conditions in the park at the time this management plan was developed. Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

Mesic flatwoods. A long, continuous north-south band of mesic flatwoods extends through the central and southern interior of the park, just upslope from the baygall community. There are also scattered patches located primarily in the central and southern parts of the park. Elevations range from 50 to 90 feet msl. During the rainy season, flatwoods are subject to inundation; however they remain dry for most of the year. Dominant plant species include: longleaf pine (with some slash pine), saw palmetto, fetterbush, gallberry and wiregrass. Other plants include: runner oak, sand live oak, gopher apple, shiny blueberry, St. John's-worts, and yellow-eyed grass.

Sandhill. A very small patch of vegetation can be found east of Wingate Creek in a narrow north-south band in the northeastern portion of the park. It resembles a sandhill, at least in terms of its dominant plants. Elevations exceed 60 feet msl. Dominant plant species include: longleaf pine, turkey oak, and wiregrass. Other typical plant species include: persimmon, winged sumac, Florida needlegrass, lopsided Indiangrass, Queen's delight, bracken fern, runner oaks, partridge pea, alicia, gopher apple, grass-leaved golden aster, and deer tongue. There are also small remnant areas of longleaf pine and turkey oak west of the creek that are currently included in the area mapped as scrub and scrubby flatwoods, which could be the result of fire exclusion that allows sand pines and oaks to become established. After prescribed burning, these areas will be revisited to see if they would be better characterized as sandhill.



LEGEND

- 8 - Mesic Flatwoods-94.05 ac.
- 14 - Sandhill-3.93 ac.
- 15 - Scrub-219.39 ac.
- 16 - Scrubby Flatwoods-34.86 ac.
- 24 - Xeric Hammock-18.32 ac.
- 27 - Baygall-64.36 ac.
- 28 - Bottomland Forest-83.24 ac.
- 31 - Depression Marsh-0.85 ac.
- 39 - Seepage Slope-8.91 ac.
- 55 - Blackwater Stream-4.70 ac.
- 84 - Ruderal-81.69 ac.

Scrub. Scrub communities are spread along the western part of the park. Unfortunately, several factors including fire exclusion and cattle grazing have severely compromised the quality of much of this community. The best examples of scrub in the park are generally 60 feet or more above mean sea level. Dominant plant species include: sand pine, rosemary, sand live oak, myrtle oak, Chapman's oak, scrub oak, saw palmetto, and staggerbush. Other typical plants include: scrub palmetto, prickly pear cactus, tallow wood (hog plum), Florida bonamia, Curtiss' milkweed, sand spikemoss, grass-leaved golden aster, and several wireweed (jointweed) species.

Scrubby flatwoods. A large expanse of scrubby flatwoods is situated in the west-central part of the park and extends south and southwestward nearly to the southwestern corner of the property. Another small patch is spread along the eastern boundary. All these sites generally exceed 60 feet msl. Dominant plant species include: Sand live oak, Chapman's oak, myrtle oak, runner oak, saw palmetto and wiregrass. Other typical plant species include: sand pine, longleaf pine, staggerbush, shiny blueberry, tarflower, dwarf huckleberry, gopher apple, grass-leaved golden aster, goldenrod, and frostweed.

Xeric hammock. There is a single patch of xeric hammock at the park, along the eastern boundary, just northeast of Wingate Creek. It appears to be secondary growth on terrain formerly occupied by a xeric community. The frequent lack of ground cover vegetation suggests some form of mechanical disturbance may have had an impact here during previous years. Slopes range from 0 percent to 5 percent. For the most part hammock elevations range from 55 to 65 feet above sea level. Dominant plant species include: pignut hickory, laurel oak, live oak, and sparkleberry. Other occasional plants include: sarsaparilla vine, saw palmetto, black cherry, wild olive, tallow wood, American beautyberry, scrub palmetto, and sky-blue lupine.

Baygall. Baygalls most often occur along the seepage gradients at the base of gently sloping terrain and along the edges of Palustrine floodplains where the water table is high. As a result, the underlying acidic peat substrate remains saturated throughout most of the year. The baygall community in this park is most prevalent in a north-south band just upslope of the bottomland forest bordering Wingate Creek. It occurs at elevations between 50 and 75 feet msl. Baygall also occurs along the banks of Johnson Creek.

The vegetation is characterized by a dense undergrowth of saw palmettos and abundant catbriers. In the absence of frequent burning, loblolly bay, sweetgum and swamp bay trees spring up and may become dominant. Other components of the flora may include: wax myrtle, fetterbush, highbush blueberry, dahoon holly, saw palmetto, cinnamon fern, and Virginia chain fern.

Bottomland forest. At Wingate Creek the bottomland forest borders the low, flat banks

of Wingate Creek and the Myakka River, and those along Johnson Creek just upstream of its confluence with Wingate Creek. This closed-canopy forest of tall, straight trees is found at elevations of between 40 and 70 feet msl. Bottomland forests are subject to occasional inundation, especially during the summer rainy season, and being subjected to hydroperiods of up to 6 months per year. Dominant plant species of the bottomland forest at Wingate Creek include: water oak, live oak, laurel oak, red maple, American elm, sweetgum, dahoon holly and swamp tupelo. This last tree named can be considered diagnostic for bottomland hardwoods since it does not grow in any other natural community in the park. The trees in the bottomland forest are covered with epiphytic orchids, air plants and ferns.

Other typical components include snowbell, dwarf palmetto, wax myrtle, swamp dogwood, wild coffee, cinnamon fern, royal fern, Virginia chain fern and swamp fern.

Depression marsh. At Wingate Creek a small, shallow, seasonally inundated depression marsh is located within a ruderal area in the north-west section of the park. Typical vegetation components include: St. John's wort, yellow-eyed grass, smartweed, cattail, wax myrtle, and maidencane. Hydroperiods in this wetland have been altered, because it is drained by a manmade ditch, which have allowed wax myrtles and willows to invade. The ditch has resulted in a functioning wetland that is less than 1/3 the size it was prior to ditching as determined by the Soil Survey of Manatee County and aerial photography. A challenge to restoring the hydrology of this wetland is that it would flood adjoining private property currently used as agricultural lands.

Seepage slope. It may be a cut-over mesic flatwoods, as several pine stumps are in evidence and Curtiss' dropseed is abundant. There is a slight slope and some species of plants suggest prolonged periods of wet soil: yellow butterwort, pale meadow beauty, big yellow milkwort, hatpins and loblolly bay. The term seepage slope is used here somewhat loosely. Wetland species will need to be monitored to see if they persist, will special attention on the listed yellow butterwort, because a north/south drainage ditch was constructed along Wingate Road, as part of the ranchette development near the park's east boundary fence. The ditch intercepts water that previously moved down the seepage slope towards the bottomland forest.

Blackwater stream. Collectively, the Myakka River, Wingate Creek and Johnson Creek make up the blackwater stream community. The clear, tannin-stained waters of these three streams are generally acidic. Streambanks are often steep, and the streams flow at a moderate rate. The blackwater streams occasionally overflow. However, steeply rising slopes usually keep the water confined within the stream banks, although great fluctuations in water levels are not uncommon, especially during droughts or rainy periods. Elevations ordinarily range from just over 70 feet above sea level, where Johnson Creek enters the northern area of the park, to less than 45 feet above sea level where the Myakka River leaves the park. Typical plant species include: pickerelweed,

golden club, smartweed, spider-lily, Virginia willow, pop ash, and swamp dogwood.

Ruderal/Developed. Nearly all examples of this "community type" occur at the northern end of the park on former citrus grove lands or on former improved pasture lands. In addition, there is a small patch of ruderal habitat near the southeast corner of the park in an area previously used for tropical fish farming. Soil surveys and topographic maps indicate that much of this altered land was once mesic flatwoods, with a smaller acreage having been baygall. Portions close to Johnson and Wingate Creeks are flooded during heavy rains. Typical plant species include: bahia grass, blackroot, flat-topped goldenrod, dog fennel, horrid thistle, blueheart, and wax myrtle.

Designated Species

Designated species are those that are listed by the Florida Natural Areas Inventory (FNAI), U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDA) as endangered, threatened or of special concern. Addendum 5 contains a list of the designated species and their designated status for this park. Management measures will be addressed later in this plan.

To date 16 designated species of plants and 16 species of vertebrates have been identified within Wingate Creek. Biological surveys are incomplete at the time of this writing. Two small populations of endangered Florida bonamia were discovered in the park. This morning glory, endemic to scrub, had not been documented in Manatee County since 1916. Addendum 6 contains a list of the designated species and their designated status. Management measures will be addressed later in this plan.

Special Natural Features

No special natural features have been identified at Wingate Creek.

Cultural Resources

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

The Florida Master Site File (FMSF) lists two sites within Wingate Creek. One site,

MA00127, site name, Stanley Mound, is a prehistoric burial mound of the Weeden Island archeological complex approximately two acres in extent. The mound had been disturbed in 1955 by a bulldozer, and since has been repeatedly pot hunted. Evidence of more recent disturbance includes a hardware cloth sieve. In 1975, Joan Deming, Department of Anthropology, USF Tampa, surveyed the mound and found human bone fragments, ceramic body and rimsherds, and other artifacts. USF is the repository of the artifacts collected (BPI-1 to PBI -349). The other site, MA00817, site name Wingate Creek I, is a prehistoric-aceramic campsite.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

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

Selective timber removal has occurred at Wingate Creek. This removal was done under three contexts: removal of sand pines to facilitate prescribed burning in the scrub community, removal of sand pines that have encroached in other communities during a long absence of fire, and thinning of longleaf pines and south Florida slash pines where necessary to facilitate mechanical treatment of saw palmetto. Addendum 6 contains the timber management analysis.

Additional Considerations

With its closure, activities of the Department of Health and Rehabilitative Service's (HRS) Outward Bound Camp at Wingate Creek are no longer an issue.

Management Needs and Problems

Except for the conversion of some tracts of upland habitat to improved pasture, the natural communities at Wingate Creek may be said to be in good condition. Restoration of the pastures is needed, and will be the greatest challenge. Threats to the park are primarily external. Phosphate mining poses a potential threat to surface waters in that the walls of retention ponds on a mine upstream could break, sending phosphate and clay-laden waters into the park, and mining in the headwaters of the Myakka River may change flows (which typically decrease because of mining activities).

The surrounding countryside has for many years been a mix of improved pasture, interspersed with woodlands, the whole interlaced with narrow, forested drainageways. Now some upland sites are being converted to citrus orchards and row crops. Also, land to the northeast and east, is being developed for ranchettes and rural homesites. These activities could leave the state property as an insular habitat. The need, in this case, is to expand the boundaries. A corridor connecting Wingate Creek to other conservation lands less than a mile to the south, via the Myakka River would benefit plant and animal populations in the park. In particular the gopher tortoise population must be assessed to judge whether habitat is adequate to sustain the existing population. The first gopher tortoise burrow surveys, conducted in the summer of 1997, indicate a dense population characterized by an unusually high number of juveniles.

Prescribed burns will be needed in scrub, scrubby flatwoods, sandhill and mesic flatwoods communities, and perhaps on some baygall sites.

The following aggressive exotic pest plants (listed as EPPC I) have been observed/collected at Wingate Creek; Brazilian pepper, *Schinus terebinthifolius*; cogongrass, *Imperata cylindrica*; climbing fern, *Lygodium microphyllum* and *L. japonicum*; Asian sword fern, *Nephrolepis multiflora*; torpedo grass, *Panicum repens*; bahia grass, *Paspalum notatum*; West Indian marshgrass, *Hymenachne amplexicaulis*; water hyacinth, *Echhornia crasipes*; lantana, *Lantana camara*; and rosary pea, *Abrus precatorius*. Fortunately the infestation of these species at Wingate Creek is limited at present and can be eradicated, but in the absence of active management could easily get out of control. Feral hogs are also present and should be controlled.

Management Objectives

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division primary objective in natural resource management is to maintain and restore, to the extent possible, to the conditions that existed before the ecological disruptions caused by man. The objective for managing cultural resources is to protect these resources from human-related and natural threats. This will arrest deterioration and help preserve the cultural resources for future generations to enjoy.

Management objectives at Wingate Creek are to monitor surface water quality, conduct prescribed burning, control exotic pest plants (Brazilian pepper, cogongrass, climbing fern, Asian sword fern, torpedo grass, bahia grass, water hyacinth, lantana, and rosary pea) and feral hogs, acquire buffering lands and manage listed species for long-term survival.

Management Measures for Natural Resources

Hydrology

Land use activities near Wingate Creek have altered the hydrology of the upper Myakka River watershed. Row crop irrigation in the watershed has increased dry seasons water levels in the Myakka River and its tributaries that resulted in the stress and death of more than 2,000 acres of forested wetlands near the park. The Florida Park Service has unsuccessfully sought cooperative funding from the Southwest Florida Water Management District to monitor hydrology at Wingate Creek and Myakka River State Park. Funding for hydrologic monitoring will continue to be pursued.

The phosphate mine north (upstream) of the park has resumed mining, since the previous management plan was adopted in 1998. To ensure that water quality is not degraded in the park, the Florida Park Service has asked the DEP, Bureau of Mine Reclamation to include additional water quality monitoring as a special condition of the mine's discharge permit renewal. The outcome of this request has yet to be decided, since the issuance of the mine discharge permit was challenged by an environmental group.

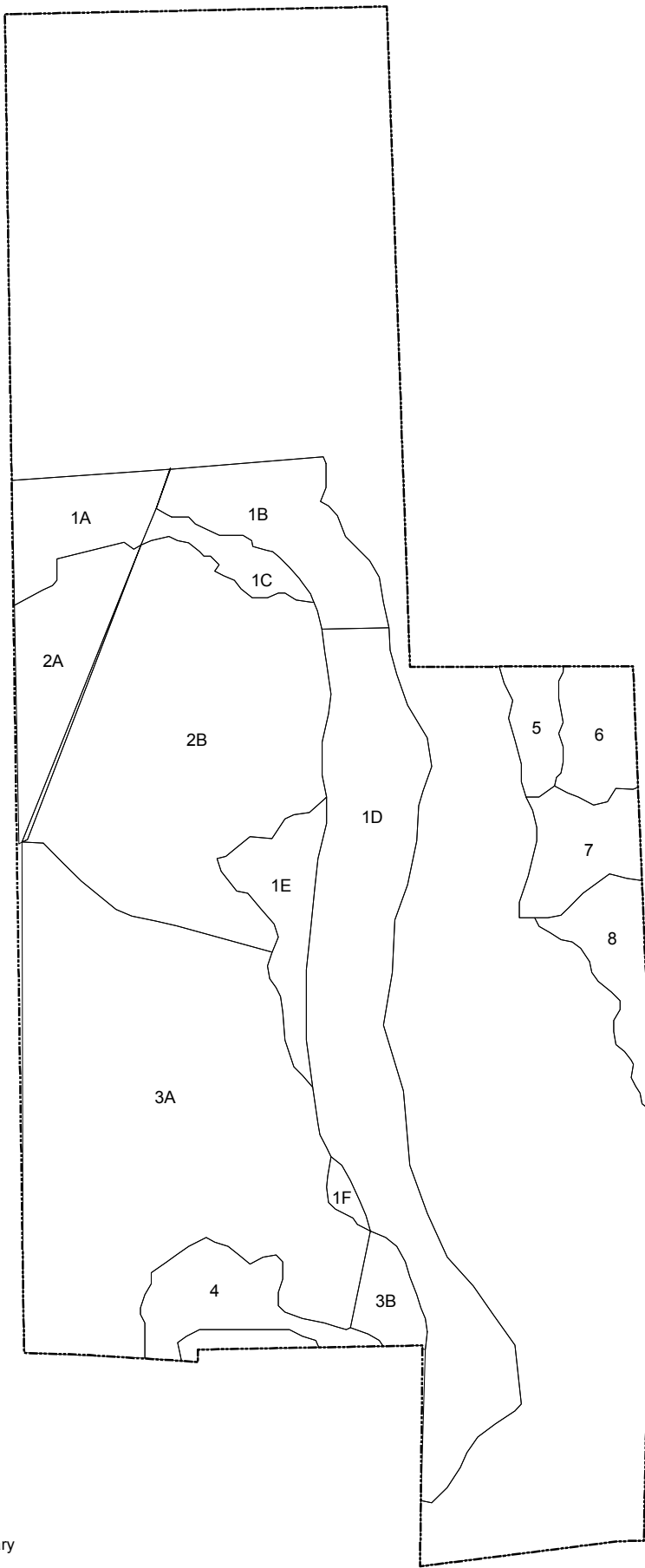
Hydrology of a depression marsh at the park may be impacted by a drainage ditch nearby. The marsh will be evaluated for potential restoration measures.

Soil and water resources will be conserved at Wingate Creek by using best management practices (BMP) to prevent soil erosion and negative impacts to water resources. Erosion related to feral hog damage is a problem. Feral hogs need to be controlled.

Prescribed Burning

The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within the unit's natural communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are implemented for each zone (see Burn Zones Map). The park burn plan is updated annually to meet current conditions. All prescribed burns are conducted with authorization from the Department of Agriculture and Consumer Services, Division of Forestry (DOF). Wildfire suppression activities will be coordinated between the Division and the DOF.

The burn plan will incorporate the seasonal timing as well as frequency of prescribed burns. Generally speaking, frequent late spring and early summer burns are effective in controlling hardwood encroachment in fire-adapted communities. Burns conducted during this period cause the release of nutrients from burned vegetation. After allowing for these factors, the timing of most prescribed burns should correspond with the natural fire season, which occurs between April and July. Unfortunately, regulations sometimes prevent burning during very dry periods of the year -- when, in



WINGATE CREEK
UNIT

BURN ZONE
MAP

the pre-Columbian era, much of the burning would have occurred. Some variation within the natural fire season is also important. Instead of burning during the same month each year, fires should be scheduled for different months within the natural fire season. However, it is important to burn frequently even if that means burning “out of season”.

Sandpines will be removed before burning in sandpine scrub, and mechanical treatment of saw palmetto will be used where necessary to reduce its density.

A smoke management concern at Wingate Creek is the necessity of keeping smoke off State Road 64, at the north boundary of the park. Careful planning is necessary when burning near the structures of the former Outward Bound Camp.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. To avoid duplication of efforts and conserve staff resources, the Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species. Specifically, data collected by the FWC and USFWS as part of their ongoing research and monitoring programs will be reviewed periodically to inform management of decisions that may have an impact on designated species at the park.

Special consideration will be made for the management of *Bonamia grandiflora* at Wingate Creek. The scrub in which it occurs will be burned to stimulate flowering and seed production as described in the U.S. Fish and Wildlife Recovery Plan (U.S. Fish and Wildlife Service 1996).

