SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Land Stewardship Section

3301 Gun Club Road

West Palm Beach, Florida 33406

Kissimmee River Management Areas Ten-Year General Management Plan 2014 through 2024

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January, 2014

Land Stewardship Section
South Florida Water Management District
3301 Gun Club Road
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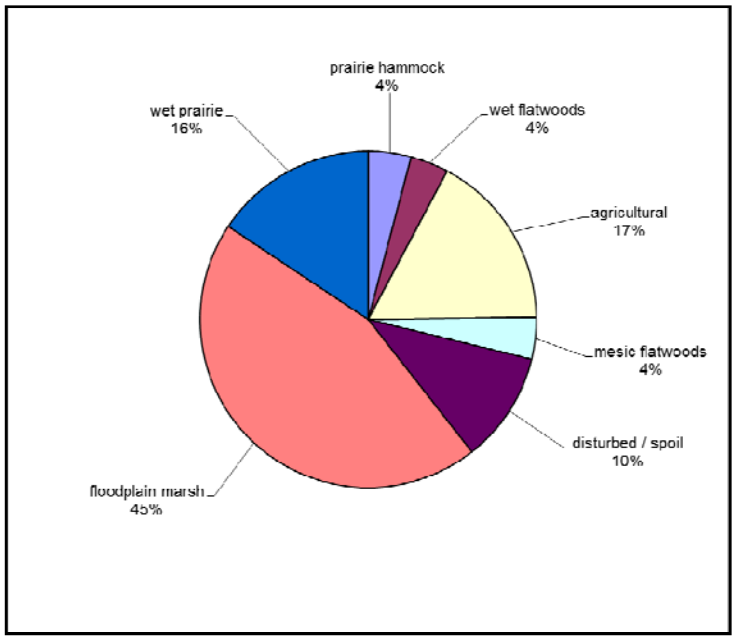
1. Executive Summary

The South Florida Water Management District (District) is directed to acquire and manage lands which are vital to the restoration of the Everglades, the Kissimmee River, the Kissimmee Chain of Lakes and its headwaters. In the 1980s the District targeted the floodplain of the Kissimmee River as a Save Our Rivers project. This plan addresses management for the 50,810 acres that have been acquired in fee-simple by the District within the Kissimmee River project area.

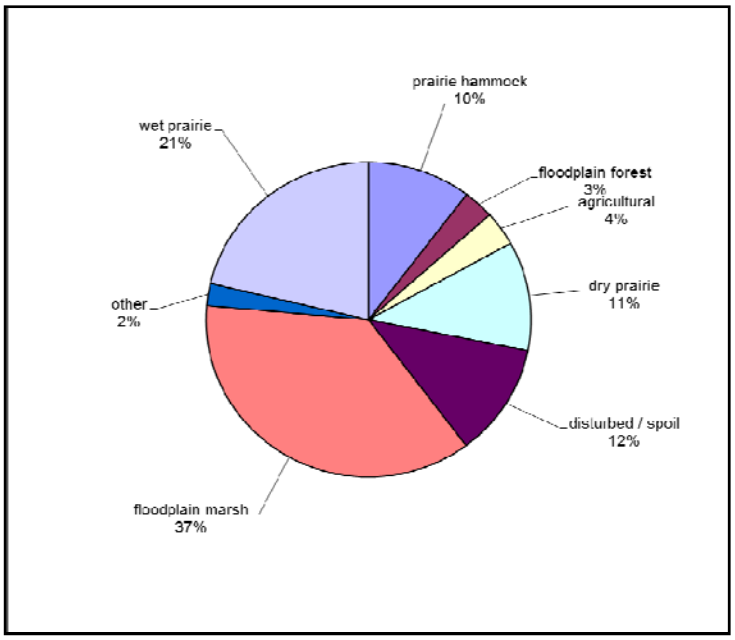
This General Management Plan describes the historical, ecological, and managerial aspects of the area as a means to coordinate effective management programs. The plan serves as a guidance document for the implementation of resource-based land management practices. It also provides information on operational procedures and organizational structures within the District and of management activities and objectives for the management areas.

NATURAL SETTING

The natural character of the management areas is defined by 6 distinct soil categories classified by the Natural Soil Landscape Positions soil classification system: flatwood soils, flats soils, knolls, sand depression soils, muck depression soils, and urban or man-made lands. These soils support distinct plant communities that are defined by criteria established by the Florida Natural Areas Inventory; the most common of which have the following coverage:



Upper River (Pool A) Natural Communities



Lower River (Pools C-D) Natural Communities

RESOURCE MANAGEMENT

Resource management programs for the management areas consist of:

- Prescribed fire to mimic the natural fire frequency in fire-dependent natural communities.
- Forestry and vegetation management such as shredding or mowing overgrown understories, or thinning pine communities where they are too dense.
- Wildlife management, including surveys, habitat management, and hunting programs.
- Exotic vegetation treatment.
- Monitoring the health of the natural communities and the impact of management practices on them.
- Restoring sites that have previously been altered by drainage and/or agriculture.

RESTORATION PROJECTS

In addition to the restoration of the middle pools of the Kissimmee River (formerly Pools B-D), the District is using in-house funds for the restoration of two former dry prairie areas in Starvation Slough and and one area of scrub at River Runt in Pool C. The scrub restoration involves filling old drainage ditches, while the dry prairie restoration involves disking sod fields, herbicide applications, and groundcover restoration.

MONITORING

The District performs vegetative community monitoring and faunal monitoring associated with the Kissimmee River Restoration Project. The Florida Fish and Wildlife Conservation Commission monitors bat houses and a swallow-tailed kite nesting colony, and the Archbold Biological Station monitors red-cockaded woodpeckers and scrub jays.

WILDLIFE MANAGEMENT

Wildlife management, including hunting programs, is conducted by the Florida Fish and Wildlife Conservation Commission through a multi-site cooperative agreement. The hunting program includes a general gun, muzzle loading, and archery season in the fall, small game hunts in late winter, and turkey hunting in early spring. In addition to hog hunts, the District manages feral swine through a managed hog removal program. This program uses no-cost hog control agents that use a variety of methods to remove feral swine including shooting, trapping and dogs.

PUBLIC USE

Infrastructure for several recreational activities is provided in the management areas including boating, airboating, canoeing, bicycling, camping, equestrian, fishing, hiking, and hunting. The Florida National Scenic Trail and Florida Cracker Trail wind their way through portions of the Management Areas.

2. Introduction and Management Plan Purpose

The Kissimmee River Restoration Act was passed in 1976 and authorized the initial studies and planning for the restoration of the river. A recommended restoration plan was developed and the Kissimmee River Restoration Project was authorized by Congress in the 1992 Water Resources Development Act as a joint partnership between the District and the US Army Corps of Engineers. The project was designed to restore over 40 square miles of river/floodplain ecosystem including 43 miles of meandering river channel and 27,000 acres of wetlands. To complete the restoration it was necessary to acquire land and flowage easements within the 100-year floodplain.

The Save Our Rivers program was created in 1981 and received dedicated funds derived from real estate documentary stamp taxes beginning in 1985 and Preservation 2000 funds beginning in 1990. Between 1985 and 2000, the District through the Save Our Rivers program acquired 49,000 acres of property fee title or in flowage easements to support the Kissimmee Rover Restoration Projects. This acreage was in addition to floodplain land that had been previously acquired during the river channelization works of the 1950s and 1960s. In total, the District has fee-simple ownership of 50,810 acres within the Kissimmee River corridor.

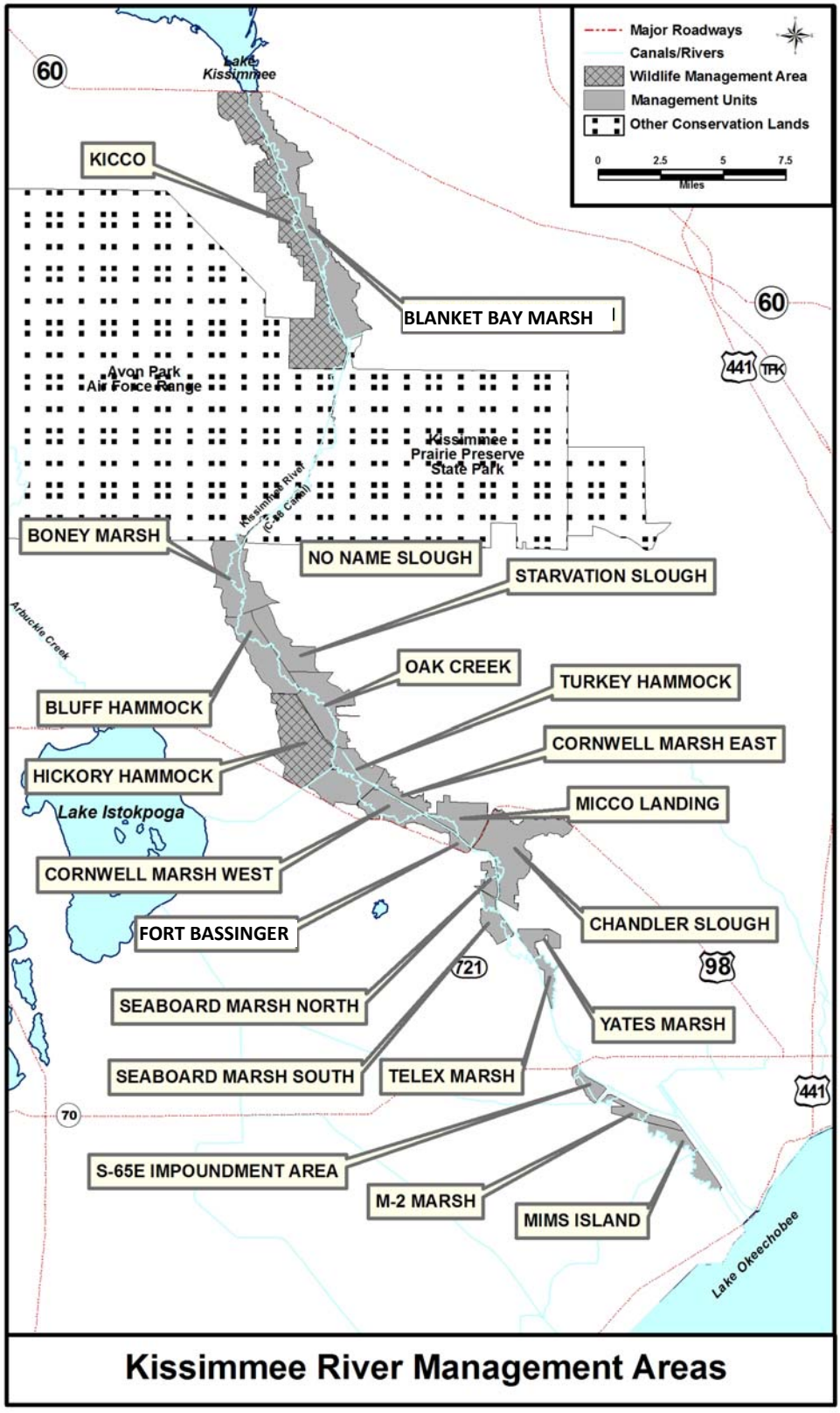
There Kissimmee River properties are divided into 21 management areas (**Table 1** and **Maps 1 - 2**). Most of the management areas have trailheads or other public use facilities accessible by road, while others are only accessible by river (see **Section 6 - Public Use**). The Avon Park Airforce Range, and the Kissimmee Prairie Preserve State Park manage the floodplain within the former Pool B of the middle river area. The 100 year floodplain, the point on either side of the river to which the District sought to acquire the rights necessary to implement the river restoration, is generally two miles wide and includes the river channel, oxbow lakes, marshes, and wet prairies surrounded by pockets of cypress and a large fringing oak hammock. Landward of the hammock may be small areas of oak scrub, dry prairie, or pine flatwoods.

This General Management Plan consolidates relevant information about the Kissimmee River Management Areas including land management goals and objectives, past and present land uses, resource data, restoration and management needs, public use programs, and administrative duties to guide management actions for the period 2014 through 2024. Management activities described in this plan are based on requirements and directives of Florida Statutes and established District policies. Section 373.591(4), Florida Statutes, requires that management plans be developed for District conservation, preservation, and recreation lands.

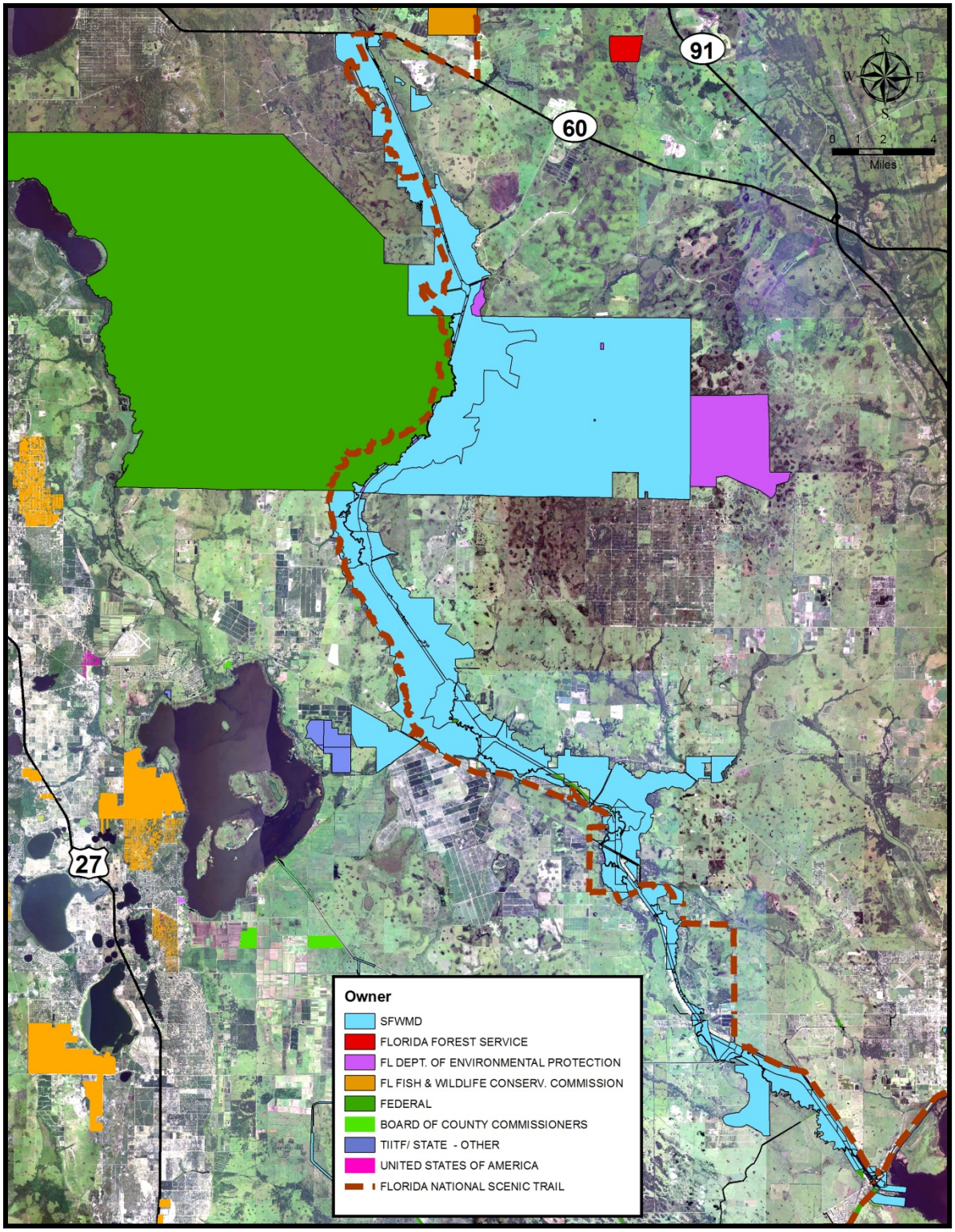
Table 1. Management Areas of the Kissimmee River

	West Side of Channel	East Side of Channel
Upper River (Pool A)	KICCO	Blanket Bay
Middle River (Pools B-D)	Boney Marsh Bluff Hammock Hickory Hammock Cornwell Marsh West Fort Bassinger	No Name Slough Starvation Slough Oak Creek Turkey Hammock Cornwell Marsh East Micco Landing Chandler Slough
Lower River (Pool E and Paradise Run)	Seaboard Marsh North Seaboard Marsh South S-65E Impoundment M-2 Marsh Mims Island	 Yates Marsh Telex Marsh

Map 1. The Kissimmee River Management Areas



Map 2. Regional Public Land Ownership



State statutes further directs the District to provide natural resource protection and management while allowing compatible multiple uses on public lands. This mission statement and requirements set forth in Florida Statutes provide three primary goals for the Land Stewardship Section:

- Conserve and protect water resources
- Protect and/or restore land to its natural state and condition
- Provide appropriate public use

To accomplish these goals, the Land Stewardship Section performs six major functions:

- Strategic, project, and management planning
- Operation and maintenance of land resources
- Development of public use programs
- Development of restoration projects
- Evaluation of management activities
- Administration of land management service contracts

The plan consolidates current site information and general guidelines for management of the area. It also updates and replaces the Conceptual Management Plan developed by the Florida Fish and Wildlife Conservation Commission in 1994 for the KICCO Wildlife Management Area, and the 2008 – 2013 General Management Plan for the Kissimmee River Pools C&D developed by the District. As such, it serves as a collective information source for management staff, partners, and the general public.

2.1 Kissimmee River Management Area Goals and Objectives

The Land Stewardship Section's primary functions and management priorities for 2014-2024 are contained in the following Goals and Objectives:

Goal 1: Manage natural communities and modified habitats to protect and enhance water, floral, and faunal resources.

Objectives:

- Mechanically treat vegetation to reduce overgrown saw palmettos, wax myrtles, and hardwoods, as needed.
- Continue the regular application of fire through a well-planned and documented prescribed burning program.
- Continue an aggressive, integrated exotic plant management program to eliminate and control infestations of all invasive exotic plant species, with a special emphasis on lygodium. Treatments will be documented and coordinated with other management activities.
- Continue to use prescribed grazing as a resource management tool.

- Continue to provide selective herbicide applications at the River Runt restoration site to encourage the recruitment of native species.
- Continue to provide selective herbicide applications at the dry prairie restoration sites at Starvation Slough, and other groundcover restoration sites along Hwy 98 and Fort Bassinger, to encourage the recruitment of native species.

Goal 2: Provide resource-based public use opportunities.

Objectives:
- Maintain, and expand if appropriate, existing nature based recreational opportunities including hiking, biking, equestrian use, camping, hunting, birding, and wildlife viewing.
- Continue to coordinate with the Florida Trail Association, and local chapters, on the maintenance and use of the areas' trails, including the Florida National Scenic Trail.
- Continue to participate in the Water Resources Advisory Committee's Recreation Issues Workshop which facilitates public use planning with stakeholders and user groups.

Goal 3: Maintain public use facilities and area infrastructure.

Objectives:
- Maintain present public-use improvements (roads, parking/trailheads, signs, structures) using a combination of District resources, contracts, and volunteer involvement.
- Maintain boat ramps at the Istokpoga Canal and the S-65D water control structure.
- Install an equipment storage area at Istokpoga Canal public use area.
- Refurbish the pole barn at the Hickory Hammock campground.
- Replacement of the Boney Marsh boardwalk.
- Resurface the asphalt at the Istokpoga Canal public use area.
- Expand camping facilities at the Istokpoga Canal public use area.

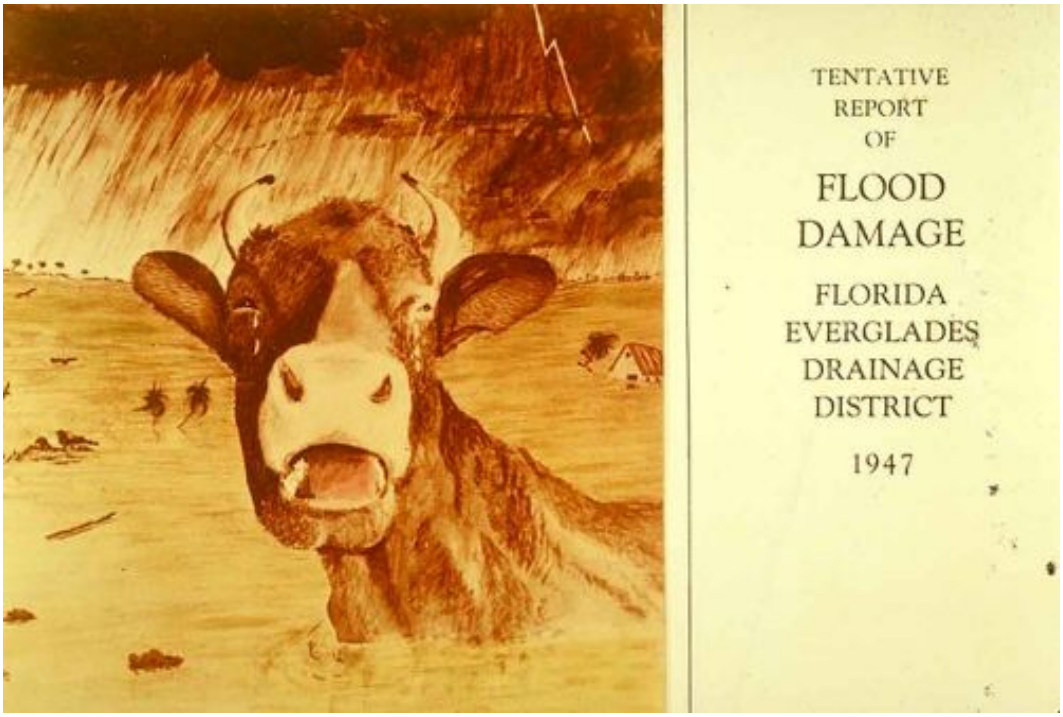
3. Site History

Historically, the Kissimmee River meandered over 103 miles within a one to two mile wide floodplain. The floodplain, approximately 56 miles long, sloped gradually to the south from an elevation of about 51 feet at Lake Kissimmee to about 15 feet at Lake Okeechobee; falling an average of about 4 inches in elevation over each mile of the river. Under historic conditions, river flows generally exceeded 250 cubic feet per second (cfs) 95 percent of the time, while overbank flooding occurred 35-50% of the time during the historic period of hydrologic record (1934-1960). The river moved very slowly, with normal river velocities averaging less than two feet per second.

The historic floodplain was covered by approximately 35,000 acres of wetlands. The distribution and maintenance of plant communities within the floodplain wetlands depended on prolonged inundation and seasonally fluctuating water levels. A fluctuating hydroperiod, along with the undulating topography of the floodplain, a meandering river channel, oxbows, and natural discontinuous sand banks, enhanced and maintained habitat diversity, including the mosaic of intermixed vegetation types.

Prior to 1940, human habitation was sparse within the Kissimmee Basin. Land use within the basin consisted primarily of farming and cattle ranching. However, rapid growth and development following World War II set the stage for extensive property damage when a severe hurricane occured within the basin in 1947. The mass flooding during this period intensified public pressure for measures to reduce the threat of flood damage within the Kissimmee Basin. The State of Florida responded with a request to the federal government to design a flood-control plan for central and southern Florida.

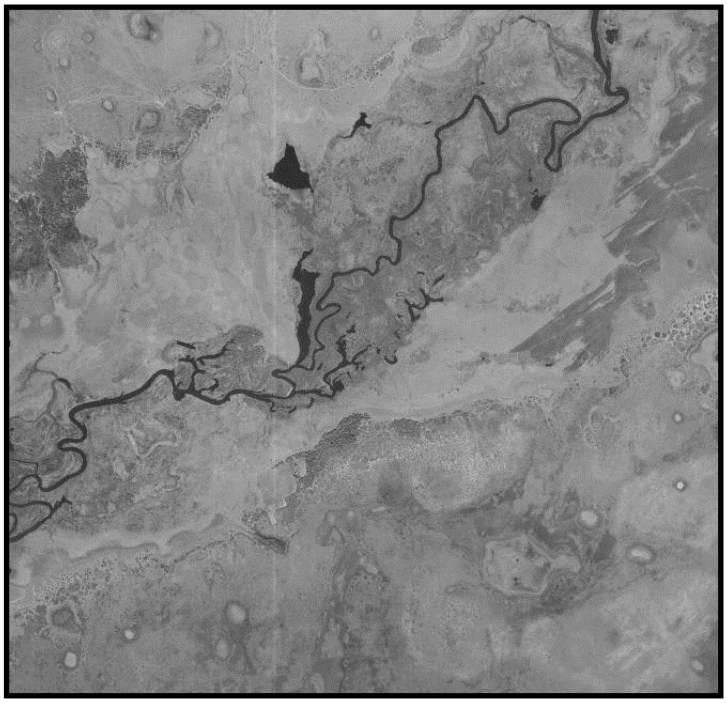
In 1948, Congress authorized the U.S. Army Corps of Engineers to initiate construction of the Central & Southern Florida Project for Flood Control and Protection. In 1954, Congress specifically authorized the Kissimmee River portion of the project, which was planned and designed from 1954 to 1960. Between 1962 and 1971, the meandering river was transformed into a 56 mile-long, 30 foot deep, 300 foot-wide canal. Excavation of the canal and deposition of the resulting spoil eliminated approximately 35 miles of river channel and 6,200 acres of floodplain wetland habitat. The floodplain was transformed into a series of impounded reservoirs (Pools A-E). Inflow from the upper basin was regulated by six water control structures (S-65s). Water control structures and canals were built in the upper lakes region which allowed regulation of water flow within and between the lakes of the upper basin.



The "Crying Cow" report that demanded better flood protection

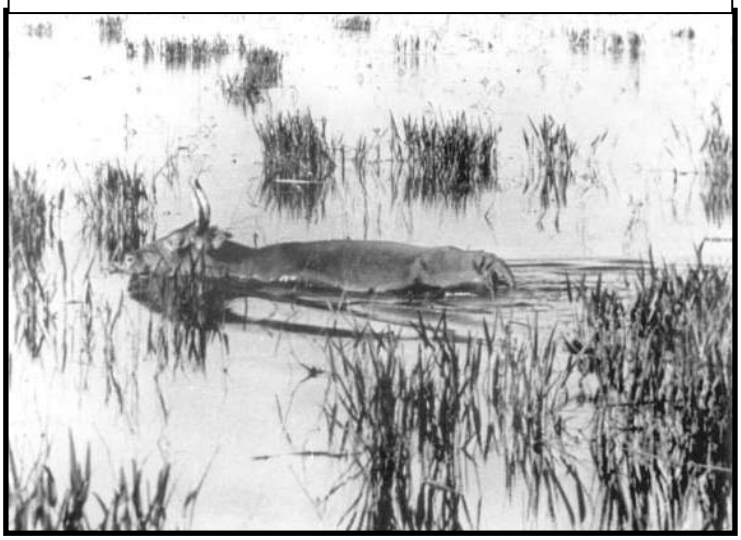
Transformation of the river-floodplain ecosystem into a series of deep impoundments drained much of the floodplain, eliminated historical water-level fluctuations, and greatly modified flow characteristics. Approximately 26,000-31,000 acres of pre-channelized floodplain wetlands were drained, covered with spoil, or converted canal. The floodplain at the lower end of each pool remained inundated, but pre-channelization water level fluctuations were eliminated and the upper pools dried out. The physical effects of channelization, including alteration of the system's hydrologic characteristics, largely eliminated river and floodplain wetlands and degraded fish and wildlife habitat of the Kissimmee River ecosystem.

In 1981, the Florida Legislature established the Save Our Rivers program for the five water management districts to acquire environmentally sensitive land. The legislation (Chapter 373.59 F.S.) produced the Water Management Lands Trust Fund and empowered the water management districts to acquire lands needed to manage, protect, and conserve the state's water resources. Once acquired, the lands were to be managed in an environmentally acceptable manner and restored to their natural state. Districts were authorized to make certain capital improvements, i.e. fencing, access roads/trails, and provide basic public facilities. The legislation also requires the districts to develop and provide appropriate public use opportunities. In addition, habitat management such as control of exotic species and controlled burning was to be conducted.



The Kissimmee River, prior to channelization

Massive flooding in the 1940s that prompted Congress to authorize the Central & Southern Florida Project for flood control and protection



The river during channelization in the 1950s and 60s (left), boating in the straightened and channelized river (right)

The planning of the restoration project was aided by the construction of a large scale-model of the river in a huge tank in a lab at Univ. of California, Berkley.

The Kissimmee River Restoration Project was authorized by Congress in the 1992 Water Resources Development Act as a joint partnership between the District and the US Army Corps of Engineers. The project was designed to restore over 40 square miles of river/floodplain ecosystem including 43 miles of meandering river channel and 27,000 acres of wetlands. The restoration plan calls for the reestablishment of inflows from Lake Kissimmee to provide flow velocities and volumes similar to the ones that existed prior to channelization.

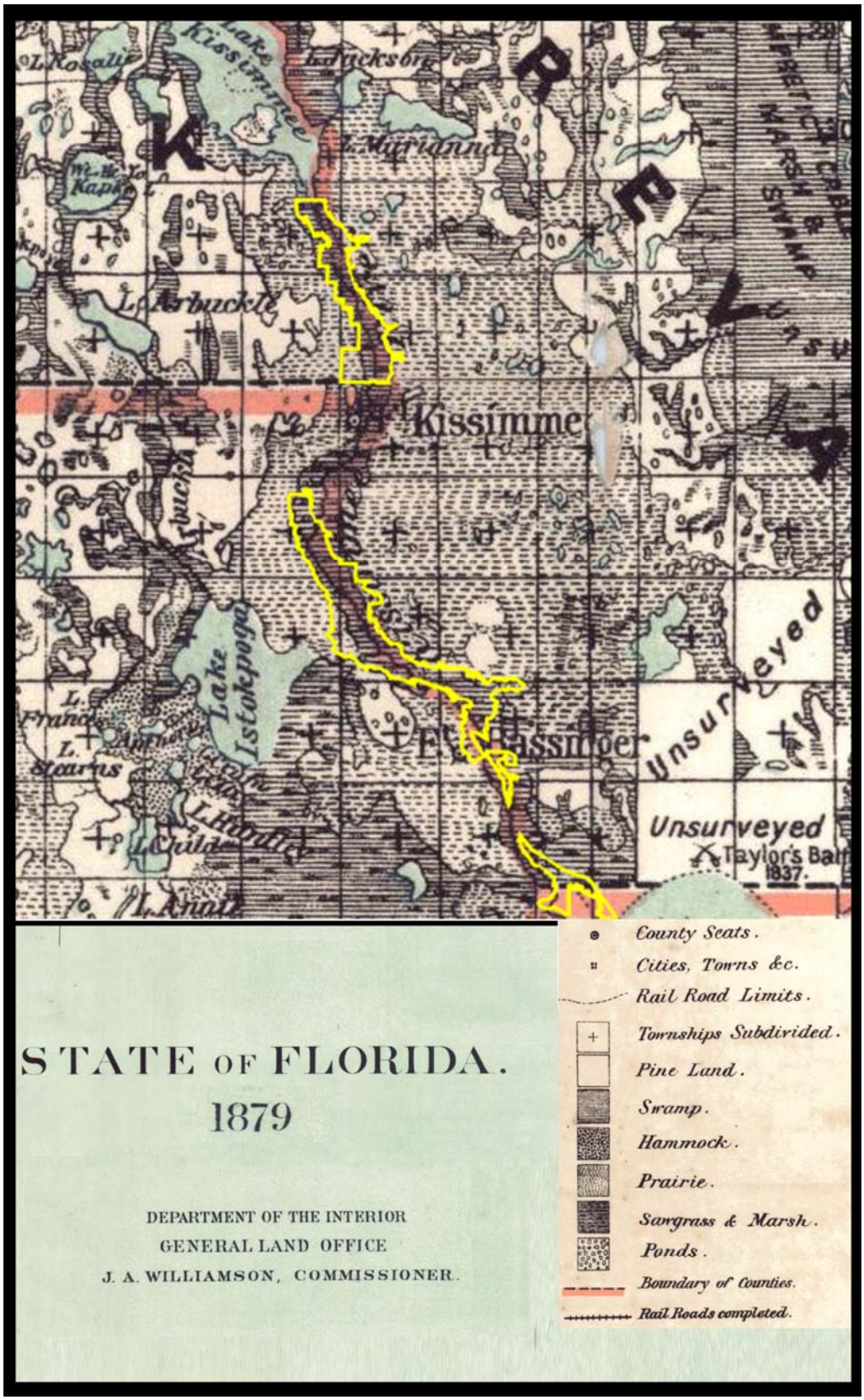
Approximately 11,312 acres were purchased in the 1960s as part of the channelization of the Kissimmee River, of which 7,637 acres are managed today as part of the Kissimmee River Management Areas. Land continued to be acquired from the 1980s until present; first as Save Our Rivers projects and later through the Kissimmee River Restoration Project. Today the District owns fee-title interest in 50,810 acres along the river, of which 8,081 acres is managed by the Department of Environmental Protection as the Kissimmee Prairie Preserve State Park. The District also has less-than-fee interest in 14,520 acres of conservation and flowage easements. **Table 2** identifies th site history and dates of historical significance for the Kissimmee River. **Maps 3-5** provides historical information on plant communities along the river corridor. **Map 6** shows the channelized river as it existed form the 1960s until the 1990s, divided into five controlled impoundment areas or Pools.

Table 2 – Site History

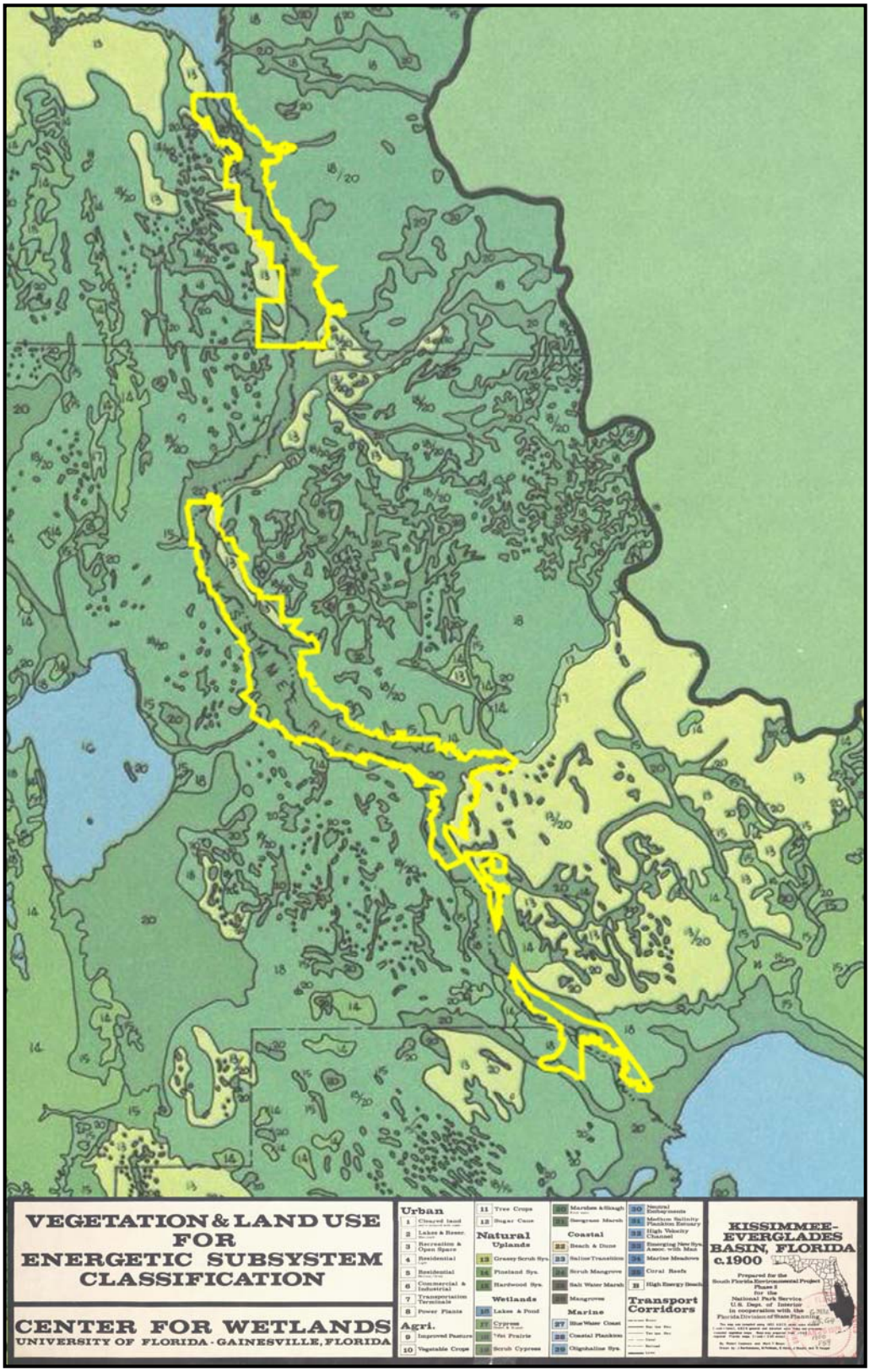
	ACTIVITY	EFFECT ON FLOODPLAIN
1837	Fort Basinger constructed	Trails constructed between forts spaced approximately 20 miles apart, allowed settlement of the area when the Armed Occupation Act was passed in 1842.
1850	U. S. Congress passed the Swamp and Overflowed Land Act	Allowed the state legislatures to transfer the ownership of swamp and overflowed lands to private entities to reclaim the land through drainage and levee projects.
1858	Third Seminole War ended	Pushed the Seminoles south of Lake Okeechobee and opened the Kissimmee Basin to settlement
1881-1884	Hamilton Disston's Atlantic and Gulf Coast Canal and Okeechobee Land Company completes canals and dredging projects throughout the region creating a navigable water way from Fort Myers to St. Cloud.	Water levels in the Kissimmee Upper Basin dropped and the area was opened to steamboat traffic. Clearing and snagging operations began on the Kissimmee River to keep it navigable.
1890's	Kissimmee Island Cattle Company (KICCO) acquired land south and west of Lake Kissimmee and used the native range for cattle ranching	While this would have been an intensification, cattle had been grazing the area since the land belonged to Spain.
1915	Small ditches were carved through the land west of the river for the establishment of KICCO's company town.	Drained wetlands and created an untenable situation of having a settlement and large operation in the 100-year floodplain.
Late 1947	Major hurricane strikes with a 100 – year flood event in the Kissimmee River Valley. Subsequent "Crying Cow" report demanded better flood protection for agricultural lands in the Kissimmee River Valley.	The flood event revitalized the flood plain and surrounding wetlands.
1948	Congress authorizes the Central and Southern Florida Project for Flood Control and Protection	Set the stage for massive drainage and flood control projects.
1954	The Kissimmee River channelization is authorized by Congress	
1954-1960	Planning and design completed for the Kissimmee River flood control project	
1962-1971	Channelization of the Kissimmee River	Transformation of the river-floodplain ecosystem into a series of impoundments, it drained much of the floodplain
1971-1974	Environmental impacts from the channelization are recognized by the Central and South Florida Flood Control District and planning efforts to restore the River begin.	It was clear that any attempt to restore the River would require nearly all of its floodplain to be in public ownership so that the river could flood naturally
1974	The State purchased 1718 acres within Blanket Bay, and granted a flowage easement to the District	State acquisition kept Blanket Bay from being developed.
1983-1985	KICCO in Pool A acquired by the South Florida Water Management District	An existing development and incompatible use was removed.
1992	Kissimmee River Restoration Project authorized by Congress	Set the stage for the restoration of much of the River's former floodplain

1994	Ground breaking for the construction of the Kissimmee River Restoration Project	The first 1000 feet of backfilling was completed in Pool B
1997	Construction begins on Pool A restoration projects	Projects included increasing the amount of water that could be brought into the Kissimmee River, removing spoil mounds on the south side of Blanket Bay, and constructing tie-back levees at S-65A that allow Pool A wetlands to retain more water.
1999-2001	Phase I of the restoration project, removal of the S-65B structure and backfilling of the C-38 in Pool C	Emergent and shoreline vegetation has reappeared and is thriving. Waterfowl are returning. Water quality is improving. Wildlife populations are increasing.
2003	A drainage canal was filled at the south end of KICCO.	Improved hydrology of Tick Island Slough
2006	Phase IV backfilling in Pool B begins	Ecological improvements similar to Phase I are anticipated.
2007 - 2013	Backfilling continues into Pool D, land acquisition for restoration purposes nears completion.	Ecological improvements similar to Phase I are anticipated.

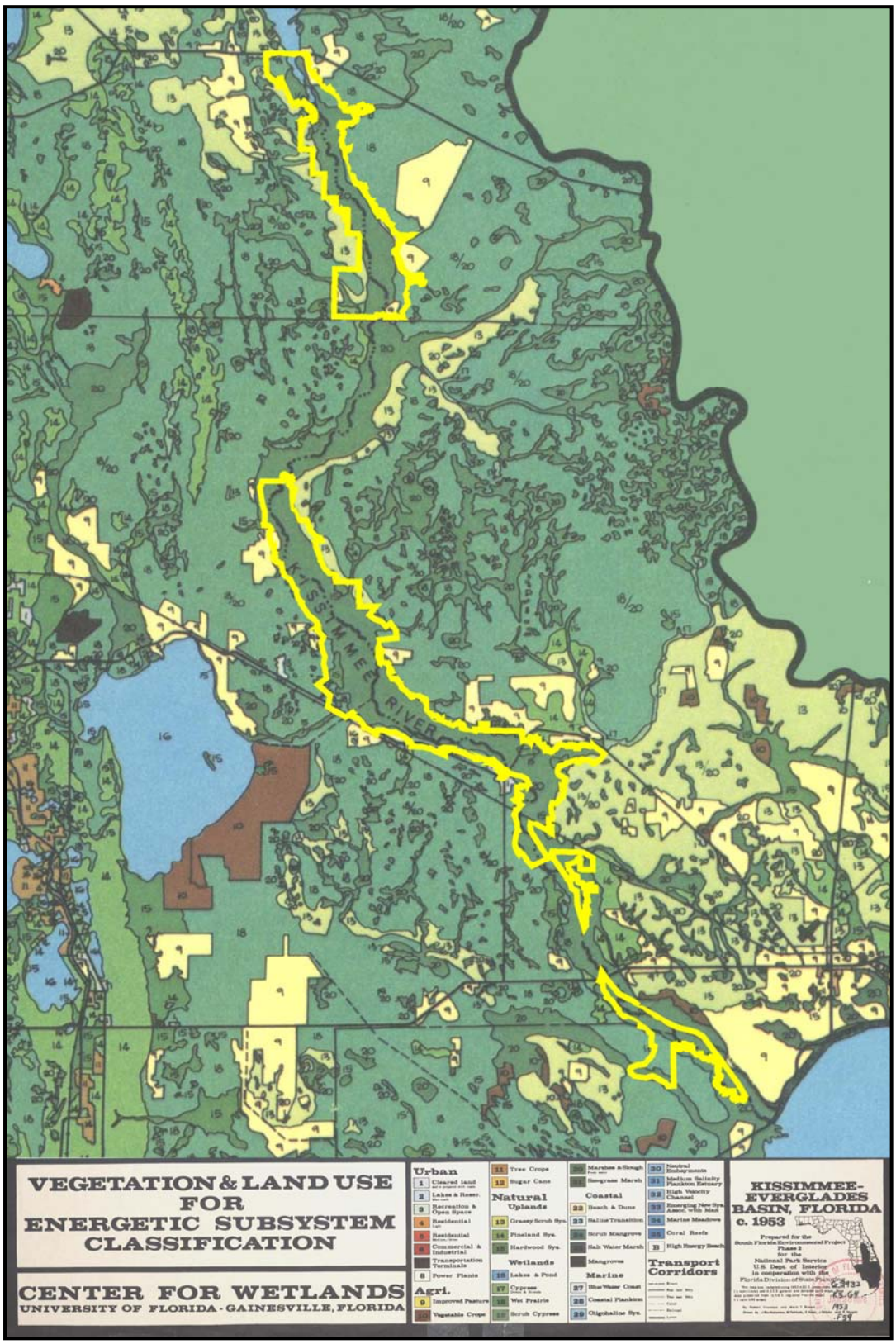
Map 3. 1879 General Land Office Map with land cover classification



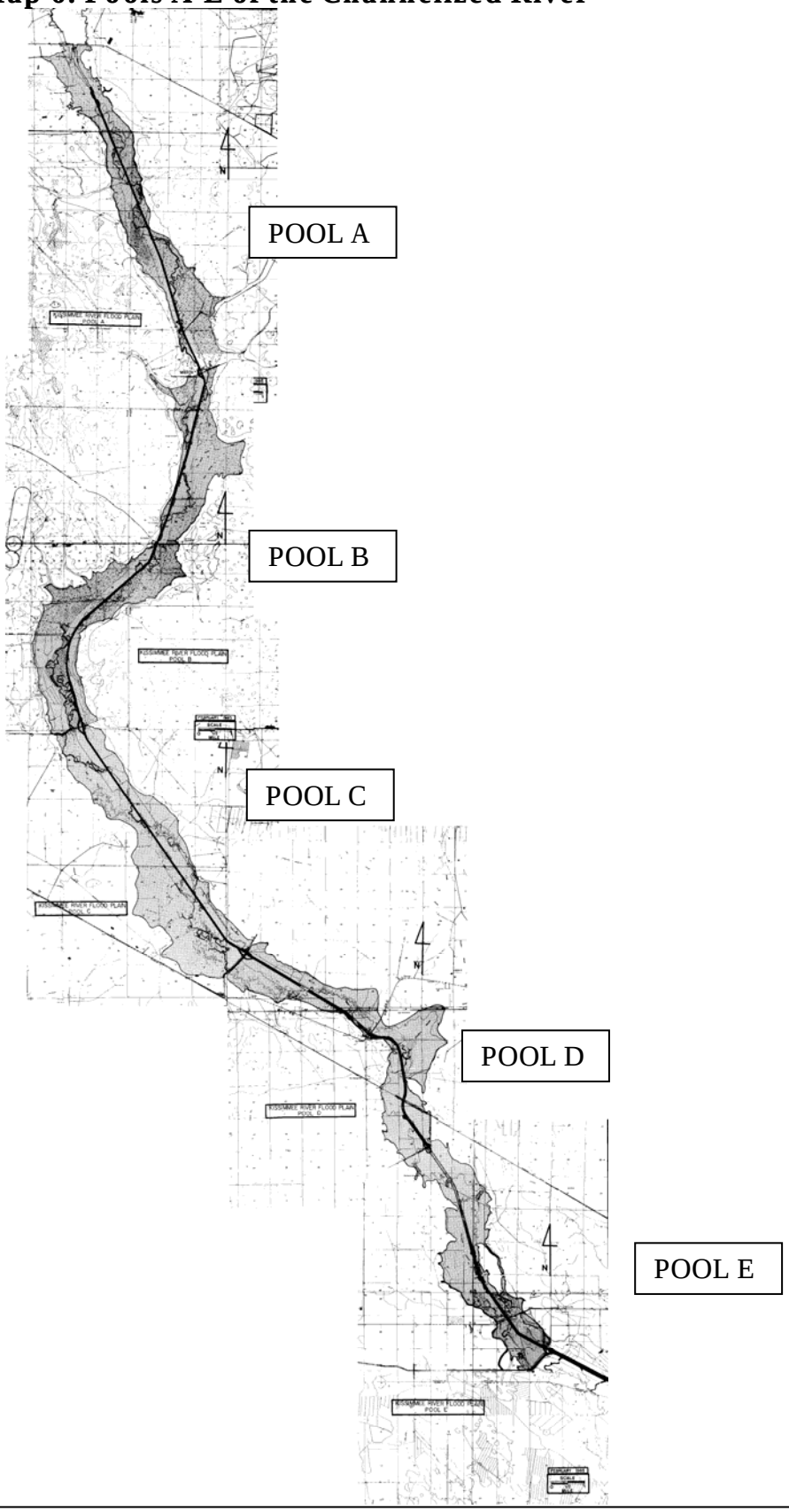
Map 4. University of Florida land cover map - 1900



Map 5. UF land cover map - 1953



Map 6. Pools A-E of the Channelized River



4. Resource Inventory

Policy 140-25(3)(e) Inventories of natural and historic resources shall be performed to provide information for effective land management planning, natural community maintenance and ecological restoration. (District policies are reprinted in **Appendix A**)

Floral and faunal species are inventoried and natural communities are mapped by Land Stewardship personnel, volunteers, or private contractors. The data helps District land managers with resource management planning and monitoring efforts.

Inventory data is on file with the Land Stewardship Section. Land Stewardship shares natural areas and species data with the Florida Natural Areas Inventory through a Memorandum of Understanding.

Floral and faunal inventories of the Management Areas in the northern management areas (Pool A) were included in the environmental assessment initiated shortly after acquisition. The southern management units had a floral and faunal survey included as part of the 2002-2007 Kissimmee River Pools C and D General Management Plan. These served to determine the presence of listed species and to serve as ecological baselines. Additional surveys have been completed with species' lists being updated regularly by volunteers, contractors, and District & Florida Fish and Wildlife Conservation Commission staff. Archaeological and cultural resource inventories were conducted in coordination with the Department of State, Division of Historical Resources and are described in the State's Master Site File.

4.1 Hydrology

Policy 140-25(1) The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources.

The major geomorphic features which affect area hydrology are the Osceola Plain and Bombing Range Ridge, the Okeechobee Plain, small portions of the Caloosahatchee Incline, and the Lake Wales Ridge (**Map 7**). The Osceola Plain is a generally broad terrace bounded by the Lake Wales Ridge to the west and the Eastern Valley to the east, both of which are marine scarps. The Osceola Plain has little relief locally, and generally has an elevation of 60 to 70 feet above the National Geodetic Vertical Datum. The prominent feature of the Osceola Plain is known as the Bombing Range Ridge. The Kissimmee River passes through the length of the Osceola Plain slightly west of the center line roughly parallel with the axis of the peninsula. For the southernmost 25 miles of this route it occupies a valley 1.5 miles wide, which is cut rather sharply into the surface of the plain. The Okeechobee Plain gradually slopes to the south and is one of the flattest parts of the United States. At its northern boundary at the toe of the Osceola Plain, the

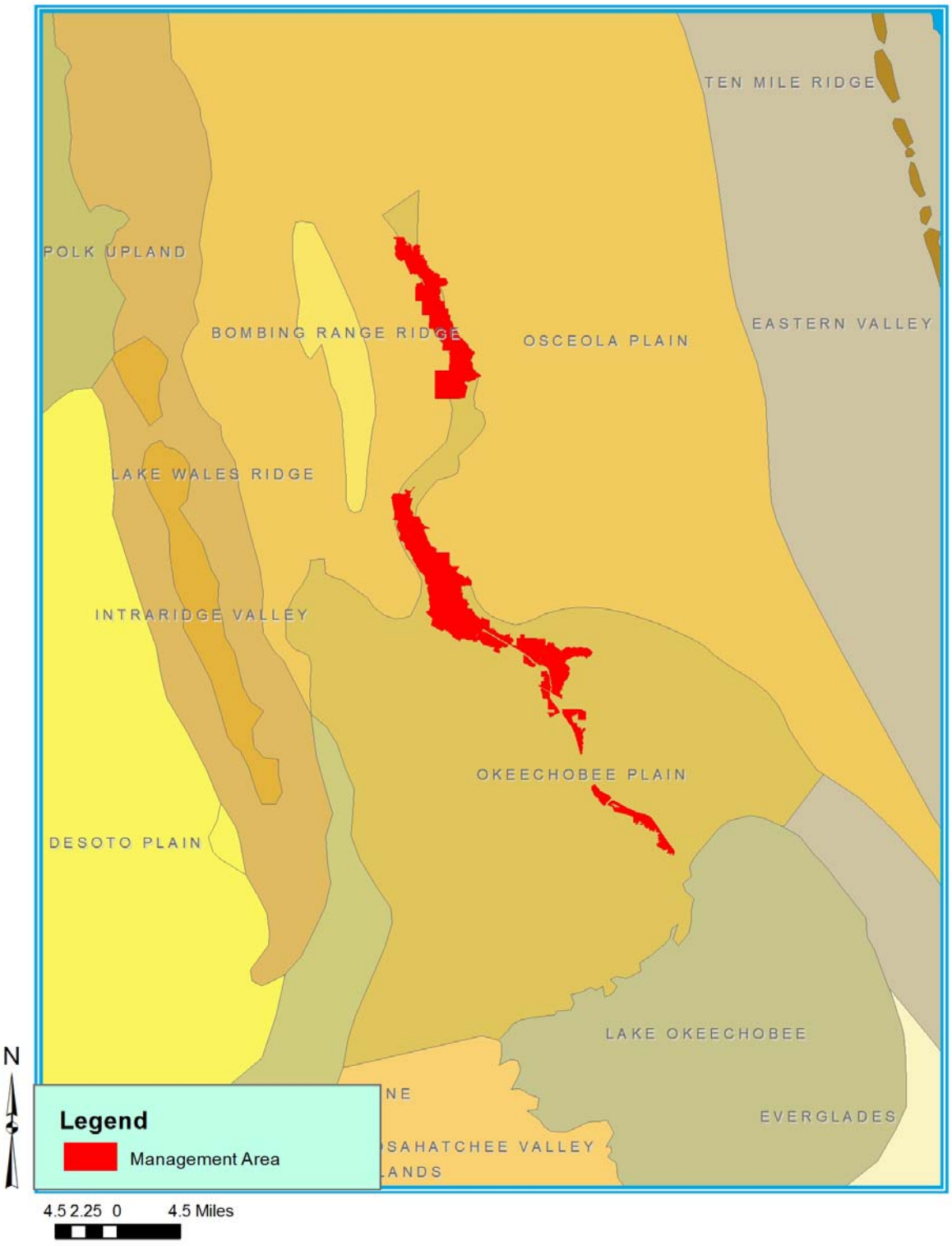
elevation is 30 to 40 feet above the National Geodetic Vertical Datum and slopes southward to an elevation of 20 feet at the north shore of Lake Okeechobee. The narrow northern portion of this plain consists of the Kissimmee River Valley. The Lake Wales Ridge, which forms the most prominent topographic feature of the Florida peninsula, rises above the Okeechobee Plain to an elevation of over 150 feet (**Map 8**).

Prior to channelization, surface water flow was dependent on rainfall-driven seasonal cycles that supplied water to the river system. (**Maps 9-10**) Most of the floodplain remained inundated for a major portion of the year. As much as 77% of the floodplain had mean annual hydroperiods of at least 265 days, with depths commonly exceeding one meter on the inner portions of the floodplain. Gently sloping elevations and seasonally fluctuating inflow produced slow drainage and periodic overflow onto the river floodplain. Water flow was delayed by dense wetland vegetation, a widely meandering channel, and organically rich river substrates. Packingham Slough, Buttermilk Slough, Tick Island Slough, Oak Creek, Istokpoga Creek, Turkey Hammock, Near Dinner Bay, Underhill Sawgrass, and Chandler Slough are tributaries that added to the basin's water retention capacity and flowage. Many small agricultural drainage ditches fed into the sloughs increasing the efficiency through which the depression marshes in those lands drain. During significant rainfall events, water was delivered to the main channel by overland sheetflow. Higher elevations were influenced by fluctuating water levels during the summer months. Water drawdown from elevated areas was a slow process. Pre-channelized stages typically receded at rates of less than one foot per month.

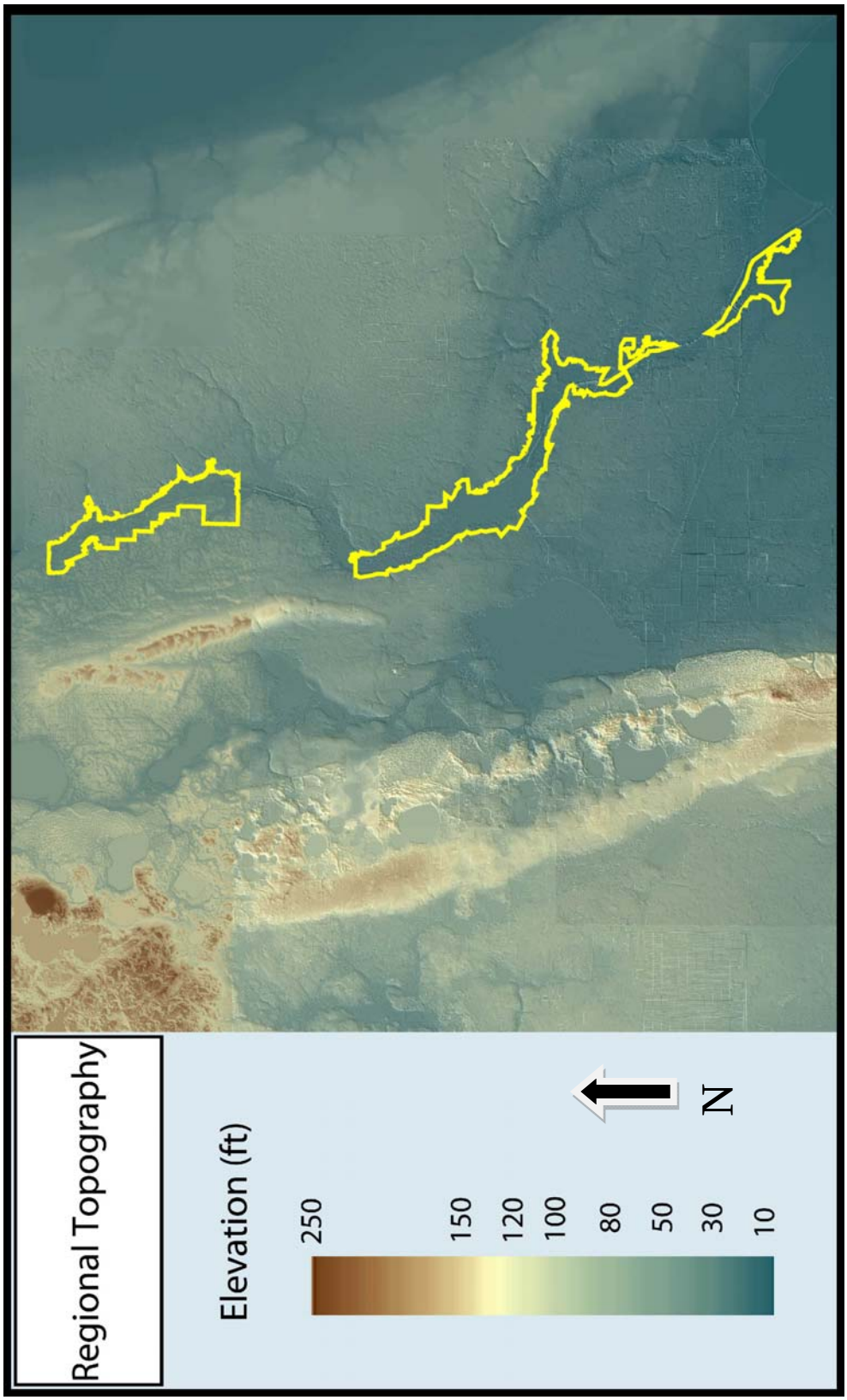
In the late 1960s, the lower portion of the river system was straightened and deepened, creating a linear 56 mile long canal (C-38) that bisects the Kissimmee River floodplain. The canal was divided into six elevational steps, or pools, by water control structures. Average depth of the canal is 30 feet and surface width ranges from 210 to 345 feet. The channelization changed the somewhat uniform, natural river gradient into a series of terraced impoundments, declining in elevation in six foot increments. Controlled water releases from the Upper Chain-of-Lakes Basin, through Lake Kissimmee, have eliminated wide seasonal fluctuations within the floodplain and hastened surface drainage. Istokpoga Creek is now a canal draining into Pool C. Chandler Slough remains the main tributary to Pool D.

Alterations within the region have combined to make a system that is unlike the historical system (**Maps 11-13**). To moderate the dynamic hydrology and create a more natural hydrologic pattern, the District has implemented several restoration projects, the largest of which is the Kissimmee River Restoration Project (see **Section 5.1 - Restoration Projects**).

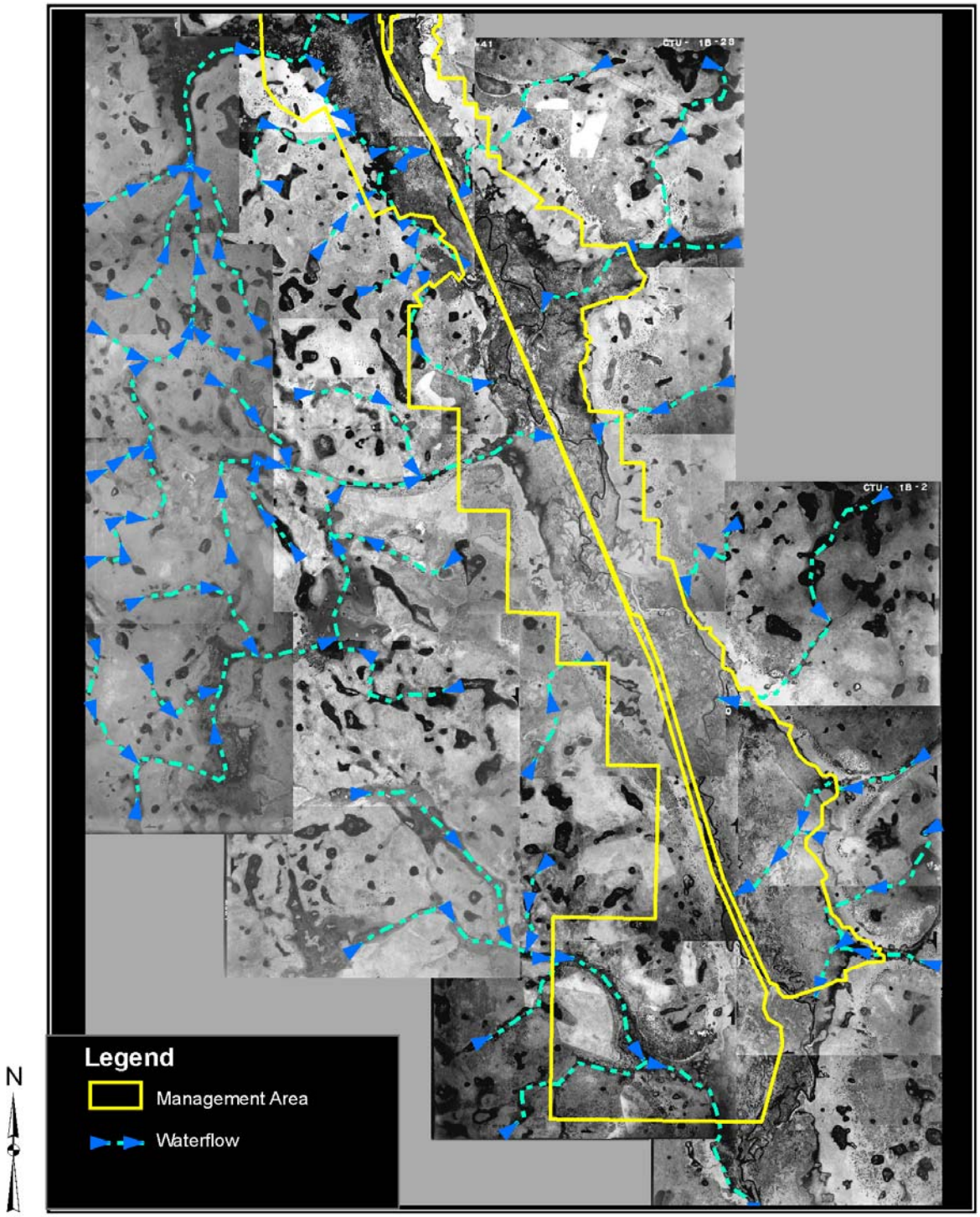
Map 7. Regional Major Geomorphic Features



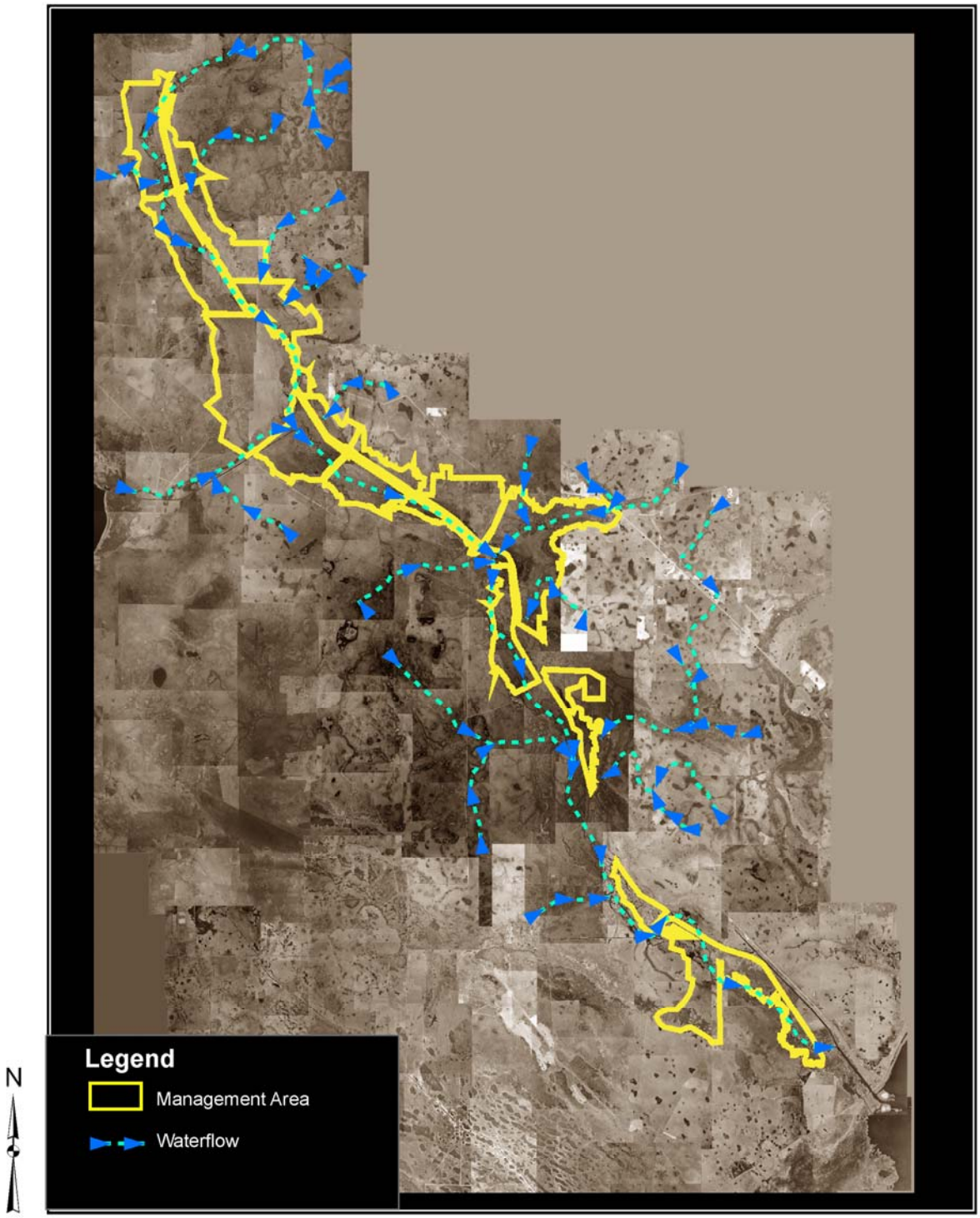
Map 8. Kissimmee River Valley Topographic Relief



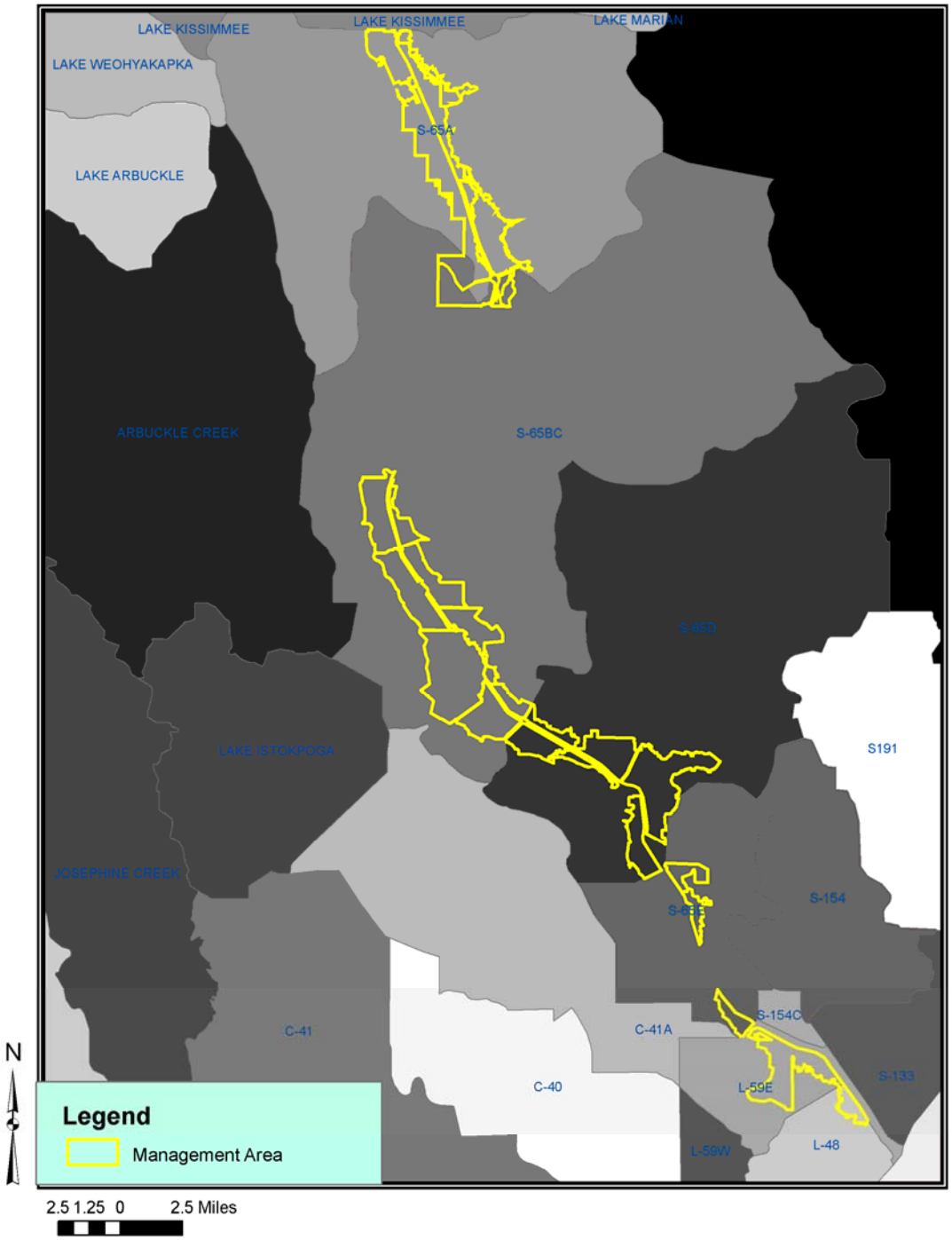
Map 9. Upper River Historic Hydrology (1941 aerial composite).