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species, as well. They may also harbor diseases or parasites that significantly affect non-resistant native species. Consequently, it is the strategy of the Division to remove exotic species from native natural communities.

At Wingate Creek, efforts must be directed for the removal of the invasive pest plant, *Imperata cylindrica*, cogongrass. A precise herbicide protocol using one percent Glypro (glyphosate) is currently being employed elsewhere in the district. It should be utilized here as well.

In addition to cogongrass, efforts must be directed for the removal of *Lygodium microphyllum*, and *L. japonicum* climbing ferns that forms dense mats, and which can ascend the trunks of small trees to smother the foliage.

Other exotic plants that need to be treated/removed are Brazilian pepper, *Schinus terebinthifolius*; Asian sword fern, *Nephrolepis multiflora*; torpedo grass, *Panicum repens*; bahia grass, *Paspalum notatum*; West Indian marshgrass, *Hymenachne amplexicaulis*; water hyacinth, *Echhornia crasipes*; lantana, *Lantana camara*; and rosary pea, *Abrus precatorius*.

The exotic animal of concern at both properties is the feral hog. Trapping is the preferred method of control. However, control measures will be difficult until this park is staffed.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

There are no known problem species at this park.

Management Measures for Cultural Resources

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, pre-testing of the project site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

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

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

structures.

In the past, there has been evidence that artifact collectors have disturbed/excavated at the Stanley Mound Site (MA00127). This site should be regularly inspected to look for signs of disturbance.

Research Needs

Natural Resources

Any research or other activity that involves the collection of plant or animal species on park property requires a collecting permit from the Department of Environmental Protection. Additional permits from the Florida Fish and Wildlife Conservation Commission, the Department of Agriculture and Consumer Services, or the U.S. Fish and Wildlife Service may also be required.

At Wingate Creek research will be directed at completing vascular plant and vertebrate surveys with particular emphasis on a gopher tortoise burrow census. Long-range research will focus on returning the improved pasture to some semblance of its original state.

Cultural Resources

Because of the initial findings of the site file search, management measures for cultural resources include drafting a proposal for a Level I archaeological survey. Any ground disturbing activities should be conducted in accordance with Division Policy and DHR criteria.

Resource Management Schedule

A priority schedule for conducting all management activities which is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 7. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available.

Land Management Review

In 1997 land management reviews were established under s. 259.036, Florida Statutes. The purpose of these reviews is to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund are being managed for the purposes for which they were acquired, and managed in accordance with the adopted land management plan. The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan.

A land management review of this park has not been conducted.

LAND USE COMPONENT

INTRODUCTION

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

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

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

EXTERNAL CONDITIONS

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

Existing Use of Adjacent Lands

Wingate Creek is surrounded by primarily agricultural land uses. The western boundary is adjacent to private pastureland. North of the property lies State Road 64 and a phosphate mine is located directly north of the road upstream of Wingate Creek. The holding ponds of this mine pose the greatest potential threat to the surface waters of this site. The eastern boundary is bordered by a citrus field and Wingate Road. In recent years, many ranch style homes have been built along Wingate Road. A 46-acre site in the northeast corner of the park boundary was recently transferred to the Division of Recreation and Parks from the Department of Juvenile Justice which used the area as an Outward Bound camp for the

development and operation of a Short-Term Elective Program (STEP) and a wilderness camp.

Within the vicinity of Wingate Creek, there are a variety of resource-based recreation opportunities on public lands. The park is located about 10 miles east of Lake Manatee State Park on State Road 64. Lake Manatee State Park offers swimming, boating, camping, picnicking, and shared-use trails. Just north of Lake Manatee is the Rye Wilderness Park whose amenities include a boat ramp, playground, bike trails, hiking trails, nature trails, tent camping, horseback trails, canoe launch, fishing, and picnic tables. Hiking and fishing is also available south of the park in the Myakka River - Flatford Swamp that is managed by the Southwest Florida Water Management District (SWFWMD). Hiking is also available at another nearby SWFWMD property, Lake Manatee Reserve - Coker Prairie Tract. Across State Road 64 to the north lies the 22,000-acre Duette Park. This county park has camping, picnicking, hunting, hiking, biking, horseback riding, and nature trails.

Planned Use of Adjacent Lands

It is anticipated that private lands around Wingate Creek will continue to be developed for residential uses as Florida's population continues to grow. The additional development may impact the unit by effecting water resources, and increasing vehicular traffic on adjacent roads. Additional agricultural land uses are also anticipated around the park, since the regional climate is well suited to citrus and row crop farming. Additional agricultural uses could result in a decrease in surface and ground water quality.

PROPERTY ANALYSIS

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

Recreation Resource Elements

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

Land Area

Wingate Creek is managed as a satellite of Lake Manatee State Park. The park is a biologically diverse 614-acre tract. Although this property has some improved

pasture, it also contains scrubby flatwoods, sandpine scrub, longleaf pine flatwoods, slash pine flatwoods, seepage slopes, as well as baygall and bottomland hardwood communities along Wingate Creek. This parcel serves as part of the larger Wingate Creek drainage system. This property is best suited to low-impact activities such as trails and nature study.

Water Area

The park encompasses portions of Wingate Creek and a small portion of the Myakka River in the upper Myakka River drainage basin. The surface water features within the park are quite narrow, with heavily vegetated shorelines. The narrow creek is not suitable for swimming or canoeing.

Significant Wildlife Habitat

The park is particularly valuable as a wildlife corridor along the upper stretches of the Myakka River.

Archaeological and Historical Features

The park contains two archaeological sites. One site, Stanley Mound, is a prehistoric burial mound of the Weeden Island archaeological complex. The other site, Wingate Creek I, is a prehistoric-aceramic campsite. A comprehensive archaeological survey is still needed.

Assessment of Use

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

Past Uses

Portions of the park have been used for farming and cattle grazing as evidenced by improved pastures and old fields. Some citrus farming also occurred on the property.

Recreational Uses

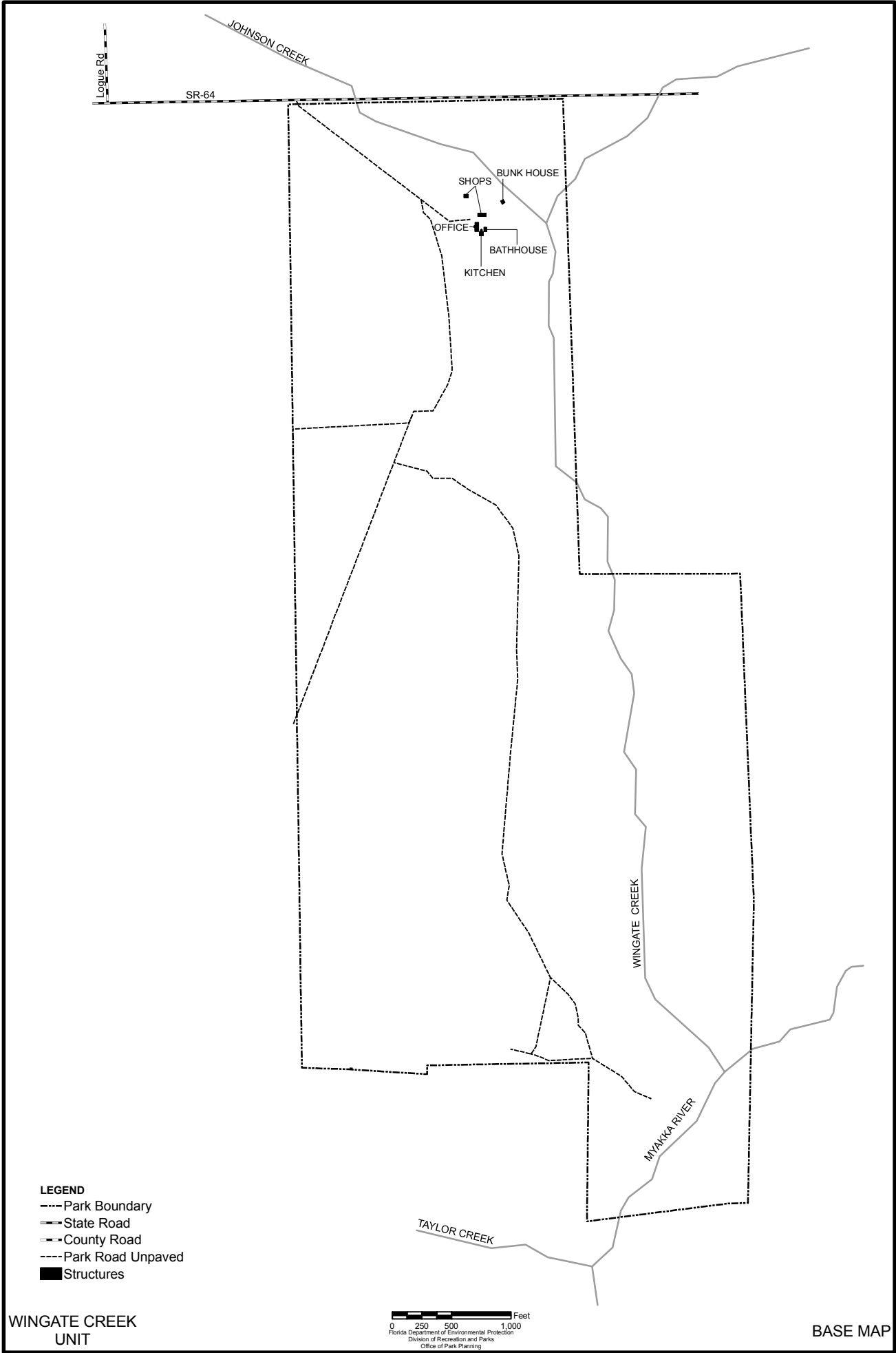
The park is currently open to the public for nature study and hiking.

Other Uses

In 2004, the Department of Juvenile Justice was released of their lease of a 46-acre parcel in the northeast corner of the property which they used as an Outward Bound wilderness camp. The lease has since been transferred back to the Department of Recreation and Parks for management as part of Wingate Creek. Most of the facilities remain and are now property of the state park.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally,



- LEGEND**
- Park Boundary
 - == State Road
 - - County Road
 - Park Road Unpaved
 - Structures



WINGATE CREEK
UNIT

BASE MAP

facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Wingate Creek, the sandhill, scrub (excluding the ruderal scrub), bottomland forest, baygall, blackwater stream, depression marsh and seepage slope communities have been designated as protected zones as delineated on the Conceptual Land Use Plan.

Existing Facilities

Recreation Facilities

Visitors to the park utilize a portion of the existing pasture for vehicular parking and hike on the existing unpaved park roads. With the addition of the former Outward Bound wilderness camp, the following facilities are now part of the state park:

Office building with reception area, conference room, six offices and two restrooms

Kitchen building

Bathhouse with laundry room

All-purpose building (24'x33')

Shop building

Equipment shelter

Large water system

Support Facilities

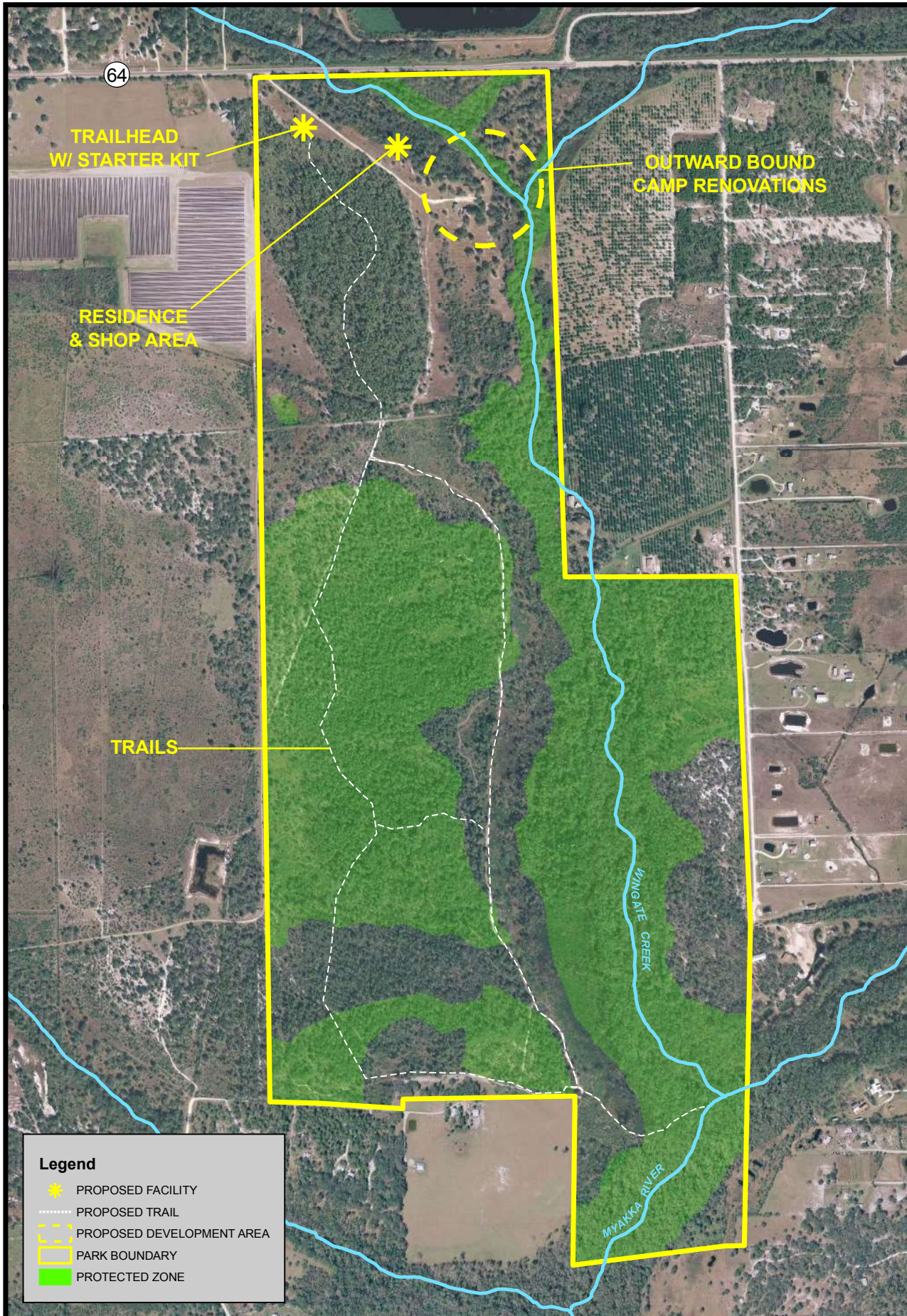
None. Wingate Creek relies on the support facilities at Lake Manatee State Park.

CONCEPTUAL LAND USE PLAN






The following narrative represents the current conceptual land use proposal for this park. As new information is provided regarding the environment of the park, cultural resources, recreational use, and as new land is acquired, the conceptual land use plan may be amended to address the new conditions (see Conceptual Land Use Plan). A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

During the development of the unit management plan, the Division assesses potential impacts of proposed uses on the resources of the property. Uses that could result in unacceptable impacts are not included in the conceptual land use plan. Potential impacts are more thoroughly identified and assessed through the site planning process once funding is available for the development project. At that stage, design elements, such as sewage disposal and stormwater management, and design constraints, such as designated species or cultural site locations, are more thoroughly investigated.

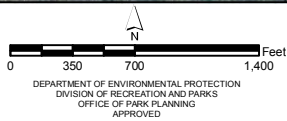
Advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize



Legend

-  PROPOSED FACILITY
-  PROPOSED TRAIL
-  PROPOSED DEVELOPMENT AREA
-  PARK BOUNDARY
-  PROTECTED ZONE

WINGATE CREEK



**CONCEPTUAL
LAND USE PLAN**

impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. Federal, state and local permit and regulatory requirements are met by the final design of the projects. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses and Proposed Facilities

The primary emphasis is placed on protection of the site's resources. Potential recreational uses should be primarily low-impact, and must be compatible with resource preservation objectives. The existing activities of hiking and nature study on the Wingate Creek property are appropriate and should continue. In addition, the following park development is recommended:

Recreation Facilities

Stabilize access road. The existing entrance road needs to be stabilized to provide reliable access to the existing and proposed facilities and trails.

Trailhead development. A small picnic shelter, small restroom, and stabilized parking are recommended to serve as a trailhead for the proposed trail system. An interpretive kiosk is also recommended to orient visitors to the site and provide information on the park's diverse natural resources and unique plant life.

Develop trail system. There is potential to establish a trail system for hikers. Some portions of the trail will utilize the existing unpaved service roads. The proposed trail should introduce visitors to the park's diverse natural communities that will be interpreted at the trailhead and through signage along the trail.

Following the removal of sand pine and the reintroduction of fire to the scrub community at Wingate Creek, the Division will consider recreational equestrian use of existing service roads and firebreaks west of the creek.

Outward Bound renovations. The facilities obtained through the transfer of the Outward Bound camp should be renovated to serve the needs of the state park. The facilities have the potential to support the recreation, training, education, research and support needs of the park. A public-private partnership is recommended to rehabilitate some or all of these facilities for use by recreational user groups, interns, volunteers, researchers, and/or AmeriCorps or other transient individuals performing work or conducting research for the park or Division. The Division could also use the buildings for support facilities (maintenance shop/equipment storage, staff residence or volunteer campsites) or for the instruction of prescribed burn courses, interpretive workshops and programming, CPR/First Aid courses, or other staff training sessions

and related functions. A group camp may also be developed in this area to provide organized groups with the opportunity to stay overnight.

The administration/education building is in good condition; the kitchen is in fair condition; and the restroom/showers are in fair condition. Funds to perform the necessary modifications to bring the facilities up to Division standards should be identified upon exploration of the above partnership.

Support Facilities

A shop building and equipment shelter was also acquired through the lease transfer with the Department of Juvenile Justice. The shop building is in disrepair and needs to be demolished. The equipment shelter can be used to serve the support needs of the state park unless this area is established as a public use area. A new equipment shelter and ranger residence is recommended to support future management efforts at the property.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 7. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

Recreation Facilities

Stabilized Park Road (500 ft)
Small Picnic Shelter
Small Restroom
Interpretive Signs (5)
Stabilized parking (10 cars)
Group Camp

Support Facilities

Ranger Residence
Equipment Shelter (3 bay)

Existing Use and Optimum Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 1). The optimum carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately

increase the unit's carrying capacity.

Table 1 Existing Use And Optimum Carrying Capacity

Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Shared Use Trail			40	80	40	80
Group Camp			30	30	30	30
TOTAL	0	0	70	110	70	110

Optimum Boundary

As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency. At this time, no lands are considered surplus to the needs of the park.