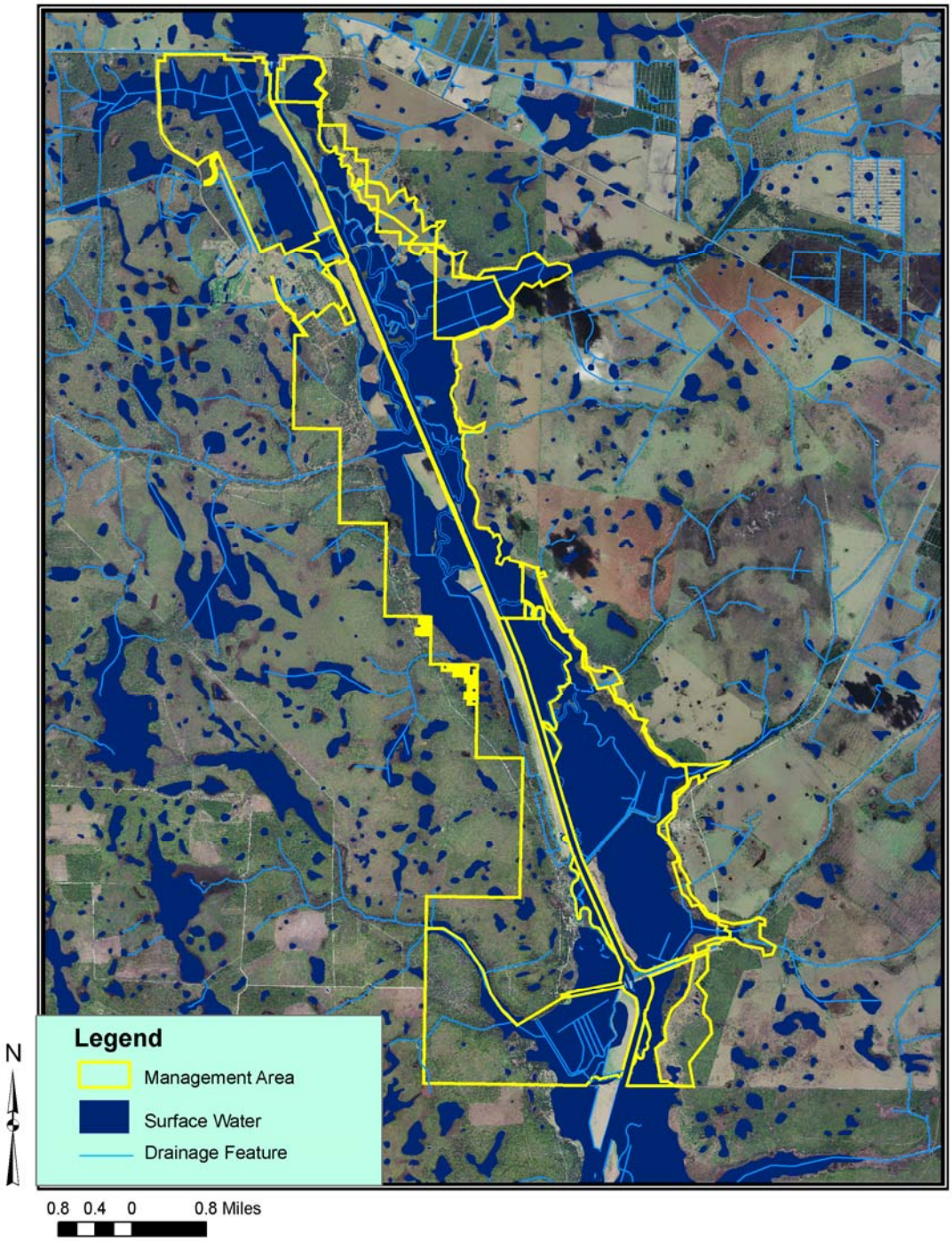
Map 10. Lower River Historic Hydrology (1938-47 aerial composite).



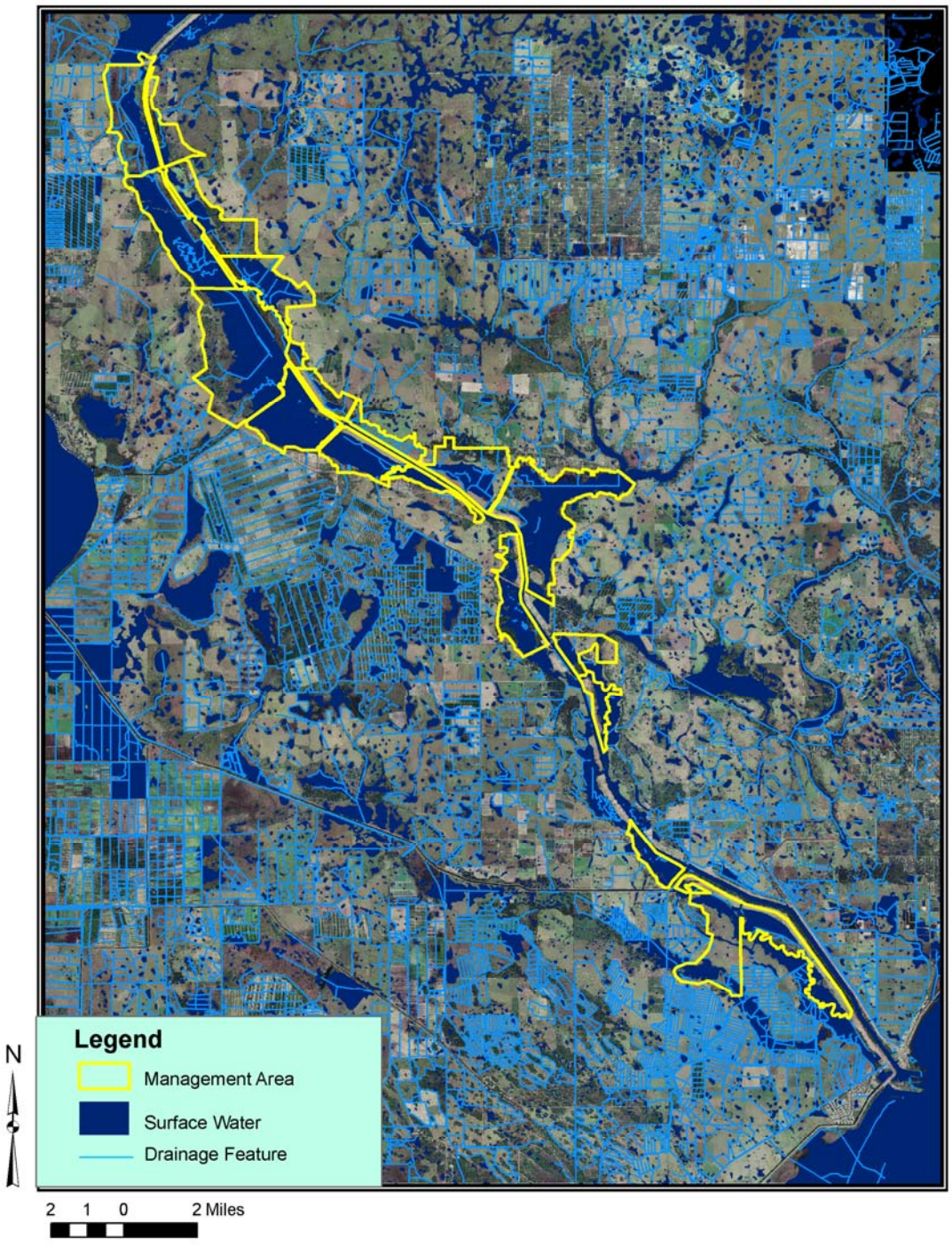
Map 11. Hydrologic Basins



Map 12. Surface Waters Upper Kissimmee River (Pool A)



Map 13. Surface Waters Lower Kissimmee River (Pools C-E)



4.2 Soils

There are six distinct soil categories within the Kissimmee River management areas as defined by the Natural Soil Landscape Positions soil classification system: flatwood soils, flats soils, knolls, sand depression soils, muck depression soils, and urban or made lands (**Maps 14a-b**). This classification system groups South Florida soils into 12 categories based on hydrology and soil morphology that reflect the local relative topography, hydrology, and vegetation of the area. Soil classification descriptions are included as **Appendix B**.

Soil Contamination and Excavation Sites

Several sites within the Kissimmee River Management Areas were identified as containing contaminated soils which in some cases required remediation. These sites included:

Pool A: KICCO
Three cattle dipping vats with associated arsenic contamination were remediated along with a recommendation that no water wells be installed near the site of the vats.

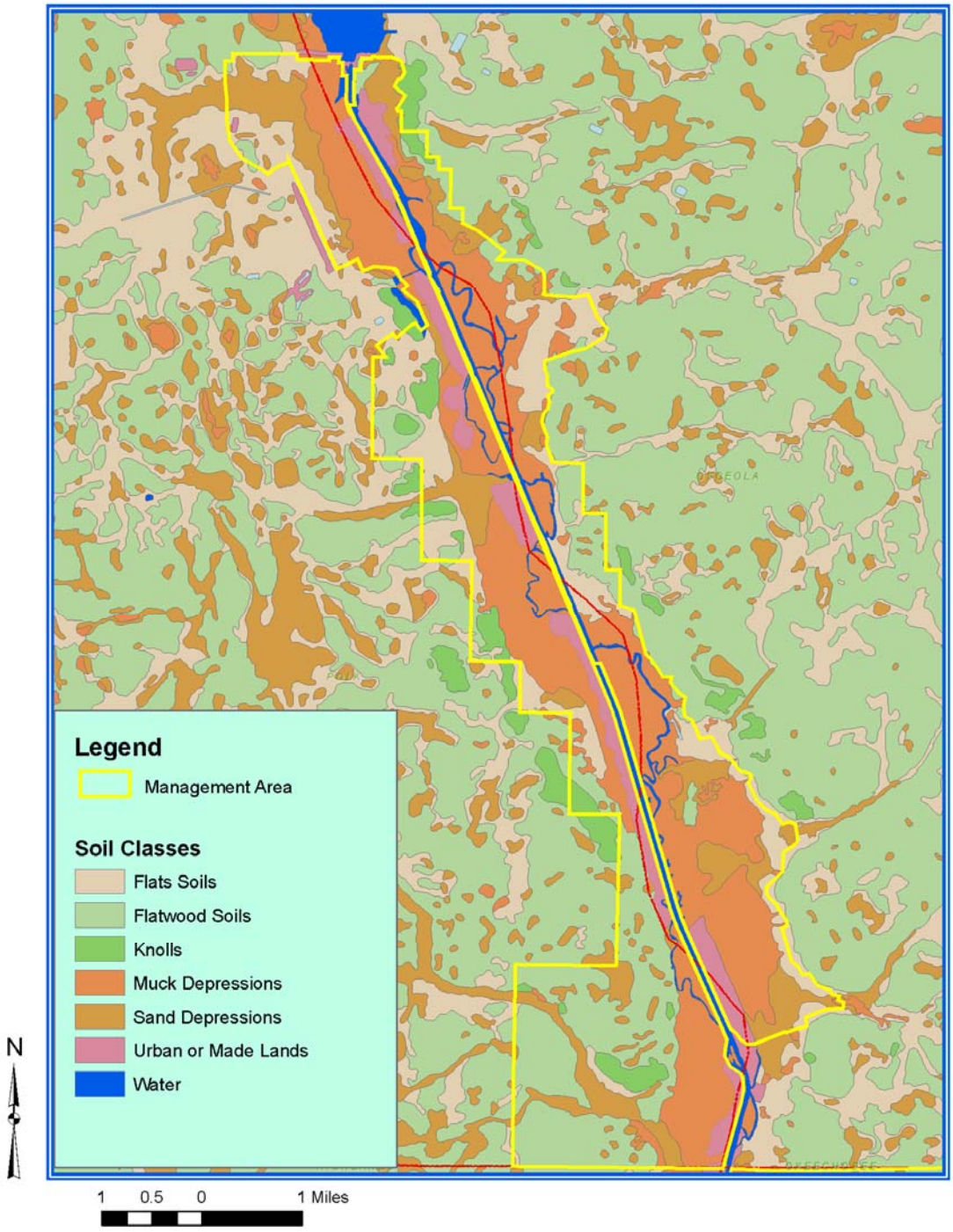
Pool C:
This site contained a cattle vise with a cattle spray pen. Testing for soil contaminants involved installation of two temporary test wells, one permanent test well, and collection of soil boring samples. Based on initial site investigations and characterization, concentrations of soil contaminants typically associated with cattle dipping vats did not exceed the human risk-based criteria for a Restricted I site or assumed ecological risk-based criteria (Dames and Moore 1997). Therefore this site required no corrective action or restriction on use.

Pool C:
Soil and water samples were gathered using 27 soil borings, two piezometers (equipment that measures groundwater flow and duration) and four groundwater monitoring wells. Soil sample results indicated concentrations of DDT and other associated pollutants that exceeded the exposure scenario of a residential site. Corrective actions were completed.

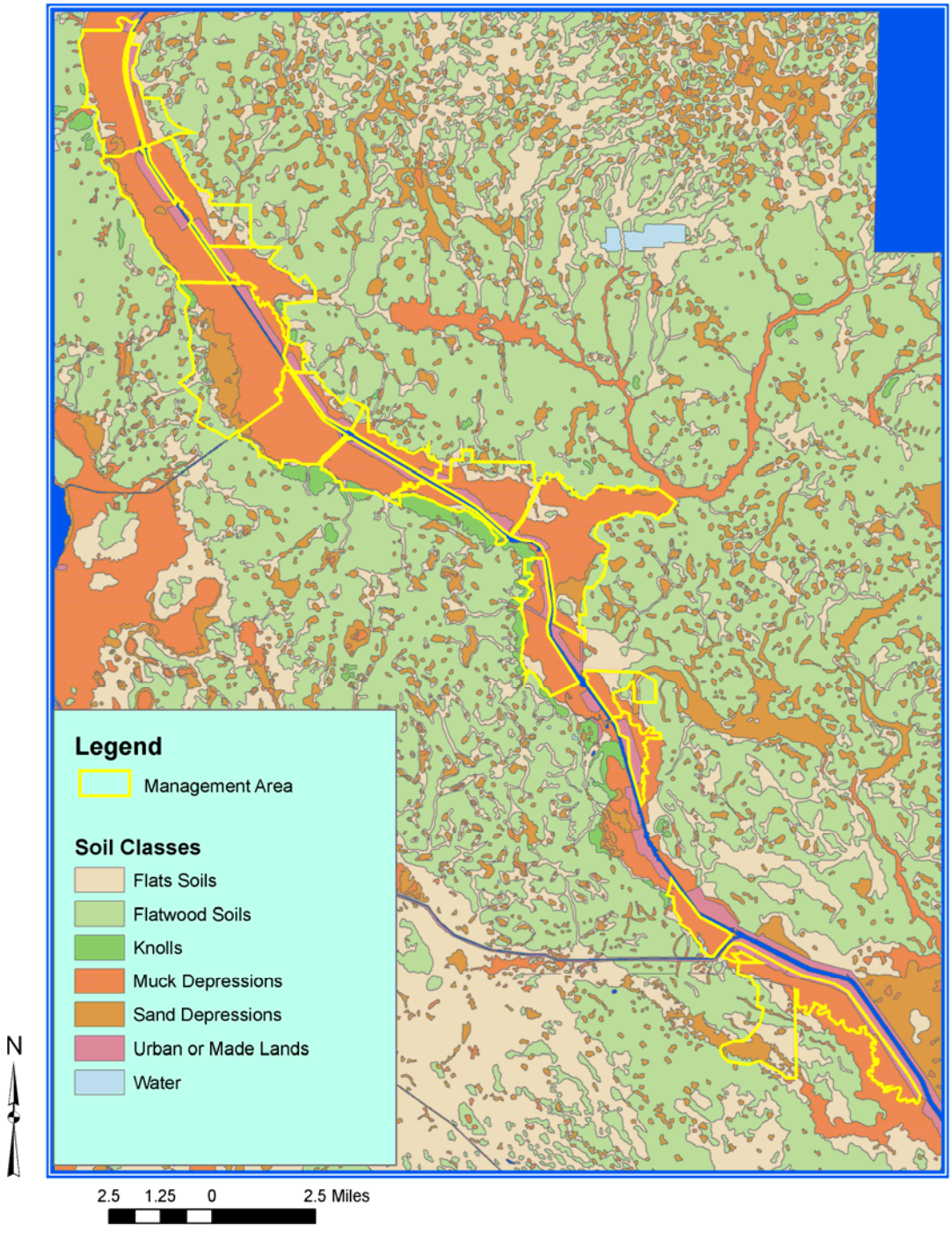
Pool D:
Similar to Pool A, this site also contained a cattle-dipping vat. Site analysis included soil borings, installation of three piezometers and four monitoring wells, collection of soil and groundwater samples, and site characterization. Analytical results indicated groundwater contaminants of potential concern did not exceed acceptable levels defined by the Florida Groundwater Guidance Concentrations (Dames and Moore 1997) There were, however, sample results indicating an area of arsenic-impacted soil. Remediation activities were implemented for a Restricted I scenario that allows extensive, but less than full-time contact with

the site. This designation allows for park or recreational areas that receive heavy use (soccer and baseball fields, parks and picnic areas close to residential areas) and agricultural sites where farming practices result in moderate site contact (approximately 100 days per year). To achieve this use-level category, sixty tons of arsenic-impacted soil immediately adjacent to the vat was excavated for off-site removal and the area was back-filled with clean soil. The concrete vat was decontaminated and disposed off-site. The Florida Department of Environmental Protection determined no further action was required.

Map 14a. Soils, Upper River (Pool A)



Map 14b. Soils, Lower River (Pools C-E)



4.3 Natural Communities

The Land Stewardship Program classifies natural community types by the Florida Natural Areas Inventory Classification system. Thirteen natural community types occur on the Management Areas (see **Figures 1a, 1b**, and **Maps 15-17**). Community condition varies widely, depending on previous and current land use, hydrologic alteration, exotic infestation, and the return frequency of fire. Descriptions are included as **Appendix C.**

Figure 1a. Pool A (northern) Dominant Community Types

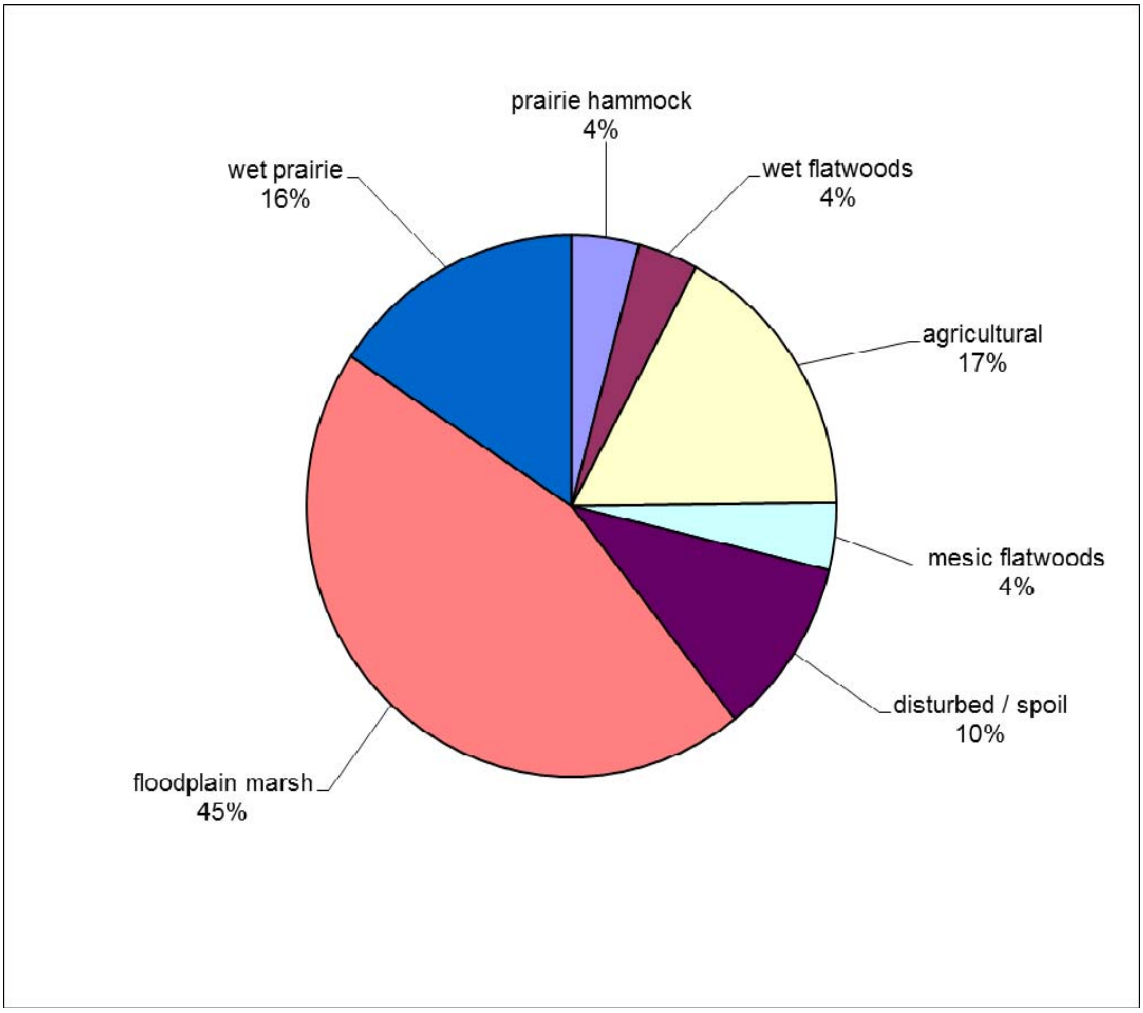
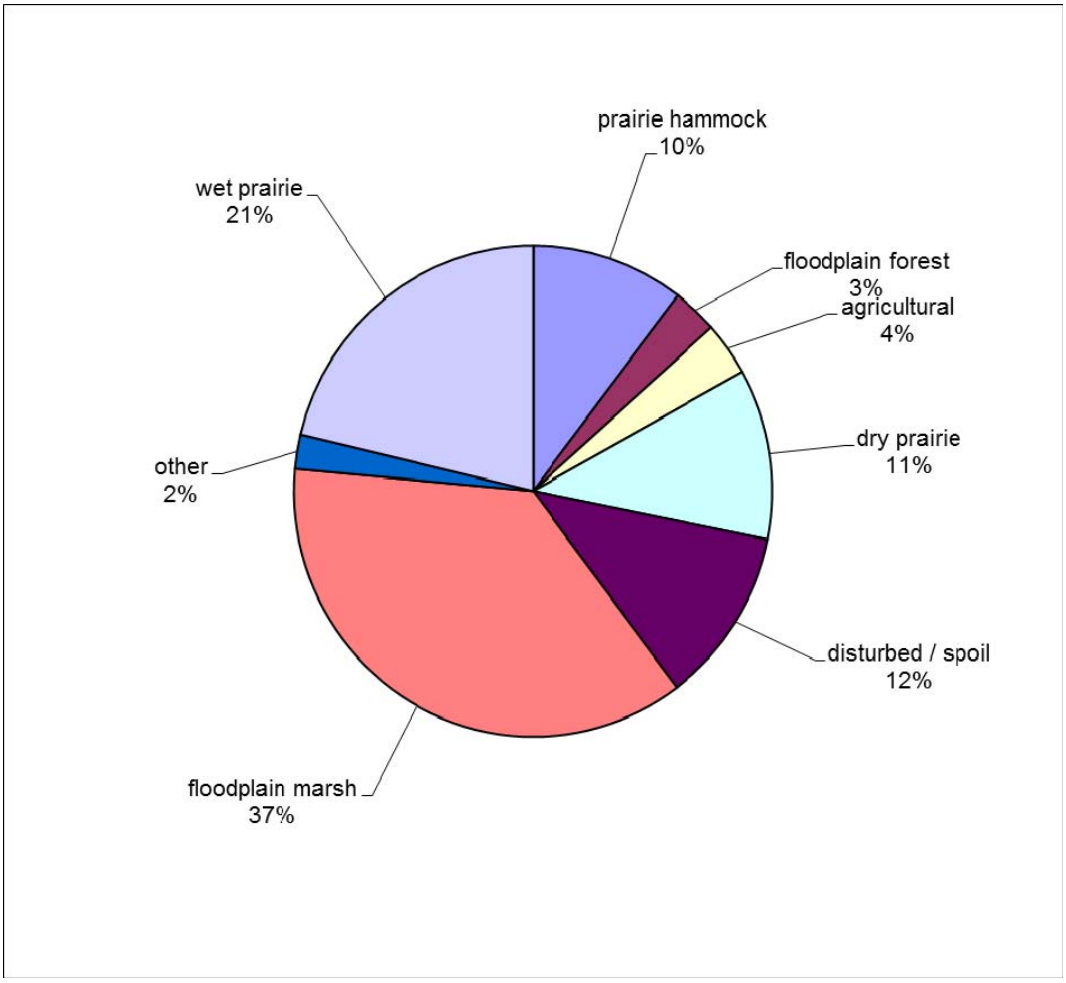
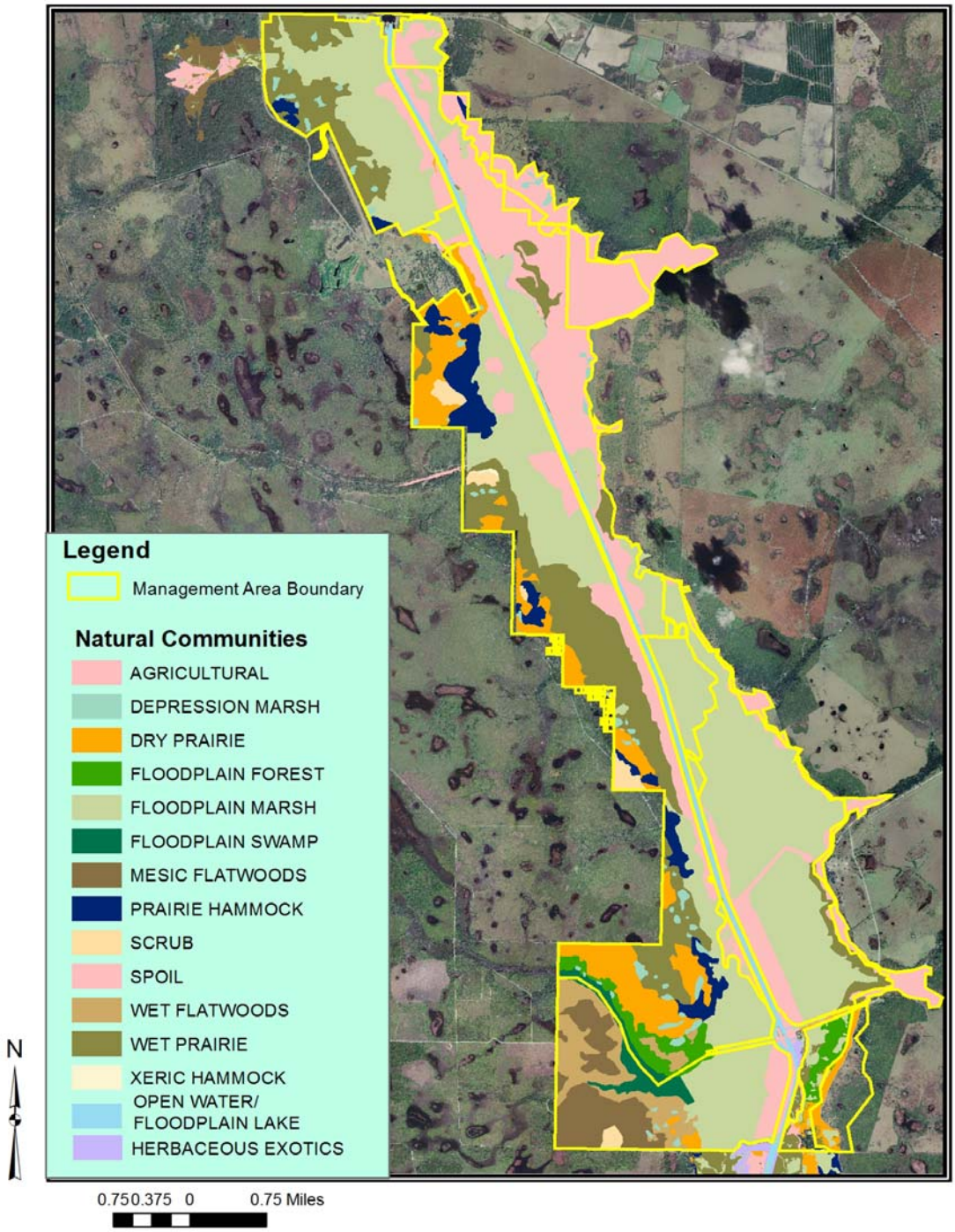


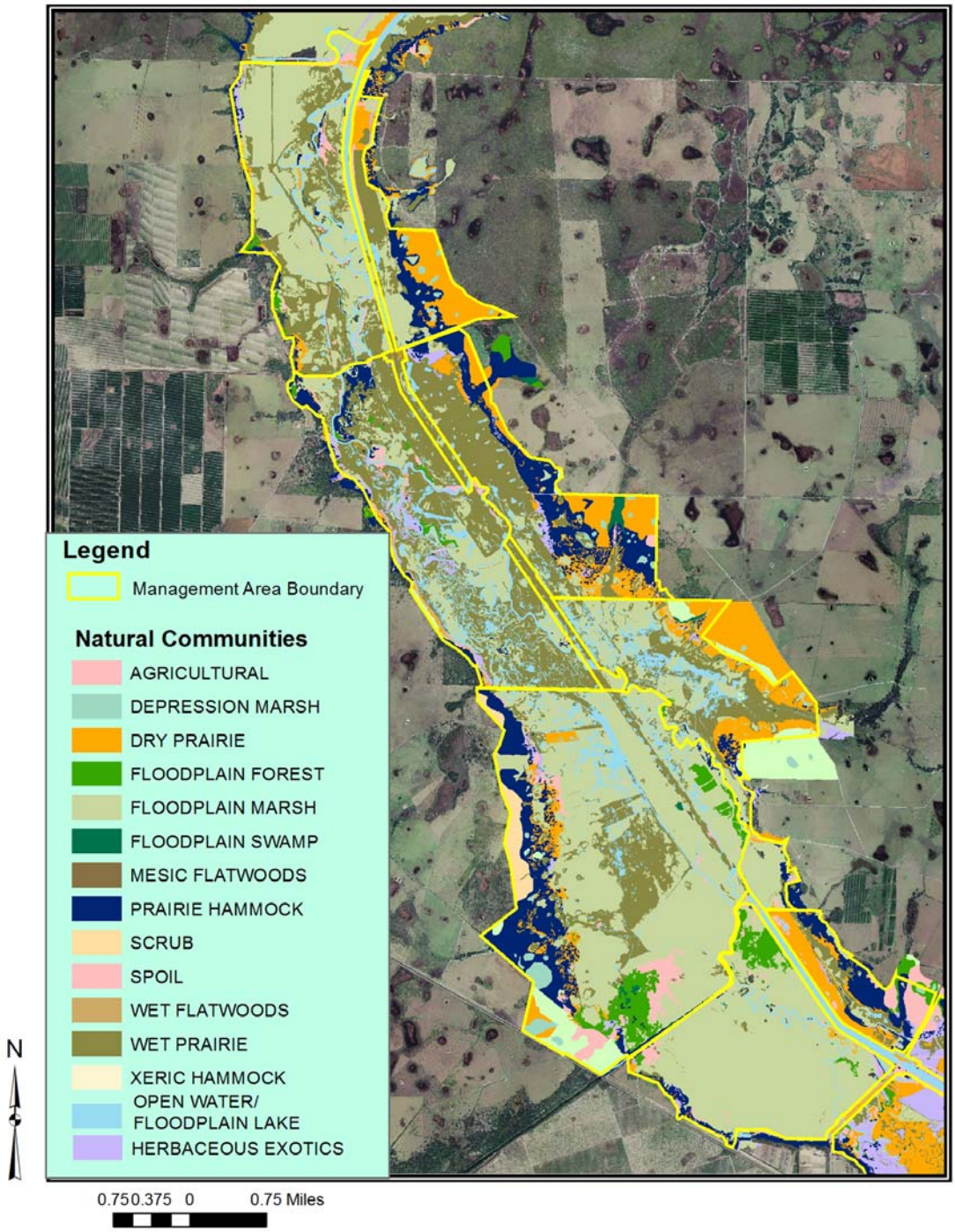
Figure 1b. Pool C and D (southern) Dominant Community Types



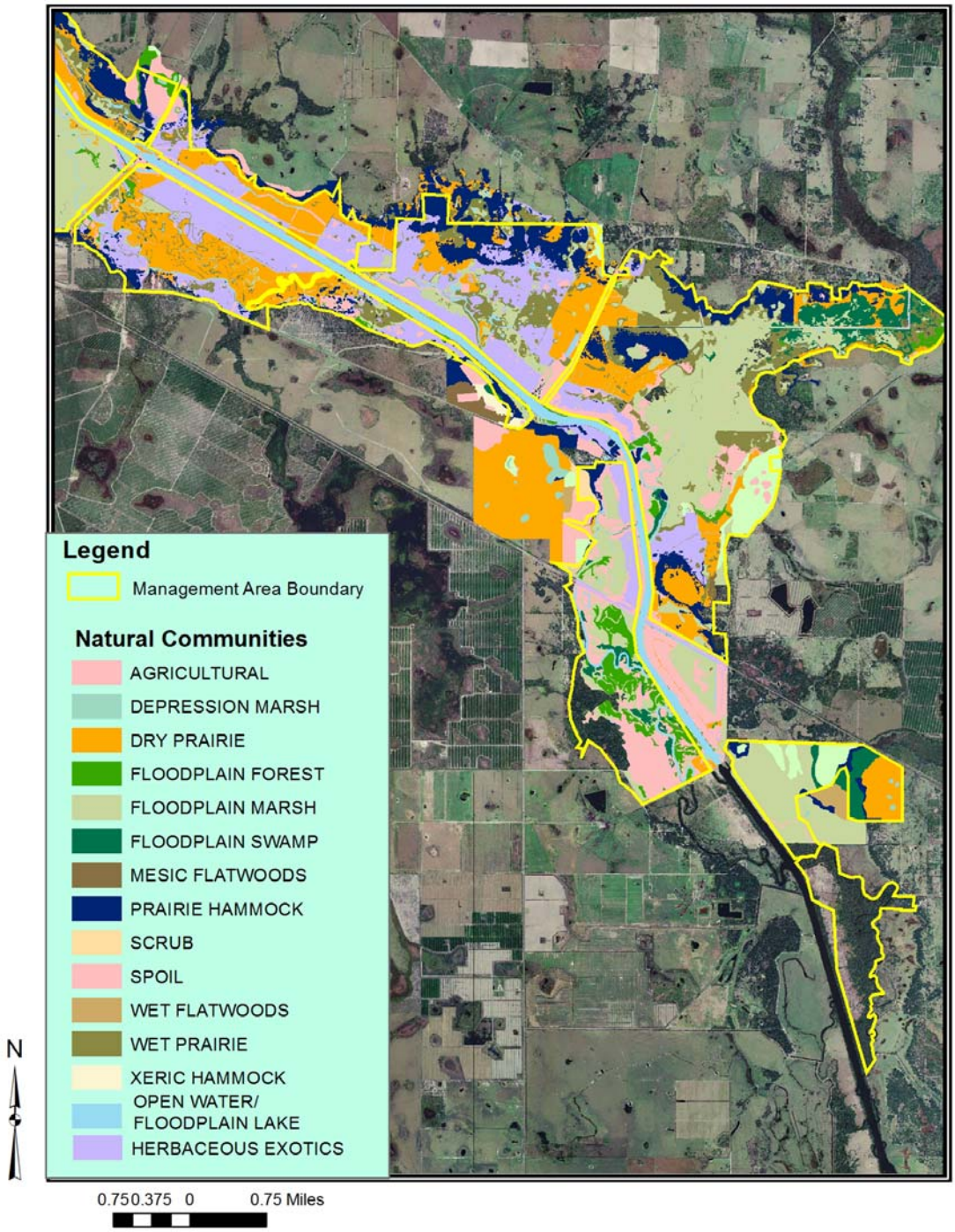
Map 15. Pool A Natural Communities.



Map 16. Pool C Natural Communities.



Map 17. Pool D Natural Communities.



4.4 Wildlife

The plant communities within the project provide habitat for numerous bird, fish, amphibian, reptile, and mammal species, several of which are listed federally or by the state (**Appendix D**). At least 22 species considered rare, endangered, threatened, or of special concern have been noted. Confirmed listed wildlife include the woodstork, American bald eagle, crested caracara, American alligator, burrowing owl, gopher tortoise, eastern indigo snake, red rat snake, gopher frog, scrub jay, grasshopper sparrow, Sherman's Fox squirrel, swallow-tailed kite, woodstork, sandhill crane, peregrine falcon, and osprey.

The river corridor historically served as wintering and breeding grounds for waterfowl; important habitat for indigenous mammals, amphibians and reptiles; and a key stronghold for protected species. Many of the bird species considered imperiled statewide depend on shallow wetlands to feed and nest. Wading bird populations have steadily declined within the basin since the 1800's. Prior to 1910, declines were attributed to commercial plume hunting. Following the channelization of the Kissimmee River, nesting failures were due to inadequate food production, marsh destruction, alteration of hydrological patterns, and competition from the non-native cattle egret. By the early 1970s, floodplain utilization by wintering waterfowl had declined by 92%.

The Sherman's fox squirrel is the only regularly observed documented listed mammal, however there is potential for the southern Florida mink, Sherman's short-tailed shrew, big cypress fox squirrel, Florida mastiff bat, and Florida mouse to occur in the area. The Florida black bear and Florida panther have been documented, as has the Florida bonneted bat (the northernmost extent of its range). Large game mammals include feral hog and whitetail deer. Feral hogs are considered exotic mammals. Coyotes have expanded their range to south Florida, and their presence in the Kissimmee River Basin has been documented as well.

Favorable climate and hydrologic conditions provide habitat for numerous species of reptiles and amphibians in the Management Areas, seven of which are listed species. There are also at least two non-native species: the brown anole and Cuban tree frog. The Kissimmee River Restoration Program uses amphibian and reptile community structure as an indication of river restoration success.

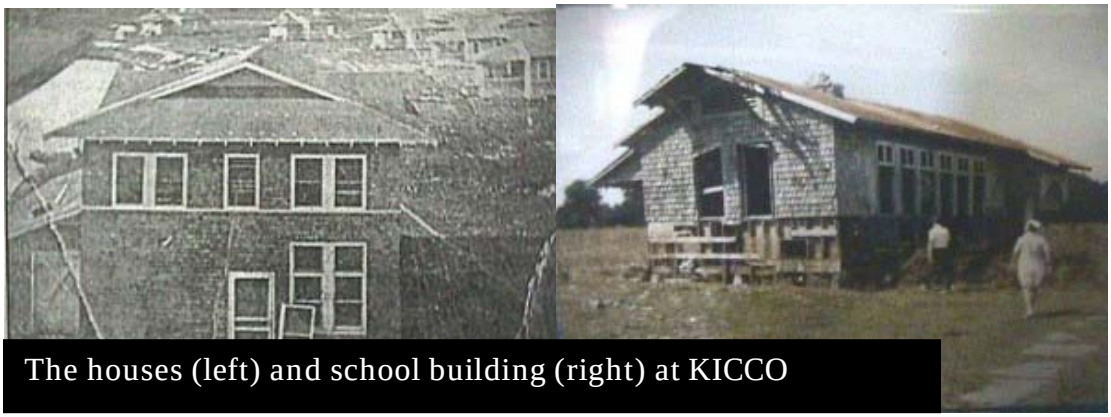
4.5 Cultural Resources

Policy 140-25(3)(j) Archaeological and historic resources are protected by site identification and inter-agency coordination with the Florida Division of Historical Resources. Land Stewardship planning shall include an analysis of archaeological data accompanied by appropriate public education opportunities.

Pool A: KICCO

The primary known cultural feature of the KICCO Management Area in Pool A is the site of the small KICCO company town (**Maps 18a-d**). Built at the location of a former riverboat landing, the town served KICCO employees from about 1915 until the late 1920s with at least some occupation continuing until the flood event of 1947 destroyed many of the structures. The Bureau of Archaeological Research within the Department of State's Division of Historic Resources surveyed the few remnant structures in the 1980s after the District acquired the property. Subsequently the buildings were demolished after no other agency or groups were willing or able to accept a relocation of the structures.

A 3D computer rendering of the KICCO town (looking south)



The houses (left) and school building (right) at KICCO

Maps 18a-d. Company town of KICCO, Aerial Photography

18a. KICCO townsite 1941

18b. KICCO 1953, most of the structures gone

18 c. KICCO townsite 1968, trees removed

18d. KICCO townsite 2004, with a denser tree canopy, and former marsh dominated by shrubby vegetation

Pool C and D

There are numerous archeological sites within Pool C and D. Site types include shell middens, burial middens, and ceremonial structures and mounds. Sites of more recent historical significance include the Ft. Bassinger and the Pearce-Lockett Estate and cemetery grounds.

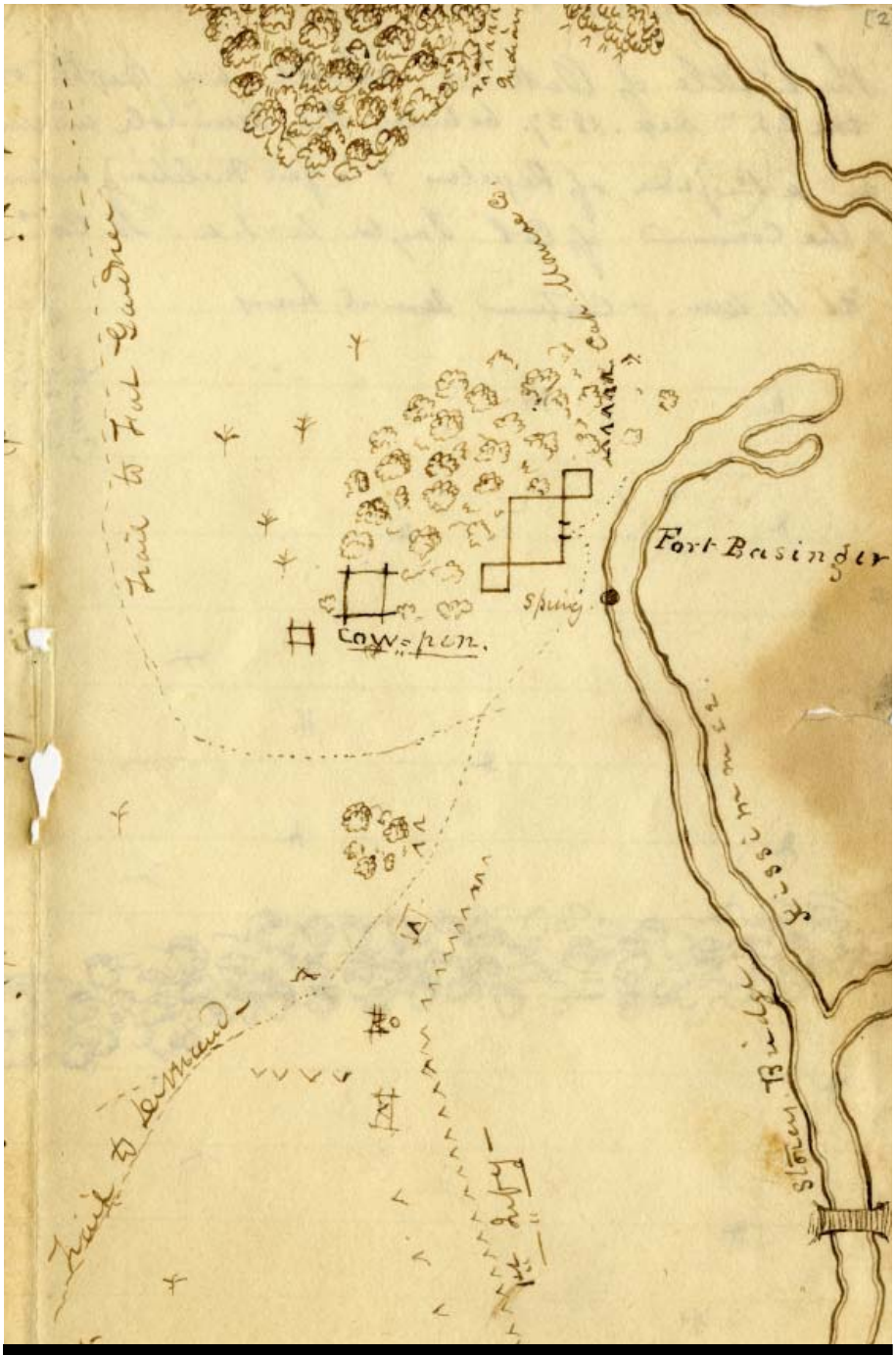
Ft. Bassinger was built by the U.S. Army in 1837 in the Second Seminole War as part of an effort to keep the Seminole Indians south of Lake Okeechobee by placing small frontier forts throughout the remainder of the Florida peninsula. The forts were spaced about every 20 miles and connected by a system of semi-improved trails (**Map 19**). These allowed frequent mounted patrols between the forts as a deterrent to the Seminoles.

In 1993 the District acquired the Pearce-Lockett Estate through a donation as part of the Kissimmee River Restoration Project. Since this time the District has provided maintenance to sustain the property in its current condition. There have been several attempts to find a management partner for the site including discussions with the State, Highlands County, the Florida Heartland Rural Economic Initiative, and the Center for Environmental Studies. The District and the Highlands County Parks Department cooperatively managed the site from 1997 until 2001. The County received grant funding from the State for recreational amenities. The Florida Park Service evaluated the property in 2002 and concluded that the site met or exceeded the qualifications for a State Park, but budget constraints prevented them from accepting title from the District. The District is currently seeking a long term partner to manage and provide continued public access to the property.

The Pearce-Lockett Estate is historically significant. The majority of the site is a State registered archaeological site; it was once the permanent home to a community in the Belle Glade II period around 1800 years ago. A homestead was established in 1875 by Capt. John Mizell Pearce, a veteran of the Civil War and the Third Seminole War. He married into the family of the famous Southern poet Sydney Lanier; he and his wife had 10 children. John Pearce operated a steam boat along the Kissimmee River and later a ferry. He was also a deputy sheriff and a cattleman. John Pearce, his wife, and several other family members were laid to rest on site in a family cemetery that remains in good condition. His son, William, was instrumental in establishing the Ft. Bassinger School (moved to the estate in 2004). Edna Pearce-Lockett taught at the Ft. Bassinger School, she would later take over the homestead and cattle operation and be the third woman elected to the Florida House of Representatives.

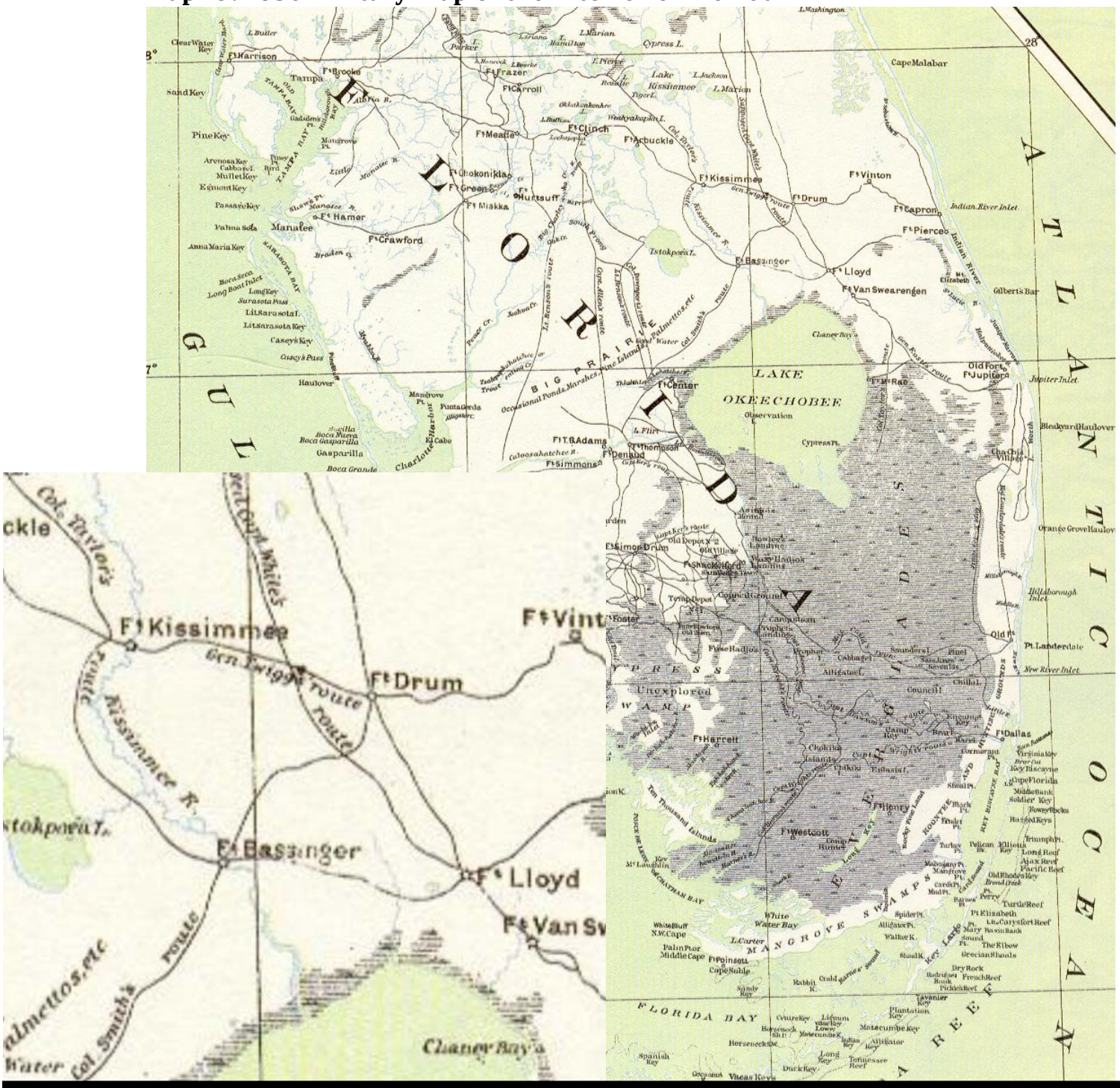
The District supports requests to conduct research on the archaeological and historic sites within the Management Areas and safeguards the integrity of the sites, primarily by prohibiting ground disturbing activities. Management activities planned for these areas are exotic plant control, vegetation

management, and prescribed burning. Staff from the Florida Division of Historic Resources may conduct additional investigations on those sites in the future.



A sketch of Fort Bassinger along the west side of the Kissimmee River from Capt. Backus's Diary, 1838.

Map 19: 1856 Military Map of the Interior of Florida



This reproduction of the 1856 Military Map of the Interior of Florida, showing the array of frontier forts and trails that were established in the Seminole Wars. Col. Taylor's route, as depicted on the map, that passes through Ft. Bassinger was where a large contingent of troops under the future President, Zachary Taylor, made their way to the shore of Lake Okeechobee for one of the largest battles in the 2nd Seminole War

A sketch of buildings within Ft. Bassinger from the 1840s (above), and a drawing of a typical Florida frontier fort (below)

5. Natural Resource Management

Policy 140-23 The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands.

Resource management includes all activities that manipulate, modify, and control natural features within the Management Areas. Conservation lands that were acquired by the District are managed and maintained in an environmentally acceptable manner and, to the extent practicable, restored and protected in their natural state and condition. Management responsibilities are defined by statute and are directed by best management practices. Goals and objectives for the Management Areas clarify resource management guidelines necessary to fulfill the District's land stewardship responsibilities. Land Stewardship resource management activities include cattle grazing, hydrologic restoration projects, mechanical vegetation management, prescribed burning, and exotic plant and animal control.

5.1 Restoration Projects

Policy 140-25(1) The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources.

Policy 140-25(1)(c) Where feasible, an attempt shall be made to restore a more natural hydroperiod on tracts where the drainage patterns have been altered.

Kissimmee River Restoration Project

The Federal 1992 Water Resources Development Act authorized the Kissimmee River Restoration project including the headwaters revitalization component of the restoration project, tied the headwaters benefit to the Kissimmee River Restoration project, and authorized a 50/50 cost sharing between the state and federal government for the total cost of the project. The ground breaking for construction of the restoration project was April of 1994 with the backfilling of 1000 feet of the C-38 canal in Pool B.

The restoration project is being implemented by the District's Kissimmee River Section in partnership with the U.S. Army corps of Engineers. The restoration project reestablishes historic inflows from Lake Kissimmee that will provide flow velocities and volumes similar to those that existed prior to channelization. It specifies continuous backfilling of 22 miles of the C-38 canal in Pools B, C, and D; removal of 2 water control structures and locks (S-65B and S-65C); recarving of approximately 9 miles of river channel; and acquisition of 85,000 acres of land. It also includes backfilling of local farm ditches and degrading of local farm levees. The remaining water control structures will be operated to provide more natural hydrologic conditions. Pool A is being left unmodified to allow continued

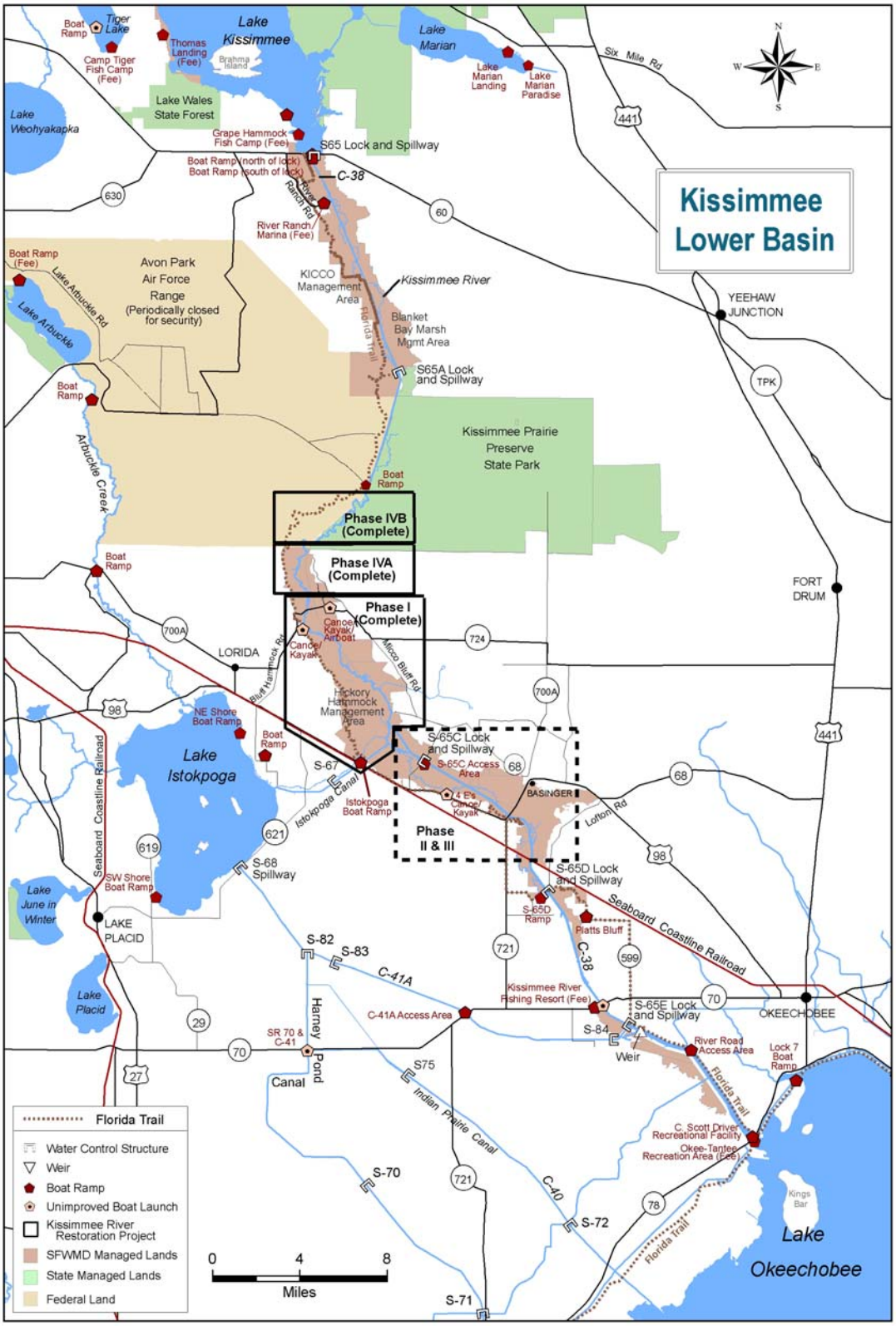
flood relief for the Kissimmee Chain-of-Lakes, and to serve as a control to gauge the benefits in comparison to the extensive restoration in Pools B-D.

Construction of the Kissimmee River Restoration Plan was divided into four major phases, the first of which was initiated in 1999 (**Map 20**). The phases have been completed out-of-sequence. Phase I included removal of the S-65B structure, and backfilling of a small portion of lower Pool B and most of Pool C. Phase II/III has begun and will remove S-65C, and will backfill the remainder of Pool C and most of Pool D. Phase IV backfilled a section of Pool B north of the Phase I area. It is anticipated that the construction of the project will be completed within this plan period.

The first major phase of canal backfilling began in June 1999 and was completed in February 2001. In June 2000 the structure S-65B spillway, lock, and control houses were demolished. During this phase approximately 7 miles of the C-38 canal were back-filled using the spoil material (12 million cubic yards) originally dredged during the construction of the canal. The associated spoil piles were degraded to natural ground level. One and one-quarter miles of new river channel were dredged and 15 continuous miles of river were re-created. Already, environmental improvements have been observed. Sandbars and sandy bottom are signs of improvement in the river's hydrology. In formerly isolated sections of the river, oxbows are flowing again. Emergent and shoreline vegetation has reappeared and is thriving. Waterfowl and other wildlife are returning. Water quality is improving. The project is reestablishing the physical form of the river with its historical water levels and flows, while ensuring existing flood protection is maintained.

The three construction phases completed so far have backfilled 14 mi of canal, recarved 6 mi of river channel. These efforts reestablished flow to 24 mi of continuous river channel and allowed intermittent inundation of 7,710 ac of floodplain. The restoration plan will culminate with modification of the Kissimmee Basin water control structure operations including the implementation of a new stage regulation schedule for the Kissimmee Chain of Lakes.

Map 20. The Kissimmee River Restoration Project



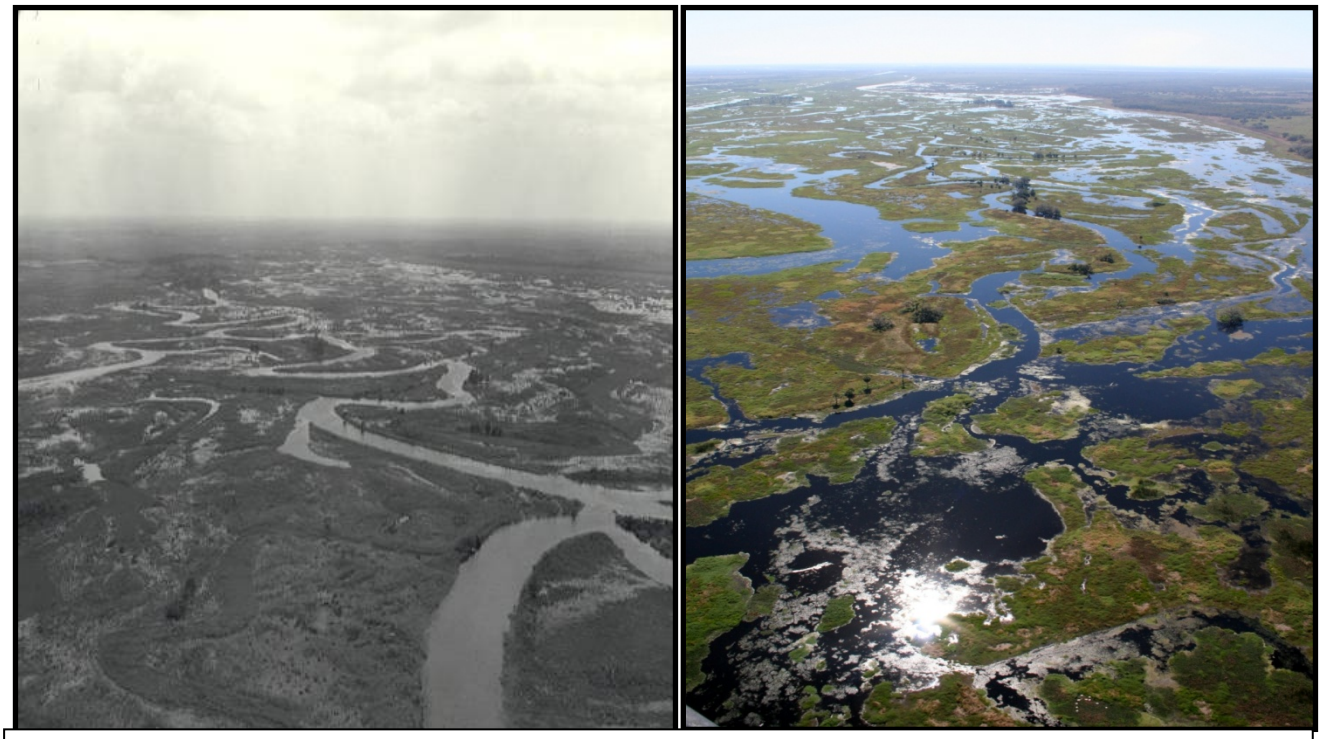
Kissimmee River Restoration, Photos

The major construction work for the restoration is being completed by contractors for the U.S. Army corps of engineers, it involves re-establishing the historic river channels, removing water control structures, and backfilling the C-38 canal that has diverted the waters of the floodplain since the 1960s.

Demolition of a major control structure that had been used to regulate water levels in the artificial Pools (left); and the former location of the structure following floodplain restoration (right).

Kissimmee River Restoration, Photos

The drained floodplain, pre-restoration (left); and the post-restoration floodplain (right)



The natural floodplain, pre-channelization in 1955 (left); and the post-restoration floodplain (right)

Starvation Slough

There are two dry prairie restoration sites at Starvation Slough. Both are on historically dry prairies that have been converted to cattle pasture. The northern site is approximately 60 acres. The restoration effort has included removing the sod with a commercial sod harvester, and then disking the site twice and applying herbicide to kill any remaining pasture grasses. Native seed was harvested elsewhere in Starvation Slough where the dry prairie was still intact, and seeded at the disked restoration site. To date there has been substantial recruitment of native species. Selective herbicide applications and mowing are employed to keep invasive exotic species from becoming established on the site.

The southern site has been a more passive restoration effort that included flattening a levee road, removing the sod by disking and herbicide, and allowing native species to recruit naturally. As with the northern unit, selective herbicide applications and mowing are employed to keep invasive exotic species from establishing. A wide variety of native plants associated with dry prairie communities have become established on this site as well.

5.1.1 Monitoring

Policy 140-25(3)(f)(2) Monitoring shall be conducted to identify landscape changes resulting from management activities.

Tracking environmental response to management and restoration activities provides valuable information on progress toward restoration objectives. Information obtained by monitoring specific sites assists land managers in making sound ecological choices for each unique parcel.

Using geographic information systems and global positioning technology, the District tracks the location of exotic plants throughout the Management Areas. This helps Land Stewardship monitor the effectiveness of the exotics control program and track the extent and severity of infestations.

The District has installed thirty five 360 degree photomonitoring points within the management areas. These photo points were utilized between 2007 and 2010 to observe and document the vegetative character of the property at that time. The photopoints have been established with permanent monuments that can be located with GPS coordinates and a metal detector, and are available for use in the future to compare site conditions with the 2007-2010 baseline condition.

The Kissimmee River Section has developed a monitoring program that is integrated with river restoration research objectives. The Kissimmee River Restoration evaluation program's database is designed to collect, manage, evaluate and disseminate information related to activities, observations, and measurements associated with restoration of the Kissimmee River and its

floodplain ecosystem. Program components are designed to track initial and long-term responses to the reconstruction of the ecosystem by evaluating a suite of indicators representing physical, chemical, biological, and functional components of the system. Components being evaluated include birds, fish, reptiles and amphibians, hydrogeomorphology, hydrology, invertebrates, vegetation, water quality and endangered species.

Kissimmee River Section Monitoring

Birds

- Evaluate avian populations in floodplain wetlands
- Evaluate avian use of remnant river channel habitats
- Determine habitat requirements and population size of nesting Florida mottled ducks
- Quantify use of floodplain wetlands by king rails, Virginia rails, sora, yellow rails, black rails and pied-billed grebes

Fish

- Determine species composition, density, biomass, and relative abundance of fish prior to river restoration.
- Determine species composition and relative abundance of fish subsequent to river restoration.
- Determine species composition and relative abundance of fish migrating between the river channel and floodplain habitats.
- Assess the importance of floodplain habitats to riverine fish.
- Evaluate the reproductive success of fish under channelized conditions.
- Establish baseline food web structure and major energy pathways within the channelized system.

Herptefauna

- Evaluate wetland amphibian and reptile community structure.
- Evaluate upland amphibian and reptile structure.
- Evaluate river channel turtle community structure.
- Evaluate reproductive phenology of amphibians.

Hydrogeomorphology

- Evaluate effects of reestablished flow on the geomorphology and substrate characteristics of the restored channel.

Hydrology

- Evaluate historic river channel geometry, velocities and discharges.

Invertebrates

- Evaluate habitat-specific community structure and functional attributes of river channel and floodplain aquatic invertebrate communities within the channelized river.
- Evaluate habitat-specific and system-wide production of river channel and floodplain aquatic invertebrate communities.
- Evaluate aquatic invertebrate drift within remnant river channels of the channelized river.

Vegetation
- Evaluate how aquatic vegetation is distributed within the remnant river channels.

Water Quality
- Evaluate dissolved oxygen concentrations in river channel.
- Evaluate turbidity and suspended solid concentrations in river channel.
- Evaluate phosphorous loads in river channel.

Endangered Species
- Evaluate use of the channelized floodplain by foraging wood storks.
- Evaluate wood stork reproductive success and nesting within the channelized system.
- Identify all active crested caracara territories, describe habitat characteristics, and evaluate reproductive success within the channelized river floodplain.
- Quantify use of the river by snail kites.

5.2 Vegetation Management

Policy 140-25(2)(d) Where practicable, an attempt shall be made to restore and maintain desirable vegetation to promote habitat diversity in areas where invasive exotic vegetation, grazing practices, or improved land uses have substantially altered the historic landscape.

Policy 140-25(3)(l) Mechanical equipment may be used in conjunction with prescribed burning and other management tools to control vegetation and restore habitat structure.

Vegetation management is a program component where the composition and/or structure of a vegetative community is physically altered by mechanical means to meet a management objective. The techniques used in vegetation management include mowing, disking, shredding, roller-chopping, timber thinning, and planting. These techniques are applied to one or more management objectives that may include:

- A step towards restoring a degraded vegetative community

- Improving an area's suitability as wildlife habitat
- Exotic species control or weed management
- Fuel management for prescribed burning purposes
- Clearing of vegetation for maintenance or project management purposes

Vegetation maintenance needs are identified annually by the regional land manager. Vegetation control and maintenance is executed by District field personnel or through contracts. Shredding of woody vegetation occurs as needed in pine and prairie communities to reduce fuel loads and open the understory which increases plant diversity and improves wildlife habitat. These areas are subsequently maintained with fire which is a more cost-effective and beneficial technique for managing vegetation in those types of plant communities.

5.2.1 Exotic/Invasive Plants

Policy 140-25(2)(c) Management practices will strive to identify existing infestations and implement appropriate control or eradication measures.