At this time, no lands are identified for addition to the Wingate Creek property. However, in the future, a corridor connecting the park to other conservation lands less than a mile to the south, via the Myakka River would benefit plant and animal populations in the park.

Addendum 1 – Acquisition History and Advisory Group Staff Report

Beker Acquisition History

Sequence of Acquisition

On October 26, 1988, the Board of Trustees of the Internal Improvement Trustee Fund (Trustees) obtained title to property that later became Beker. The Trustees acquired the property by donation. The donation is a result of a settlement and compromise made between Beker Phosphate Corporation and the Trustees. The Beker phosphate company had owed the State of Florida approximately \$2.5 million in severance taxes, filed Chapter 11 bankruptcy on October 21, 1985. In 1988, the State and the corporation entered into an agreement whereby the corporation conveyed the property of approximately \$2.5 million value by donation to the Trustees in exchange for the State compromising Beker's severance tax liability of about \$2.5 million.

Lease Agreement

On August 8, 1990, the Trustees conveyed management authority of Beker to the Department of Environmental Protection (DEP), Division of Recreation and Parks (Division) under Lease No. 3703.

Since the establishment of Beker in 1988, the Trustees have not acquired any new lands to add to Beker. However, the Division has released its leasehold interest in 45.85 acres of the park.

Title Interest

The Trustees hold fee simple title to Beker, and the Division manages the property as a park under Lease No. 3703 for a period of fifty (50) years and will expire on August 8, 2040.

Outstanding Reservations

The Division's Lease from the Trustees stipulates that all the property be utilized for public outdoor recreation and related purposes. Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan. The following is a listing of outstanding rights, reservations and encumbrances that apply to Beker.

Beker Acquisition History

Instrument:.....Special Warranty Deed
Instrument Holder:.....Chapter 11 Operating Trustees for Beker
Phosphate Corporation
Beginning Date:October 26, 1988
Ending Date:There is no specific ending date given.
Outstanding Rights, Uses, Etc.:The donation of the property by Chapter 11
Operating Trustee for Beker Phosphate
Corporation to the Trustees is subject to matters
set forth on Exhibit B of the Special Warranty
Deed.

Beker (Wingate Creek Unit) Advisory Group List

The Honorable Jane W. von Hahmann
Chairman
Manatee County Board of
Commissioners
P.O. Box 1000
Bradenton, Florida 34206

William C. Wolbert, Park Manager
Lake Manatee State Park
20007 State Road 64
Bradenton, Florida 34202

Gary Reeder, Chairman
Manatee River Soil and Water
Conservation District
1703 21st Street West
Palmetto, Florida 34221

Jeff McGrady, Regional Wildlife
Administrator
Southwest Region
Florida Fish and Wildlife Conservation
Commission
3900 Drane Field Road
Lakeland, Florida 33811

Duane Weis, Manager
Myakka River District
Florida Division of Forestry
4723 53rd Avenue, East
Bradenton, Florida 34203

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Southwest Florida Water Management
District
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Brooksville, Florida 34604

Steve Black, President
Manatee County Audubon Society
2746 Feiffer Circle
Sarasota, Florida 34235

Gayle Reynolds, Group Chair
Manatee-Sarasota Group
Sierra Club
6047 Rogers Avenue
Sarasota, Florida 34231

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Florida Native Plant Society - Serenoa
Chapter
1815 Palma Sola Boulevard
Bradenton, Florida 34209

Ralph Hancock, Chair
Suncoast Chapter
Florida Trail Association
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St. Petersburg, Florida 33704

Roberta Langford, President
Myakka River Riders
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Bradenton, Florida 34212

Mike Lyster, Council President
Southwest Florida Boy Scout Council
5931 Barclay Lane
Naples, Florida 34110

Dr. Gaylor Huenefeld
4950 Wingate Road
Myakka City, Florida 34251

Otto M. Bundy, Owner
Native Plant Nursery
4218 18th Avenue West
Bradenton, Florida 34205

Beker (Wingate Creek Unit) Advisory Group List

Beker (Wingate Creek Unit) Advisory Group List

The Advisory Group meeting to review the proposed land management plan for Beker was held in the visitor center of Gamble Plantation Historic State Park on August 27, 2008 at 9am. Chairman Jane W. von Hahmann (Manatee County) was represented by Candie Pederson. Gayle Reynolds (Sierra Club) was represented by Rosalie Shaffer. Roberta Langford (Myakka River Riders) was represented by Marcia Cox. Gary Reeder (Manatee River Soil and Water Conservation District), Jeff McGrady (Florida Fish and Wildlife Conservation Commission) and Mike Lyster (Southwest Florida Boy Scout Council) did not attend. All other appointed Advisory Group members were present. Also in attendance were Gina Sowders (SWFWMD) and Alicia Dozier and Michelle Bevelock (Myakka River Riders). Attending staff from the Division of Recreation and Parks included Valinda Subic, Terry Hingtgen, Curt Wolbert and Brian Burket.

Mr. Burket began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. He provided a brief overview of the Division's planning process and summarized public comments received during the previous evening's public workshop. He then asked each member of the advisory group to express his or her comments on the plan.

Summary of Advisory Group Comments

Will VanGelder (Southwest Florida Water Management District) commented that the name, South Fork, is the same used for the neighboring SWFWMD property and this may lead to confusion. He requested the opportunity to review designs for any planned creek crossings. He questioned whether it is necessary to provide a staff residence at South Fork due to concerns over an additional well and septic system in the area. Curt Wolbert responded that one of the properties identified as optimum boundary already contains a residence and shop building which could be used by park staff. Mr. VanGelder commented that the future plans for neighboring Moody Branch Mitigation Park may influence the management and public access of South Fork. He asked how signage for South Fork would be established. Mr. Wolbert replied that the Division would like to coordinate a shared agency entrance with both logos on the entrance sign. In regards to the proposed interpretive program for South Fork, Mr. VanGelder recommended including the neighboring conservation lands and highlighting restoration progress and future plans. He mentioned that some of the roads within the SWFWMD property have recently been improved. He commented that he would like to work with park staff to remove some of the internal fencing between the properties. He stressed the need to establish a property address in case of emergencies and fires. He provided a few suggestions to improve the maps within the management plan. On page 35 of the South Fork plan, he recommended expanding the discussion about how to "promote efficient resource management of the three adjacent public conservation lands." Terry Hingtgen responded that this topic is addressed in more detail in the Resource Management Component. Mr. VanGelder stated that the cost estimates for South Fork and Wingate Creek include much duplication that may

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not be necessary. For Wingate Creek, he voiced support for the removal of sand pine prior to the reintroduction of fire in the scrub community. He recommended that park staff coordinate with the Division of Forestry and suggested that the harvesting of sand pine could result in good money.

Marcia Cox (Myakka River Riders) asked if equestrian access to South Fork could be provided through Moody Branch Mitigation Park. Valinda Subic replied that the Division would like to increase cooperation among the agencies managing adjacent public conservation lands around South Fork to establish a seamless, coordinated management effort; therefore, equestrian use at South Fork would be dependent upon future coordination of recreational use. Ms. Cox requested that consideration be given to allowing equestrian use of the Wingate Creek property. She commented that there is potential to use some of the facilities of the former Outward Bound Camp to support equestrian use of the property. She asked about the removal of sand pine from Wingate Creek. Terry Hingtgen explained that it is necessary to remove the sand pine before initiating a prescribed burn where it is present on the property.

Steve Black (Manatee County Audubon Society) discussed a potential conservation connection between the Wingate Creek property and the Upper Myakka River Watershed (SWFWMD) to the south. Valinda Subic suggested that Manatee County may have interest in protecting this portion of the Myakka River corridor. Mr. Black expressed support for removing internal fencing between the neighboring conservation lands at South Fork.

Otto M. Bundy (South Fork adjacent landowner) remarked that the South Fork property is an important environmental area that will require long-term maintenance which will cost money. He stated that he is in favor of moving slowly with allowing recreational use on this property.

Dr. Huenefeld (Wingate Creek adjacent landowner) expressed his opposition to spending money at either South Fork or Wingate Creek during these difficult economic times especially when other state parks are available nearby. He also recommended allowing cattle on the Wingate Creek property to help reduce the overgrowth of vegetation.

Karen Fraley (Florida Native Plant Society – Serenoa Chapter) commented that education is the key to managing South Fork and Wingate Creek. She appreciated that park biologists recognize the importance of the habitats and natural communities at these properties. She expressed support for the removal of sand pine and prescribed fire at Wingate Creek. She questioned whether the resource management cost estimates are sufficient. She requested that the Division look into securing public access at the northwest side of South Fork through the adjacent orange grove. She recommended that all future trails be kept away from endemic plant species. She expressed some

Beker (Wingate Creek Unit) Advisory Group List

concern over the potential equestrian use of South Fork. She stated her support for the reduction of internal fence lines.

Duane Weis (Florida Division of Forestry) pointed out a discrepancy between two sections of the South Fork plan regarding timber management. He also offered some suggestions/corrections to the Timber Analysis for Wingate Creek. Terry Hingtgen stated he would make the necessary revisions. Mr. Weis requested a copy of the carrying capacity calculations. He agreed with staff comments that managing natural and cultural resources while providing recreational opportunities is a balancing act that often results in tough decisions.

Ralph Hancock (Florida Trail Association – Suncoast Chapter) indicated that the Florida Trail Association has some interest in helping with trail development at Wingate Creek and South Fork. He estimated that about three miles of hiking trail could be offered at Wingate Creek using existing roads and an open area along the creek. He suggested this could be a good Eagle Scout project. At South Fork, he stated he would like to see the internal fencing removed before developing a trail system.

Rosalie Shaffer (Manatee-Sarasota Group Sierra Club) commented that she is glad that these sensitive lands were acquired and are being managed. She stated that the protection of water quality and wetlands are very important. She recommended that it should be a priority to monitor surface water and groundwater and to work with the phosphate mines to protect water quality. She asked about the potential to plant cypress trees in the wetlands. Terry Hingtgen replied that there is no evidence that cypress ever existed on these properties. Ms. Shaffer recommended the restoration of the depression marsh at Wingate Creek. Mr. VanGelder suggested a partial ditch block would allow some restoration without flooding the neighbor's field.

Candie Pedersen (Manatee County) commented that there are some very sensitive plants on both properties, but if trails are routed appropriately, they could support horses, too. She suggested that the management plan further address the potential impact that phosphate mines can have on water quality and quantity within the park properties. She also expressed support for the restoration plans discussed in the management plan.

Summary of Additional Comments

Gina Sowders (Southwest Florida Water Management District) commented that the parking area within the SWFWMD property off State Road 62 has recently been improved and is capable of accommodating 15-20 cars. She also mentioned that the roads within the SWFWMD property are erosion prone and have been stabilized with large-scale rocks. She stated that the SWFWMD property is only available for hiking due to this erosion potential as well as the presence of endangered species and

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threatened habitats, the high value of the ecological resource, wet conditions from agricultural runoff and the availability of equestrian trails in the vicinity. She further stated that it is not likely that this property would be open to horses in the future. She requested to see the carrying capacity calculations. She recommended that hog trapping occur during the week as opposed to the weekend to minimize interaction with park visitors. She requested to be informed of any research that takes place at South Fork. She asked how park staff deals with security issues including the illegal use of ATVs on the properties. Curt Wolbert responded that he utilizes law enforcement, fencing and signage and commented that ATVs are no longer a problem. Ms. Sowders expressed her support for working with the Division to establish coordinated management of the neighboring properties including providing signage and a sign-in box at the gate.

Staff Recommendations

The staff recommends approval of the proposed management plan for Beker as presented with the following changes:

Equestrian use of the South Fork property. Manatee County has indicated that they plan to allow equestrian use of Moody Branch Mitigation Park once it is open to the public; currently projected for 2011. This mitigation park is located directly north of the South Fork property and shares a common boundary. The Division will work with Manatee County to coordinate recreational trail use between the two properties; however, horses will not be allowed on land directly south managed by SWFWMD. Trails within the SWFWMD property are available to hikers only. If additional lands are acquired, the Division will reevaluate public access to the state park property.

Equestrian use of the Wingate Creek property. Following the removal of sand pine and the reintroduction of fire to the scrub community at Wingate Creek, the Division will consider recreational equestrian use of existing service roads and firebreaks west of the creek.

Addendum 2--References Cited

Wingate Creek References Cited

- Becker, C.R. 1997. Wingate Creek State Preserve's Vascular Plant Reference Collection. District 4 Annual Research Report, WCSP-1-D, Florida Park Service, Osprey FL.
- Bureau of Economic and Business Research (BEBR), University of Florida. 2003. Florida Statistical Abstract 2003. Gainesville, Florida.
- Florida Department of Environmental Protection. 2004. Florida State Park System Economic Impact Assessment for Fiscal Year 2003/2004. Tallahassee, Florida.
- Florida Natural Areas Inventory. 1990. *Guide to the Natural Communities of Florida*. Florida Natural Areas Inventory, Tallahassee, FL.
- Florida Natural Areas Inventory. 2001. *Florida Conservation Lands*. 316 pp
- Manatee County. 1999. 2020 Manatee County Comprehensive Plan. Manatee County, Florida.
- Myers, R.L., and J.J. Ewel. 1990. *Ecosystems of Florida*. University of Central Florida Press. Orlando. 765 pp.
- U. S. Department of Commerce, Bureau of the Census. 2000. U. S. Census 2000.
- U.S.D.A.- SCS. 1983. *Soil Survey of Manatee County, Florida*. In cooperation with the University of Florida Institute of Food and Agricultural Sciences, Agricultural Experiment Stations and Soil Science Department, and the Manatee County Board of County Commissioners. 159 pp.
- U.S. Fish and Wildlife Service. 1996. *Recovery Plan for Nineteen Central Florida Scrub and High Pineland Plants* (revised). U.S. Fish and Wildlife Service, Atlanta, GA. 134 pp.
- Web page
Wunderlin, R.P., and B. F. Hansen. 2000. *Atlas of Florida Vascular Plants* (<http://www.plantatlas.usf.edu/>). [S. M. Landry and K. N. Campbell (application development), Florida Center for Community Design and Research.] Institute for Systematic Botany, University of South Florida, Tampa.
- Wunderlin, R.P. 1982. *Guide to the Vascular Plants of Central Florida*. University Presses of Florida, Gainesville. 472 pp.

Wingate Creek References Cited

Addendum 3 – Soil Descriptions

Wingate Creek Soil Descriptions

(3) BRADEN FINE SAND - This is a nearly level to very gently sloping, somewhat poorly drained soil on stream terraces that are well above normal overflow. Slopes are smooth and are 0 to 3 percent. They generally grade toward the stream.

Typically, the surface layer is very dark gray fine sand about 4 inches thick. The subsurface layer, to a depth of 28 inches, is grayish brown, brown, dark brown, light yellowish brown, and yellow fine sand. The subsoil, to a depth of 44 inches, is yellowish brown fine sandy loam. The substratum to a depth of 70 inches or more is light gray, gray, and light brownish gray fine sand and sand.

Included with this soil in mapping are areas of soils on similar landscapes; however, those soils are sandy to a depth of 80 inches or more. Also included are a few areas where the subsoil is at a depth of less than 20 inches and some places where a brownish organic stained layer is in the surface layer.

In most years, the water table is at a depth of 30 to 40 inches for 1 to 3 months out of the year. It rises above a depth of 30 inches briefly during periods of heavy rainfall. The soil is flooded rarely for brief periods following abnormally high rainfall. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is medium in the surface layer and subsoil and low in the subsurface layer and substratum.

The natural vegetation consists of open forest of slash pine and live oak and a ground cover of saw palmetto, creeping bluestem, panicum, and pineland threeawn.

(7) CANOVA, ANCLOTE, AND OKEELANTA SOILS - This map unit consists of nearly level, very poorly drained mineral and organic soils in freshwater swamps and in broad, poorly defined drainageways. It is about 40 percent Canova soils, 25 percent Anclote soils, 20 percent Okeelanta soils, and 15 percent other soils, but the proportion varies in each mapped area. Individual areas of each soil are large enough to map separately, but because of present and predicted use they were not separated in mapping. In a typical mapped area, Okeelanta soils are in the lowest places; Anclote soils in the highest places, generally near the edges; and Canova soils in an intermediate position. In the poorly defined drainageways, the Anclote soils and to a lesser extent the Canova soils are adjacent to the streams. Slopes are less than 2 percent.

Typically, the surface layer of Canova soils is dark reddish brown muck 8 inches thick and dark gray fine sand 9 inches thick. The subsurface layer is gray fine sand 7 inches thick. The subsoil is gray sandy clay loam about 39 inches thick. The substratum is gray fine sandy loam.

In most years, Canova soils are ponded, or the water table is at or near the surface for 9 months or more out of the year. Permeability is rapid in the surface and subsurface

Wingate Creek Soil Descriptions

layers and moderate in the subsoil. The available water capacity is high in the surface layer, very low in the subsurface layer, and medium in the subsoil.

Typically, the surface layer of Anclote soils is black fine sand 16 inches thick. Below that, to a depth of 80 inches or more, there is grayish brown, gray, and light gray fine sand.

In most years, Anclote soils are ponded, or the water table is at or near the surface for 9 months or more out of the year. Permeability is rapid throughout. The available water capacity is medium in the surface layer and low in the other layers.

Typically, the surface layer of Okeelanta soils is black muck 20 inches thick. Below the surface layer, there is black sand 7 inches thick, grayish brown sand 4 inches thick, and light brownish gray sand 29 inches thick.

In most years, Okeelanta soils are ponded, or the water table is at or near the surface for 9 months or more out of the year. Permeability is rapid throughout. The available water capacity is very high in the surface layer and low in the other layers.

The most extensive minor soils are the Chobee, Floridana, and Manatee soils.

The soils making up this map unit are mainly in natural vegetation consisting of bay, gum, ash, swamp maple, water oak, scattered cypress, and some slash pine. In many areas they support a thick undergrowth of vines, briars, and water-loving plants.

(12) CASSIA FINE SAND, MODERATELY WELL DRAINED - This is a moderately well drained, nearly level soil on low ridges and knolls in the uplands. Areas are irregular in shape and range in size from about 5 to 100 acres. Slopes are convex and range from 0 to 2 percent.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. The subsurface layer is light gray to white fine sand. It extends to a depth of 29 inches. The subsoil is dark brown fine sand. It extends to a depth of 41 inches. Below the subsoil there is a layer of pale brown to white fine sand.

Included with this soil in mapping are areas of Pomello soils. Also included are areas of soils that are similar to the Cassia soils except that the subsoil is below a depth of 50 inches.

The water table is at a depth of 40 to 60 inches for 1 to 4 months out of the year but rises to within 40 inches of the surface for less than 2 weeks during very wet seasons. It recedes to a depth of more than 60 inches during very dry periods. Permeability is very rapid in the surface and subsurface layers and in the substratum and moderately rapid

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in the subsoil. The available water capacity is medium in the subsoil and very low in the other layers.

The native vegetation consists of scrub live oak and scrub oak, saw palmetto, sand pine, prickly pear, rosemary, and pineland threeawn.

(18) DELRAY-POMONA COMPLEX - This complex consists of soils in nearly level, broad grassy sloughs where there are poorly defined stream channels in some places. Some areas are located around the larger ponds. The soils are in the eastern part of the county, generally above an elevation of about 40 feet. The soils are so intermixed that they could not be mapped separately at the scale selected for mapping. Slopes are less than 2 percent.

Delray soils make up about 50 percent of this complex, Pomona soils make up 40 percent, and scattered areas of Myakka, Wauchula, Waveland, and Palmetto soils make up 10 percent. Typically, the Delray soils are at slightly lower elevations than the Pomona soils.

Typically, the surface layer of Delray soils is black fine sand about 15 inches thick. The subsurface layer is grayish brown and light brownish gray fine sand 40 inches thick. The subsoil is grayish brown and greenish gray fine sandy loam and sandy clay loam to a depth of 80 inches or more.

In most years, if Delray soils are not drained, the water table is at or near the surface for 6 months or more out of the year. The available water capacity is high in the surface layer, medium in the subsoil, and low in the subsurface layer. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. Natural fertility is medium.

Typically, the surface layer of Pomona soils is black fine sand about 6 inches thick. The subsurface layer is gray and light gray fine sand 16 inches thick. The subsoil in the upper part is dark reddish brown and dark brown fine sand 14 inches thick. Below that, there is pale brown fine sand 15 inches thick. The subsoil in the lower part is olive gray fine sandy loam 9 inches thick. The substratum is gray loamy fine sand to a depth of 80 inches.

In most years, if Pomona soils are not drained, the water table is at or near the soil surface for 5 months or more out of the year. The available water capacity is low in the surface layer, medium in both parts of the subsoil, and very low in the other layers. Permeability is moderately slow in the lower part of the subsoil, moderate in the upper part of the subsoil, and rapid in the other layers. Natural fertility is low.

The natural vegetation in areas of this complex consists of scattered pine trees, clumps

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of saw palmetto, gallberry, and a stand of grasses such as bluestem, lopsided indiagrass, maidencane, and pineland threeawn.

(19) DUETTE FINE SAND, 0 TO 5 PERCENT SLOPES - This is a moderately well drained soil on low ridges and knolls in flatwoods. Slopes are smooth.

Typically, the surface layer is very dark gray fine sand about 4 inches thick. The subsurface layer, to a depth of 58 inches, is fine sand. In the upper 8 inches it is light gray, and below that it is white. The subsoil is fine sand that is coated with organic materials to a depth of 80 inches or more. To a depth of 64 inches, it is dark brown, and below that, it is black.

Included with this soil in mapping are small areas of Cassia and Pomello soils.

In most years, if this Duette soil is not drained, the water table is at a depth of 48 to 72 inches for 1 to 4 months during the wet season. It is below a depth of 72 inches for the rest of the year. The available water capacity is very low, except in the subsoil where it is medium. Natural fertility is low. Permeability is very rapid in the surface layer and moderately rapid in the subsoil.

The natural vegetation consists of dwarf and scrub oak, saw palmetto, sand pine, prickly pear, and pineland threeawn.

(24) FELDA-WABASSO ASSOCIATION, FREQUENTLY FLOODED - This association consists of nearly level, poorly drained Felda soils and Wabasso soils and soils that are closely similar to them. The soils are in a regular and repeating pattern on the flood plains along the larger streams in the county. The Wabasso soils are on low ridges. The Felda soils are at slightly lower elevations. Slopes are 0 to 2 percent. Areas are generally narrow and long and follow streambeds and flood plains. Some areas are broad and range in width to almost 2 miles. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit.

The composition of this map unit is more variable than that of most other map units in the county; nevertheless, valid interpretations for the expected uses of the soils can still be made.

Felda soils and those that are closely similar to them make up about 60 percent of the association, wabasso soils and those that are closely similar to them make up 25 percent, and minor soils make up 15 percent.

Typically, the surface layer of Felda soils is very dark gray fine sand 3 inches thick. The subsurface layer is grayish brown fine sand 21 inches thick. The subsoil is between

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depths of 24 and 64 inches. In the upper part it is grayish brown fine sandy loam 3 inches thick. In the middle part it is gray sandy clay loam 6 inches thick. In the lower part it is light gray sandy clay loam 29 inches thick. The substratum to a depth of 80 inches or more is light gray sandy loam. In some of the closely similar soils the subsoil is nearer the surface and in others the surface layer is thicker than in Felda soils.

In most years, if Felda soils are not drained, the water table is within a depth of 10 inches for 2 to 4 months out of the year and at a depth of 10 to 40 inches for about 6 months out of the year. It recedes to below a depth of 70 inches in dry seasons. Stream overflow frequently floods these soils. Permeability is rapid in the surface and subsurface layers and moderate to moderately rapid in the subsoil. The available water capacity is very low in the surface and subsurface layers and medium in the subsoil.

Typically, Wabasso soils have a surface layer of very dark gray fine sand 7 inches thick. The subsurface layer is gray and light gray fine sand 14 inches thick. The subsoil in the upper part is black, dark reddish brown, and brown fine sand 10 inches thick. In the lower part it is grayish brown sandy loam and gray sandy clay loam 28 inches thick. A 6-inch layer of pale brown fine sand separates the two parts. The substratum to a depth of 80 inches or more is gray sand mixed with shell fragments. The closely similar soils are like Wabasso soils except that they do not have the lower part of the subsoil.

In most years, if Wabasso soils are not drained, the water table is at a depth of 10 to 40 inches for more than 6 months out of the year and within a depth of 10 inches for less than 60 days in wet seasons. Stream overflow frequently floods these soils.

Permeability is rapid in the surface and subsurface layers, in the layer between the two parts of the subsoil, and in the substratum. It is moderate to moderately rapid in the upper part of the subsoil and slow to very slow in the lower part. The available water capacity is very low in the surface and subsurface layers and in the layer between the two parts of the subsoil. It is medium in the upper and lower parts of the subsoil.

The most extensive soils included in the association are the Anclote, Floridana, Bradenton, and Chobee soils.

The natural vegetation consists mostly of gum, oak, maple, hickory, bay, and magnolia in the lower areas and scattered pine and saw palmetto on the low ridges. In a few places it consists of water-tolerant grasses. Almost all areas of this unit are in natural vegetation.

(26) FLORIDANA-IMMOKALEE-OKEELANTA ASSOCIATION - This map unit consists of nearly level, very poorly drained Floridana soils, poorly drained Immokalee soils, and very poorly drained Okeelanta soils. It is about 35 percent Floridana soils, 30 percent Immokalee soils, 20 percent Okeelanta soils, and 15 percent minor soils. These

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soils are in small to large shallow grassy ponds mainly in the central and eastern parts of the county. Generally, Okeelanta soils are in the lowest places near in the center of the ponds; Floridana soils are in an intermediate position; and Immokalee soils are along the edges of ponds. Slopes are less than 2 percent. Areas of the individual soils are large enough to map separately, but in considering the present and predicted use they were mapped as one unit. Most of the mapped areas are circular or oblong.

The composition of this map unit is more variable than that of most other map units in the county; nevertheless, valid interpretations for expected uses of the soil can still be made.

Typically, the surface layer of Floridana soils is black and very dark gray fine sand about 19 inches thick. The subsurface layer is gray fine sand about 17 inches thick. The subsoil is dark gray sandy clay loam 17 inches thick. The substratum is light gray fine sand that extends to a depth of 80 inches or more.

In most years, in undrained areas Floridana soils are ponded for 6 to 9 months or more out of the year. The water table is at a depth within 40 inches for the rest of the year except in extended dry periods. Permeability is rapid in the surface layer, subsurface layer, and substratum; it is slow in the subsoil. The available water capacity is medium in the surface layer and subsoil and low in the other layers.

Typically, the surface layer of Immokalee soils is black fine sand about 5 inches thick. The subsurface layer is dark gray, gray, and light gray fine sand 29 inches thick. The subsoil is dark reddish brown and dark brown fine sand 9 inches thick. The substratum to a depth of 80 inches or more is grayish brown fine sand.

Immokalee soils are ponded for 6 months or more in most years. The water table is at a depth within 40 inches for much of the remainder of the year. Permeability is moderate in the subsoil and rapid in all other layers. The available water capacity is medium in the subsoil, low in the surface layer, and very low in the other layers.

Typically, Okeelanta soils in the uppermost 20 inches are black muck. Below that, to a depth of 54 inches or more, there is black and light brownish gray sand.

In most years, in undrained areas Okeelanta soils are ponded for 9 months or more, and the water table is near the surface for the rest of the time. Permeability is rapid throughout the soil. The available water capacity is very high in the organic layer and low in the sandy layers.

Included with the soils in this map unit are areas of Anclote, Chobee, Delray, Manatee, Myakka, and Pomona soils.

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The natural vegetation in the lowest places is sawgrass, maidencane, willow, and, in places, a few cypress. In other areas, the vegetation is maidencane, St. Johns wort, various bluestems, smooth cordgrass, and sedges.

(30) MYAKKA FINE SAND, 0 TO 2 PERCENT SLOPES - This is a nearly level, poorly drained soil in areas of broad flatwoods. Slopes are smooth to concave.

Typically, the surface layer is dark gray fine sand about 5 inches thick. The subsurface layer is fine sand. In the upper 8 inches it is gray, and below that, it is light gray. The subsoil is fine sand 22 inches thick. In the upper 6 inches it is black, in the next 8 inches it is dark reddish brown, and in the lower 8 inches it is dark brown. Below the subsoil there is brown fine sand to a depth of 61 inches, and below that, there is very dark brown fine sand to a depth of 75 inches or more.

Included with this soil in mapping are small areas of EauGallie, Ona, Pomona, St. Johns, Wabasso, Wauchula, and Waveland soils. In most years, the water table is at a depth of less than 10 inches for 1 to 4 months out of the year. It recedes to a depth of more than 40 inches in very dry seasons. The available water capacity is medium in the subsoil and very low in the other layers. Permeability is rapid in the surface and subsurface layers and substratum and moderate or moderately rapid in the subsoil. Internal drainage is slow, and runoff is slow. Natural fertility is low.

The natural vegetation consists of longleaf and slash pines and an undergrowth of saw palmetto, running oak, gallberry, waxmyrtle, huckleberry, pineland threeawn, and scattered fetter bushes.

(35) ONA FINE SAND, ORSTEIN SUBSTRATUM - This is a nearly level, poorly drained soil that is in areas of broad flatwoods. Slopes are smooth and range from 0 to 2 percent.

Typically, the surface layer is black fine sand about 5 inches thick. The subsoil in the upper part is very dark brown and dark reddish brown fine sand 11 inches thick. The next layer is brown and light brownish gray fine sand 36 inches thick. The subsoil in the lower part is black fine sand that is weakly cemented to a depth of 68 inches and black friable fine sand to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Myakka, Pompano, St. Johns, Waveland, and Wauchula soils.

In most years, a water table is at a depth of 10 to 40 inches for periods of 4 to 6 months out of the year. It rises to a depth of less than 10 inches for 1-2 months out of the year. It may recede to a depth of more than 40 inches in very dry seasons. Permeability is moderated in the upper part of the subsoil, slow or very slow in the lower part of the

Wingate Creek Soil Descriptions

subsoil, and rapid in the other layers. The available water capacity is medium in the surface layer and in the subsoil and low in the layer between the two parts of subsoil.

The native vegetation consists of pine trees and an understory of saw palmetto, running oak, pineland threeawn, and gallberry.

(42) POMELLO FINE SAND, 0 TO 2 PERCENT SLOPES - This is a nearly level, moderately well drained soil on low ridges in flatwoods. Individual areas are irregularly shaped. Slopes are smooth concave.

Typically, the surface layer is gray fine sand 2 inches thick. The subsurface layer is white fine sand to a depth of 46 inches. The subsoil is fine sand. In the upper 5 inches it is black. Below that, to a depth of 80 inches or more it is dark reddish brown.

Included with this soil in mapping are similar soils that have a subsoil below a depth of 50 inches. Also included are small areas of Cassia, Duette, and Zolfo soils and Pomello soils on 2 to 5 percent slopes.

In most years, the water table is at a depth of 24 to 40 inches for 1 to 4 months out of the year and at a depth of 40 to 60 inches for 8 months out of the year. The available water capacity is very low except in the subsoil, where it is medium. Natural fertility is low. Permeability is very rapid in the surface and subsurface layers and moderately rapid in the subsoil.

The natural vegetation consists of dwarf and sand live oaks, saw palmetto, longleaf and slash pines, pineland threeawn, running oak, creeping bluestem, broomsedge bluestem, splitbeard bluestem, lopsided indiagrass, switchgrass, panicum, and paspalum. A few areas are used for citrus, vegetables, and improved pasture grasses where the areas are near other soils used for these crops.

(43) ST. JOHNS FINE SAND, 2 TO 5 PERCENT SLOPES - This is a gently sloping, poorly drained soil on seepy side slopes adjacent to drainageways. Most areas of this soil are long and narrow.

Typically, the surface layer is black fine sand to a depth of 7 inches and very dark gray fine sand to a depth of 13 inches. The subsurface layer, to a depth of 28 inches, is light gray fine sand. The subsoil is black to very dark gray fine sand about 32 inches thick. The sand grains in the subsoil are well coated with organic matter. The next layer is dark gray fine sand about 8 inches thick, and the layer below that, to a depth of 80 inches or more, is black fine sand.

Included with this soil in mapping are small but numerous areas of very poorly drained sandy soils in seeps. also included area areas of a similar soil that has a subsoil below a

Wingate Creek Soil Descriptions

depth of 30 inches, areas of other similar soils that are cemented in the subsoil, and a few areas where slopes are greater than 5 percent.

In most years, if this soil is not drained, the water table is within a depth of 15 inches for 2 to 6 months out of the year and at a depth of 15 to 30 inches during periods of lower rainfall. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Natural fertility is low, and the content of organic matter is moderate. The available water capacity is medium in the subsoil and low in the surface and subsurface layers.

The natural vegetation consists of slash pine, loblolly bay, saw palmetto, and gallberry. The native grasses include chalky bluestem, cinnamon fern, and pineland threeawn.

(45) TAVARES FINE SAND, 0 TO 5 PERCENT SLOPES - This is a moderately well drained soil on ridges and knolls. Slopes are smooth to convex.

The soil is fine sand to a depth of 80 inches or more. Typically, the surface layer is very dark gray to a depth of about 6 inches. The underlying material is yellowish brown and light yellowish brown to a depth of 56 inches, very pale brown to a depth of 79 inches, and white to a depth of 80 inches or more.

Included with this soil in mapping are small areas of Adamsville Variant, Orlando, Orsino, and Zolfo soils. Also included are small areas of Tavares soils on 5 to 8 percent slopes.

In most years, if this soil is not drained, a water table is at a depth of 40 to 60 inches for 6 to 12 months and at a depth of 60 inches or more during very dry periods. The available water capacity is very low. Permeability is very rapid. Natural fertility is low.

The natural vegetation consists of slash and longleaf pine, blackjack, turkey, and post oak, and an understory of pineland threeawn, creeping bluestem, lopsided indiagrass, hairy panicum, low panicums, purple lovegrass, and broomsedge bluestem.

(52) WAVELAND FINE SAND - This is a poorly drained, nearly level soil in broad areas of flatwoods. Slopes are smooth to concave and range from 0 to 2 percent.

Typically, the surface layer is fine sand about 8 inches thick. In the upper 5 inches it is black, and below that, it is dark gray. The subsurface layer is 24 inches thick. In the uppermost 13 inches it is grayish brown sand, and below that, it is light gray fine sand. The subsoil, to a depth of 51 inches, is black sand. The substratum to a depth of 80 inches or more is sand that has pockets of sandy loam. In the upper 6 inches it is dark grayish brown, in the next 9 inches it is grayish brown, and in the lower part it is olive.

Wingate Creek Soil Descriptions

Included with this soil in mapping are small areas of Myakka, Ona, and Pomona soils.

In most years, the water table is within a depth of 10 inches for 1 to 4 months out of the year and within a depth of 40 inches for 6 months or more out of the year. It is above the subsoil early in the summer rainy season and after periods of heavy rainfall in other seasons. The water table recedes to a depth of more than 40 inches in extended dry seasons. The available water capacity is low in the surface layer, very low in the subsurface layer, medium in the subsoil, and low in the substratum. Permeability is rapid in the surface and subsurface layers, very slow to slow in the subsoil, and moderate to rapid in the substratum. Natural fertility and organic matter content are low.

Large areas are cleared and used for improved pasture. The native vegetation consists of South Florida slash pine and an understory of saw palmetto, waxmyrtle, gallberry, huckleberry, fetterbush, lopsided indiagrass, creeping bluestem, chalky bluestem, Florida threeawn, and pineland threeawn.