Policy 140-25(3)(b) Exotic plant control in all management areas shall strive to attain a level of success where periodic maintenance eliminates the infestation or reduces the coverage of exotic plants.

South Florida's subtropical climate provides an excellent growth environment for the rapid spread of exotic plants that can cause extensive alterations to natural ecosystems. Environmental changes caused by extensive hydroperiod alterations have contributed to the expansion of exotic plant species in natural areas. Exotic plant infestations can result in partial or total displacement of native plants, loss of wildlife habitat, and the degradation of public use areas depending on the severity of the infestation.

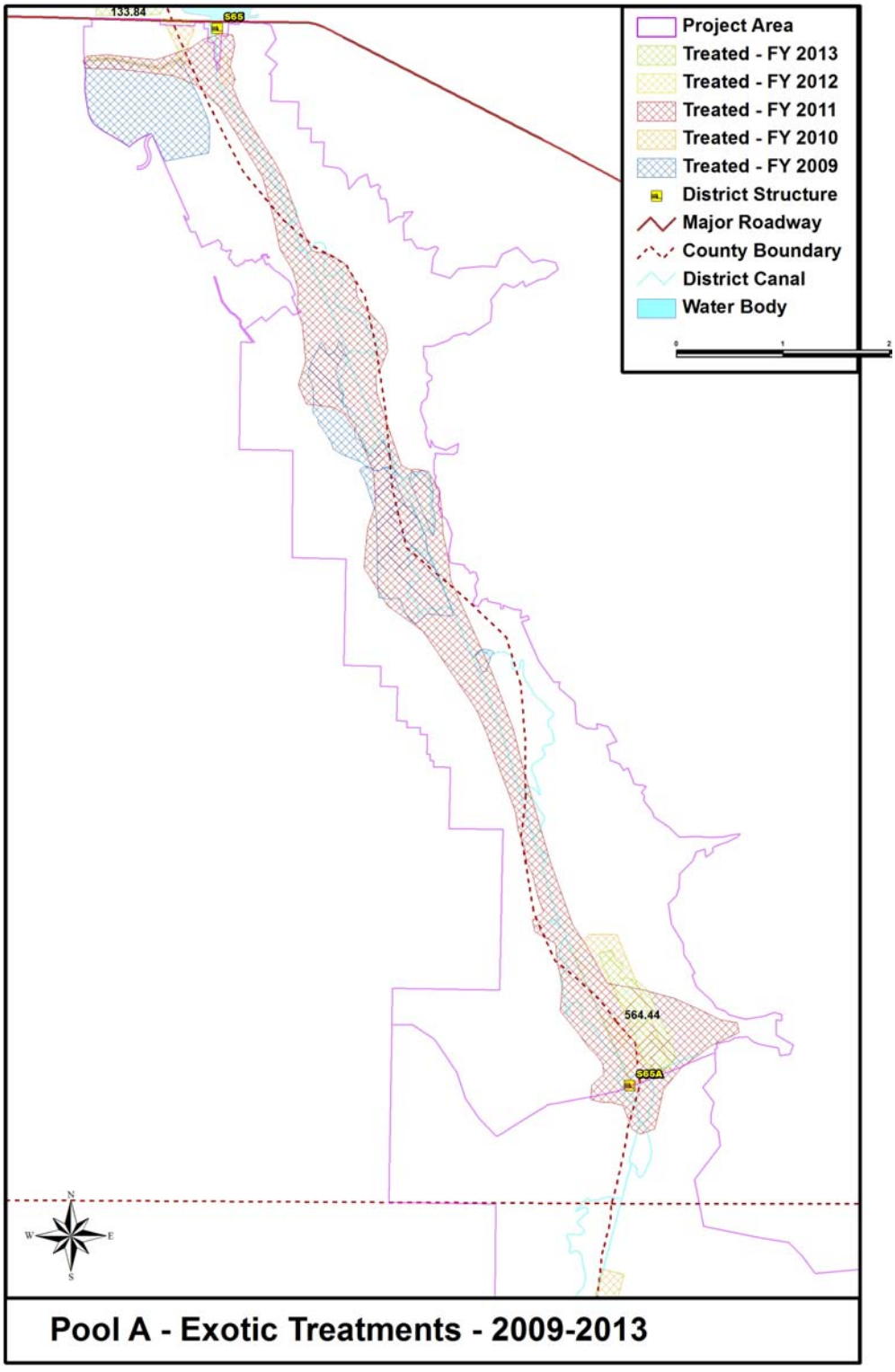
Land Stewardship targets Category I and II non-native plant species as identified on the Exotic Pest Plant Council's biennially updated list of *Florida's Most Invasive Species* (http://www.fleppc.org/). Category I species include non-native plants that invade and disrupt Florida native plant communities. Category II plants have the potential to invade and disrupt natural successional processes. Both Category I and II exotics are considered invasive and a threat to the function and ecological stability of Florida's natural communities.

The District has treated the following Category I plants within the Management Areas: Japanese climbing fern (*Lygodium japonicum*), Old World climbing fern (*Lygodium microphyllum*), cogon grass (*Imperata cylindrica*), Brazilian pepper (*Schinus terebinthifolius*), and tropical soda apple (*Solanum viarum*). Of particular concern is climbing fern. The District treats and surveys the climbing fern-infested areas several times a year to control established infestations and locate new ones.

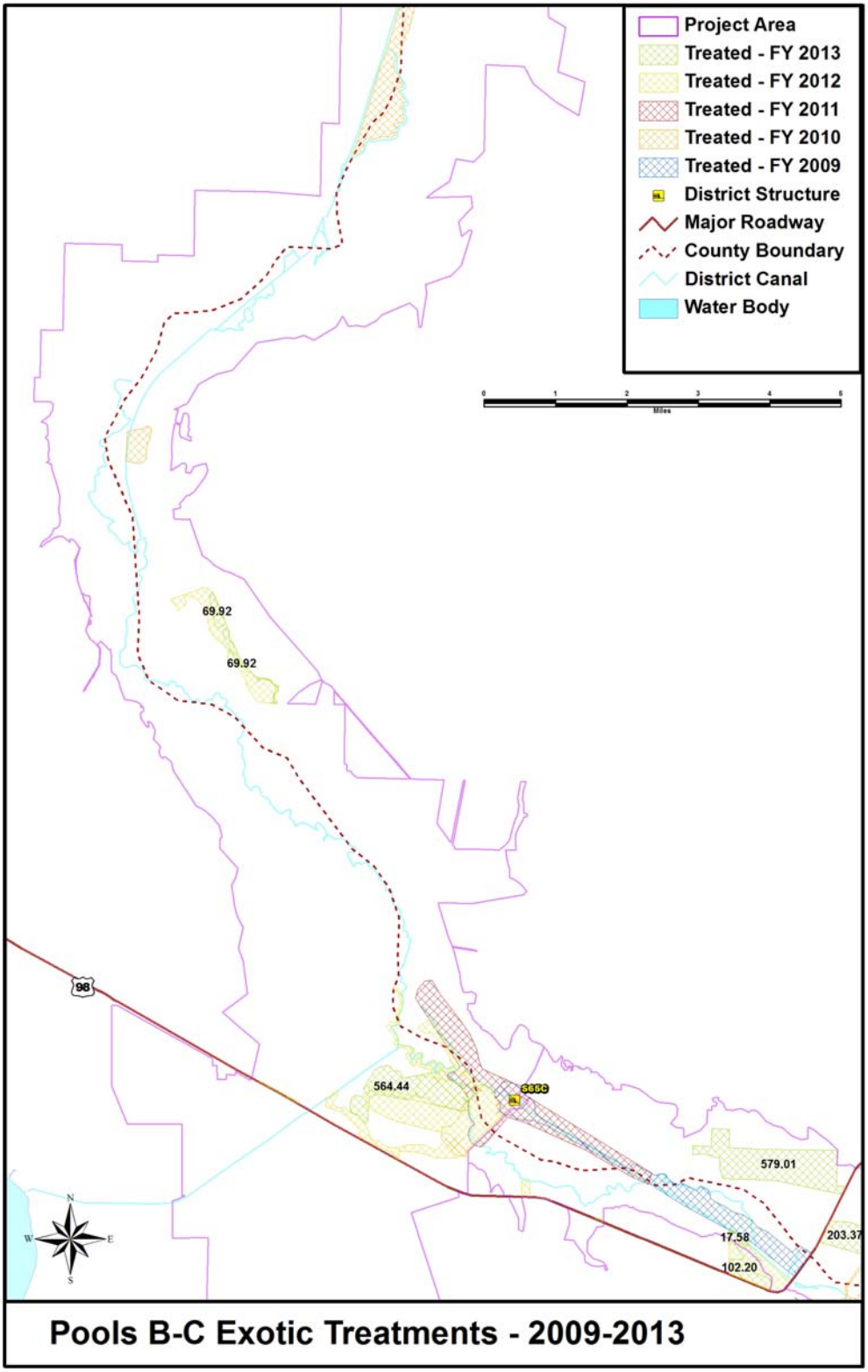
Invasive exotic plant control measures include a combination of herbicide application (aerial and ground), biological control, prescribed fire, mowing, and physical removal. When restoration projects are complete the District will also be able to use inundation as a means of exotic control. Selection of control measures is dependent upon species type, environmental factors, and natural communities impacted. Private vendors are contracted to conduct exotic plant control activities within the management areas. Application methods for chemical control include both aerial and ground application depending on site location and infestation level. In addition District staff and volunteers have released the tropical soda apple leaf beetle, a biological control agent that has brought significant improvements in the control of tropical soda apple.

District field technicians also provide supplemental support on small or sporadic infestations. Generally, treatments in the Management Areas are scheduled so that each unit is covered annually or bi-annually depending on available funding. Areas of treatment are scheduled based on surface water conditions, time since last treatment, severity of infestation, and consistency with other management operations and priorities. (**Maps 21 – 23**).

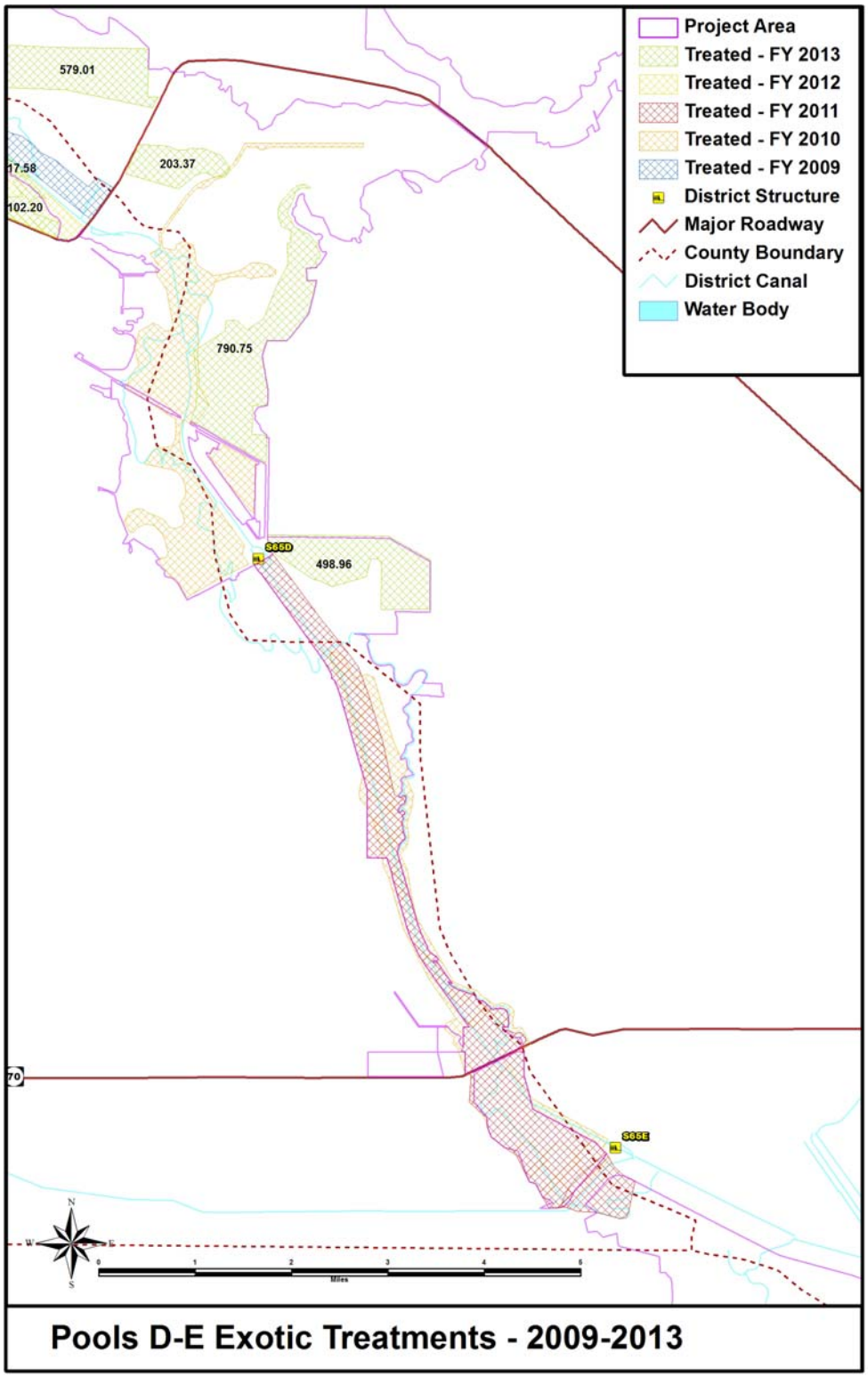
Map 21. Pool A Exotic Treatments 2009 - 2013



Map 22. Pools B - C Exotic Treatments 2009 - 2013



Map 23. Pools D - E Exotic Treatments 2009 - 2012



5.2.2 Rare, Threatened and Endangered Plant Species

Policy 140-25(2)(b) Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.

Listed species are those plants and animals considered rare within a specific geographic area by the U.S. Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission, Florida Natural Areas Inventory, or the Florida Department of Agriculture and Consumer Services. The plant list of the Management Areas (Appendix D) contain several listed species (**Table 3**).

Table 3. Plants Occuring on the Kissimmee River Management Areas that are listed by the Florida Department of Agriculture and Consumer Services as Threatened (T), Endangered (E), or Commercially Exploited (C).

Common Name	Scientific Name	Status
Catesby's Lily	*Lilium catesbaei*	T
Florida Jointweed	*Polygonella basiramia*	E
Giant Orchid	*Pteroglossaspis ecristata*	T
Cardinal Wild-pine	*Tillandsia fasciculata*	E
Giant Wild-pine	*Tillandsia utriculata*	E

Land Stewardship establishes appropriate fire and hydrologic regimes, and controls invasive exotics in natural communities with the intent of perpetuating listed plant species. District Public Use Rules aid in the protection of native habitat and specifically prohibit destroying, defacing, or removing any natural feature or native plant on District lands. In this manner, listed plants are given lawful protection and environmental conditions suitable for their growth and reproduction. Information on listed wildlife species is continued in Section 5.4.3.

5.2.3 Forest Resources

Policy 140-25(3)(h) Sustainable use of forest resources shall be conducted where these activities adhere to a series of environmental criteria (see 1999 Forest Management Plan) that meet Land Stewardship Program goals. Timber contractors will be required to meet silvicultural Best Management Practices (BMP) developed for Florida forests.

Policy 140-25(5)(b)(3) Timber sales will be conducted to improve forest health or to support specific forest management goals.

District policy designates its properties as multiple-use resources, which include timber harvesting. However, such activity must be compatible with Land Stewardship goals and objectives and meet strict environmental criteria:

- Sites considered for high-density pine plantings are currently in an "improved" or disturbed state (i.e. bahia pasture, existing pine plantation)
- Sites to be harvested are scheduled for hydrologic restoration and existing timber will likely be lost as a result of flooding
- The area does not contain any significant resources (e.g. endangered species) that may be harmed by changes in land use
- Forest operations would not require major road construction or improvement for accessing and processing timber, particularly within or across wetlands or other sensitive plant communities
- The area contains timber that requires salvage following fire and/or insect or disease damage, and could be subject to a sanitation harvest with minimal environmental impact
- The area has special needs for endangered species (e.g., red-cockaded woodpecker) management that requires timber stand improvement
- Harvest or planting would not negatively impact public use
- Timber harvests would return forests to a more natural structure and improved forest health

A timber thinning project is being evaluated for the southernmost pine stand at KICCO for red-cockaded woodpecker habitat improvement.

Pine plantings have occurred on 66 acres at Hickory Hammock, the 9 acres at the 4Es portion of Cornwell Marsh, and 53 acres at Ft. Basinger. These pine areas will be thinned to a natural density of about 30-35 ft^2 basal area/acre. The Hickory Hammock pines will be thinned to a basal area of less than 30-35 ft^2/acre to be compatible with the wet and dry prairie understory.

5.2.4 Range Resources

Policy 140-25(3)i Range management and grazing will be considered on improved or native ranges when the introduction of cattle will not conflict with other natural resource management and public use goals.

Livestock grazing has occurred over the last century within south and central Florida and continues to be an important land use today. The Kissimmee River Valley has been grazed for over four centuries since the early Spaniards stocked the Florida Peninsula with cattle. Cattle grazing is employed by the District and other land management agencies as a management tool, particularly for the reduction of fire fuel loads and maintenance of open habitat for the benefit of

native wildlife. The revenue producing lease program provides many benefits, such as:

- On-site management and security for District-owned lands at no cost to the District
- Minimizing District expenses by generating revenue from non-governmental sources to off-set District management, maintenance and resource protection costs
- Minimizing impacts to the local agricultural economy by keeping viable agricultural lands in active production for as long as possible
- Minimizing fiscal impacts of public land ownership to the local government by keeping lands on the tax roll

Grazing Lease Parameters

The District often exercises the option to lease grazing rights to the public when a property is acquired. Lease terms include a maximum stocking rate based on forage availability and the assignment of certain management responsibilities that may include, but are not limited to infrastructure maintenance and/or fence construction and repair. The District restricts activities that could be detrimental to the environmental integrity of the area and requires all lessees to implement best management practices as provided by the Florida Department of Agriculture and Consumer Services. Leased lands remain on the county property tax rolls with the tax payments paid by the lessee.

There are currently seven active grazing leases within the Kissimmee River Management Areas, reduced from twelve in the last plan update due to the continued progress of the Kissimmee River Restoration. The remaining leases lie outside of existing or planned restoration areas.

5.3 Fire

Policy 140-25(5)(c)(3) Prescribed fire will be a primary management tool on District lands and will be applied within fire-maintained communities at appropriate intervals.

The majority of natural communities on District lands require frequent fire to maintain their vegetative characteristics and biodiversity. Wildfires no longer occur with historical frequency or extent, and this has altered natural community structure and function. Prescribed fire attempts to mimic the benefits of natural wildfires that historically reduced fuel loads, recycled soil nutrients, and maintained natural communities by inhibiting hardwood encroachment and stimulating fire-adapted plant growth and reproduction. The District recognizes the benefits of fire and has integrated prescribed fire planning and application into its land management strategy.

5.3.1 Fire History

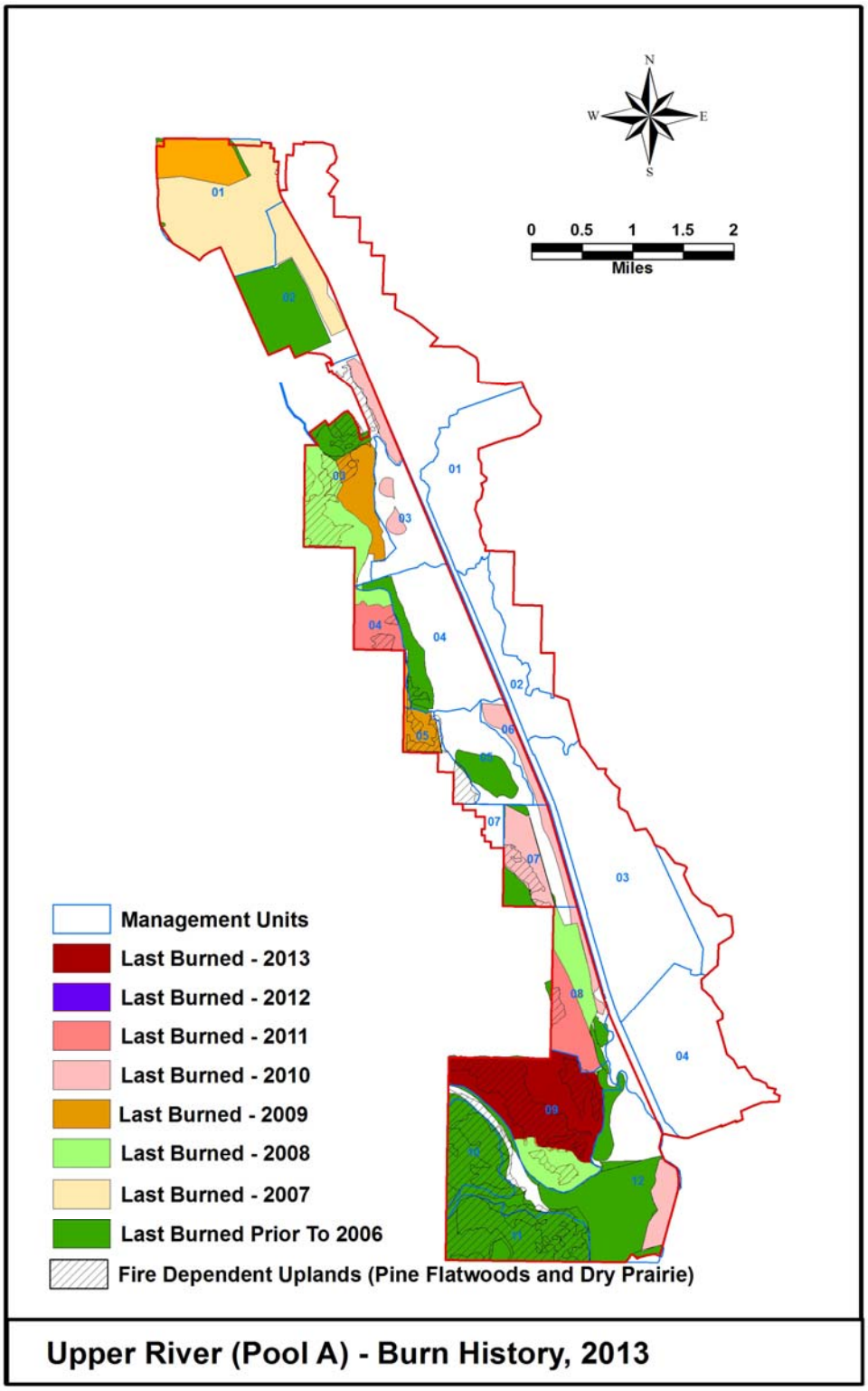
Pool A (**Maps 24 a-b**)

The District began its prescribed fire planning for the Management Areas in the early 1990s and, since then, has conducted prescribed fires regularly in the marshes, prairies, and flatwoods. The small areas of scrub are burned less frequently**.** The previous owner of KICCO burned the property at a frequency of about every other year. The District has continued prescribed burning on a rotation based on the need of the plant communities and the response of those communities to the last burn conducted. Since most of Blanket Bay marsh is improved pasture and serves as a control for the Kissimmee River Restoration Program, it has not been burned. There is an overgrown marsh in the south end of Blanket Bay where the District is planning on utilizing fire and shredding as a means to control the woody vegetation that has invaded the community. Fire data (prescribed and wild) is maintained in a Geographic Information System to produce cumulative burn maps of the property.

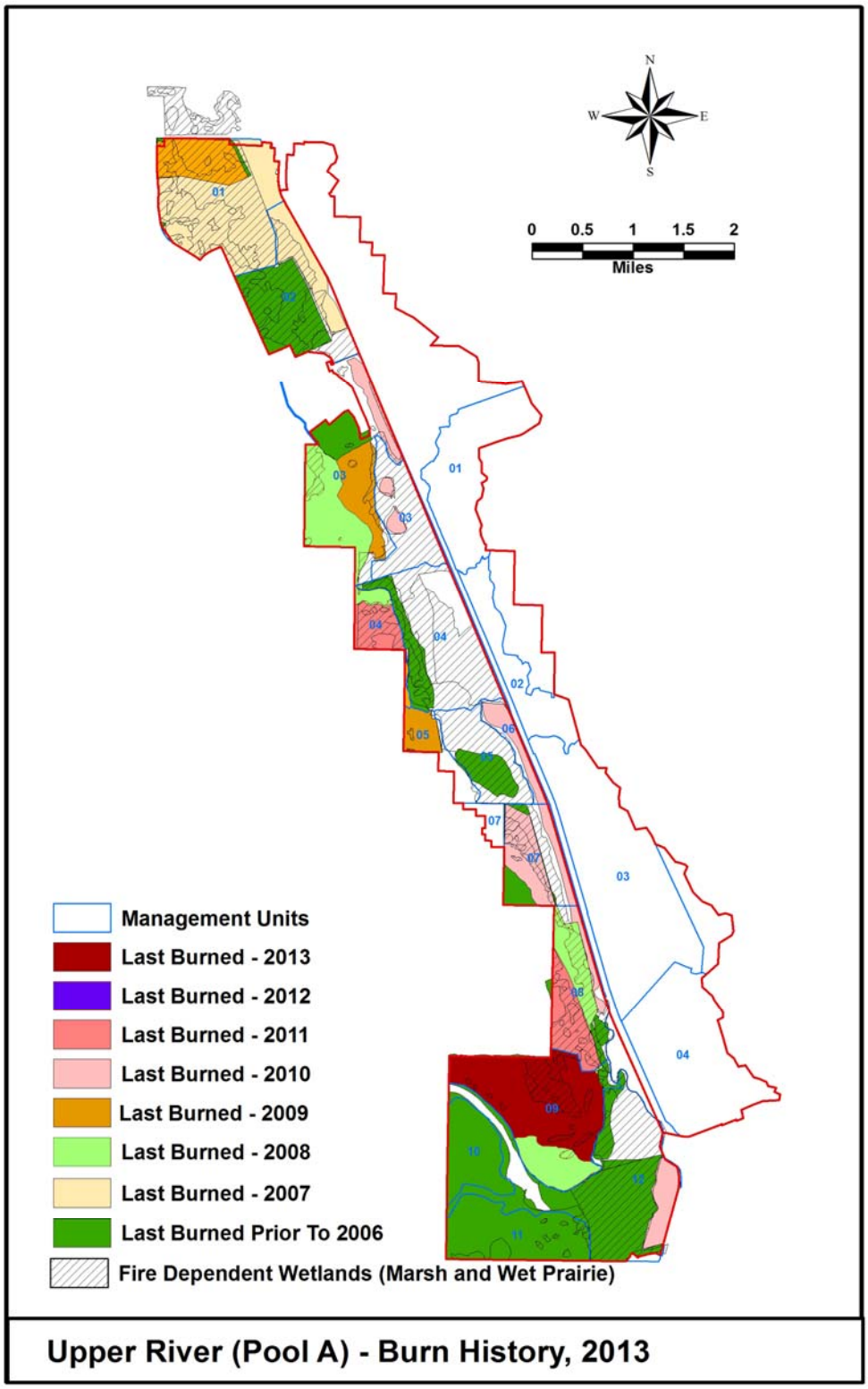
Pool C/D (**Maps 24 c-f**)

Documented fire history is not available for the southern Management Areas prior to District acquisition. However, pasture management practices in this region indicate native range areas were probably burned regularly to improve forage. Other areas on the properties may have experienced fire exclusion because of buildings, roads, ditches, or man-induced conditions. Many of the natural community types found on these parcels require varying frequencies of prescribed fire. District prescribed burning was first initiated in 1990 on Hickory Hammock. Oak Creek and Starvation Slough have experienced burn treatments periodically since 1995.

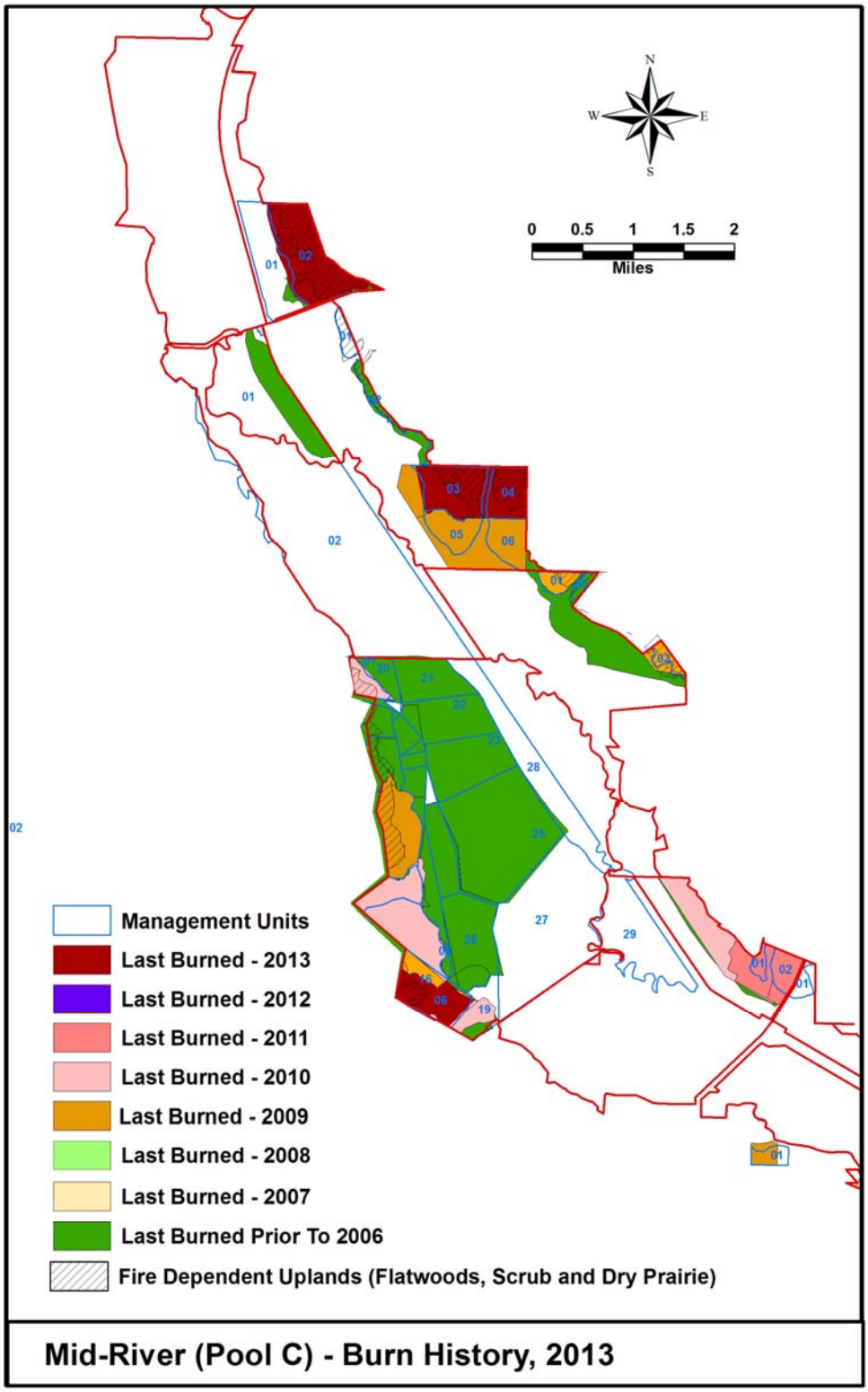
Map 24a. Fire History Map for Kissimmee River Pool A, Uplands



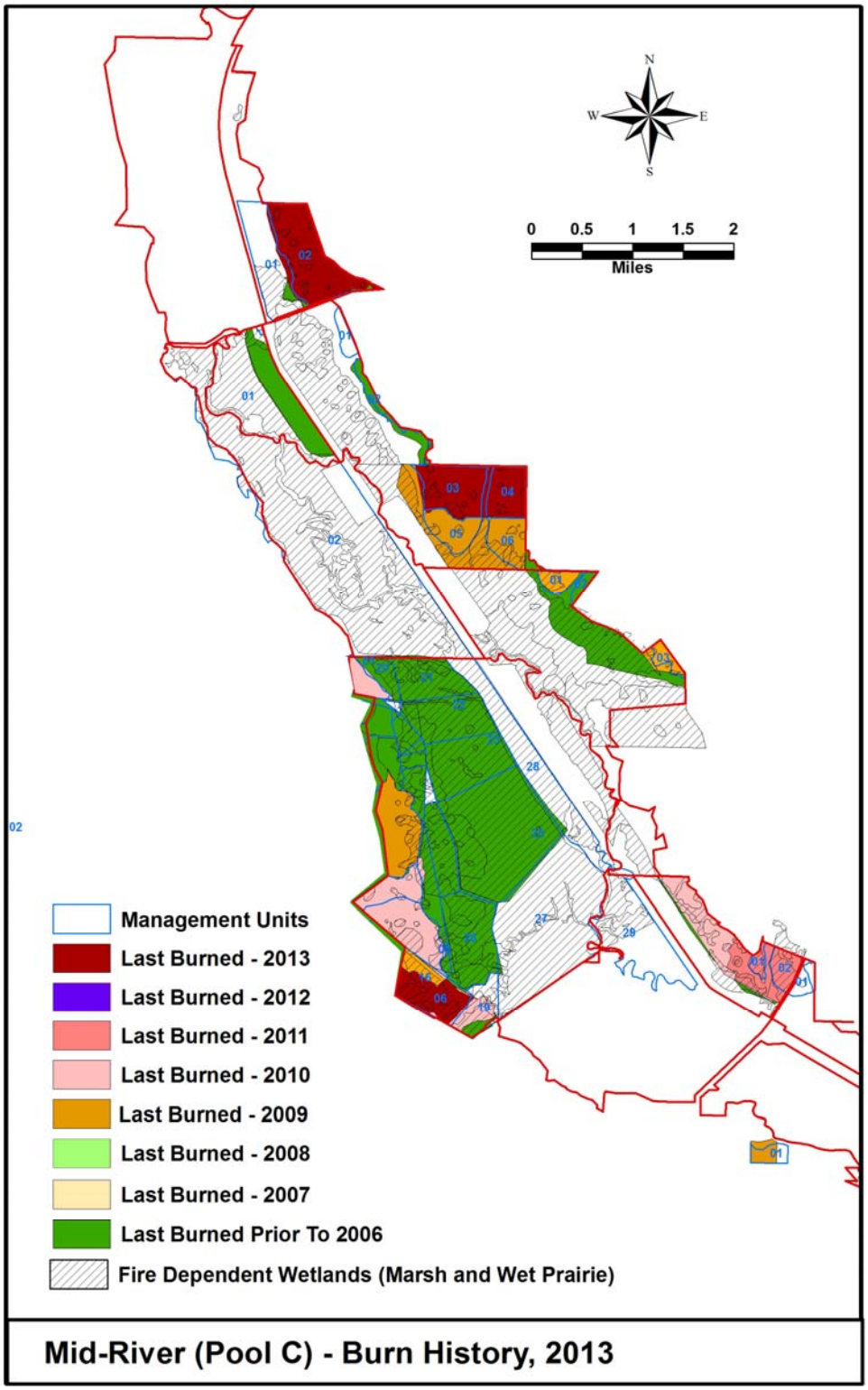
Map 24b. Fire History Map for Kissimmee River Pool A, Wetlands