Addendum 4 – Plant And Animal List

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
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FERNS

Mosquito fern	<i>Azolla caroliniana</i>	
Swamp fern	<i>Blechnum serrulatum</i>	
Strap fern	<i>Campyloneurum phyllitidis</i>	
Florida shield fern	<i>Dryopteris ludoviciana</i>	
Foxtail clubmoss	<i>Lycopodiella alopecuroides</i>	
Nodding clubmoss	<i>Lycopodiella cernua</i>	27
Japanese climbing fern *	<i>Lygodium japonicum</i>	
Old World climbing fern *	<i>Lygodium microphyllum</i>	
Sword fern	<i>Nephrolepis exaltata</i>	
Asian sword fern *	<i>Nephrolepis multiflora</i>	
Cinnamon fern	<i>Osmunda cinnamomea</i>	27,29
Royal fern	<i>Osmunda regalis</i> var. <i>spectabilis</i>	27,29
Golden polypody	<i>Phlebodium aureum</i>	
Resurrection fern	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>	
Whisk fern	<i>Ptilotum nudum</i>	
Bracken fern	<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i>	
Sand spikemoss	<i>Selaginella arenicola</i>	
Downy maiden fern *	<i>Thelypteris dentata</i>	
Willdenow's maiden fern	<i>Thelypteris interrupta</i>	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Shoestring fern	<i>Vittaria lineata</i>	
Netted chain fern	<i>Woodwardia areolata</i>	
Virginia chain fern	<i>Woodwardia virginica</i>	

GYMNOSPERMS AND CYCADS

Eastern red cedar	<i>Juniperus virginiana</i>	
Sand pine	<i>Pinus clausa</i>	
South Florida slash pine	<i>Pinus elliottii</i>	
Longleaf pine	<i>Pinus palustris</i>	

MONOCOTS

Yellow colic-root	<i>Aletris lutea</i>	
Blue maidencane	<i>Amphicarpum muhlenbergianum</i>	
Shortspike bluestem	<i>Andropogon brachystachyus</i>	
Bushy bluestem	<i>Andropogon glomeratus</i> var. <i>glaucopsis</i>	
Bushy bluestem	<i>Andropogon glomeratus</i> var. <i>pumilus</i>	
Splitbeard bluestem	<i>Andropogon ternarius</i>	

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Broomsedge	<i>Andropogon virginicus</i> var. <i>virginicus</i>	
Broomsedge	<i>Andropogon virginicus</i> var. <i>decipiens</i>	
Little chalky bluestem	<i>Andropogon virginicus</i> var. <i>glaucus</i>	
Jack-in-the pulpit.....	<i>Arisaema triphyllum</i>	
Big threeawn;		
Piedmont threeawn.....	<i>Aristida condensata</i>	
Corkscrew threeawn.....	<i>Aristida gyrans</i>	
Arrowfeather threeawn.....	<i>Aristida purpurascens</i> var. <i>virgata</i>	
Bottlebrush threeawn	<i>Aristida spiciformis</i>	
Wiregrass.....	<i>Aristida stricta</i> var. <i>beyrichiana</i>	
Tropical carpetgrass.....	<i>Axonopus compressus</i>	
Common carpetgrass.....	<i>Axonopus fissifolius</i>	
Big carpetgrass	<i>Axonopus furcatus</i>	
Watergrass *	<i>Bulbostylis barbata</i>	
Capillary hair sedge.....	<i>Bulbostylis ciliatifolia</i>	
Sandy-field hair sedge.....	<i>Bulbostylis stenophylla</i>	
Ware's hair sedge.....	<i>Bulbostylis warei</i>	
Florida scrub roseling.....	<i>Callisia ornata</i>	
Many-flowered grass-pink	<i>Calopogon multiflorus</i>	8
Yellow canna.....	<i>Canna flaccida</i>	
Long's sedge	<i>Carex longii</i>	
Hop sedge	<i>Carex lupuliformis</i>	
Coast sandspur	<i>Cenchrus spinifex</i>	
Slender woodoats.....	<i>Chasmanthium laxum</i>	
Day-flower	<i>Commelina diffusa</i>	
Erect dayflower	<i>Commelina erecta</i>	
Gambian dayflower *	<i>Commelina gambiae</i>	
Bermudagrass *	<i>Cynodon dactylon</i>	
Baldwin's flatsedge	<i>Cyperus croceus</i>	
Sheathed flat sedge	<i>Cyperus haspan</i>	
Rusty flatsedge	<i>Cyperus odoratus</i>	
Many-spike flat sedge	<i>Cyperus polystachyos</i>	
Pine barren flat sedge	<i>Cyperus retrorsus</i>	
Tropical flatsedge.....	<i>Cyperus surinamensis</i>	
Durban crowfoot *	<i>Dactyloctenium aegyptium</i>	
Variable witchgrass.....	<i>Dichanthelium commutatum</i>	
Cypress witchgrass	<i>Dichanthelium dichotomum</i>	
Witchgrass.....	<i>Dichanthelium ensifolium</i> var. <i>breve</i>	
Cypress witchgrass	<i>Dichanthelium ensifolium</i> var. <i>unciphyllum</i>	
Hemlock witchgrass	<i>Dichanthelium portoricense</i>	
Rough-hair witchgrass	<i>Dichanthelium strigosum</i> var. <i>glabrescens</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Southern crab grass.....	<i>Digitaria ciliaris</i>	
India crabgrass *	<i>Digitaria longiflora</i>	
Water hyacinth *	<i>Eichhornia crassipes</i>	
Road grass	<i>Eleocharis baldwinii</i>	
Viviparous spikerush	<i>Eleocharis vivipara</i>	
Butterfly orchid	<i>Encyclia tampensis</i>	15,29
Thalia lovegrass *	<i>Eragrostis atrovirens</i>	
Coastal love grass.....	<i>Eragrostis virginica</i>	
Flattened pipewort.....	<i>Eriocaulon compressum</i>	
Giant pipewort	<i>Eriocaulon decangulare</i>	
Wild coco.....	<i>Eulophia alta</i>	
Pinewoods fingergrass	<i>Eustachys petraea</i>	
Carolina fimbry	<i>Fimbristylis dichotoma</i>	
Hairy fimbry	<i>Fimbristylis puberula</i>	
Umbrella grass.....	<i>Fuirena scirpoidea</i>	
Shortleaf skeletongrass.....	<i>Gymnopogon brevifolius</i>	
Tooth-petal false rein-orchid	<i>Habenaria floribunda</i>	
Water-spider false rein-orchid	<i>Habenaria repens</i>	
West Indian marshgrass *	<i>Hymenachne amplexicaulis</i>	
Florida spider-lily	<i>Hymenocallis tridentata</i>	
Yellow star grass	<i>Hypoxis curtissii</i>	
Yellow star grass	<i>Hypoxis juncea</i>	
Cogongrass *	<i>Imperata cylindrica</i>	
Prairie iris	<i>Iris hexagona</i>	
Soft rush.....	<i>Juncus effusus</i> subsp. <i>solutus</i>	
Grass-leaf rush.....	<i>Juncus marginatus</i>	
Big-head rush.....	<i>Juncus megacephalus</i>	
Lesser creeping rush.....	<i>Juncus repens</i>	
Needle-pod rush	<i>Juncus scirpoides</i>	
Fragrant flatsedge	<i>Kyllinga odorata</i>	
Bloodroot.....	<i>Lachnanthes caroliana</i>	
Bog-buttons.....	<i>Lachnocaulon anceps</i>	
Dotted duckweed*	<i>Landoltia punctata</i>	
Pine lily	<i>Lilium catesbaei</i>	8
Naked-stem dewflower *	<i>Murdannia nudiflora</i>	
Golden club.....	<i>Orontium aquaticum</i>	
Beaked panicum.....	<i>Panicum anceps</i>	
Maidencane.....	<i>Panicum hemitomom</i>	
Gaping panicum.....	<i>Panicum hians</i>	
Torpedograss *.....	<i>Panicum repens</i>	
Redtop panicum.....	<i>Panicum rigidulum</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Warty panicum.....	<i>Panicum verrucosum</i>	
Sour paspalum.....	<i>Paspalum conjugatum</i>	
Bahia grass *	<i>Paspalum notatum</i> var. <i>saurae</i>	
Early paspalum.....	<i>Paspalum praecox</i>	
Thin paspalum.....	<i>Paspalum setaceum</i>	
Vasey grass *	<i>Paspalum urvillei</i>	
Green arum	<i>Peltandra virginica</i>	
Florida needlegrass.....	<i>Piptochaetium avenacioides</i>	
Yellow fringed orchid.....	<i>Platanthera ciliaris</i>	8, 27
Golden fringed orchid.....	<i>Platanthera cristata</i>	8
Pickeralweed.....	<i>Pontederia cordata</i>	
Giant orchid	<i>Pteroglossaspis ecristata</i>	8
Natalgrass *	<i>Rhynchelytrum repens</i>	
Falling beaksedge.....	<i>Rhynchospora caduca</i>	
Bunched beak sedge	<i>Rhynchospora cephalantha</i>	
Short-bristle horned beaksedge	<i>Rhynchospora corniculata</i>	
Fasciculate beak sedge.....	<i>Rhynchospora fascicularis</i>	
Thread-leaf beaksedge.....	<i>Rhynchospora filifolia</i>	
Pine-barren beaksedge	<i>Rhynchospora intermedia</i>	
Sandy-field beak sedge.....	<i>Rhynchospora megalocarpa</i>	
Big-plume beaksedge	<i>Rhynchospora megaplumosa</i>	15
Southern beaksedge.....	<i>Rhynchospora microcarpa</i>	
Beak sedge.....	<i>Rhynchospora microcephala</i>	
Millet beaksedge	<i>Rhynchospora miliacea</i>	
Plumed beaksedge	<i>Rhynchospora plumosa</i>	
Wright's beak sedge.....	<i>Rhynchospora wrightiana</i>	
Scrub palmetto.....	<i>Sabal etonia</i>	
Dwarf palmetto	<i>Sabal minor</i>	
Cabbage palm.....	<i>Sabal palmetto</i>	
Sugarcane plumegrass.....	<i>Saccharum giganteum</i>	
India cupscale *	<i>Sacciolepis indica</i>	
American cupscale.....	<i>Sacciolepis striata</i>	
Narrow-leaved arrowhead	<i>Sagittaria graminea</i>	
Bull-tongue arrowhead	<i>Sagittaria lancifolia</i>	
Creeping bluestem.....	<i>Schizachyrium scoparium</i>	
Netted nutrush	<i>Scleria reticularis</i>	
Tall nutgrass.....	<i>Scleria triglomerata</i>	
Saw palmetto	<i>Serenoa repens</i>	
Knotroot foxtail	<i>Setaria parviflora</i>	
Blue-eyed grass.....	<i>Sisyrinchium nashii</i>	
Jeweled blue-eyed grass.....	<i>Sisyrinchium xerophyllum</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Greenbrier, catbrier.....	<i>Smilax auriculata</i>	
Sawtooth greenbrier	<i>Smilax bona-nox</i>	
Wild sasparilla	<i>Smilax glauca</i>	
Laurel greenbrier	<i>Smilax laurifolia</i>	
Sasparilla	<i>Smilax pumila</i>	
Coral greenbrier	<i>Smilax walteri</i>	
Lopsided Indiangrass	<i>Sorghastrum secundum</i>	
Prairie wedgescale	<i>Sphenopholis obtusata</i>	
Fragrant ladies'-tresses.....	<i>Spiranthes odorata</i>	
Green-vein ladies'-tresses	<i>Spiranthes praecox</i>	
Dropseed	<i>Sporobolus curtissii</i>	
Florida dropseed	<i>Sporobolus floridanus</i>	
West indian dropseed *	<i>Sporobolus indicus</i> var. <i>pyramidalis</i>	
Pineywoods dropseed.....	<i>Sporobolus junceus</i>	
Bantam-buttons	<i>Syngonanthus flavidulus</i>	
Medusahead air plant.....	<i>Tillandsia balbisiana</i>	15,29
Giant air plant.....	<i>Tillandsia fasciculata</i> var. <i>densispica</i>	8,15,16,29
.....	
Ball-moss	<i>Tillandsia recurvata</i>	
Southern needleleaf	<i>Tillandsia setacea</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Spreading air plant	<i>Tillandsia utriculata</i>	8,15,16,29
Florida giant air plant.....	<i>Tillandsia Xfloridana</i>	
Eastern gama grass	<i>Tripsacum dactyloides</i>	
Southern cattail.....	<i>Typha domingensis</i>	
Saber mudmidget.....	<i>Wolffiella oblonga</i>	
Short-leaf yellow-eyed grass	<i>Xyris brevifolia</i>	
Carolina yellow-eyed grass	<i>Xyris caroliniana</i>	
Elliott's yellow-eyed grass.....	<i>Xyris elliotii</i>	
Fringed yellow-eyed grass.....	<i>Xyris fimbriata</i>	
Richard's yellow-eyed grass.....	<i>Xyris jupicai</i>	
Tall yellow-eyed grass.....	<i>Xyris platylepis</i>	
Adam's needle	<i>Yucca filamentosa</i>	

DICOTS

Rosary pea *	<i>Abrus precatorius</i>
Slender copperleaf	<i>Acalypha gracilens</i>
Red maple	<i>Acer rubrum</i>
Shyleaf	<i>Aeschynomene americana</i>
Flax-leaf false-foxglove.....	<i>Agalinis linifolia</i>

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Hammock thoroughwort.....	<i>Ageratina jucunda</i>	
Yellow colicroot.....	<i>Aletris lutea</i>	
Sessil joyweed *	<i>Alternanthera sessilis</i>	
Slender amaranth*	<i>Amarantherus viridis</i>	
Pepper vine	<i>Ambrosia artemisiifolia</i>	
Cluster-spike indigo-bush	<i>Amorpha herbacea</i>	
Pepper vine	<i>Ampelopsis arborea</i>	
Groundnut	<i>Apios americana</i>	
Curtiss' Milkweed	<i>Asclepias curtissii</i>	15
Florida milkweed	<i>Asclepias feayi</i>	
Savannah milkweed.....	<i>Asclepias pedicellata</i>	
Aquatic milkweed.....	<i>Asclepias perennis</i>	
Butterflyweed	<i>Asclepias tuberosa</i>	
Netted pawpaw	<i>Asimina reticulata</i>	
Fern-leaf yellow foxglove	<i>Aureolaria pedicularia</i> var. <i>pectinata</i>	
Groundsel tree; Silverling.....	<i>Baccharis glomeruliflora</i>	
Saltbush	<i>Baccharis halimifolia</i>	
Coastal plain honeycomb head.....	<i>Balduina angustifolia</i>	
White screwstem	<i>Bartonia verna</i>	
Tar flower	<i>Bejaria racemosa</i>	
Florida greeneyes	<i>Berlandiera subcaulis</i>	
Begger-ticks.....	<i>Bidens alba</i> var. <i>radiata</i>	
Begger-ticks.....	<i>Bidens mitis</i>	
Shrimp-plant *	<i>Blechum pyramidatum</i>	
False nettle; Bog hemp.....	<i>Boehmeria cylindrica</i>	
Florida bonamia	<i>Bonamia grandiflora</i>	15
Blueheart	<i>Buchnera americana</i>	
Beautyberry.....	<i>Callicarpa americana</i>	
Trumpet creeper.....	<i>Campsis radicans</i>	
Pennsylvania bittercress	<i>Cardamine pensylvanica</i>	
Florida paintbrush	<i>Carphephorus corymbosus</i>	
Pineland purple; False vanillaleaf	<i>Carphephorus odoratissimus</i> var. <i>subtropicanus</i>	
Hairy chaffhead.....	<i>Carphephorus paniculatus</i>	
Scrub hickory	<i>Carya floridana</i>	
Pignut hickory	<i>Carya glabra</i>	
Love vine.....	<i>Cassytha filiformis</i>	
Madagascar periwinkle *	<i>Catharanthus roseus</i>	
Hackberry.....	<i>Celtis laevigata</i>	
Coinwort.....	<i>Centella asiatica</i>	
Butterfly pea	<i>Centrosema virginianum</i>	
Buttonbush.....	<i>Cephalanthus occidentalis</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Rosemary.....	<i>Ceratiola ericoides</i>	
Coontail.....	<i>Ceratophyllum demersum</i>	
Partridge-pea.....	<i>Chamaecrista fasciculata</i>	
Wild sensitive plant.....	<i>Chamaecrista nictitans</i> var. <i>aspera</i>	
Pill-pod sandmat.....	<i>Chamaesyce hirta</i>	
Hyssop-leaf sandmat.....	<i>Chamaesyce hyssopifolia</i>	
Chapman's pea.....	<i>Chapmannia floridana</i>	
Mexican tea *.....	<i>Chenopodium ambrosioides</i>	
Fringe tree.....	<i>Chionanthus virginicus</i>	
Maryland goldenaster.....	<i>Chrysopsis mariana</i>	
Goldenaster.....	<i>Chrysopsis subulata</i>	
Water hemlock.....	<i>Cicuta maculata</i>	
Purple thistle.....	<i>Cirsium horridulum</i>	
Nuttall's thistle.....	<i>Cirsium nuttallii</i>	
Tangerine *.....	<i>Citrus reticulata</i>	
Sour orange; Grapefruit;		
Sweet orange *.....	<i>Citrus Xaurantium</i>	
Lemon *.....	<i>Citrus Xlimon</i>	
Swamp leatherflower.....	<i>Clematis crispa</i>	
Net-leaf leatherflower.....	<i>Clematis reticulata</i>	
Atlantic pigeonwings.....	<i>Clitoria mariana</i>	
Tread softly.....	<i>Cnidocolus stimulosus</i>	
Blue mistflower.....	<i>Conoclinium coelestinum</i>	
Dwarf sneezeweed.....	<i>Conyza canadensis</i> var. <i>pusilla</i>	
Coreopsis.....	<i>Coreopsis leavenworthii</i>	
Stiff cornel; Swamp dogwood.....	<i>Cornus foemina</i>	
Lanceleaf rattlebox *.....	<i>Crotalaria lanceolata</i>	
Smooth rattlebox *.....	<i>Crotalaria pallida</i> var. <i>obovata</i>	
Rabbit-bells.....	<i>Crotalaria rotundifolia</i>	
Showy rattlebox *.....	<i>Crotalaria spectabilis</i>	
Tropical croton.....	<i>Croton glandulosus</i> var. <i>floridanus</i>	
Rushfoil.....	<i>Croton michauxii</i>	
Columbian waxweed *.....	<i>Cuphea carthagenensis</i>	
Panal *.....	<i>Cypselea humifusa</i>	
Creeping beggarweed.....	<i>Desmodium incanum</i>	
Threeflower tricktrefoil *.....	<i>Desmodium triflorum</i>	
Carolina ponysoot.....	<i>Dichondra caroliniensis</i>	
Poor joe.....	<i>Diodia teres</i>	
Virginia buttonweed.....	<i>Diodia virginiana</i>	
Persimmon.....	<i>Diospyros virginiana</i>	
Pine-barren white-top aster.....	<i>Doellingeria reticulata</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Pink sundew	<i>Drosera capillaris</i>	
West Indian chickweed	<i>Drymaria cordata</i>	
Twinflower	<i>Dyschoriste oblongifolia</i>	
False daisy	<i>Eclipta prostrata</i>	
Florida elephant's-foot	<i>Elephantopus elatus</i>	
Florida tasselflower*	<i>Emilia fosbergii</i>	
Lilac tassel flower*	<i>Emilia sonchifolia</i>	
Fireweed	<i>Erechtites hieraciifolius</i>	
Oakleaf fleabane	<i>Erigeron quercifolius</i>	
Daisy fleabane.....	<i>Erigeron vernus</i>	
Rattlesnakemaster	<i>Eryngium aquaticum</i>	
Fragrant eryngium.....	<i>Eryngium aromaticum</i>	
Baldwin's eryngo	<i>Eryngium baldwinii</i>	
Button rattlesnakemaster	<i>Eryngium yuccifolium</i>	
Southeastern coral bean	<i>Erythrina herbacea</i>	
Dog fennel.....	<i>Eupatorium capillifolium</i>	
Mohr's thoroughwort.....	<i>Eupatorium mohrii</i>	
False hoarhound.....	<i>Eupatorium rotundifolium</i>	
Spurge.....	<i>Euphorbia polyphylla</i>	
Flat-topped goldenrod	<i>Euthamia caroliniana</i>	
Silver dwarf morning glory.....	<i>Evolvulus sericeus</i>	
Water ash; Pop ash.....	<i>Fraxinus caroliniana</i>	
Elliott's milk pea.....	<i>Galactia elliotii</i>	
Eastern milk pea.....	<i>Galactia regularis</i>	
Downy milk pea.....	<i>Galactia volubilis</i>	
Stiff marsh bedstraw.....	<i>Galium tinctorium</i>	
Narrow-leaf purple everlasting	<i>Gamochaeta falcata</i>	
Pennsylvania everlasting	<i>Gamochaeta pensylvanica</i>	
Southern gaura	<i>Gaura angustifolia</i>	
Dwarf huckleberry	<i>Gaylussacia dumosa</i>	
Dangleberry; Blue huckleberry	<i>Gaylussacia frondosa</i> var. <i>tomentosa</i>	
Yellow jessamine	<i>Gelsemium sempervirens</i>	
Wild geranium.....	<i>Geranium carolinianum</i>	
Globe amaranth *	<i>Gomphrena serrata</i>	
Loblolly bay	<i>Gordonia lasianthus</i>	
Scrub hedge hyssop	<i>Gratiola hispida</i>	
Hairy hedge-hyssop.....	<i>Gratiola pilosa</i>	
Branched hedge-hyssop	<i>Gratiola ramosa</i>	
Round-fruit hedge-hyssop.....	<i>Gratiola virginiana</i>	
Pinebarren frostweed	<i>Helianthemum corymbosum</i>	
Florida scrub frostweed	<i>Helianthemum nashii</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Swamp sunflower	<i>Helianthus angustifolius</i>	
Florida sunflower	<i>Helianthus floridanus</i>	
Camphor weed	<i>Heterotheca subaxillaris</i>	
Coastal plain hawkweed.....	<i>Hieracium megacephalon</i>	
Innocence.....	<i>Houstonia procumbens</i>	
Marsh pennywort	<i>Hydrocotyle umbellata</i>	
Whorled pennywort	<i>Hydrocotyle verticillata</i>	
St. John's-wort.....	<i>Hypericum cistifolium</i>	
Sandweed	<i>Hypericum fasciculatum</i>	
Pineweeds	<i>Hypericum gentianoides</i>	
St. Andrew's-cross.....	<i>Hypericum hypericoides</i>	
Dwarf St. John's-wort	<i>Hypericum mutilum</i>	
Myrtle-leaf St. John's-wort.....	<i>Hypericum myrtifolium</i>	
St. Andrew's-cross.....	<i>Hypericum tetrapetalum</i>	
Musky mint; cluster bushmint	<i>Hyptis alata</i>	
John Charles bittermint *	<i>Hyptis verticillata</i>	
Sand holly; Carolina holly	<i>Ilex ambigua</i> var. <i>ambigua</i>	
Dahoon holly	<i>Ilex cassine</i>	
Inkberry; Gallberry	<i>Ilex glabra</i>	
Indigo.....	<i>Indigofera caroliniana</i>	
Hairy indigo *	<i>Indigofera hirsuta</i>	
Scarletcreeper.....	<i>Ipomoea hederifolia</i>	
Cypressvine	<i>Ipomoea quamoclit</i>	
Virginia willow.....	<i>Itea virginica</i>	
Grass-leaf lettuce	<i>Lactuca graminifolia</i>	
Shrub verbena *	<i>Lantana camara</i>	
Drysand pinweed.....	<i>Lechea divaricata</i>	15
Piedmont pinweed.....	<i>Lechea torreyi</i>	
Poorman's pepper	<i>Lepidium virginicum</i>	
Slender blazing-star	<i>Liatris gracilis</i>	
Dense gayfeather.....	<i>Liatris spicata</i>	
Short-leaf blazing-star	<i>Liatris tenuifolia</i> var. <i>quadriflora</i>	
Gopher apple	<i>Licania michauxii</i>	
Blue toadflax	<i>Linaria canadensis</i>	
Malaysian false pimpernel *	<i>Lindernia crustacea</i>	
Yellowseed false-pimpernel	<i>Lindernia dubia</i> var. <i>anagallidea</i>	
Round-leaved false pimpernel	<i>Lindernia grandiflora</i>	
Sweetgum.....	<i>Liquidambar styraciflua</i>	
Bay lobelia	<i>Lobelia feayana</i>	
Glades lobelia	<i>Lobelia glandulosa</i>	
Lobelia	<i>Lobelia paludosa</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Coral honeysuckle.....	<i>Lonicera sempervirens</i>	
Piedmont primrose-willow.....	<i>Ludwigia arcuata</i>	
Lanceleaf primrose-willow	<i>Ludwigia lanceolata</i>	
Seaside primrose-willow.....	<i>Ludwigia maritima</i>	
Small-fruit primrose-willow.....	<i>Ludwigia microcarpa</i>	
Mexican primrose-willow.....	<i>Ludwigia octovalvis</i>	
Marsh primrose-willow	<i>Ludwigia palustris</i>	
Primrose willow*.....	<i>Ludwigia peruviana</i>	
Creeping primrose-willow	<i>Ludwigia repens</i>	
Sky-blue lupine.....	<i>Lupinus diffusus</i>	
Roserush.....	<i>Lygodesmia aphylla</i>	
Staggerbush.....	<i>Lyonia fruticosa</i>	
Maleberry	<i>Lyonia ligustrina</i> var. <i>foliosiflora</i>	
Fetterbush.....	<i>Lyonia lucida</i>	
Wild bush-bean *	<i>Macroptilium lathyroides</i>	
Sweet bay.....	<i>Magnolia virginiana</i>	
Florida milkvine.....	<i>Matelea floridana</i>	29
Black medic *	<i>Medicago lupulina</i>	
White sweet-clover *	<i>Melilotus albus</i>	
Creeping cucumber.....	<i>Melothria pendula</i>	
Globifera.....	<i>Micranthemum umbrosum</i>	
Florida Key hempvine.....	<i>Mikania cordifolia</i>	
Climbing hempvine.....	<i>Mikania scandens</i>	
Sensitive briar	<i>Mimosa quadrivalvis</i> var. <i>floridana</i>	
American partridge berry; Twinberry.....	<i>Mitchella repens</i>	
Lax hornpod.....	<i>Mitreola petiolata</i>	
Balsam pear *	<i>Momordica charantia</i>	
Indian pipe	<i>Monotropa uniflora</i>	
Red mulberry.....	<i>Morus rubra</i>	
Wax myrtle.....	<i>Myrica cerifera</i>	
Spatter-dock.....	<i>Nuphar advena</i>	
Swamp tupelo.....	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Pinebarren whitetop	<i>Oclemena reticulata</i>	
Cut-leaved evening-primrose	<i>Oenothera laciniata</i>	
Flat-top mile graines *	<i>Oldenlandia corymbosa</i>	
Clustered mile graines.....	<i>Oldenlandia uniflora</i>	
Prickly-pear cactus.....	<i>Opuntia humifusa</i>	
Wild olive.....	<i>Osmanthus megacarpus</i>	
Lady's sorrel.....	<i>Oxalis corniculata</i>	
Violet wood sorrel *	<i>Oxalis debilis</i> var. <i>corymbosa</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Feay's palafoxia	<i>Palafoxia feayi</i>	
Florida pellitory-of-the-wall	<i>Parietaria floridana</i>	
Clustered pellitory-of-the-wall	<i>Parietaria praetermissa</i>	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Many-flower beardtongue	<i>Penstemon multiflorus</i>	
Swamp bay	<i>Persea palustris</i>	
Annual phlox*	<i>Phlox drumondii</i>	
Phoebanthus	<i>Phoebanthus grandiflorus</i>	
Oak mistletoe	<i>Phoradendron leucarpum</i>	
Red chokeberry	<i>Photinia pyrifolia</i>	
Frog-fruit carpetweed	<i>Phyla nodiflora</i>	
Cypress-head ground-cherry	<i>Physalis arenicola</i>	
Slender-leaf false dragonhead	<i>Physostegia leptophylla</i>	
Pokeberry; Pokeweed	<i>Phytolacca americana</i>	
Pennyroyal	<i>Piloblephis rigida</i>	
Yellow butterwort	<i>Pinguicula lutea</i>	37
Small butterwort	<i>Pinguicula pumila</i>	
Grass-leaved golden aster	<i>Pityopsis graminifolia</i>	
Southern plantain	<i>Plantago virginica</i>	
Stinking camphorweed	<i>Pluchea foetida</i>	
Shrubby camphorweed	<i>Pluchea odorata</i>	
Fleabane	<i>Pluchea rosea</i>	
Milkwort	<i>Polygala grandiflora</i>	
Wild batchelor's button	<i>Polygala lutea</i>	
Yellow milkwort	<i>Polygala nana</i>	
Yellow batchelor's button	<i>Polygala rugelii</i>	
Coastal plain milkwort	<i>Polygala setacea</i>	
Wireweed; Hairy jointweed	<i>Polygonella ciliata</i>	
Sandhill jointweed	<i>Polygonella fimbriata</i>	
Tall jointweed	<i>Polygonella gracilis</i>	
Jointweed	<i>Polygonella polygama</i>	
Large-flower jointweed	<i>Polygonella robusta</i>	
Swamp smartweed	<i>Polygonum hydropiperoides</i>	
Dotted smartweed	<i>Polygonum punctatum</i>	
Smartweed	<i>Polygonum setaceum</i>	
Rustweed	<i>Polypreum procumbens</i>	
Paraguay purslane *	<i>Portulaca amilis</i>	
Mermaid-weed	<i>Proserpinaca palustris</i>	
Comb-leaf mermaid-weed	<i>Proserpinaca pectinata</i>	
Black cherry	<i>Prunus serotina</i>	
Sweet everlasting;		

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Rabbit's tobacco	<i>Pseudognaphalium obtusifolium</i>	
Wild coffee	<i>Psychotria nervosa</i>	
Coastal blackroot.....	<i>Pterocaulon pycnostachyum</i>	
Mock bishop's weed	<i>Ptilimnium capillaceum</i>	
Carolina desertchicory	<i>Pyrrhopappus carolinianus</i>	
Chapman's oak	<i>Quercus chapmanii</i>	
Sand live oak.....	<i>Quercus geminata</i>	
Bluejack oak	<i>Quercus incana</i>	
Scrub oak	<i>Quercus inopina</i>	
Turkey oak	<i>Quercus laevis</i>	
Laurel oak.....	<i>Quercus laurifolia</i>	
Dwarf live oak	<i>Quercus minima</i>	
Myrtle oak	<i>Quercus myrtifolia</i>	
Water oak	<i>Quercus nigra</i>	
Live oak	<i>Quercus virginiana</i>	
Myrsine.....	<i>Rapanea punctata</i>	
Pale meadow beauty.....	<i>Rhexia mariana</i>	
Nash's meadow-beauty	<i>Rhexia nashii</i>	
Nuttall's meadow beauty.....	<i>Rhexia nuttallii</i>	
Fringed meadow beauty	<i>Rhexia petiolata</i>	
Swamp azalea	<i>Rhododendron viscosum</i>	
Winged sumac	<i>Rhus copallinum</i>	
One-leaf rhynchosia.....	<i>Rhynchosia michauxii</i>	
Tropical Mexican-clover *	<i>Richardia brasiliensis</i>	
Southern marsh yellowcress.....	<i>Rorippa teres</i>	
Highbush blackberry	<i>Rubus argutus</i>	
Sand blackberry	<i>Rubus cuneifolius</i>	
Hastate-leaved dock	<i>Rumex hastatulus</i>	
Paraguayan dock *	<i>Rumex paraguayensis</i>	
Short-leaved sabatia.....	<i>Sabatia brevifolia</i>	
Lance-leaf marsh pink	<i>Sabatia difformis</i>	
Large-flower marsh pink	<i>Sabatia grandiflora</i>	
Carolina willow	<i>Salix caroliniana</i>	
Lyre-leaf sage.....	<i>Salvia lyrata</i>	
Elderberry	<i>Sambucus nigra</i> subsp. <i>canadensis</i>	
Pineland pimpernel	<i>Samolus valerandi</i> subsp. <i>parviflorus</i>	
Lizard's-tail	<i>Saururus cernuus</i>	
Brazilian pepper *	<i>Schinus terebinthifolius</i>	
Sweet broom	<i>Scoparia dulcis</i>	
Florida scrub skullcap	<i>Scutellaria arenicola</i>	
Rough skullcap.....	<i>Scutellaria integrifolia</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Danglepod.....	<i>Sesbania herbacea</i>	
Piedmont black senna.....	<i>Seymeria pectinata</i>	
Common wireweed	<i>Sida acuta</i>	
Llima	<i>Sida cordifolia</i>	
Indian hemp.....	<i>Sida rhombifolia</i>	
Smooth bumelia.....	<i>Sideroxylon reclinatum</i>	
Common nightshade	<i>Solanum americanum</i>	
Tropical soda apple *	<i>Solanum viarum</i>	
Pinebarren goldenrod.....	<i>Solidago fistulosa</i>	
Chapman's goldenrod.....	<i>Solidago odora</i> var. <i>chapmanii</i>	
Common sow-thistle *	<i>Sonchus oleraceus</i>	
Creeping ox-eye*.....	<i>Sphagneticola trilobata</i>	
Queen's delight.....	<i>Stillingia sylvatica</i>	
Wire plant.....	<i>Stipulicida setacea</i> var. <i>lacerata</i>	
Hairy dawnflower.....	<i>Stylisma villosa</i>	
Storax; American snowbell.....	<i>Styrax americanus</i>	
Climbing aster	<i>Symphotrichum carolinianum</i>	
Rice button aster.....	<i>Symphotrichum dumosum</i>	
Annual saltmarsh aster	<i>Symphotrichum subulatum</i>	
Drooping-leaf aster	<i>Symphotrichum walteri</i>	
Spreading hoary-pea	<i>Tephrosia hispidula</i>	
Rugel's hoary-pea.....	<i>Tephrosia rugelii</i>	
Poison ivy	<i>Toxicodendron radicans</i>	
Virginia marsh St. John's-wort	<i>Triadenum virginicum</i>	
Forked blue curls.....	<i>Trichostema dichotomum</i>	
White clover *	<i>Trifolium repens</i>	
American elm.....	<i>Ulmus americana</i>	
Caesarweed *	<i>Urena lobata</i>	
Bladderwort	<i>Utricularia subulata</i>	
Tree sparkleberry	<i>Vaccinium arboreum</i>	
Highbush blueberry.....	<i>Vaccinium corymbosum</i>	
Blueberry	<i>Vaccinium darrowii</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Deerberry	<i>Vaccinium stamineum</i>	
Brazilian vervain*.....	<i>Verbena brasiliensis</i>	
Sandpaper vervain.....	<i>Verbena scabra</i>	
Ironweed	<i>Vernonia gigantea</i>	
Possum haw	<i>Viburnum nudum</i>	
Walter's viburnum.....	<i>Viburnum obovatum</i>	
Four-leaf vetch.....	<i>Vicia acutifolia</i>	
Piedmont cow-pea	<i>Vigna luteola</i>	

* Non-Native Species

Wingate Creek Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Long-leaf violet.....	<i>Viola lanceolata</i>	
Swamp white violet.....	<i>Viola primulifolia</i>	
Florida violet.....	<i>Viola sororia</i>	
Summer grape.....	<i>Vitis aestivalis</i>	
Muscadine grape.....	<i>Vitis rotundifolia</i>	
Calusa grape.....	<i>Vitis shuttleworthii</i>	
Tallowood; Hog plum.....	<i>Ximenia americana</i>	

FISH

Oriental weatherfish*	<i>Misgurnus anguillicaudatus</i>	55
Coastal shiner	<i>Notropis petersoni</i>	55
Flagfish	<i>Jordanella floridae</i>	55
Eastern mosquitofish.....	<i>Gambusia holbrooki</i>	31,55
Sailfin molly	<i>Poecilia latipinna</i>	55
Brook silverside.....	<i>Labidesthes sicculus</i>	55
Everglades pygmy sunfish.....	<i>Elassoma evergladei</i>	55
Warmouth	<i>Lepomis gulosus</i>	55
Bluegill.....	<i>Lepomis macrochirus</i>	55
Dollar sunfish	<i>Lepomis marginatus</i>	55
Spotted sunfish.....	<i>Lepomis punctatus</i>	55
Largemouth bass	<i>Micropterus salmoides</i>	55

AMPHIBIANS

Greater siren	<i>Siren lacertina</i>	55
Oak toad	<i>Bufo quercicus</i>	8,14,15,16
Southern toad	<i>Bufo terrestris</i>	MTC
Greenhouse frog*	<i>Eleutherodactylus planirostris</i>	
.....	<i>planirostris</i>	MTC
Florida cricket frog.....	<i>Acris gryllus dorsalis</i>	31,55
Green treefrog.....	<i>Hyla cinerea</i>	8,27,29
Pinewoods treefrog.....	<i>Hyla femoralis</i>	8,11,27
Squirrel treefrog	<i>Hyla squirella</i>	8,27,29
Cuban treefrog*	<i>Osteopilus septentrionalis</i>	84,85
Little grass frog.....	<i>Pseudacris ocularis</i>	31
Florida chorus frog	<i>Pseudacris nigrita verrucosa</i>	31
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>	MTC
Gopher frog.....	<i>Rana capito</i>	8
Pig frog	<i>Rana grylio</i>	55
Southern leopard frog	<i>Rana sphenoccephala</i>	55
Bullfrog.....	<i>Rana catesbeiana</i>	55

* Non-Native Species

Wingate Creek Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
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REPTILES