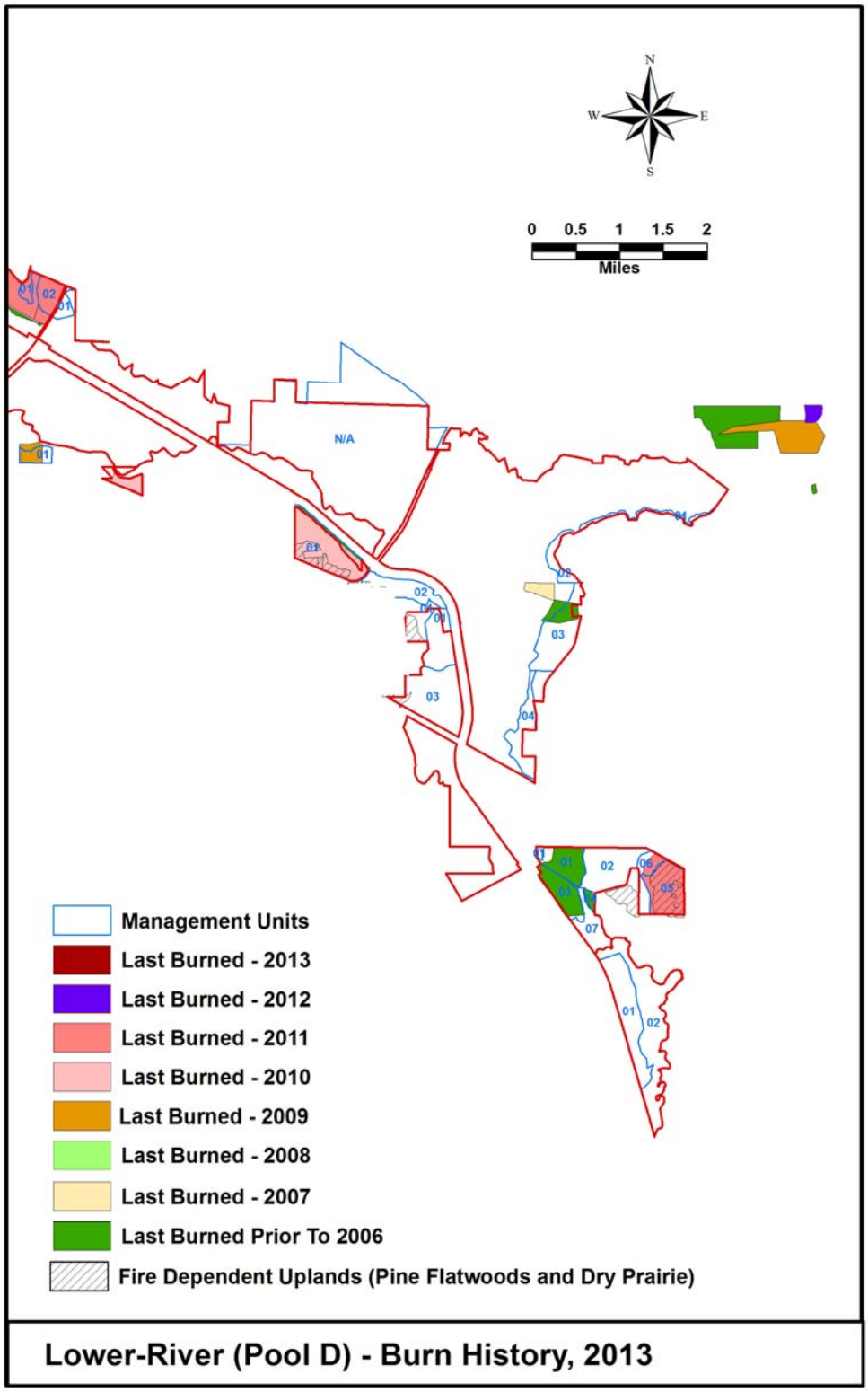
Map 24c. Fire History Map for Kissimmee River Pool C, Uplands



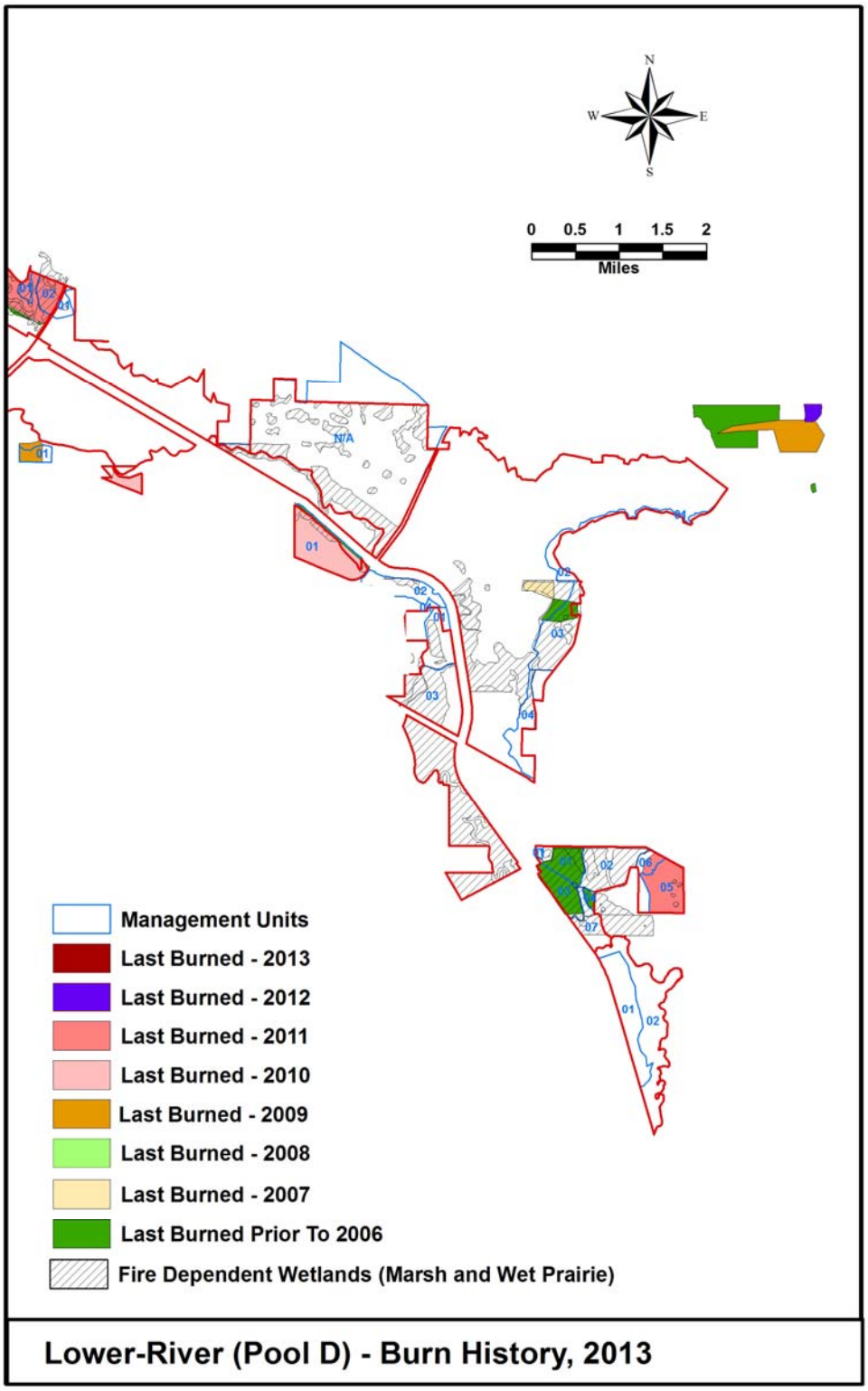
Map 24d. Fire History Map for Kissimmee River Pool C, Wetlands



Map 24e. Fire History Map for Kissimmee River Pool D, Uplands



Map 24f. Fire History Map for Kissimmee River Pool D, Wetlands



5.3.2 Prescribed Fire Planning

Burn units have been established within the Managent Areas. Seasonal planning considers potential burn areas based on their location, natural community types, fire history, and fire management objectives and constraints. The Land Stewardship Section bases fire management plans on ecological research and professional experience. Fire frequency schedules for each natural community consider recommendations provided in *The Natural Communities of Florida* (Florida Natural Areas Inventory, 1990). To mimic historic fire conditions, Land Stewardship emphasizes growing season burns (April-September) where practical. Natural firebreaks are utilized where possible to promote historic fire patterns, avoid soil disturbance, and reduce hydrologic flow disruption created by fire lines. Listed species life requirements are elements of prescribed fire planning. Application of fire, with appropriately timed herbicide treatments, is used as a tool for the control of exotic and invasive plants.

Burns are executed using proven methods as defined by the Prescribed Burning Act of 1990, Chapter 590.026 Florida Statutes. This legislation and associated administrative rules outline accepted forestry burn practices and are administered through the Florida Forest Service. Land Stewardship has a three-person prescribed fire crew in the Okeechobee Service Center and utilizes other District staff and cooperating agency staff— Florida Forest Service, the Florida Park Service, and the Florida Fish and Wildlife Conservation Commission to conduct burns. All Land Stewardship staff have completed the state certified burn course to ensure safety and proper technique.

Prescribed fire is applied within the Management Areas at appropriate fire intervals for each natural community. The District concentrates on applying fire to each area of the property, in order to reduce accumulated fuel loads, improve habitat, and provide a safer basis for future burns of increased frequency and lower intensity. Planning will emphasize yearly burn acreage to attain a 3-5 year rotation for flatwoods and prairie communities.

Prescribed Fire and Carbon Sequestration

The District currently stores carbon on the lands it manages in vegetation and organic soils. Each year, the amount of carbon increases as young forests grow and marshes steadily fix carbon into peat. This is also known as carbon sequestration. It is important to manage the District's land resources in a manner to maximize the amount of carbon that is sequestered, while minimizing carbon dioxide and other greenhouse gas emissions. Prescribed fire is a tool that when used under the right conditions and with the right frequency can increase the rate at which a fire-dependent natural community can grow and store carbon. Following a burn, there is a subsequent spike in primary productivity caused by a release of nutrients and exposure of more surface area to sunlight, as well as post-burn increases of both above and below ground carbon stores.

Prescribed fire guidelines for maximizing carbon storage that the District considers when conducting prescribed burns include:

- Burning at 3 to 5 year intervals
- Conducting late winter burns
- Implementing a proper mop-up phase of the prescribed fire to extinguish smoldering stumps is important to reduce unnecessary carbon and nitrous oxide releases, flaming combustion releases much less carbon than smoldering combustion
- Avoiding muck fires and conditions that lead to muck fires as they release large quantities of carbon and nitrous oxide
- Keeping fuel density low to avoid the possibility of massive carbon releases in wildfire

5.3.3 Wildfire Suppression

Policy 140-25(3)(d) The Florida Forest Service will be notified of all wildfires on District lands. Land Stewardship will provide initial suppression when commensurate personnel and equipment are available.

Lightning-caused wildfires are a common occurrence throughout Florida, including the Kissimmee River Management Areas. It is District policy, and state law, that the Florida Forest Service is notified when a wildfire occurs on Land Stewardship-managed properties. Land Stewardship staff assigned to the area respond to and, if appropriate, begin suppression of area wildfires when detected. The Florida Forest Service is called immediately and a fire assessment is made.

5.4 WILDLIFE MANAGEMENT

A primary objective in the stewardship of the Management Areas is to maintain healthy fish and wildlife populations. Land Stewardship accomplishes this in several ways:

- Performing land management activities that maintain and/or improve native wildlife habitat
- Conducting specific management practices ato benefit protected species
- Conducting wildlife inventories through a partnership with the Florida Fish and Wildlife Conservation Commission and prohibiting activities that have the potential to negatively impact listed species
- Following management guidelines for listed species protection as determined by the *Multi-species Recovery Plan for the Threatened and Endangered Species of South Florida, Volume 1,* (U.S. Fish and Wildlife Service. 1998)
- Reducing non-native pest species populations where appropriate
- Maintaining a master file of confirmed and potential wildlife species

- Cooperating with the Florida Fish and Wildlife Conservation Commission on wildlife management issues, including wildlife inventories and evaluating management actions.

Wildlife management in the Management Areas is directed toward production of natural species diversity consistent with the biological community types present. The Florida Fish and Wildlife Conservation Commission maintains a lead role in wildlife management in the Management Areas by managing public hunting activities.

5.4.1 Game Management

Policy 140-25(4)(b)(4) Florida Fish and Wildlife Conservation Commission regulations shall govern hunting in areas opened for such use.

The Kissimmee River Management Areas contain two Wildlife Management Areas and a Public Use Area established by the Florida Fish and Wildlife Conservation Commission (**Maps 25-27**). The Commission administers several hunting seasons in the fall, small game and hog hunts in late winter, and spring turkey hunts. Management activities directed towards game management include establishing bag limits for game species and regulating hunting pressure.

5.4.2 Exotic/Invasive Animal Species

Wildlife pest species are those non-native species that are harmful to native wildlife, that negatively impact native vegetation and wildlife or interfere with management objectives. The Land Stewardship's goal for wildlife pest management is to reduce populations to attain an acceptable level of impact to natural plant and animal communities. The District's land manager uses monitoring, visual observation, and consultation with the Florida Fish and Wildlife Conservation Commission to define an acceptable level of impact. When population control measures are warranted, land managers consult with the Commission to determine effective and appropriate control techniques. The effects of pest population control efforts are monitored by periodic site evaluations.

The feral hog is a pest species that occurs within the Management Areas. Disturbance caused by this species negatively impacts natural communities and interferes with land management operations. Although valued by some members of the public as a game animal, the feral hogs' high fecundity, adaptability, rooting behavior, omnivorous diet, and ability to quickly colonize areas raises environmental concerns. Their disruption of soil and vegetation alter natural communities and can be especially damaging in sensitive habitats that are slow to recover. Hog disturbance has occurred within most of the management area including wetland communities. Land management objectives are affected when rooting disturbance disrupts prescribed burns by preventing the spread of fire.

Areas of disturbed soil are also more susceptible to exotic plant invasion. Rooting can also damage hiking trails, have a detrimental impact on small animal populations, and ground-nesting birds, and can damage infrastructure.

Currently, feral hog populations have been declining in KICCO due to the installation of a 12 mile long hog fence on its western border. Control methods are decided in consultation with the Florida Fish and Wildlife Conservation Commission and include providing public hog hunts and utilizing no-cost hog control agents where necessary. Contracted hog-control agents are currently used on all managemenet units on the river and other satellite properties.

5.4.3 Rare, Threatened and Endangered Animal Species

Policy 140-25(2)(b) Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.

Several species listed as endangered, threatened, or of special concern by state and federal agencies occur within the Management Areas, including gopher tortoise (*Gopherus polyphemus*), wood stork (*Mycteria americana*), Sherman's fox squirrel (*Sciurus niger shermani*), Florida bonneted bat (*Eumops floridanus*), and Indigo snakes (*Drymarchon corais couperi*) **(Table 4).** Additionally, the Commission has classified most of the Management Areas as a Regional Biodiversity Hotspot. Hotspots represent areas which have high overlap for declining species of wildlife plus known occurrences of rare flora, fauna, and natural communities.

District land management activities including prescribed burning, hydrologic restoration, exotic vegetation eradication, understory control, and selective forest thinning improve natural environmental characteristics that benefit listed species as well as a variety of other indigenous wildlife. Staff from the Archbold Biological Station have a monitoring program in place for red cockaded woodpeckers and scrub jays at KICCO.

Table 4. Listed Animal Species: (T) Threatened, (E) Endangered, (SSC) Species of Special Concern

Scientific Name	Common Name	Status	
		Fed	State
Aramus guarauna	Limpkin		SSC
Athene curicularia	Burrowing Owl		SSC
Caracara cheriway	Crested caracara	T	
Drymarchon corais couperi	Eastern indigo snake	T	
Egretta caerulea	Little blue heron		SSC
Egretta thula	Snowy egret		SSC
Egretta tricolor	Tri-colored heron		SSC
Eudocimus albus	White ibis		SSC

Eumops floridanus	Florida Bonneted Bat	E	
Falco sparverius paulus	Southeastern American kestrel		T
Felis concolor coryi	Florida Panther	E	
Gopherus polyphemus	Gopher tortoise		T
Grus canadensis pratensis	Florida sandhill crane		T
Mycteria americana	Wood stork	E	
Pituophis melanoleucus mugitus	Florida pine snake		SSC
Sciurus niger shermani	Sherman's fox squirrel		SSC
Trichechidae manatus	Florida Manatee	E	

6. Public Use

Policy 140-23 The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands.

Section 373.1391 (1)(a) Florida statute states that wherever practical, lands acquired by the District shall be open to the general public for recreational uses. The District encourages public use of management areas for appropriate natural resource-based activities. All District lands are available for public use, except in rare instances where there is no legal public access or where reservation/lease restrictions or construction activities prohibit public entry.

Public input into the management of the area is solicited at the quarterly Water Resource Advisory Committee Recreational Issues Workshops. Adjustments to public use opportunities are made on an ongoing basis through the Recreational Issues Workshops and through rulemaking through the 40E-7, F.A.C. public use rule. This plan addresses public use matters only to describe the scope of public use opportunities available or planned as of the date of the plan, it is not intended to set public use policies through the plan period.

The determination of compatible public uses is based on the following criteria:

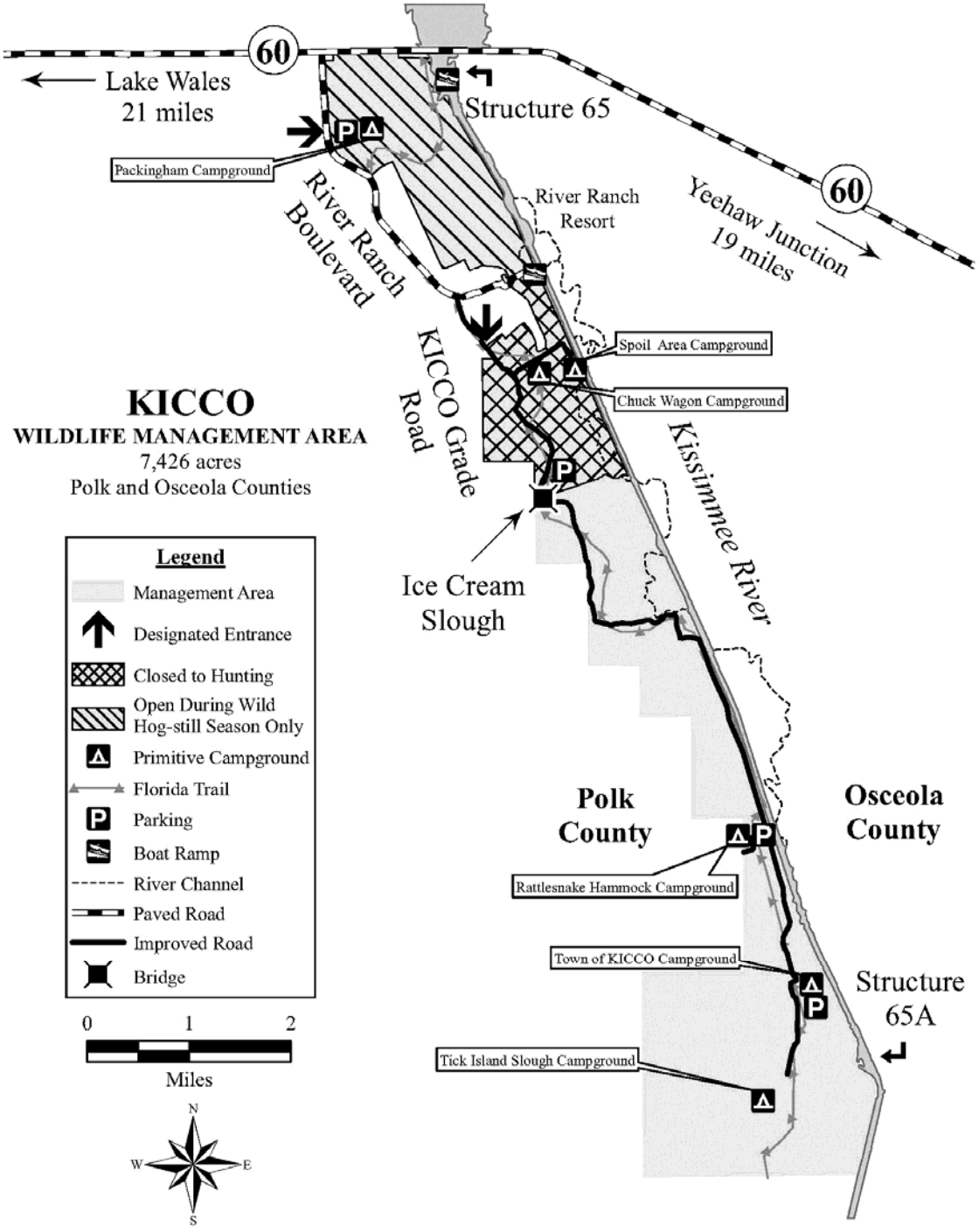
- Consistency with the reason the lands were acquired
- Restrictions and/or prohibitions imposed by easements, leases, reservations, purchase agreements, and other legal mandates
- Infrastructure and support facility requirements, such as fences, gates, signage, entry design, stabilized off-road parking, trails, campsites, maintenance, and other operational and budgetary impacts
- Opportunities for persons with disabilities
- Limitations on use resulting from endangered species, other sensitive natural resources, archeological resources, or land management practices
- Public health, safety and welfare
- Protection of resources

A wide variety of recreational activities are appropriate and encouraged in the Management Areas including boating, bicycling, canoeing, camping, equestrian use, fishing, hiking, and hunting (**Table 5**). In addition, new boat ramps have been constructed at the Istokpoga canal along Hwy 98, and at the S-65 D locks to provide access to the restored river. Campsites, accessible from the river, have been established throughout the management areas. The Florida National Scenic Trail winds its way through the management areas, and is currently being relocated from the west side to the east side of the river. Sections of general hiking trails on the west side will continue to be maintained by volunteers from local hiking clubs.

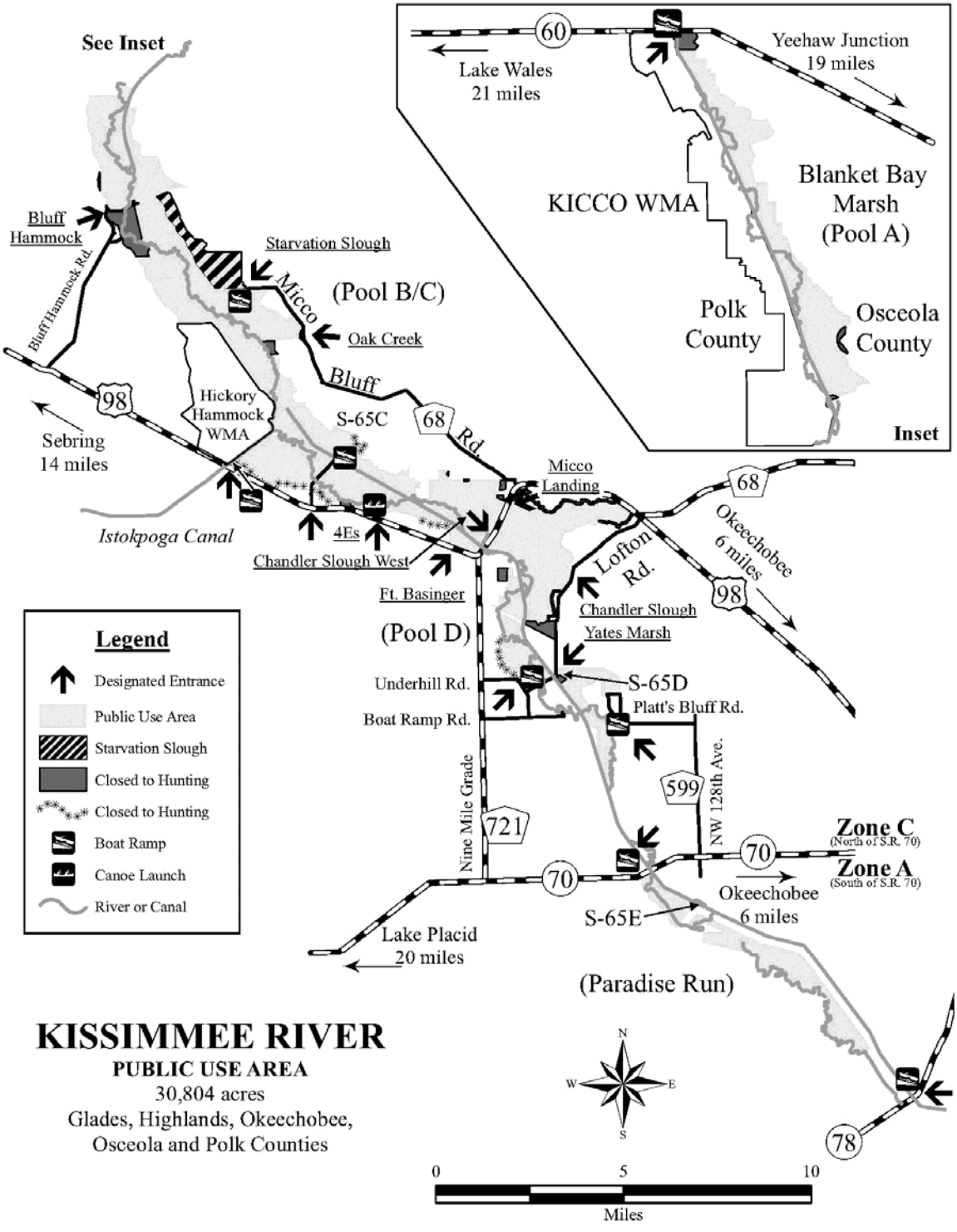
Table5. Recreational Opportunities

Unit	Airboating	Bicycling	Canoeing	Camping	Education / Visitor Center	Equestrian	Fishing	Hiking / Nature Appreciation	Hunting	Picnic Tables
Kissimmee Management Region										
KICCO Wildlife Management Area		✓	✓	✓		✓	✓	✓	✓	✓
Blanket Bay Marsh	✓		✓	✓			✓		✓	✓
Kissimmee Prairie Preserve State Park		✓		✓	✓	✓	✓	✓		✓
Boney Marsh	✓		✓	✓			✓	✓	✓	
Bluff Hammock	✓		✓			✓	✓	✓	✓	✓
Hickory Hammock Wildlife Management Area	✓	✓	✓	✓		✓	✓	✓	✓	✓
No Name Slough	✓	✓	✓			✓	✓	✓	✓	
Starvation Slough	✓	✓	✓	✓		✓	✓	✓	✓	✓
Oak Creek	✓		✓	✓			✓	✓	✓	✓
Turkey Hammock West	✓		✓	✓			✓		✓	
Turkey Hammock East							✓		✓	
Cornwell Marsh West				✓			✓	✓	✓	
Cornwell Marsh East							✓	✓	✓	
Micco Landing	✓	✓	✓	✓		✓	✓	✓	✓	
Seaboard Marsh North	✓		✓				✓		✓	
Seaboard Marsh South	✓		✓				✓		✓	
Yates Marsh		✓		✓			✓	✓	✓	✓
Telex Marsh			✓				✓	✓	✓	
Paradise Run		✓					✓		✓	

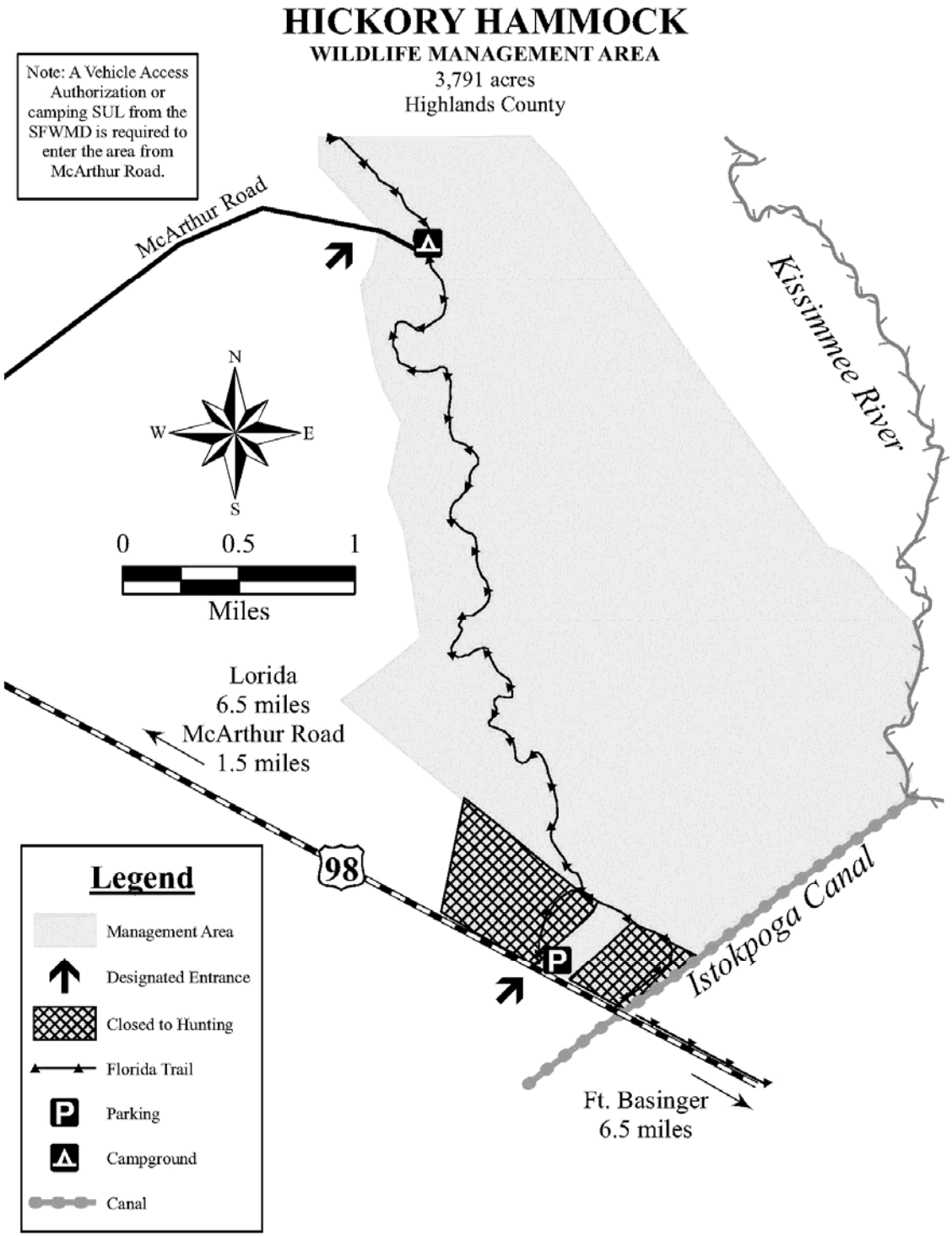
Map 25. KICCO Wildlife Management Area



Map 26. Kissimmee River Public Use Area



Map 27. Hickory Hammock Wildlife Management Area



6.1 Resource Protection

Policy 140-25(1)(d) Public use shall not result in detrimental impacts to water resources. When a public use activity produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.

Policy 140-25(3)(g) Resource protection shall be provided by professional law enforcement services through funded and unfunded contractual agreements to safeguard the public and protect natural and cultural resources on District-managed natural areas.

Policy 140-25(4)(b)(1) Public use regulations are set forth in 40E-7.511, Florida Administrative Code, to implement Section 373.1391(1)(b), Florida Statutes. Accordingly, the District shall publish and make available to the public a "Recreational Guide" for designated land management areas.

Regulations that govern activities within the Management Areas are in the District's 40E-7, F.A.C. Public Use Rules, which are available at all Service Center and at agency headquarters in West Palm Beach. Allowed activities include hiking, fishing, boating, canoeing, camping, hunting, geocaching, equestrian use, biking, and nature study. The Florida Fish and Wildlife Conservation Commission is responsible for enforcing laws, rules, and regulations applicable to the Management Areas, along with the local county sheriffs' offices. The Commission has an officer housed at KICCO who helps patrol Pool A, an officer housed at Hickory Hammock in Pool C, and two officers at Chandler Slough in Pool D. The officers reside in District-owned facilities through a contractual agreement with the District and provide a law enforcement presence on District lands at no cost to the agency.

Management of public activities on District lands requires a strong commitment to resource protection while simultaneously promoting public recreational uses. The District emphasizes the enforcement of pertinent rules and regulations to protect natural resources and enhance recreation opportunities. Law enforcement officers conduct regular patrols throughout the year, increasing their presence during hunting seasons and at other times when public use is high. Law enforcement surveillance protects natural and cultural resources, deters illegal activity, and safeguards the public. Patrols are conducted with 4-wheel drive vehicles, boats, all terrain vehicles, aircraft, and on foot. The Land Stewardship Section's law enforcement coordinator reviews biweekly reports and meets with officers to structure patrols based on resource needs.

Resource protection is also greatly enhanced by the establishment and maintenance of posted fence lines that delineate property boundaries. New fence construction and maintenance needs are addressed as necessary.

6.2 Environmental Education

Educational programs are developed and implemented on select management areas by organizations interested in promoting increased visitor knowledge and appreciation of natural areas and cultural resources. A central theme to these programs is the vital role of water management in maintaining resource viability and productivity. There are several interpretive kiosks throughout the Management Areas including four at KICCO, and one at the boat ramp near the S-65 water control structure. There are fifteen kiosks (9 District and 6 Commission) in Pools C and D. The District encourages educational partnerships through memorandums of understanding, leases, and contract agreements.

7. Administration

Administration of District land management is directed through the Land Stewardship Section. Policy decisions, planning and budgeting, procurement of personnel and equipment, contract administration, and issues of program development are administrative tasks coordinated through the Section. Input is provided from the public and regional land managers located at District Service Centers, Field Offices, or Field Stations over the 16-county area. Regional land managers handle regular administrative duties from their field locations to assure quick response to local concerns and management issues. Administrative activities for the Management Area are handled through the DuPuis field office.

7.1 Planning and Budgeting

Planning is a major function of the Land Stewardship mission and is critical to maintain proper program focus, direction, and coordination with other agencies. Planning is accomplished by section planning staff in coordination with land management staff. Section-level planning produces the Land Stewardship Activity Report for the Florida Forever Workplan, and coordinates land acquisition planning with other District and outside agency personnel.

Policy 140-25(6)(b) General Management Plan: Provides a description of recommended management and is required for each Land Stewardship Management Area. The GMP follows a designated format and is updated every ten years.