Florida mud turtle.....	<i>Kinosternon subrubrum steindachneri</i>	55
Florida box turtle.....	<i>Terrapene carolina bauri</i>	MTC
Florida chicken turtle.....	<i>Deirochelys reticularia chrysea</i>	31
Gopher tortoise.....	<i>Gopherus polyphemus</i>	8,14,15,16,24
American alligator	<i>Alligator mississippiensis</i>	55
Green anole	<i>Anolis carolinensis carolinensis</i>	8,15,27,29
Cuban brown anole *	<i>Anolis sagrei</i>	29,84,85
Indopacific House Gecko*	<i>Hemidactylus garnotii</i>	84,85
Six-lined racerunner	<i>Cnemidophorus sexlineatus sexlineatus</i>	8,14,15,16
Southeastern five-lined skink.....	<i>Eumeces inexpectatus</i>	8,14,27,29
Ground skink.....	<i>Scincella lateralis</i>	8,14,24
Southern black racer	<i>Coluber constrictor priapus</i>	8,14,15,16
Eastern indigo snake.....	<i>Drymarchon corais couperi</i>	MTC
Yellow rat snake.....	<i>Elaphe obsoleta quadrivittata</i>	8,14,27,29
Eastern coachwhip	<i>Masticophis flagellum flagellum</i>	15,16
Brown water snake	<i>Nerodia taxispilota</i>	31, 55
Florida water snake	<i>Nerodia fasciata pictiventris</i>	55
Rough green snake.....	<i>Opheodrys aestivus</i>	8,15,16
Eastern garter snake	<i>Thamnophis sirtalis sirtalis</i>	8,27,29
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	8,14,15,16

BIRDS

Anhinga.....	<i>Anhinga anhinga</i>	OF
Cattle egret.....	<i>Bubulcus ibis</i>	84
American bittern	<i>Botaurus lentiginosus</i>	31
White ibis.....	<i>Eudocimus albus</i>	29,55
Wood stork.....	<i>Mycteria americana</i>	29,55
Wood duck.....	<i>Aix sponsa</i>	29,55
Black vulture.....	<i>Coragyps atratus</i>	8,15,OF
Turkey vulture.....	<i>Cathartes aura</i>	8,15,OF
Swallow-tailed kite	<i>Elanoides forficatus</i>	8, OF
Sharp-shinned hawk.....	<i>Accipiter striatus</i>	8,15,16,27
Cooper's hawk.....	<i>Accipiter cooperii</i>	8,15,16,27
Red-shouldered hawk	<i>Buteo lineatus</i>	8,15,16,27
Red-tailed hawk	<i>Buteo jamaicensis</i>	8,15,OF
Bald eagle	<i>Haliaeetus leucocephalus</i>	8, OF

* Non-Native Species

Wingate Creek Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
American kestrel	<i>Falco sparverius</i>	8,16
Wild turkey	<i>Meleagris gallopavo</i>	8,23,27,29
Northern bobwhite	<i>Colinus virginianus</i>	8,16
Florida sandhill crane	<i>Grus canadensis pratensis</i>	8,84
Killdeer	<i>Charadrius vociferus</i>	84
American woodcock	<i>Scolopax minor</i>	27,31
Eurasian collared dove*	<i>Streptopelia decaocto</i>	84,85
Mourning dove.....	<i>Zenaida macroura</i>	8,14,16
Common ground-dove.....	<i>Columbina passerina</i>	8
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	29
Barn owl	<i>Tyto alba</i>	8,14,24,29
Great horned owl	<i>Bubo virginianus</i>	8
Barred owl.....	<i>Strix varia</i>	29
Common nighthawk	<i>Chordeiles minor</i>	8
Chuck-will's-widow.....	<i>Caprimulgus carolinensis</i>	8
Belted kingfisher	<i>Megaceryle alcyon</i>	29
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	8,16
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	8,16
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	8,16
Downy woodpecker	<i>Picoides pubescens</i>	8,16
Northern flicker.....	<i>Colaptes auratus</i>	8,16
Pileated woodpecker	<i>Dryocopus pileatus</i>	8,27,29
Eastern kingbird.....	<i>Tyrannus tyrannus</i>	8
Eastern phoebe	<i>Sayornis phoebe</i>	8,16
Great crested flycatcher.....	<i>Myiarchus crinitus</i>	8,16
Tree swallow	<i>Iridoprocne bicolor</i>	OF
Purple martin.....	<i>Progne subis</i>	OF
Chimney swift	<i>Chaetura pelagica</i>	OF
Blue jay	<i>Cyanocitta cristata</i>	8,16,84
American crow	<i>Corvus brachyrhynchos</i>	8,16
Fish crow	<i>Corvus ossifragus</i>	8,16,27,29
Tufted titmouse	<i>Parus bicolor</i>	8,15,24
House wren.....	<i>Troglodytes aedon</i>	8,15
Carolina wren.....	<i>Thryothorus ludovicianus</i>	8,27,29
Ruby-crowned kinglet.....	<i>Regulus calendula</i>	8,16
Blue-gray gnatcatcher.....	<i>Polioptila caerulea</i>	8,16
American robin.....	<i>Turdus migratorius</i>	8,27,29,84
Gray catbird	<i>Dumetella carolinensis</i>	8,16,27
Northern mockingbird	<i>Mimus polyglottos</i>	8,84
Brown thrasher.....	<i>Toxostoma rufum</i>	8,16
Loggerhead shrike	<i>Lanius ludovicianus</i>	8,16

* Non-Native Species

Wingate Creek Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
White-eyed vireo.....	<i>Vireo griseus</i>	8,27,29
Blue-headed vireo.....	<i>Vireo solitarius</i>	27,29
Red-eyed vireo.....	<i>Vireo olivaceus</i>	27,29
Northern parula.....	<i>Parula americana</i>	8,27,29
Prothonotary warbler.....	<i>Protonotaria citrea</i>	8,16
Hooded warbler.....	<i>Wilsonia citrina</i>	29
Black-throated blue warbler.....	<i>Dendroica caerulescens</i>	8,27,29
Yellow-rumped warbler.....	<i>Dendroica coronata</i>	8,27,29
Yellow-throated warbler.....	<i>Dendroica dominica</i>	8,27,29
Pine warbler.....	<i>Dendroica pinus</i>	8,16
Palm warbler.....	<i>Dendroica palmarum</i>	8,16
Blackpoll warbler.....	<i>Dendroica striata</i>	27,29
Black-and-white warbler.....	<i>Mniotilta varia</i>	27,29
Common yellowthroat.....	<i>Geothlypis trichas</i>	8,27
American redstart.....	<i>Setophaga ruticilla ruticilla</i>	8,27,29
Common grackle.....	<i>Quiscalus quiscula</i>	MTC
Northern cardinal.....	<i>Cardinalis cardinalis</i>	MTC
Eastern towhee.....	<i>Pipilo erythrophthalmus</i>	8,16
Bachman's sparrow.....	<i>Aimophila aestivalis</i>	8,16
Eastern meadowlark.....	<i>Sturnella magna</i>	8,84
Brown-headed cowbird.....	<i>Molothrus ater</i>	8
Summer tanager.....	<i>Piranga rubra</i>	8,16
American goldfinch.....	<i>Carduelis tristis</i>	8,16

MAMMALS

Short-tailed shrew.....	<i>Blarina brevicauda</i>	8,16
Least shrew.....	<i>Cryptotis parva</i>	8,16
Nine-banded armadillo *.....	<i>Dasyurus novemcinctus</i>	MTC
Eastern cottontail.....	<i>Sylvilagus floridanus</i>	8, 16
Gray squirrel.....	<i>Sciurus carolinensis</i>	8, 27,29,84
Sherman's fox squirrel.....	<i>Sciurus niger shermani</i>	8,14,16
Southern flying squirrel.....	<i>Glaucomys volans</i>	8,14,16,24
Cotton mouse.....	<i>Peromyscus gossypinus gossypinus</i>	8,16,29
Oldfield mouse.....	<i>Peromyscus polionotus</i>	8,16
Florida mouse.....	<i>Podomys floridanus</i>	15,16
Hispid cotton rat.....	<i>Sigmodon hispidus</i>	8,16
Eastern woodrat.....	<i>Neotoma floridana</i>	8,29
Raccoon.....	<i>Procyon lotor</i>	MTC
River otter.....	<i>Lutra canadensis</i>	55
Striped skunk.....	<i>Mephitis mephitis</i>	8,16

* Non-Native Species

Wingate Creek Animals

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for all species)
Bobcat.....	<i>Felis rufus</i>	8,16
Wild pig *	<i>Sus scrofa</i>	MTC
White-tailed deer.....	<i>Odocoileus virginianus</i>	MTC

Habitat Codes

Terrestrial

1. Beach Dune
2. Bluff
3. Coastal Berm
4. Coastal Rock Barren
5. Coastal Strand
6. Dry Prairie
7. Maritime Hammock
8. Mesic Flatwoods
9. Mesic Hammock
10. Coastal Grasslands
11. Pine Rockland
12. Prairie Hammock
13. Rockland Hammock
14. Sandhill
15. Scrub
16. Scrubby Flatwoods
17. Shell Mound
18. Sinkhole
19. Slope Forest
20. Upland Glade
21. Upland Hardwood Forest
22. Upland Mixed Forest
23. Upland Pine Forest
24. Xeric Hammock

Palustrine

25. Basin Marsh
26. Basin Swamp
27. Baygall
28. Bog
29. Bottomland Forest
30. Coastal Interdunal Swale
31. Depression Marsh
32. Dome
33. Floodplain Forest
34. Floodplain Marsh
35. Floodplain Swamp
36. Freshwater Tidal Swamp
37. Hydric Hammock
38. Marl Prairie
39. Seepage Slope
40. Slough
41. Strand Swamp
42. Swale
43. Wet Flatwoods
44. Wet Prairie

Lacustrine

45. Clastic Upland Lake
46. Coastal Dune Lake
47. Coastal Rockland Lake
48. Flatwood/Prairie Lake
49. Marsh Lake
50. River Floodplain Lake
51. Sandhill Upland Lake
52. Sinkhole Lake
53. Swamp Lake

Riverine

54. Alluvial Stream
55. Blackwater Stream
56. Seepage Stream
57. Spring-Run Stream

Estuarine

58. Estuarine Algal Bed
59. Estuarine Composite Substrate
60. Estuarine Consolidated Substrate
61. Estuarine Coral Reef
62. Estuarine Grass Bed
63. Estuarine Mollusk Reef
64. Estuarine Octocoral Bed
65. Estuarine Sponge Bed
66. Estuarine Tidal Marsh
67. Estuarine Tidal Swamp
68. Estuarine Unconsolidated Substrate
69. Estuarine Worm Reef

Marine

70. Marine Algal Bed
71. Marine Composite Substrate
72. Marine Consolidated Substrate
73. Marine Coral Reef
74. Marine Grass Bed
75. Marine Mollusk Reef
76. Marine Octocoral Bed
77. Marine Sponge Bed
78. Marine Tidal Marsh
79. Marine Tidal Swamp
80. Marine Unconsolidated Substrate
81. Marine Worm Reef

Subterranean

82. Aquatic Cave
83. Terrestrial Cave

Miscellaneous

84. Ruderal
85. Developed

MTC Many Types Of Communities
OF Overflying

Habitat Codes

Addendum 5 – Designated Species List

Rank Explanations For FNAI Global Rank, FNAI State Rank, Federal Status, And State Status

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

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

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

FNAI GLOBAL RANK DEFINITIONS

- G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- G4 = apparently secure globally (may be rare in parts of range)
- G5 = demonstrably secure globally
- GH = of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- GX = believed to be extinct throughout range
- GXC = extirpated from the wild but still known from captivity or cultivation
- G#? = tentative rank (e.g., G2?)
- G#G# = range of rank; insufficient data to assign specific global rank (e.g., G2G3)
- G#T# = rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
- G#Q = rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
- G#T#Q = same as above, but validity as subspecies or variety is questioned.
- GU = due to lack of information, no rank or range can be assigned (e.g., GUT2).
- G? = not yet ranked (temporary)
- S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- S3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- S4 = apparently secure in Florida (may be rare in parts of range)
- S5 = demonstrably secure in Florida
- SH = of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- SX = believed to be extinct throughout range
- SA = accidental in Florida, i.e., not part of the established biota
- SE = an exotic species established in Florida may be native elsewhere in North America
- SN = regularly occurring, but widely and unreliably distributed; sites for conservation hard to determine
- SU = due to lack of information, no rank or range can be assigned (e.g., SUT2).
- S? = not yet ranked (temporary)

Rank Explanations For FNAI Global Rank, FNAI State Rank, Federal Status, And State Status

LEGAL STATUS

N = Not currently listed, nor currently being considered for listing, by state or federal agencies.

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

LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.

PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.

LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.

PT = Proposed for listing as Threatened Species.

C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.

E(S/A) = Endangered due to similarity of appearance.

T(S/A) = Threatened due to similarity of appearance.

STATE

Animals (Listed by the Florida Fish and Wildlife Conservation Commission - FFWCC)

LE = Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.

LT = Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

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

Plants (Listed by the Florida Department of Agriculture and Consumer Services - FDACS)

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

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

Wingate Creek Designated Species – Plants

Common Name/ <i>Scientific Name</i>	FDACS	<u>Designated Species Status</u>	
		USFWS	FNAI
Curtiss' milkweed <i>Asclepias curtissii</i>	LE		G3/S3
Florida bonamia <i>Bonamia grandiflora</i>	LE	LT	G3/S3
Many-flowered grass-pink <i>Calopogon multiflorus</i>	LE		G2 G3/S2 S3
Butterfly orchid <i>Encyclia tampensis</i>	CE		
Pine pinweed <i>Lechea divaricata</i>	LE		G2/S2
Pine lily; Catesby's lily <i>Lilium catesbaei</i>	LT		
Nodding clubmoss <i>Lycopodiella cernua</i>	CE		
Florida milkvine <i>Matelea floridana</i>	LE		G2/S2
Cinnamon fern <i>Osmunda cinnamomea</i>	CE		
Royal fern <i>Osmunda regalis</i> var. <i>spectabilis</i>	CE		
Yellow butterwort <i>Pinguicula lutea</i>	LT		
Yellow fringed orchid <i>Platanthera ciliaris</i>	LT		
Golden fringed orchid <i>Platanthera cristata</i>	LT		
Giant orchid <i>Pteroglossaspis ecristata</i>	LT		G2 G3/S2
Longbristle beaksedge <i>Rhynchospora megaplumosa</i>	LE		G2/S2
Medusahead air plant <i>Tillandsia balbisiana</i>	LT		
Wild pine; Air plant <i>Tillandsia fasciculata</i> var. <i>densispica</i>	LE		
Spreading air plant <i>Tillandsia utriculata</i>	LE		
Curtiss' milkweed <i>Asclepias curtissii</i>	LE		G3/S3

Wingate Creek Designated Species – Plants

Common Name/ Scientific Name	FDACS	<u>Designated Species Status</u>	
		USFWS	FNAI
Florida bonamia <i>Bonamia grandiflora</i>	LE	LT	G3/S3
Many-flowered grass-pink <i>Calopogon multiflorus</i>	LE		G2 G3/S2 S3
Butterfly orchid <i>Encyclia tampensis</i>	CE		
Pine pinweed <i>Lechea divaricata</i>	LE		G2/S2
Pine lily; Catesby's lily <i>Lilium catesbaei</i>	LT		
Nodding clubmoss <i>Lycopodiella cernua</i>	CE		
Florida milkvine <i>Matelea floridana</i>	LE		G2/S2
Cinnamon fern <i>Osmunda cinnamomea</i>	CE		
Royal fern <i>Osmunda regalis</i> var. <i>spectabilis</i>	CE		
Yellow butterwort <i>Pinguicula lutea</i>	LT		
Yellow fringed orchid <i>Platanthera ciliaris</i>	LT		
Golden fringed orchid <i>Platanthera cristata</i>	LT		
Giant orchid <i>Pteroglossaspis ecristata</i>	LT		G2G3/S2
Longbristle beaksedge <i>Rhynchospora megaplumosa</i>	LE		G2/S2
Medusahead air plant <i>Tillandsia balbisiana</i>	LT		
Wild pine; Air plant <i>Tillandsia fasciculata</i> var. <i>densispica</i>	LE		
Spreading air plant <i>Tillandsia utriculata</i>	LE		

Wingate Creek Designated Species – Animals

Common Name/ Scientific Name	FFWCC	Designated Species Status	
		USFWS	FNAI
AMPHIBIANS			
Gopher frog <i>Rana capito</i>	LS		G3G4/S3
REPTILES			
Florida box turtle <i>Terrapene carolina bauri</i>	LS		
Gopher tortoise <i>Gopherus polyphemus</i>	LT		G3/S3
American alligator <i>Alligator mississippiensis</i>	LS	LT(S/A)	G5/S4
Eastern indigo snake <i>Drymarchon corais couperi</i>	LT	LT	G4T3/S3
Eastern diamondback rattlesnake <i>Crotalus adamanteus</i>			G4/S3
BIRDS			
White ibis <i>Eudocimus albus</i>	LS		G5/S4
Wood stork <i>Mycteria americana</i>	LE	LE	G4/S2
Swallow-tailed kite <i>Elanoides forficatus</i>			G5/S2
Cooper's hawk <i>Acciptier cooperii</i>			G5T2T3/S2S3
Bald eagle <i>Haliaeetus leucocephalus</i>	LT	LT	G4/S3
Florida sandhill crane <i>Grus canadensis pratensis</i>	LT		G5/S2S3
American redstart <i>Setophaga ruticilla</i>			G5/S2
Bachman's sparrow <i>Aimophila aestivalis</i>			G3/S3
MAMMALS			
Sherman's fox squirrel <i>Sciurus niger shermani</i>	LS		G5T3/S3
Florida mouse <i>Podomys floridanus</i>	LS		G3/S3

Wingate Creek Designated Species – Animals

Common Name/ <i>Scientific Name</i>	FFWCC	<u>Designated Species Status</u> USFWS	FNAI
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Addendum 6 – Timber Analysis

PURPOSE

This document is intended to fulfill the timber assessment requirement for Wingate Creek State Park (WCSP) as required by Section 1. Section 253.036, Florida Statutes. The goal of this *Timber Assessment* is to evaluate the potential and feasibility of managing timber resources for conservation and revenue generation purposes.

BACKGROUND

Wingate Creek State Park is a relatively small property at only 614 acres. According to the management plan this includes about 94 acres of mesic and 219 acres of scrubby flatwoods. Onsite inspection reveals what appears to be true scrub that grades into scrubby flatwoods, nearby severely degraded sandhills, and some mesic flatwoods. The indistinctive boundaries between cover types make obtaining exact acreages difficult at best. However, the combined acreage is probably fairly accurate. These community types are where most of the pine timber is found. Historically, most of the commercially valuable trees found on this tract would have been longleaf pine (*Pinus palustris*) (LLP), south Florida slash pine (*Pinus elliotti* var. *densa*) (SFSP), or sand pine (*Pinus clausa*) (SP).

Healthy sandhill and flatwoods communities are characterized by open, pine stands. Unlike today, early photographs and historical accounts describe Florida flatwoods as much more of a "grassland" or "savanna." The overstory pines are uneven-aged, tall, and straight with open crowns that allow a considerable amount of sunlight to reach the forest floor. Ground cover is a diverse mixture of grasses, herbaceous plants, and dried pine needles. This mixture supports frequent (every one to three years), low intensity lightning started fires. Fire burns accumulated leaf litter and exposed bare mineral soil. This bare ground combined with the light shading of emerging grasses is ideal for the germination and survival of seed and seedling pine trees. Saw palmettos (*Serenoa repens*) and most hardwoods are scattered and low growing.

All of the existing upland ecosystems on WCSP have been degraded by the absence of natural fire regimes. As a result saw palmettos and bottomland hardwoods have proliferated in the flatwoods. Sand pines and upland hardwoods have invaded the sandhills. Most of the surrounding acreage has either been converted to semi-improved pasture and orange groves or divided into small acreage tracts for housing.

GOALS AND OBJECTIVES

A primary management objective for Wingate Creek State Park is to restore where necessary and maintain healthy native ecosystems. The uplands and bottomland hardwoods stands serve as buffers to protect Wingate Creek, which during wet weather drains into the Myakka River.

Wingate Creek Timber Analysis

Large tracts of protected land with diverse habitat types afford the opportunity to manage for native plant and animal species. Although not very large, Wingate Creek State Park has a variety of ecotypes from sand pine scrubs to bottomland hardwoods. Through habitat restoration and reintroduction of periodic fire, WCSP will allow managers the ability to preserve at least portions of these natural communities.

Many unique and disappearing animal species rely on healthy pine stands for their livelihood. Included in this group are the gopher tortoise (*Gopherus polyphemus*), Sherman's fox squirrel (*Sciurus niger*), and eastern indigo snake (*Drymarchon corais*) to name a few. In addition to providing a buffer for aquatic habitats, measures implemented to insure healthy, flatwoods ecosystems will help promote the continued existence of these and other important species.

TIMBER MANAGEMENT

GENERAL TIMBER MANAGEMENT GUIDELINES

Timber management on WCSP should be viewed as a tool to facilitate ecosystem restoration and maintenance. The park is not large or its soils fertile enough to produce frequent revenues from timber sales. However, money generated from occasional tree harvesting can help fund management goals.

To better understand timber management methods, knowledge of a few silvicultural terms is useful. The first is Basal Area. An individual tree's basal area is its cross sectional area (in square feet) measured four and one-half feet above the ground. Basal Area per acre (BA) is the sum of the basal area of every tree within a stand divided the number of acres in the stand. A timber stand's tree stocking and density can be expressed in square feet of basal area per acre.

The next term is diameter breast height (DBH). This is the diameter of a tree measured at four and one-half feet above the ground. It is used in calculating the Basal Area and combined with height can determine volume of each tree.

Fully stocked pine stands have enough trees per acre of a size large enough to utilize the growing space without causing over-crowding. Pine stands with 70 to 100 sq. ft. BA are considered fully stocked. More, smaller diameter trees than larger diameter ones are required to equal one square foot of basal area per acre. (For example: It takes 357 evenly spaced, six-inch diameter breast height trees per acre to equal 70 sq. ft. BA. Whereas, only 89 twelve-inch DBH trees per acre equal the same 70 sq. ft. BA.)

Basal Area can be roughly correlated to crown coverage and therefore needle-cast. About 40 to 60 sq. ft. BA of pine trees should provide sufficient needles to carry periodic

Wingate Creek Timber Analysis

fire and while allowing adequate sunlight for native grasses to be maintained.

Another useful term is Site Index (SI). It is an indication of timber growth potential of a particular soil based on the average height of dominant trees in a stand. The U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) publishes soils maps for the United States. The maps for Manatee County indicate the potential SI for various pine species growing on the soil types found on WCSP.

Volumes predicted in this document were approximated using the published SI and U.S.D.A. Research Report No. 3, *Growth and Yield of Slash Pine Plantations in Florida*, by R. L. Barnes. These figures assume fully stocked, even-aged stands of 400 surviving trees per acre at the age indicated with thinning harvests at the earliest age needed. Uneven-aged management may reduce timber growth and revenues by up to one-half to three-quarters.

In natural, pine dominated forest systems trees die because they become old and less able to withstand insect and disease attack. (The life expectancy of slash pine is only around 100 years.) Bark beetles invade a weakened tree then multiply and kill some of its neighbors. This creates holes in the canopy of various sizes that allow full sunlight to reach the forest floor. Lightning strikes and windstorms do the same thing. In addition, lightning caused fires burn away leaf litter and expose bare mineral soil. The bare soil and canopy openings permit large numbers of direct sunlight-dependent pine seedlings to become established and grow straight and tall. (Open grown pine trees appear short and have limbs close to the ground. Historical accounts of native pines describe trees that could only have been grown under somewhat crowded conditions.)

Pine seedlings become established in these holes at very high densities. It is not uncommon to have ten to twenty thousand seedlings per acre in scattered openings. (Visual evidence of this tight spacing has been lost due to past stump harvesting practices and frequent wildfires which burn above ground portions of the stumps.) Recurrent wildfires and competition for sunlight, moisture, and nutrients favor the strongest, fastest growing pine saplings. Trees die off continually over the life of a stand until mortality replaces the survivors with young seedlings in a never ending cycle. The result is an uneven aged stand where each group of trees created by a canopy opening is about the same age. However, the stand as a whole is a mosaic of clusters that have different ages and densities.

EXISTING TIMBER RESOURCES

Typically this type of land in south Florida land was primarily managed for cattle production. Timber growing on the land was a secondary benefit. Probably most of the valuable timber was removed at least once or twice since Europeans settled in the region. Whenever the pine trees grew large enough to be useful and the landowners

Wingate Creek Timber Analysis

needed cash or building materials, the mature trees were cut. After these harvests the only trees left standing were too small, crooked, or deformed to be useful as sawtimber. No major cutting appears to have occurred within recent years. As a result, some of the previously uncut pine trees are again starting to reach maturity.

For timber management purposes, WCSP can be divided into three community types; scrub, sandhill, and flatwoods. Approximately 40 acres of flatwoods lying just west of Wingate Creek (with a very narrow strip on the east side) has a natural south Florida slash and longleaf pine stand. Basal Areas in this stand vary from 0 to over 100 sq. ft. per acre. Most of the sandhill community lies mostly to the west of the main road, although a small portion is found east of Wingate Creek. A mature sand pine scrub lies within its boundaries. As a result of fire exclusion, its sand pines are encroaching into the scattered LLP and SFSP of the surrounding sandhill community. Another dense sand pine scrub of about 50 acres is located near the entrance to the youth camp. Basal Area of sand pine in this stand exceeds 100 sq. ft. per acre. Trees have reached an age when they begin to fall over from root diseases. This condition will only get worse as the stand gets older.

Recommendations

For the following recommendations to be practical markets for the timber products produced must be available. Hauling distances from WCSP to most traditional forest product markets are considerable. Because of this pulpwood usually costs more to haul to north Florida mills than it is worth when it gets there. Although, when north Florida is very wet and the south dry, mills sometimes pay enough to make it economical for loggers to drive longer distances. Other forest product mills such as fence posts and landscape mulch are located closer to the tract. These markets can fill the important gap in the timber management options created by the lack of a pulpwood outlet. Chip-n-saw and plywood veneer are higher value products. Current markets have chip-n-saw five and veneer ten times more valuable than pulpwood. It is easily seen that a substantial amount of either of these product classes in a sale can increase buyer interest and enhance revenues considerably. Flexibility and timing can make the difference between success and failure of a timber sale. Finally, there is a limited volume of timber currently on this tract. Therefore, to attract bidders, it is likely that any planned timber harvests would have to be combined into one large sale or combined with other nearby state land timber sales.

Mesic Flatwoods - These areas need to have the understory vegetation controlled to facilitate safe prescribed burning and restore a more open ground cover. Some trees may have to be removed prior to chopping the understory. This will facilitate equipment movement. Spacing between leave trees or clusters of leave trees should be at least 30 feet to give room for the tractor and roller-drum chopper to operate without damaging residual trees.

Wingate Creek Timber Analysis

Control saw palmettos, hardwoods, and dense understory vegetation through the use of roller drum choppers and fire. This can be accomplished by burning the stand in late winter or early spring to reduce the biomass. Then roller drum chop the area prior to the summer rainy season with a chopper heavy enough to sever saw palmetto stems (probably a medium or heavy, single or tandem). A second burn in the summer after the chopping is complete would be beneficial if a fire will carry. Close mowing with a heavy-duty brush cutter is another method sometimes used to reduce and control the height of saw palmettos. However, mowing can result in a duff buildup that can cause residual smoke, soil sterilization, and root damage problems in succeeding prescribed burns. These problems can be minimized by using a headfire.

If for any reason an adequate number of young seedlings are not established by the second summer following the initial chopping, burn the stand again prior to end of the rainy season. This will allow some grasses to re-grow enough to protect the seeds and fragile seedlings.

Once 1000+ natural or 200+ planted seedlings per acre are established and growing, withhold fire from the stand for two to three years. Fire should be reintroduced to the system by following the directions contained in the *Prescribed Fire* section below.

Many factors affect the need for and timing of future thinnings. These include initial establishment density, number of trees surviving to merchantable size, crown closure (ground cover shading), and loss of crown. As soon as the trees achieve crown closure, thin the stand to 50 to 70 sq. ft. BA by removing first the weak, diseased, and suppressed trees. At the same time, enough of the co-dominant trees should be removed to reach the proper spacing. The thinning process is repeated every time the stand approaches 100 sq. ft. BA or ground cover begins to be shaded out. Thinning to as low as 40 sq. ft. BA with re-treatment at 80 to 100 sq. ft. to insure open, grassy stands is reasonable in second or subsequent harvests.

Sandhills - Harvest all encroaching sand pines. It may be necessary to control hardwoods prior to planting. If so, conduct a prescribed burn soon after the oaks leaf out in the spring. Plant 600 containerized longleaf pine seedlings per acre as previously described. Return to a normal fire rotation as described.

Sand Pine Scrub - The small area near the entrance appears to be a true sand pine scrub. Boundaries of the scrub contained within the sandhill community are less well defined due to the expanding presence of the sand pines. However, contained within the mosaic of the two communities are the typical flora and open, bare sand characteristic of other scrubs.

As sand pine trees in mature stands begin to decline, they become more prone to insect and disease attacks. Root diseases and heart rot are common in these older sand pines.

Wingate Creek Timber Analysis

Pine beetles and blow down kill weakened trees. The dead and down wood becomes fuel for intense wildfires.

Removal of most of the standing timber simulates a natural stand replacing fire, without the inherent danger to surrounding properties. Boundaries of these stands can be maintained by fire. Prescribed fires will not carry across true scrub at anywhere approaching the same frequency that it will in the surrounding sandhills. This should allow sand pines to grow and reach maturity again in appropriate areas. The potential to grow a significant volume of sand pine exists in these scrubs. However, since sand pine stands are not thinned prior to a final harvest like other pines, they may require 30 to 50 years to reach maturity and produce additional revenue.

Salvage Sales

On occasion, small volumes of wood may need to be removed due to fire, windstorm, insect or other damage. The decision whether or not to harvest the affected timber will depend on the threat to the surrounding stands, risk of collateral ecological damage, and the volume/value of the trees involved. For example, small, isolated lightning-strike beetle kills are a natural part of a healthy ecosystem and normally would not be cut. However, if a drought caused the insect infestation to spread, the infected trees and a buffer zone might have to be removed.

PRESCRIBED FIRE

Florida flatwoods and sandhill ecosystems are fire dependent. Lightning sparked fires are natural to these communities. Prior to European settlement, wildfire occurred in both of these ecosystems at regular intervals of one to three years.

Saw palmettos have always been minor components of flatwoods ecosystems. Although the exact mechanism is not known, frequent wildfires kept their numbers under control. However, with the introduction of effective fire suppression in the mid-1900's, saw palmettos invaded the flatwoods and hardwoods choked the sandhills. Sand pines used the same disruption of naturally functioning systems to colonize sandhill sites. Dense shade caused by the proliferation of palmettos, hardwoods, and sand pines results in the loss of other grassy and herbaceous ground covers.

Fires in palmetto or sand pine dominated systems tend to be less frequent and more intense than in areas with more grasses. These extreme fires do not adversely affect the palmettos, but most other overstory plants including pines are affected. Hot fires can kill pine trees directly or weaken them enough to enable insects kill them. Lack of mature long needled pines means loss of this leaf litter that normally helps support less severe ground fires.

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The intelligent use of prescribed fire is essential to the restoration and maintenance of open healthy, pine-dominated ecosystems. As desirable as burning is, caution must be exercised when reintroducing fire into these systems. It takes a lifetime to grow a mature pine tree. It only takes minutes to kill it with an ill-advised fire. Also, survival of newly established pine seedlings depends on timing and careful execution of burns. To prevent damage to delicate root systems and avoid smoky duff fires, be sure that there is adequate moisture in any organic matter thicker than approximately one inch. In stands with heavy duff layers, try not to burn more than one inch of duff at a time on approximately two to three-year intervals. At least the first burn should be during the dormant season after pine regeneration has reached at least six feet in height. To reduce seedling mortality, consider conducting the first burn during winter months at night. If ground fuels are not too heavy, succeeding burns can be switched to the growing season.

South Florida slash pine seedlings do not enter a delayed height growth, stem diameter growth, and tap root elongation “grass stage” to the extent that longleaf pine seedlings do. However, the seedlings experience more rapid diameter and bark growth earlier in their development than their north Florida slash pine relatives do. The thicker bark and stem diameters make young SFSP more tolerant of short-term recurring fire than seedling NFSP.

Cutover sand pine scrub communities usually will not support prescribed fire without considerable effort. Due to the discontinuous fuels, burns initiated in surrounding sand hills will normally self-extinguish upon entering the scrub. Once fuel loading becomes high enough, head or ring firing techniques may push flames through these scrubs. However, if sand pine regeneration has not reached cone-bearing age, this native species may be lost from the ecosystem forever.

ACCESS

Primary access to the interior of the WCSP is via the youth camp entrance road off of State Road 64. Wingate Road provides access to the portion of the tract lying east of Wingate Creek. Although another road borders the southern end of this block, traffic on it must cross a bridge. The very low weight limitations imposed on the bridge eliminate use of this road for timber management activities. A private road parallels the western boundary. Discussions with the landowner have resulted in tentative agreements for temporary use for forest management practices. However, there are no written agreements in force to assure future access.

Permanent access is best attained through the existing main road. The beginning of the road through the center of the tract is composed of very deep sands. It then crosses a steep-sided drainage ditch and then turns into a sandy road that packs better than the

Wingate Creek Timber Analysis

first stretch. Work is needed along this route to provide better access for all management activities. It is suggested that shell or limerock be spread along the very sandy portion of the road to stabilize the roadbed. To provide all weather access, the ditch needs a large elliptical-shaped culvert. Another option is to cut down the approaches to the ditch and install a hard surface crossing with armored approaches. Costs associated with these improvements may be able to be tied in with future timber harvest.

SUMMARY

Reestablishment of native pine trees is essential to restoring healthy flatwoods and sandhill ecosystems to Wingate Creek State Park. Reintroduction of periodic fire is another requirement of these systems. The needles, annually shed by longleaf and slash pine trees, are an important carrier of fire in Florida's forests. Success of the prescribed burning program will likely depend on the ability of managers to continue growing pine trees. Timber sales are used to maintain vigorous stands of pine trees and maintain more open canopies. Occasional timber sales from WCSP should make a significant contribution toward management expenses.

Elimination of natural fire has allowed hardwood species and saw palmettos to invade the former grasslands. Once these species became established, they shaded out native grasses that normally carried fire across the landscape. Without fire, leaf litter and shade build. Fire dependent, sun-loving plants (along with the animal species that rely on them) are lost from the ecosystem.

To restore and maintain a healthy fire dependent sandhill and flatwoods ecosystems, it is desirable to reestablish a more natural fire regime. Reduction in the height and density of saw palmettos will reduce the intensity of fires in the flatwoods. Fewer palmettos and hardwoods mean more sunlight reaching the ground and more native grasses and forbs. The most reliable way to control palmettos is with mechanical treatment such as mowing or roller-drum chopping. This sometimes requires removal of some of the pine trees to allow the heavy machinery to move between remaining trees within the stand. Hardwoods can be controlled through the use of growing season prescribed fires. Establishing and maintaining at least a medium density of pines assures enough needle cast to help carry essential prescribed fires that will help keep palmettos and hardwoods from dominating the area again.

Wingate Creek State Park Timber Assessment
Prepared By: Butch Mallett
Senior Forester, Other State Lands Region 3
Division Of Forestry – February 2003

Addendum 7 – Priority Schedule And Cost Estimates

Wingate Creek Priority Schedule and Cost Estimates

Estimates are developed for the funding and staff resources needed to implement the management plan based on goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division’s legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Natural and Cultural Resource Management

1. Request for operating budget, for fuel and equipment. Estimated Cost: \$15,000.00. Maintenance and interpretive assistance. Average of \$2200/year. 0-10 years. Estimated Cost: \$22,000.00.
2. Establish and replace damaged fencing Estimated Cost: \$17,400.00.
3. Widen existing fire lines and create fire control lines Estimated Cost: \$32,000.00.
4. Initiate prescribed burning program for approximately 60-70 acres per year (340 total). 0-10 years. Average of \$1590/year for personnel, fuel, and equipment. Estimated Cost: \$15,900.00.
5. Expand exotic plant and animal control program within the parks. Aggressively remove feral hogs. Continue to monitor the parks for new infestations of exotic plants. Map and treat infestations as needed. 0-10 years. Includes equipment, herbicide. Estimated Cost: \$17,000.00.
6. Mechanical reduction. Estimated Cost: \$19,575.00.
7. Acquire and install interpretive and trail signage. Estimated Cost: \$4,500.00.
8. Acquire a 4X4 3/4 ton pickup truck. Estimated Cost: \$26,000.00.
9. Acquire a 250 gal slide in fire unit for pickup. Estimated Cost: \$9,710.00
10. Acquire a 4X4 ATV. Estimated Cost: \$8,900.00
11. Acquire a 4X4 tractor and accessories. Estimated Cost: \$60,000.00

Wingate Creek Total Estimated Cost: \$247,985.00

Development Area or Facilities	Cost
Trailhead Development	\$83,125.00
Primitive Group Camp.....	\$187,500.00
Support Facilities.....	\$343,750.00
Total w/contingency	\$737,250.00

Wingate Creek Priority Schedule and Cost Estimates