General Management Plans are developed that detail strategies to guide management activities on individual project areas. These plans define goals and objectives, identify major management issues, and describe management activities. Each plan is subject to a draft revision period where public comment and professional review is requested prior to plan approval. Each plan is revised on a ten-year cycle by planning team and land management staff.

Policy 140-25(5) The District will secure dedicated funding sources, personnel and other resources to support program goals and objectives. Project funding needs and sources for cooperative management agreements with government and non-government entities will be identified during acquisition. A cooperative management agreement will designate a lead manager and identify whether District funding is required.

The principal sources of funding for land management operations include revenue from commercial and agricultural leases, revenue generated from mitigation banks and interest earned on offsite mitigation funds, and ad valorem tax revenue. Historically, the Water Management Lands Trust Fund, administered by the Florida Department of Environmental Protection, had been the primary source of land management funding. Additional funding and support has been obtained from grants, the harvest of renewable resources, in-kind services from cooperating management partners, and no-cost services from user groups and volunteers.

Budget planning begins in November during the work planning process for the following fiscal year (October-September). Overall funding availability generally determines management activities. Site-specific priorities are generated and submitted by the regional land managers. Budget distribution among the District's five land management regions is based on a programmatic prioritization of management needs.

The continued operation and maintenance of the Kissimmee River Management Areas includes costs to cover staffing, ongoing operational and land management expenses, and capital refurbishment/replacement of aging infrastructure. Capital infrastructure needs are determined by its condition and the anticipated continued serviceability over the next fiscal year. Priorities for capital refurbishment/replacement are made on a District-wide basis. It is anticipated that several infrastructure features will require refurbishment/replacement during this plan period, these features include: the boardwalk and bridge at Boney Marsh, resurfacing asphalt at the Istokpoga Canal Recreation Area, the refurbishment of several trailheads, and other minor features such as septic systems and large culverts.

The operational and land management expenses for FY 2014 are included in **Table 6,** below. Contracted Land Management Services include a contract with the Department of Corrections (inmate labor for needs such as trailhead maintenance, mowing of recreation areas, and fence repairs). Operational Expenses include supplies, septic service, business travel, and safety equipment. Public Use costs are generally the maintenance costs of public use facilities. Site Security represents costs associated with contracted law enforcement services which currently are not budgeted for on the Kissimmee River Management Areas.

Table 6. Operational and Land Management Expenses for Fiscal Year 2014.

Kissimmee River		FY2014 Budget
Contracted Land Mgt. Svcs		$58,000
Utilities and Operational Expenses		$38,424
Equipment and Infrastructure Maintenance		$55,500
Exotic Species Control		$130,000
Vegetation Management		$53,600
Public Use		$45,000
Site Security		$0
	Total	**$380,524**

7.2 Infrastructure

Policy 140-25(3)(k) Infrastructure support shall be developed and maintained to provide safe access for responsible management and public use on District lands. Such infrastructure may include access points, roads, trails, signs, utilities, and minimal public facilities.

Current infrastructure which requires regular maintenance includes recreation access points and trailheads, perimeter posting and fencing, firelines, hiking trails and roads, kiosks, camp sites, campground host sites, law enforcement officer's housing, boat ramps, and other structures.

7.3 Personnel and Equipment

The District is separated into five geographic regions, each staffed with professional land managers and technicians who are supervised by a Section Leader. The Land Stewardship Section Administrator, recreation staff, and planning staff are headquartered at the main West Palm Beach office.

Stewardship of the management areas is the primary responsibility of the District's Kissimmee River/Okeechobee regional land management staff. Dedicated staffing for the Kissimmee River Management Areas consist of one Senior Land Manager, one Scientist 3, and one planner/scheduler that performs field functions. Additional management input and support comes from District planning and Field Station personnel, as well as the Kissimmee River Section. Staff has access to tools, supplies, four-wheel drive vehicles, fire suppression trucks, all terrain vehicles, swamp buggies, bull dozers, tractors, and other heavy equipment.

7.4 Volunteers and Alternative Work Force

Policy 140-25(5)(d)(1) Volunteers, interns and alternative work forces will be used when possible to supplement existing staff and services.

Section 373.1391(3) F.S. encourages the District to use volunteers for land stewardship and other services. The District recognizes the merits of volunteerism and welcomes participation in activities appropriate for public involvement. In Fiscal Year 2013, District lands benefited from 10,000 volunteer hours, or $217,900 worth of volunteer services (using a $21.79/hour national average for the value of volunteer service). The Florida Trail Association regularly provides volunteer service to maintain the portion of the Florida National Scenic Trail that passes through the Management Areas. Land Stewardship also utilizes volunteer campground hosts at the S-65C campground, the Istokpoga Canal Boat Ramp Area, the Hickory Hammock equestrian campground, and at KICCO. Other volunteer services have been provided by the Interagency Prescribed Fire Training Council, Boy Scouts, the Florida Sportsmens' Conservation Association, and several other individual volunteers. All volunteer activities help accomplish management objectives, promote citizen involvement, and allow area staff to focus on other tasks.

7.5 Contractual Management

Policy 140-25(5)(a). The private sector may be solicited to furnish certain management-related facilities and services through the execution of leases and agreements. These leases/agreements will assure mutual benefits to both the District and private parties and be consistent with the program management objectives.

Effective operation and management of District properties requires the services and cooperation of private organizations, other governmental agencies, and volunteers. Contractual relationships are formalized through management agreements signed by both the District and contracting entity with the document defining the responsibilities of each party.

The District has established and maintains three contractual management agreements to assist with management:

Agreement #1
4600000961

This is a contractual multi-site agreement that authorizes the Florida Fish and Wildlife Conservation Commission toperform land management and public recreation services on District-owned properties.

Agreement #5

4600002826

An agreement with the Florida Department of Corrections to provide inmate labor for land management and infrastructure maintenance.

Agreement #1
C89-0065

A Memorandum of Understanding with the Florida Trail Association in which they agree to maintain the segment of the Florida National Scenic Trail that passes through the Kissimmee River Valley.

Agreement #2
C-8318

A lease (1998-2045) for the Florida Park Service to manage District property in pool B as the Kissimmee Prairie Preserve State Park.

7.6 Management Review

Policy 140-22(j) Section 373.591, Florida Statutes, mandates the District to solicit input on current management programs through professional peer reviews.

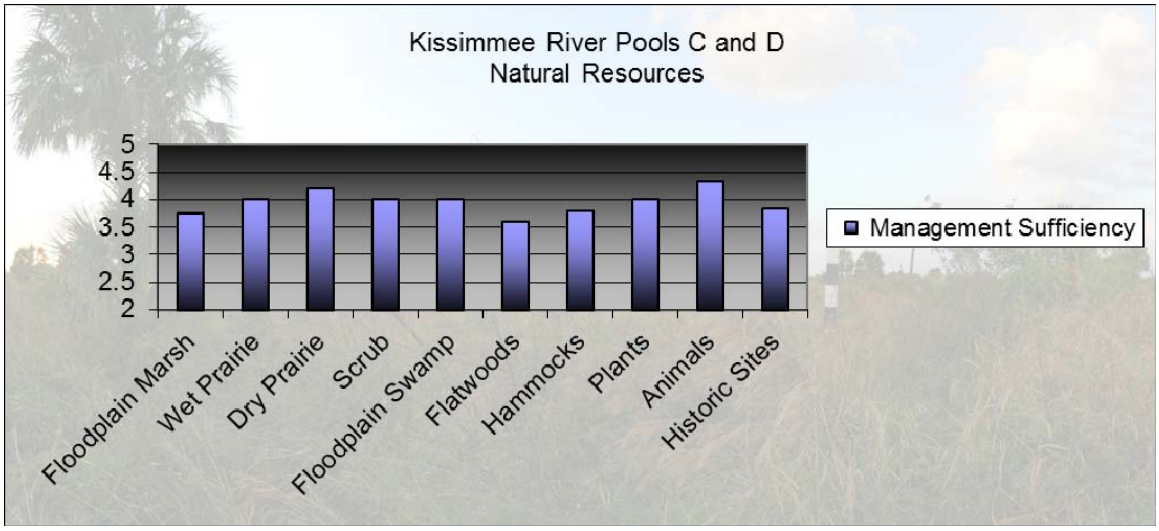
A land management review team is identified for each project area with a General Management Plan. These ad hoc teams are comprised of state, county, and private entities that periodically review management activities to assure they are consistent with acquisition intent and program objectives. Management assessments are conducted in light of the goals and objectives defined in the area's general management plan and are scored on a scale of 1 to 5 with a 1 meaning the management is insufficient and a 5 meaning the management is extremely effective. If the review team determines that management is insufficient in any area, attaining an average score of less than 3.0, then the District is to provide a written explanation to the review team along with proposed corrective actions.

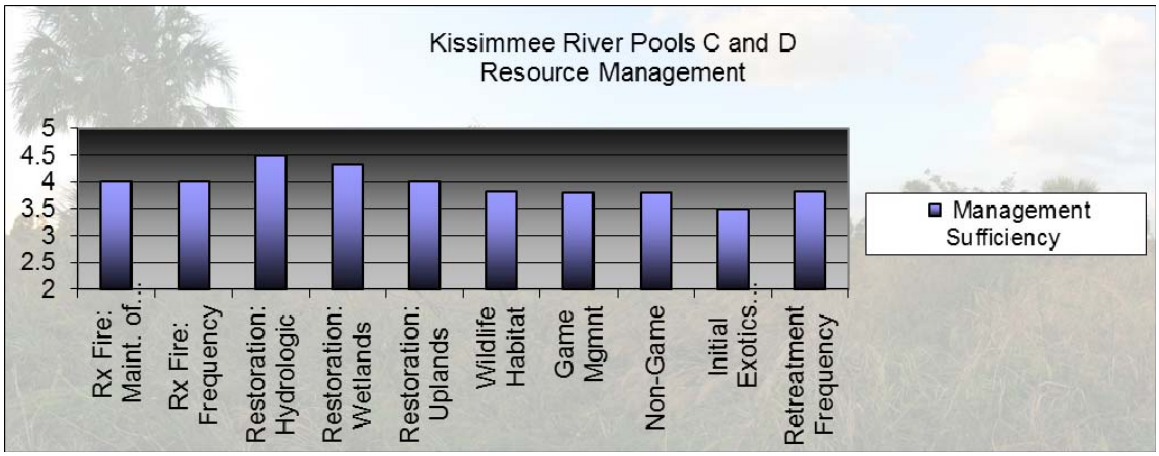
A management review of the Kissimmee River Management Areas was conducted in November, 2013. The review team provided comments on the condition of the land and the management of the site.

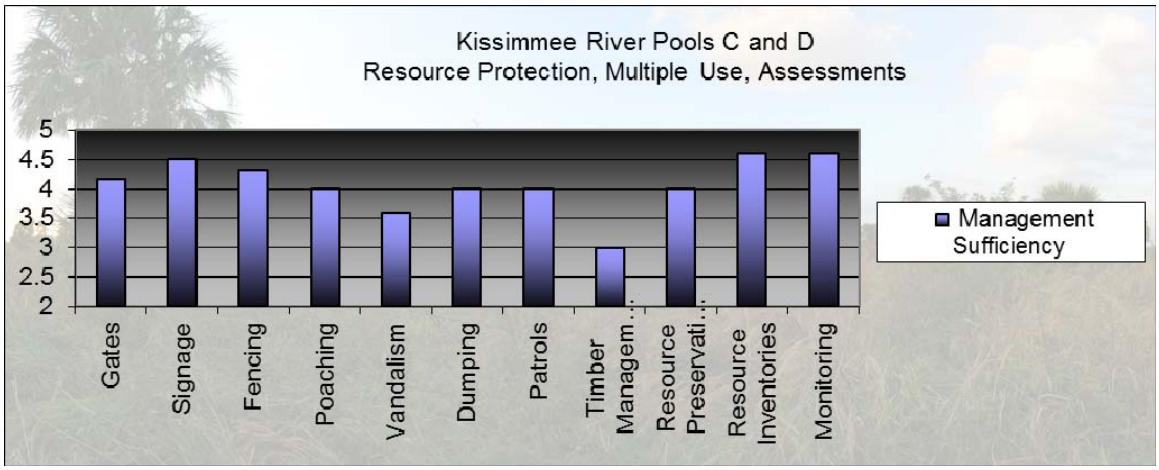
Positive comments were received on the quality and quantity of land management and restoration work being accomplished by a small land management team. Positive comments were also directed at the availability of the many public use opportunites that are provided free-of-charge, and at the improvement in the signage promoting these types of uses.

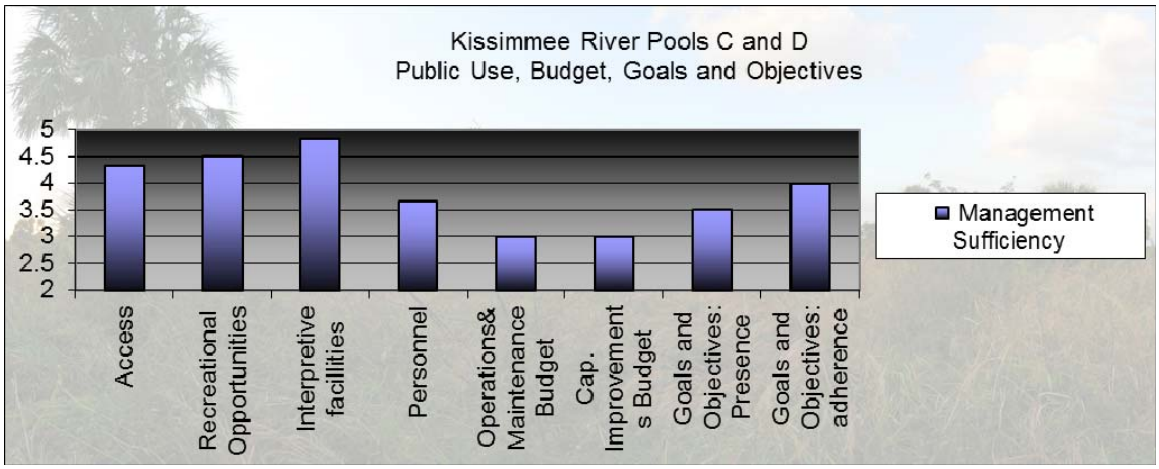
The review team expressed concern over the extent of invasive exotic species such as paragrass and caesarweed. The team understood that a targeting of these species should not come at the expense of keeping old world climbing fern (*lygodium*) at bay, but were concerned about the presence and the impact that these species were having in the hammocks (caesarweed) and floodplain marshes (paragrass).

The team also rated the management sufficiency of the land on a scale from 1 to 5 on criteria such as: the natural resources, resource management activities, public use, budget, goals and objectives, resource protection, multiple use, and biological assessments and monitoring. The average scores by category are identified on the graphs below and indicate the review team felt the Kissimmee River Management Areas were being properly managed:









The average score for the 2013 for the condition of the Natural Rresources was 4.0; Resource Management was 4.0; Resource Protection, Multiple Use, and Assesments was 4.1; and Public Use, Budget and Goals and Objectives was 3.8. The relatively low scores received in the categories of Personnel, Operations & Maintenance Budget, and Capital Improvements Budget reflect the review team's recognition of the District's current budgetary challenges. There was no explanation provided by the review team members as to why timber management received a relatively lower score.

Appendix A

Land Stewardship Goals and Policies

ARTICLE II. LAND STEWARDSHIP

Sec. 140-21. Scope.
This policy shall apply to all lands managed by the Land Stewardship Program, including property acquired with Save Our Rivers, Preservation 2000 or mitigation funding. Nothing in this policy shall negate any statute, administrative rule, or other policy requirement. This policy may be reviewed and approved by the District Governing Board at five-year intervals or earlier and updated as required. Public comment may be solicited as part of the review process.
(R.M. No. 139)

Sec. 140-22. Purpose.
(a) This policy establishes a commitment to the responsible management of District lands in a manner consistent with legislative directives and the District's mission.
(b) In 1981, the Florida Legislature established the "Save Our Rivers" program (SOR) for the five water management Districts to acquire water resource lands. This legislation (Section 373.59, Florida Statutes) produced the Water Management Lands Trust Fund, empowering the water management Districts to acquire lands needed to protect, manage, and conserve the state's water resources. Preservation 2000 (P2000), enacted by the Legislature in 1990, also added land acquisition funds to the Save Our Rivers program. The 1999 Florida Forever Act consolidated the legislative directives of SOR/P2000 and expanded the funding to take over when P2000 terminates. The 1999 legislation authorized funds to be appropriated for acquisition, management, maintenance and capital improvements, including perimeter fencing, signs, control of invasive exotic species, controlled burning, habitat inventory and restoration, law enforcement, access roads and trails, and minimum public accommodations.
(c) Land acquired by the District's Save Our Rivers program and managed by the Land Stewardship program must satisfy several requirements set forth in Sections 373.139 and 373.1391, Florida Statutes. Section 373.139, Florida Statutes, declares it necessary for the public health and welfare that water and water-related resources be conserved and protected. The acquisition of real property for this objective shall constitute a public purpose for which public funds may be budgeted.
(d) Section 373.1391(1)(a), Florida Statutes, states that lands titled to the water management districts shall be managed and maintained to the extent practicable to ensure a balance between public access, general public recreational purposes, and restoration and protection of their natural state and condition.
(e) Section 373.1391(1)(b), Florida Statutes, states, in part, that "Whenever practicable, such lands shall be open to the general public for recreational uses. General public recreational uses shall include, but not be limited to, fishing,

hunting, horseback riding, swimming, camping, hiking, canoeing, boating, diving, birding, sailing, jogging, and other related outdoor activities to the maximum extent possible considering the environmental sensitivity and suitability of those lands."
(f) Section 373.1391(1)(d), Florida Statutes, states that the District shall first consider using soil and water conservation Districts to administer agricultural leases.
(g) Section 373.1391(3), Florida Statutes, encourages each District to use volunteers to provide land management and other services.
(h) Section 373.1391(4), Florida Statutes, encourages each District to enter into cooperative land management agreements with state agencies or local governments to provide the coordinated and cost-effective management of lands.
(i) Section 373.1391(5), Florida Statutes, authorizes water resource and supply projects, stormwater management projects, linear facilities, and sustainable agriculture and forestry where it is compatible with the natural resource values and the public interest and is consistent with the project management plan, the proposed use is appropriately located on the property and other lands have been considered, and the titleholder of the property has been properly compensated.
(j) Section 373.591, Florida Statutes, mandates the District to solicit input on current management programs through professional peer reviews.
(R.M. No. 139)

Sec. 140-23. Statements of Policy.
The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands. The mission statement, together with requirements set forth in the Florida Statutes, provide three primary goals for the District Land Stewardship Program, each of which is linked to sections in this Land Stewardship Policy document:
(1) Conservation and protection of water resources (section 140-25(1)).
(2) Protection and/or restoration of land to its natural state and condition:
a. Restoration and Protection of Natural Communities (section 140-25(2)); and
b. Resource Operations and Maintenance (section 140-25(3)).
(3) Provide public use (section 140-25(4)).
(R.M. No. 139)

Sec. 140-24. Definitions.
For the purpose of this article, the following words and terms shall have the meanings respectively ascribed:
Archaeological/Historic Resources means any prehistoric or historic district site, building, object, or property of historic, architectural, or archaeological value relating to the history, government, and culture of a historic or pre-historic people.
Best Management Practice (BMP) means the best available technology or process that is practical and achieves the desired goal or objective.
Capital Improvement means activities relating to the restoration, public access, recreational uses and necessary services for land and water areas, including the

initial removal of invasive plants, and the construction, improvement, enlargement or extension of facilities' signs, fire lines, access roads, and trails. Such activities shall be identified prior to the acquisition of a parcel or the approval of a project.

Cooperating Agencies means two or more agencies working together to operate a specific management area.

Cooperative Management Agreement means an agreement between two or more agencies outlining the respective duties and responsibilities of each agency in the management of a specific tract of land.

Critical Habitat means areas designated for the survival and recovery of state/federally listed rare, threatened, endangered or other sensitive species.

Desirable Vegetation means native plant species that are appropriate for a specific community type and provide benefits to wildlife in the form of food, cover and nesting.

Habitat Diversity means richness and variety of native plant communities within a particular area of the landscape.

Hydroperiod means flooding duration, depth, and timing that influences species composition, ecosystem structure and function.

Interim Land Management means management of non-natural areas that provides revenue without impacting long-term water-development projects.

Invasive/Exotic Vegetation means certain plants that displace native species and adversely affect wildlife habitat, water quality, recreation, and biological diversity.

Lead Manager means the prime managing entity designated for a given tract of land; generally provides the on-site staff.

Management Area means a single tract or combination of tracts under one management program.

Mitigation means, for purposes of this policy, the actual acquisition, restoration, creation, or enhancement of wetlands to compensate for permitted wetland impacts.

Mitigation Banking means wetland acquisition, restoration, creation or enhancement undertaken expressly to provide compensation in advance of wetland losses from development activities.

Multiple-Use means the management of renewable resources for a variety of purposes such as recreation, range, timber, wildlife habitat, and water resource development.

Prescribed Fire means burning of vegetative fuels using controlled application of fire within specified environmental conditions.

Primary Resource Lands means lands having high water resource, fish, wildlife, and recreational values requiring acquisition or protection.

Regional Mitigation Area means, for purposes of this policy, permitted wetland impacts offset through payment for the acquisition, restoration and perpetual management of a Save Our Rivers identified and duly noticed project.

Responsible Management means level of management described in the General Management Plan.

Sustainable Use means to provide continued use of a natural resource without degradation or loss of that resource.
Water Resource Buffer means that portion of a Preservation 2000 or Save Our Rivers project necessary to protect the aquatic environment.
Wildlife Corridor means a connection between natural areas that allows the safe movement of wildlife.
(R.M. No. 139)
Cross references: Definitions and rules of construction, § 100-2.

Sec. 140-25. Responsibilities.
The Land Stewardship Program is responsible for:
(1) Water Resource Protection. The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources. The following policies guide implementation of this objective:

a. Acquired lands shall be managed to provide water resource-related benefits.

b. Land uses or activities that significantly or permanently alter or degrade the quality, quantity and/or natural movement of ground or surface water are not allowed unless they are a part of a regional water management system.

c. Where feasible, an attempt shall be made to restore a more natural hydroperiod on tracts where the drainage patterns have been altered.

d. Public use shall not result in detrimental impacts to water resources. When a public use activity produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.

e. Water resource lands designated as necessary to implement the Central and Southern Florida "Restudy" Project shall, upon acquisition, become the responsibility of the (Interim) Land Management Program, and follow the guidelines set forth under Section 373.1391(5), Florida Statutes.

(2) Restoration and Protection of Natural Communities:

a. The Land Stewardship Program will encourage the acquisition of large or regionally significant areas that protect important natural resources and provide wildlife corridors.

b. Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.

c. The planting of invasive exotic plant species shall be prohibited in all management areas. Management practices will strive to identify existing infestations and implement appropriate control or eradication measures.

d. Where practicable, an attempt shall be made to restore and maintain desirable vegetation to promote habitat diversity in areas where invasive exotic vegetation, grazing practices, or improved land uses have substantially altered the historic landscape.

(3) Resource Operations and Maintenance:

a. Lands acquired for natural and/or hydrologic resource benefits shall be managed to conserve and protect those resources.

b. Exotic plant control in all management areas shall strive to attain a level of success where periodic maintenance eliminates the infestation or reduces the coverage of exotic plants.

c. Prescribed fire will be a primary management tool on District lands and will be applied within fire-maintained communities at appropriate intervals.

d. The Division of Forestry will be notified of all wildfires on District lands. Land Stewardship will provide initial suppression when commensurate personnel and equipment are available.

e. Inventories of natural and historic resources shall be performed to provide information for effective land management planning, natural community maintenance and ecological restoration.

f. Evaluation and monitoring of management activities shall be conducted to improve program effectiveness and efficiency.

1. Research shall evaluate the environmental response of certain management activities to assist staff in making appropriate management decisions.

2. Monitoring shall be conducted to identify landscape changes resulting from management activities.

3. Legislative-mandated management reviews will provide input from professional peers.

g. Resource protection shall be provided by professional law enforcement services through funded and unfunded contractual agreements to safeguard the public and protect natural and cultural resources on District-managed natural areas.

h. Sustainable use of forest resources shall be conducted where these activities adhere to a series of environmental criteria (see 1999 Forest Management Plan) that meet Land Stewardship Program goals. Timber contractors will be required to meet silvicultural Best Management Practices (BMP) developed for Florida forests.

i. Range management (grazing) will be considered on improved or native ranges when the introduction of cattle will not conflict with other natural resource management and public use goals.

j. Archaeological and historic resources are protected by site identification and inter-agency coordination with the Florida Division of Historical Resources. Land stewardship planning shall include an analysis of archeological data accompanied by appropriate public education opportunities.

k. Infrastructure support shall be developed and maintained to provide safe access for responsible management and public use on District lands. Such infrastructure may include access points, roads, trails, signs, utilities, and minimal public facilities.

l. Mechanical equipment may be used in conjunction with prescribed burning and other management tools to control vegetation and restore habitat structure.

m. Agricultural developments previously existing on acquired natural areas may be maintained if management of these developments is consistent with other land stewardship goals.

(4) Public Use and Environmental Education:

a. Public use of management areas that is consistent with other management goals shall be encouraged. Public use that may have detrimental impacts on sensitive environmental resources shall be restricted until an evaluation determines such use is compatible. A public use compatibility assessment will be included in the General Management Plan completed for each management area and will be based on the following criteria:

1. Consistency with the reason the lands were acquired.

2. Restrictions and/or prohibitions imposed by easements, leases, reservations, adjacent land ownership, conditions of the purchase agreement, and any other agreements concerning the property.

3. Infrastructure and support facility requirements, such as fences, gates, signage, entry design, stabilized off-road parking, trails, campsites, maintenance, and other operational and budgetary impacts.

4. Opportunities for persons with disabilities.

5. Limitations resulting from endangered species, other sensitive natural resources, archaeological resources, or land management practices.

6. Public health, safety and welfare.

7. Environmental education program opportunities.

b. Public Use Regulation:

1. Public use regulations are set forth in 40E-7.511, Florida Administrative Code, to implement Section 373.1391(1)(b), Florida Statutes. Accordingly, the District shall publish and make available to the public a "Public Use Guide" for designated land management areas. The Public Use Guide will be adopted by the Governing Board at a public meeting advertised in accordance with Chapter 120, Florida Statutes.

2. Rules and regulations governing the public use of each management area shall be enforced by agencies with appropriate law enforcement jurisdiction.

3. Pursuant to Section 373.609, Florida Statutes, the District shall seek the cooperation of every state and county attorney, sheriff, police officer, and appropriate city and county official in the enforcement of the provisions set forth according to 40E-7.511, Florida Administrative Code.

4. Florida Fish and Wildlife Conservation Commission regulations shall govern hunting in areas opened for such use.

(5) Implementation Strategies. The District will secure dedicated funding sources, personnel and other resources to support program goals and objectives. Project funding needs and sources for cooperative management agreements with government and non-government entities will be identified during acquisition. A cooperative management agreement will designate a lead Manager and identify whether District funding is required.

a. The private sector may be solicited to furnish certain management-related facilities and services through the execution of leases and agreements. These leases/agreements will assure mutual benefits to both the District and private parties and be consistent with the program management objectives.

b. Mitigation:

1. Mitigation Banking: Mitigation banking provides an opportunity to accomplish large-scale restoration that may otherwise go unfunded. Pursuant to Section 373.4135, Florida Statutes, the District is encouraged to develop mitigation banks. Land managers will evaluate opportunities in their regions to implement mitigation banks that are consistent with the guidelines established in the Joint State and Federal Mitigation Bank Review Team Process for Florida.

2. Regional Mitigation Areas: The acquisition, restoration and management of District lands as mitigation shall be consistent with Chapter 2000-133, amending Sections 373.414 and 373.4135, Florida Statutes. This includes the establishment of Memorandums of Agreement (MOA) that include restoration plans, success criteria, and monitoring requirements. The MOAs will be used to implement mitigation using full-cost accounting, public noticing, and approval by the Governing Board for use as a mitigation area. The mitigation shall meet restoration objectives as provided in the General Management Plan.

c. Revenue Generation:

1. Private concessions and/or agreements with non-profit organizations will be considered to implement needed services through concession contracts.

2. Entrance and user fees, permits, licenses and/or advance reservations may be required where considered necessary by the managing agency.

3. Timber sales will be conducted to improve forest health or to support specific forest management goals.

4. Grazing leases will be encouraged on selected rangeland to generate revenue or to provide services that offset program management costs.

d. Volunteers and Interns:

1. Volunteers, interns and alternative work forces will be used when possible to supplement existing staff and services.

2. Any volunteer services must meet the standards and procedures prescribed by the District (Risk Management Manual, Volume 1).

(6) Program Components:

a. Management Assessment: A brief summary of the management issues completed when the site is identified for acquisition.

b. General Management Plan (GMP): Provides a description of recommended management and is required for each Land Stewardship Management Area. The GMP follows a designated format and is updated every five years.

c. Activity Plan (AP): Provides a detailed implementation strategy for specific activities such as prescribed burning, exotic removal and restoration. The plan shall be developed by the lead Manager in consultation with the cooperating agencies for each major tract of land (or group of tracts) to be operated as a single

management unit. The AP may be included in the GMP and is updated when necessary.

d. Annual Work Plan (AWP): Summarizes activities corresponding with annual budget development and is prepared by the Operations Section of the Land Stewardship Program.

e. Reporting: Summaries of management activities for each management area will be reported quarterly within the District and annually as part of the Florida Forever Work Plan.

(R.M. No. 139)

Secs. 140-26--140-40. Reserved.

Appendix B. Soil Descriptions

Flatwood Soils

Flatwood soils are poorly drained non-hydric, upland soils with sandy marine sediments throughout the profile. The seasonal high water table can range from six to 18 inches below the soil surface for three to six months annually. This soil type is dominant on the Management Areas uplands and uplands throughout the basin.

Flat Soils

Flat (previously referred to as slough) soils are poorly drained hydric soils with sandy marine sediments throughout the profile. Flats are located between the flatwoods and topographic depressions and are generally regarded as transition areas, e.g. a wet prairie or a slough. Generally, the seasonal high water table begins in June and ends from September or thereafter with inundation periods dependent upon seasonal rainfall or large storm events. Within the Management Areas the tributary sloughs and many of the depression marsh communities are buffered by soils of this this classification.

Knolls

Knoll soils are non-hydric, upland soils with sandy marine sediments throughout the profile. These soils typically have no unique diagnostic horizons within the soil profile and are well to somewhat poorly drained. The seasonal high water table can range from one and a half to six feet below the soil surface for four to seven months annually. One ecological community that is typical to the knolls landscape is sand pine scrub. Natural vegetation may typically be even-aged sand pine trees with a dense under-story of oaks, saw palmetto, and other shrubs. Ground cover under the trees and shrubs is scattered. Large areas of light colored sand are often noticeable.

Sand Depression Soils

Sand depression soils are very poorly drained hydric soils that typically have sandy marine sediments throughout the profile. Often, these areas are depressions adjacent to flatwoods. The seasonal high water table can range from one foot below to two feet above the soil surface for seven to 10 months annually. Wetland communities dominate this landscape position. Within the Management Areas, most of the outer floodplain represent this soil class.

Muck Depression Soils

Muck depression soils are very poorly drained hydric soils that have an organic surface layer underlain by sandy marine sediments. These areas are often depressions adjacent to Flatwood soil-types. The seasonal high water table can range from six inches below to two feet above the soil surface for seven to eleven months annually. Wetland communities dominate this soil type. Examples within the Management Areas include the inner river floodplain .

Urban or Made Lands

Urban or made land areas have soils that have been altered, excavated, or disturbed and no longer possess their natural morphological features. These soils do not function as they did in their original state, and little information on this subject is available. The seasonal high water table varies by site and is usually controlled to inhibit flooding of developed areas. No ecological communities are representative of this landscape position. The spoil berms fall into this classification.

Water Areas

This classification represents areas that are permanently inundated, with depths usually two feet or more. No soil series or ecological community is associated with this classification. In the Management Areas, the channelized Kissimmee River and the oxbows and main channel of the old river best represent this category.

Appendix C. FNAI Natural Communities

Xeric Hammock

Xeric hammock is characterized as either a scrubby, dense, low canopy forest with little understory other than palmetto, or a multi-storied forest of tall trees with an open or closed canopy (Florida Natural Areas Inventory, 1990). Soils are deep, sandy and well drained, conditions expected of topography created by old dune systems. Typical canopy species in the Kissimmee River basin are live oak (*Quercus virginiana*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*) and Chapman oak (*Quercus chapmanii*). The understory is generally sparse due to dry soil conditions and overstory shading. Understory species include saw palmetto (*Serenoa repens*), bracken fern (*Pteridium aquilinum*), myrsine (*Rapanea punctata*), silk bay (*Persea borbonia var. humilis*), highbush blueberry (*Vaccinium corymbosum*) and Carolina jessamine (*Gelsemium sempervirens*). Wild pine (*Tillandsia balbisina*), and laurel greenbriar (*Smilax sp.*) are common arboreal species.

Xeric hammock is the climax successional stage of scrub or sandhill. Isolated remnant hammocks are the result of maturing scrub, protected from fire. Once established, xeric hammock resists burning by a lack of contiguous understory fuel and a duff layer of relatively incombustible oak leaves. When fire does occur within this community, it removes canopy, understory and ground cover biomass, reverting the area back to scrub. In the Land Stewardship Program management units, xeric hammock is commonly associated with scrub and prairie hammock, with similar species composition.

Xeric hammock is scarce, however, there is one classic example of this rare community located in the KICCO Management Area. Special care will be taken to avoid soil disturbance and protect this area from fire during prescribed fire applications to surrounding natural communities. Xeric hammock has a Florida Natural Areas Inventory state ranking of “S3”, rare or uncommon in state. Due to its rarity, areas of xeric hammock will be identified and managed to ensure perpetuation of existing locations.

Scrub

Scrub occurs in many forms, but is often characterized as a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the under-story (Florida Natural Areas Inventory, 1990). The later is the structural form for much of the scrub within the Management Areas. Typical plants include sand live oak, myrtle oak, Chapman’s oak, scrub oak, saw palmetto, rosemary (*Ceratiola ericoides*), rusty lyonia (*Lyonia ferruginea*), stagger bush (*Lyonia lucida*), runner oak (*Quercus pumila*), and wiregrass.

Highest elevations in the basin support this community. All scrub locations have sandy, well-drained, loose and non-organic soils. In the Kissimmee River

Management Areas, scrub is often associated with scrubby flatwoods, dry prairie, and in a few locations, xeric hammock.

Scrub is a fire dependent community. Fuel buildup is a lengthy process, as vegetation grows relatively slowly due to severe environmental conditions. With sufficient fuel, fire will burn with speed and intensity, returning nutrients to the soil and opening the canopy for light to reach ground layer species. Burns naturally occur once every 20 to 80 years. In an effort to maintain scrub sites, management practices include prescribed fire applied on a natural cycle for shrubby, oak-dominated scrub.

Scrub is being lost at an astounding rate throughout the state, as high elevations and fast drainage make this community highly desirable for development. This association occurs almost exclusively in Florida. State ranking of scrub is “S2”, imperiled in the state because of its rarity and vulnerability (Florida Natural Areas Inventory, 1990).

Prairie Hammock

Prairie hammock is characterized as a clump of tall cabbage palms and live oaks in the midst of prairie or marsh communities (Florida Natural Areas Inventory, 1990). Prairie hammocks establish on elevated soils surrounded by lower topography. These islands are generally flooded only for a short duration during the highest water levels. Naturally occurring fires are rare in these hammocks, due mainly to a lack of under-story fuel.

Canopy species in the floodplain are live oak and cabbage palm, with occasional laurel oak in lower elevations. An abundance of epiphytes, including listed species, are found in mature canopy trees. As in most prairie hammocks, those found here have a sparse under-story due to over-story shading, but cover is also reduced by cattle grazing and trampling of shrub and ground layer vegetation. Many species common to undisturbed hammocks are sparse or lacking, replaced by disturbance species such as broomweed (*Sida sp.*), tropical soda apple (*Solanum viarum*), and caesarweed (*Urena lobata*). Typical under-story plants of pristine prairie hammocks include wax myrtle, water oak, stoppers (*Eugenia sp.*), marlberry (Ardisia escallonioides), beautyberry (*Callicarpa americana*), and saw palmetto.

Florida Natural Areas Inventory ranks prairie hammocks as “G4” and “S4” both statewide and globally secure, although it may be quite rare in parts of its range, especially at the periphery. Land Stewardship management strives to minimize soil disturbance, restrict fire where appropriate and eradicate non-native invasive species within hammock areas.

Mesic Flatwoods

Mesic flatwoods are characterized as an open canopy forest of sparse pine trees with little or no under-story but a dense ground cover of herbs and shrubs. Two

common vegetation associations are longleaf pine/wiregrass/runner oak and slash pine/gallberry/saw palmetto. In the MA, slash pine dominates the over-story and gallberry (*Ilex glabra*), saw palmetto and fetterbush occur in the understory. Other typical plants include St. Johns-wort (*Hypericum sp.*), dwarf huckleberry (*Gaylussacia dumosa*), staggerbush, blueberry (*Vaccinium sp.*), gopher apple (*Lycania michauxi*), tar flower, bog buttons (*Lachnocalon sp.*), blackroot (*Pterocaulon pycnostachyum*), and yellow-eyed grass (*Xyris sp*).

This community occurs on similar soils as dry prairies and wet flatwoods, with minor changes in topography determining community type. Acidic sands overlay hardpan that reduces water exchange between the soil surface and subsurface. Thus rainy seasons produces surface flooding, and dry seasons extreme drought, influencing vegetation species composition. Plants of this community have adapted to long intervals of inundation and desiccation, and acclimated to periodic fire.

Natural fires occur every one to eight years. Frequency of fire determines community type between dry prairie and mesic flatwoods, with longer fire intervals favoring mesic flatwoods.

Wet Flatwoods

Wet flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either a thick shrubby under-story and very sparse ground cover, or a sparse under-story and a dense ground cover of hydrophytic herbs and shrubs, with variations between these extremes (Florida Natural Areas Inventory, 1990). Other plants associated with this habitat type in the MA include wax myrtle, saw palmetto, beakrush (*Rhynchospora sp.),* St. John's-wort *(Hypericum sp.*), and blue maidencane (*Amphicarpum muhlenburgianum*).

Wet flatwoods develop on poorly drained acidic, low nutrient sands underlain by hardpan. Surface water appears a minimum of one month per year. Natural fire frequency is considered to be three to 10 years. Frequent fire postpones hardwood succession and thins canopy trees, while promoting under-story growth and fire-adapted species.

State ranking is "S4", apparently secure in the state, although it may be rare in some parts of its state range. Global ranking requires further research. Most wet flatwoods are extremely vulnerable to hydrologic manipulation and exotic invasion.

Wet Prairie

Wet prairie is characterized as a treeless plain with a sparse to dense ground cover of grasses, sedges, rushes, and herbs; including wiregrass, toothache grass (*Ctenium aromaticum*), maidencane (*Panicum hemotomon*), spikerush (*Eleocharis sp*.), and beakrush (*Rhynchospora sp.*). Other typical plants include

hatpins (*Lachnocaulon sp.*), marsh pinks (*Rhexia sp.*), crownbeard (*Verbesina chapmanii*), sundews (*Drosera sp.*), tickseed (*Bidens sp.*), wax myrtle, St. John's-wort (*Hypericum sp.*), and Panicums (Florida Natural Areas Inventory, 1990).

Wet prairies occur on low, flat, poorly drained terrain and are inundated from 50 to 100 days per year. Wet prairie species have adapted to long periods of drought conditions due to rainfall seasonality. Soils typically are sands with a major organic component. Fire plays an integral role in wet prairie ecology, and with sufficient fuel build-up, burns every two to four years. If deprived of fire, these grass-dominated flatlands succumb to shrub encroachment, and are especially vulnerable to wax myrtle infestations.

Wet prairie has a state ranking of "S4", apparently secure in the state, although it may be rare in some parts of its state range. Global ranking requires further research.

Floodplain Swamp

Floodplain swamp occurs on flooded soils along river channels and in low spots and oxbows within river floodplains. Dominant trees are usually buttressed hydrophytic species such as cypress and tupelo. Floodplain swamps in the MA grade into baygalls, and often contain many of the same species, with only species dominance varying. Soils and hydroperiods determine species composition and community structure. Baygalls are generally characterized as densely forested, peat-filled seepage depressions, frequently located at the edges of the floodplain where high water tables maintain soil moisture. The MA swamps are dominated by a mixture of swamp bay (*Persea palustris*) and loblolly bay (*Gordonia lasianthus*), with scattered red maple (*Acer rubrum*), cypress (*Taxodium distichum*.), laurel oak, and cabbage palm. Typical under-story species include lizard's tail (*Saururus cernuus*), gallberry, wax myrtle laurel greenbrier (*Smilax laurifolia*), poison ivy (*Toxicodendron radicans*), chain fern (*Woodwardia virginiana*) and wild grape (*Vitis sp.*).

River swamps are characterized by surface flow early in the growing season and have both a short hydroperiod and a perceptible flow rate for at least part of each year. (Myers and Ewel, 1990). Naturally occurring fires are infrequent in floodplain swamps, due to the lack of dense understory fuels and slow peat accumulation. During periods of drought, fuel may dry out sufficiently to carry fire in backwater areas. Severe fire can destroy the peat layer and transform the baygall swamp into another community such as wet flatwoods or cypress swamp, depending on the depth of peat removal. To prevent peat fires in floodplain swamps, prescribed fire is applied to surrounding communities when soils within the floodplain are saturated.

Floodplain swamps are ranked statewide as "G4", apparently secure statewide, though it may be quite rare in parts of its range, especially at the periphery. Global ranking requires further research.

Floodplain Marsh

Floodplain marsh are wetlands of herbaceous vegetation and low shrubs that occur in river floodplains *(Florida Natural Areas Inventory, 1990).* Typical emergent vegetation includes maidencane, buttonbush, sand cordgrass (*Spartina bakeri*), dotted smartweed (*Polygonum punctatum*), arrowheads (*Sagittaria sp.*), pickerelweed (*Pontedaria cordata*), spikerush, bulrush (*Scirpus sp.*), tickseed (*Coreopsis sp.*), and water primrose (*Ludwigia sp.*).

Floodplain marshes depend on periodic fire to reduce shrub dominance, and maintain species diversity and herbaceous openings. Natural fires have historically occurred every one to five years, depending on the density of fuel available (Florida Natural Areas Inventory, 1990). Summer lightning-initiated burns consumed above-water vegetation but preserved the floodplain's thick peat accumulation. Long-term fire exclusion favors floodplain marsh succession to a bog.

Floodplain marsh has a state ranking of "S2", imperiled because of rarity, or little remaining area, or because of some factors making it very vulnerable to extinction throughout its range. Further research is required to determine global ranking. The principle cause of ecological degradation of Florida's marshes has been dewatering (Myers and Ewel, 1990).

Floodplain Forest

Floodplain forests are hardwood forests that occur on drier soils at slightly higher elevations within floodplains, such as on levees, ridges and terraces, and are usually flooded for a portion of the growing season. The dominant trees in south Florida include oaks and cypress. The floodplain forests include red maple, laurel oak, bald cypress, cabbage palm, red maple, strangler fig (*Ficus aurea*), red, sweet bay (*Magnolia virginiana*), wax myrtle, myrsine (*Rapanea punctata*), buttonbush, poison ivy, leather fern (*Acrostichum danaeifolium*), sawgrass, royal fern (*Osmunda regalis*) and lizard's tail (*Saururus cernuus*).

Hydroperiod is the most important factor influencing floodplain forests, which are inundated by floodwaters nearly every year up to 60% of the growing season. The organic material accumulating on the forest floor is redistributed in the floodplain during floods. Floodplain forests usually do not have standing water in the dry season. Floodplain forests are often associated with, and grade into, floodplain swamp or baygall. Species composition is frequently similar to that of hydric hammock communities.

Natural fires are infrequent in floodplain forests due to the lack of dense understory fuels and slow peat accumulation. During periods of drought, floodplain fuels may dry sufficiently to carry fire. Normally, light surface fires burn into the younger fringe from neighboring communities, but seldom reach

the largest trees in the deepest portion of the forest. The Land Stewardship Program regulates fire schedules to insure floodplain forests burn at natural frequencies and during periods of adequate ground moisture.

Maintenance of natural hydrologic regimes is critical to floodplain forest health. Species composition and the functional relationships throughout a river system are negatively impacted by hydrological alterations such as artificial impoundments, river diversion projects, pesticide use, forest clear cutting or intensive agriculture (Florida Natural Areas Inventory, 1990).

Floodplain forests have a state ranking of "S3", rare or uncommon in the state. Further research is required for a definitive global classification.

Depression Marsh

Depression marsh, also known as a flatwoods pond, is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often occurring in concentric bands (Florida Natural Areas Inventory, 1990). Typical plants include St. John's-wort, spikerush (*Eleocharis sp.*), yellow-eyed grass, chain fern, primrose willow (*Ludwigia peruviana*), maidencane (*Panicum hemitomon*), wax myrtle, buttonbush, pickerelweed, arrowhead, and bladderwort.

Where marshes occur, one of three geological conditions is present: surficial deposits are impermeable, the water table emerges through the permeable substrate, or the marsh is hydrologically connected to a river (Kushlan, 1991). Depression marshes are typically small in size and hydrologically isolated from other surface water bodies. Water is received by runoff, seepage or direct rainfall. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year ((Florida Natural Areas Inventory, 1990). Bottom soils are generally acidic peat, resulting from accumulation of decayed plant material. This community frequently grades into wet or mesic flatwoods.

Natural fire occurs in depression marshes every one to five years, depending on a combination of weather conditions and fuel build-up. Fire preserves the open canopy by limiting invasion of woody vegetation, promoting herbaceous growth, and slowing succession by deepening the marsh with an occasional peat fire. The Land Steewardship Program coordinates fire schedules to insure depression marshes burn at natural frequencies and during periods of adequate ground moisture.

Depression marshes provide critical breeding and foraging habitat for a wide assemblage of amphibians and reptiles not found in larger, more permanent systems. Cyclic surface water availability promotes foraging by numerous listed wading bird species such as the wood stork, white ibis, snowy egret, and sandhill crane.

Depression marsh is ranked statewide as "S", either very rare throughout its range; or found locally, even abundantly at some of its locations in a restricted range; or because of other factors making it vulnerable to extinction throughout its range. Global ranking indicates it is apparently secure, though it may be quite rare in parts of its range, especially at the periphery. Further research is required for a definitive global classification.

Appendix D. Species List

Plant Species

Species	Common Name	Type
Acalypha gracilens	slender 3-seed mercury	Native
Acer rubrum	red maple	Native
Acrostichum sp.	leather fern	N/A
Alternanthera philoxeroides	alligatorweed	Non-Native
Amaranthus australis	southern amaranth	Native
Amaranthus sp.	amaranth	Native
Amaranthus spinosus	spiny amaranth	Non-Native
Ambrosia artemisiifolia	ragweed; common ragweed	Native
Ambrosia trifida	giant ragweed	Native
Ampelopsis arborea	pepper-vine	Native
Amphicarpum muhlenbergianum	blue maidencane	Native
Andropogon glomeratus	bushy broom grass; busy bluestem	Native
Andropogon gyrans		N/A
Andropogon virginicus	chalky bluestem; broomsedge bluestem	Native
Aristida beyrichiana	wiregrass	N/A
Aristida patula	tall threeawn	N/A
Annona glabra	pond apple	N/A
Asclepias incarnata	swamp milkweed	Native
Asclepias lanceolata	lanceolata milkweed	N/A
Aster carolinianus	climbing aster	Native
Aster dumosus	See Symphyotrichum dumosum	N/A
Aster elliotti (synonym)	Elliott's aster	Native
ASTERACEAE	sunflowers	N/A
Axonopus affinis (SYN)	southern carpet grass	Native
Axonopus compressus	broadleaf carpetgrass, flat joint carpetgrass; broadleaf carpetgrass	Native
Axonopus fissifolius	common carpetgrass	Native

Axonopus furcatus	big carpet grass	Native
Axonopus sp.	carpet grass	Native
Azolla caroliniana	Carolina mosquito fern	Native
Baccharis halimifolia	salt bush, groundsel tree; sea myrtle	Native
Bacopa caroliniana	lemon bacopa; blue waterhyssop	Native
Bacopa monnieri	smooth water hyssop; herb-of-grace	Native
Bacopa sp.	water hyssop	Native
Bidens alba	beggarticks	Native
Bidens bipinnata	Spanish needles	N/A
Bidens mitis	marsh beggartick; smallfruit beggarticks	Native
Blechnum serrulatum	swamp fern; toothed midsorus fern	Native
Boehmeria cylindrica	smallspike false nettle; bog hemp	Native
Boltonia diffusa	smallhead boltonia; doll's daisy	Native
Callicarpa americana	American beautyberry	Native
Calystegia sepium	hedge false bindweed	Native
Canna flaccida	golden canna; bandanna-of-the-Everglades	Native
Cardiospermum microcarpum	heartseed	Native
Carex alata	broadwing sedge	Native
Carex glaucescens	clustered sedge	Native
Carex longii	Long's sedge	Native
Carex sp.	sedges	Native
Carex verrucosa	warty sedge	Native
Carex vexans	Florida hammock sedge	Native
Carya aquatica.	water hickory	Native
Cassia nicitans	cassia	Native
Cassia obtusifolia	sicklepod	N/A
Cenchrus echinatus	southern sandspur	N/A
Cenchrus incertus	field sandbur	Native
Cenchrus spinifex	field sandbur	Native

Centella asiatica	Asian coinleaf, spadeleaf	Native
Cephalanthus occidentalis	buttonbush	Native
Ceratophyllum demersum	coontail	Native
Ceratophyllum demersum	coontail	Native
Ceratopteris thalictroides	watersprite	Native
Chamaecrista nictitans	sensitive pea	Native
Chara sp.	chara; muskgrass	Native
Chenopodium ambriosides	Mexican tea	Non-Native
Chloris neglecta	fingergrass	Non-Native
Cirsium horridulum	yellow thistle; purple thistle	Native
Cirsium sp.	thistle	N/A
Citrus sp.	citrus	Non-Native
Cladium jamaicense	sawgrass; Jamaica swamp sawgrass	Native
Coelorachis rugosa	wrinkled jointtailgrass	Native
Colocasia esculanta	wild taro	Non-Native
Commelina diffusa	spreading or common dayflower	Native
Commelina diffusa	common dayflower	Native
Commelina gigas	climbing dayflower	Native/Endemic
Conoclinium coelestinum	mist flower	Native
Coreopsis leavenworthii	Leavenworth's tickseed	Native/Endemic
Cornus foemina	swamp dogwood; stiff dogwood	Native
Crotalaria pallida	smooth rattlebox	N/A
Ctenium aromaticum	toothache grass	N/A
Cuphea carthagenensis	Columbian waxweed	Non-Native; ornamental restricted in some areas
Cynodon dactylon	Bermudagrass	Non-Native
Cyperaceae sp.	sedges	N/A
Cyperus articulatus	jointed flatsedge	Native
Cyperus compressus	poorland flat sedge	Native
Cyperus croceus	Baldwin's flatsedge	Native
Cyperus distinctus	marshland flatsedge; swamp flatsedge	Native
Cyperus esculentus	yellow netgrass	Non-Native

Cyperus erythrorhizos	redroot flatsedge	Native
Cyperus flavescens	yellow flatsedge	N/A
Cyperus haspan	sharp edge sedge; haspan flatsedge	Native
Cyperus lanceolatus	epiphytic flatsedge	Non-Native
Cyperus odoratus	fragrant flatsedge	Native
Cyperus polystachyos	manyspike flatsedge	Native
Cyperus retrorsus	retrorse flat sedge; pinebarren flatsedge	Native
Cyperus sp.	flat sedges	N/A
Cyperus strigosus	strawcolored flatsedge	Native
Cyperus surinamensis	tropical flatsedge	Native
Cyperus virens	green flatsedge	Native
Decodon verticillatus	willow herb; swamp loosestrife	Native
Desmodium incanum	zarzabacoa comun	Native
Desmodium sp.	tick trefoil	N/A
Desmodium triflorum	threeflower ticktrefoil	Non-Native
Dichanthelium erectifolium	erectleaf witchgrass	Native
Dichondra caroliniensis	Carolina ponysfoot	Native
Dichromena colorata	white-tops	Native
Dichromena latifolia	white-bracted sedge	Native
Digitaria ciliaris	southern crabgrass	Native
Digitaria longiflora	Indian crabgrass	Non-Native
Digitaria pentzii	pangolagrass	Non-Native
Digitaria serotina	dwarf crabgrass; blanket crabgrass	Native
Digitaria sp.	crabgrass	N/A
Diodia virginiana	Virginia buttonweed	Native
Diospyros virginiana	persimmon; common persimmon	Native
Drosera Sp.	sundew	Native
Drymaria cordata	drymary	Non-Native
Echinochloa crusgalli	barnyard grass	Non-Native
Echinochloa walteri	Walter's millet; coast cockspur	Native

Eclipta prostrata	Yerba de Tajo, eclipta; false daisy	N/A
Eichhornia crassipes	water hyacinth; common water-hyascinth	Non-Native
Eleocharis cellulosa	*club-rush; gulf coast spikerush*	*Native*
Eleocharis flavescens	*pale spikerush; yellow spikerush*	*Native*
Eleocharis interstincta	*jointed spikerush; knotted spikerush*	*Native*
Eleocharis olivacea	*brightgreen spikerush*	*Native*
Eleocharis sp.	*spikerush*	*Native*
Eleocharis vivipara	sprouting spikerush; vivparous spikerush	Native
Eleocharis vivipara	sprouting spikerush; vivparous spikerush	Native
Elephantopus elatus	tall elephant's foot	Native
Eleusine indica	Indian goosegrass	Non-Native
Eragrostis atrovirens	thalia lovegrass	Non-Native
Eragrostis bahiensis	bahia lovegrass	Non-Native
Eragrostis elliotti	Elliot's lovegrass	Native
Eragrostis lugens	morning lovegrass	Non-Native
Eragrostis spectabilis	purple lovegrass	Native
Erechtites hieraciifolia	American burn	Native
Eremochloa ophiuroides	centipedegrass	Non-Native
Erigeron quercifolius	oakleaf fleabane	Native
Eryngium baldwinii	Baldwin's eryngo	N/A
Eucalyptus grandis	grand eucalyptus	Non-Native
Eupatorium capillifolium	small dogfennel; dogfennel	Native
Eupatorium coelestinum	thoroughwort	Native
Eupatorium serotinum	lateflowering thoroughwort	Native
Euthamia caroliniana	fragrant goldenrod; slender goldenrod	Native
Ficus arena	strangler fig	Native
Fimbristylis autumnalis	slender fimbry	Native
Fimbristylis caroliniana	Carolina fimbry	Native
Fimbristylis dichotoma	tall fimbry; forked fimbry	Native
Fimbristylis schoenoides	ditch fimbry	Native

Fraxinus caroliniana	pop ash; Carolina ash; water ash	Native
Fuirena pumila	dwarf umbrella-grass; dwarf umbrellasedge	Native
Fuirena scirpoidea	southern umbrellasedge	Native
Galium tinctorium	stiff marsh bedstraw	Native
Galium uniflorum	one-flower bedstraw	N/A
Gelsemium sempervirens	carolina jessimine	Native
Geranium carolinianum	carolina cranesbill	Native
Habenaria repens	water-spider orchid; false reinorchid	Native
Hedyotis uniflora	clustered bluet	Native
Hedyotis uniflor	clustered mille graine	Native
Helianthus agrestis	southeastern sunflower	Native
Hemarthria altissima	limpograss	Non-Native
Hibiscus grandiflorus	swamp rosemallow	Native
Hydrilla verticillata	hydrilla; waterthyme	Non-Native
Hydrilla verticillata	hydrilla; waterthyme	Non-Native
Hydrochloa caroliniensis (Luziola fluitans)	common watergrass	N/A.
Hydrocotyle ranunculoides	floating penny wort; floating marsh pennywort	Native
Hydrocotyle umbellata	manyflower marsh pennywort	Native
Hymenachne amplexicaulis	West Indian marsh grass; trompetilla	Non-Native
Hypericum cistifolium	roundpod St. Johns wort	Native
Hypericum fasciculatum	sandweed; peelbark St. John's-Wort	Native
Hypericum hypercoides	St. andrew's cross	Native
Hypericum mutilum	slender St. John's-Wort	Native
Hypericum sp.	St. John's-Wort	N/A
Hypericum tetrapetalum	fourpetal St. John's-Wort	Native

Hyptis alata	clustered bushmint; musky mint	Native
Ilex cassine	dahoon holly; dahoon	Native
Ilex glabra	inkberry; inkberry	N/A
Imperata cylindrica	cogongrass	Non-Native
Ipomea alba	white morning glory	Native
Ipomea sagittata	saltmarsh morning glory	Native
Ipomea sp.	morning glory	Native
Iris virginica	blue flag; Virginia iris	Native
Iva microcephala	Piedmont marshelder	Native
JUNCACEAE	rush	N/A
Juncus effusus	soft rush	Native
Juncus marginatus	shore rush	Native
Juncus megacephalus	Bighead 'rush	N/A
Justicia angusta	pineland waterwillow	N/A
Kosteletzkya virginica	virginia seashore mallow; virginia saltmarsh mallow	Native
Kyllinga brevifolia	short leaf flatsedge	Non-Native
Kyllinga odorata	fragrant flatsedge	Native
Kyllinga pumila	low spikesedge	Native
Lachnanthes caroliniana	redroot	Native
Lachnocalon anceps	whitehead bogbutton	Native
Lachnocalon beyrichianum	Southern bogbutton	Native
Lantana camara	lantana; shrub verbena	Non-Native
Leersia hexandra	southern cutgrass	Native
Lemna sp.	duckweed	Native
Lepidium virginicum	poor man's peppergrass; virginia pepperweed	Native
Liatris sp.	blazing star	Native
Limnobium spongia	frog's-bit; American spongeplant	Native
Lindernia anagallidea	.	N/A

Lindernia grandiflower	savanna false pimpernel	Native
Liquidambar styraciflua	sweet gum, red gum	N/A
Ludwigia decurrens	primrosewillow; wingleaf primrosewillow	Native
Ludwigia leptocarpa	anglestem primrosewillow	Native
Ludwigia maritima	seaside primrosewillow	Native
Ludwigia octovalius	Mexican primrosewillow	Native
Ludwigia peruviana	Peruvian primrosewillow	Non-Native
Ludwigia repens	red ludwigia; creeping primrosewillow	Native
Ludwigia sp.	water primrose; seedbox	Native
Ludwigia suffructicosa	shrubby seedbox	Native
Luziola fluitans	watergrass; southern watergrass	Native
Lygodium japonicum	Japanese climbing-fern	Non-Native
Lyonia ferruginea	rusty lyonia	N/A
Lyonia fruiticosa	staggerbush	N/A
Lyonia lucida	stagger bush	N/A
Lygodium microphyllum	Old World climbing fern; small-leaf climbing fern	Non-Native
Lythrum alatum	winged loosestrife	Native
Macroptilium lathyroides	wild bushbean	Non-Native
Magnolia virginiana	sweetbay; sweetbay magnolia	Native
Melothria pendula	creeping cucumber	Native
Micranthemum umbrosum	baby tears; shade mudflower	Native
Mikania scandens	climbing hempweed; climbing hempvine	Native
Mitreola petiolata	stalked miterwort; lax hornpod	Native

Momordica charantia	wild balsam apple; balsampear	Non-Native
Myrica cerifera	wax myrtle; southern bayberry	Native
Myriophyllum aquaticum	parrot feather; watermilfoil	Non-Native
Myriophyllum aquaticum	parrot feather watermilfoil	Non-Native
Najas guadalupensis	southern naiad; southern waternymph	Native
Najas guadalupensis	southern waternymph	Native
Nuphar advenum	spatterdock	Native
Nuphar lutea	spatterdock	Native
Nymphaea mexicana	yellow waterlilly	Native
Nymphaea odorata	white waterlilly	Native
Nyssa sylvatica var. biflora	swamp tupela	Native
Osmunda cinnamomea	cinnamon fern	Native
Osmunda regalis	royal fern	Native
Osmunda sp.	.	Native
Oxalis corniculata	creeping woodsorrel; common yellow woodsorrel	Native
Oxalis florida	wood sorrel	Native
Panicum anceps	beaked panic grass	Native
Panicum angustifolium	needleleaf witchgrass	Native
Panicum dichotomum	cypress witchgrass	Native
Panicum erectifolium	witchgrass	Native
Panicum hemitomon	maidencane	Native
Panicum hians	gaping panic grass	Native
Panicum paludivagum	Egyptian paspalidum	Non-Native
Panicum repens	torpedograss	Non-Native
Panicum rigidulum	redtop panicum	Native
Panicum sp.	panic grass	N/A
Panicum sphaerocarpon	roundseed witchgrass	N/A
Panicum verrucosum	warty panic grass	Native
Parthenocissus quinquefolia	Virginia creeper; woodbine	Native
Paspalidium geminatum	Egyptian paspalidium; Kissimmeegrass	Native
Paspalum acuminatum	brook crowngrass	Non-Native

Paspalum conjugatum	sour paspalum; hilograss	Native
Paspalum dilatatum	dallisgrass	Non-Native
Paspalum dissectum	mudbank paspalum; mudbank crowngrass	Native
Paspalum distichum	joint paspalum; knotgrass	Native
Paspalum floridanum	Florida paspalum	Native
Paspalum laeve	field paspalum	Native
Paspalum notatum	bahiagrass	Native
Paspalum publiflorum	hairy paspalum	Native
Paspalum repens	water paspalum	Native
Paspalum setaceum	thin paspalum	Native
Paspalum sp.	.	Native
Paspalum urvillei	Vasey grass	Non-Native
Passiflora sp.	passionflower	Native
Peltandra sagittifolia	spoonflower; white arrow arum	Native
Peltandra virginica	green arrow arum	Native
Periphyton	periphyton	N/A
Persea borbonia	red bay	Native
Perea borbonia humilis	silk bay	N/A
Persea palustris	swamp bay	Native
Phragmites australis	common reed	Native
Phyla nodiflora	common frog fruit; capeweed; turkey tangle fogfruit	Native
Physalis pubescens	husk tomato	Native
Phytolacca americana	common pokeweed; American pokeweed	Native
Pinus elliotti	slash pine	Native
Pistia stratiotes	water lettuce	Non-Native?
Pluchea foetida	stinking camphorweed	Native
Pluchea odorata	sweetscent	Native
Pluchea rosea	stinkweed; rosy camphorweed	Native
Pluchea sp.	camphorweed	N/A
POACEAE	Grasses	N/A
Polygonum densiflorum	denseflower smartweed; denseflower knotweed	Native

Polygonum hirsutum	hairy smartweed	Native
Polygonum hydropiperoides	swamp smartweed; mild waterpepper	Native
Polygonum punctatum	dotted smartweed	Native
Polygonum sp.	knotweed, smartweed	Native
Polypodium polypidiodes	resurrection fern	Native
Polypremum procumbens	juniperleaf; rustweed	Native
Pontederia cordata	pickerelweed	Native
Pontederia lanceolata	pickerelweed	N/A
Proserpinaca palustris	marsh mermaidweed	Native
Proserpinaca palustris	marsh mermaidweed	Native
Psidium guajava	common guava	Non-Native
Psilocarya nitens	short-beak baldrush	N/A.
Ptilimnium capillaceum	mock bishopsweed; herbwilliam	Native
Quercus chapmanii	chapman oak	Native
Quercus germinata	sand live oak	Native
Quercus laurifolia	laurel oak; diamond oak	Native
Quercus myrtifolia	myrtle oak	Native
Quercus nigra	water oak	Native
Quercus sp.	oak	N/A
Quercus virginiana	live oak	Native
Rapanea punctata	myrsine	Native
Rhexia mariana	pale meadowbeauty; Maryland meadowbeauty	Native
Rhexia nashii	maid marian	Native
Rhus copallinum	winged sumac	Native
Rhynchelytrum repens	natalgrass; rose natalgrass	N/A
Rhynchospora cephalantha	clustered beakrush; bunched beaksedge	Native
Rhynchospora chalarocephala	loose head beakrush	Native
Rhynchospora colorata	star-rush	Native
Rhynchospora decurrens	swampforest beaksedge	Native
Rhynchospora divergens	spreading beaksedge	Native

Rhynchospora fascicularis	fasciculate beak ush	Native
Rhynchospora eximia	Florida breaksedge	Native
Rhynchospora globularis	Globe beakrush	Native
Rhynchospora grayi	Gray's beakrush	Native
Rhynchospora inundata	inundated beakrush; narrowfruit horned beaksedge	Native
Rhynchospora microcarpa	southern beakrush; souther beaksedge	Native
Rhynchospora microcephala	capitate beakrush; bunched beaksedge	Native
Rhynchospora nitens	baldrush; shortbeak beaksedge	Native
Rhynchospora odorata	fragrant beakrush; fragrant beaksedge	N/A
Rhynchospora scirpoides	longbeak beaksedge	Native
Rhynchospora tracyi	Tracy's beakrush	Native
Ricciocarpus natans	liverwort; Purple-fringed riccia	N/A
Richardia scabra	rough Mexican clover	Non-Native
Rubus cuneifolius	sand blackberry	Native
Ruella sp.	ruella	Native
Sabal palmetto	cabbage palm	Native
Sabatia bartramii	Bartram's rosegentian	Native
Saccharum giganteum	sugarcane plumegrass	N/A
Sacciolepis indica	glenwood grass; Indian cupscale	Non-Native
Sacciolepis striata	American cupscale	Native
Sagittaria lancifolia	duck potato; bulltongue arrowhead	Native
Sagittaria latifolia	broadleaf arrowhead; common arrowhead; duck potato	Native

Salix caroliniana	coastalplain willow; Carolina willow	Native
Salvinia minima	water fern; water spangles	Non-Native
Sambucus canadensis	elderberry	Native
Sambucus simpsonii	.	N/A
Sarcostemma clausum	white twinevine	Native
Saururus cernuus	lizard's-tail	Native
Schinus terebinthifolius	Brazilian pepper	Non-Native
Scirpus californicus	southern bulrush; giant bulrush; California bulrush	Native
Scirpus cubensis	Cuban bulrush; burhead sedge	Non-Native
Scirpus tabernaemontani	softstem bulrush	Native
Scleria reticularis	netted nutrush	Native
Scoparia dulcis	licoriceweed; sweetbroom	Native
Senecio vulgaris	common groundsel	N/A
Senna obtusifolia	coffeeweed, sicklepod	Native
Senna occidentalis	septicweed; coffee senna	Non-Native
Senna sp.	.	N/A
Serenoa repens	saw palmetto	Native
Sesbania exaltata	.	N/A
Sesbania herbacea	danglepod	Native
Sesbania punicea	Spanish gold; rattlebox	Non-Native
Sesbania sp.	.	N/A
Sesbania vesicaria	bagpod ratlle bush; bladderpod	Native
Setaria magna	giant foxtail; giant bristlegrass	Native
Setaria parviflora	yellow bristlegrass; knotroot foxtail	Native
Setaria geniculata	bristlegrass	Native
Sida acuta	sida; common wireweed; common fanpetals	Native
Sida cordifolia	lima	Non-Native

Sida rhombifolia	arrow leaf sida; Cuban jute; Indian hemp	Native
Sida sp.	fanpetals	N/A
Sida elliottii	Elliott's fanpetals	Native
Sisyrinchium angustifolium	blue-eyed grass; narrowleaf blue-eyed grass	Native
Smilax auriculata	wild bamboo	Native
Smilax bona-nox	saw greenbrier	N/A
Smilax laurifolia	laurel greenbrier; bamboo vine	Native
Smilax rotundifolia	common greenbrier; bullbrier; roundleaf greenbrier	Native
Smilax sp.	greenbrier	N/A
Solanum americanum	American black nightshade	Native
Solanum capsicoides	soda apple, cockroach-berry	N/A
Solanum sp.	soda apple	N/A
Solanum viarum	tropical soda apple	Non-Native
Solidago fistulosa	pinebarren goldenrod	Native
Solidago tortifolia	twistedleaf goldenrod	Native
Sorghastrum secundum	lopsided indiangrass	Native
Spartina bakeri	Baker's cord grass; sand cordgrass	Native
Spartina sp.	cord grasses	Native
Sphagnum sp.	sphagnum moss	N/A
Sphenoclea zeylanica	chickenspike	Non-Native
Sphenoclea zeylanica	chickenspike	Non-Native
Sporobolus indicus	smut grass	Non-Native
Stillinga aquatica	corkwood	Native
Suriana maritima	bay cedar	Native
Symphyotrichum dumosum	Rice-button aster	Native
Taxodium distichum	bald-cypress	Native
Teucrium canadense	American germander; woodsage; Canadian germander	Native

Thalia geniculata	fireflag; alligatorflag	Native
Thelypteris dentata	downy maiden fern; downy shield fern	Native
Thelypteris interrupta	willdenows maiden fern; Willdenow's fern; downy maiden fern	Native
Thelypteris kunthii	widespread maiden fern; souther maiden fern	Native
Thelypteris palustris	marsh fern	Native
Thelypteris sp.	maidenferns	N/A
Tillandsia sp.	airplant	N/A
Toxicodendron radicans	poison ivy	Native
Triadenum virginicum	marsh St. John's wort	Native
Trifolium repens	white clover	Non-Native
Typha domingensis	southern cattail	Native
Typha latifolia	broad leaf cattail	Native
Urena lobata	Caesarweed	Non-Native
Urochloa mutica	paragrass	Non-Native
Urochloa subquadripara	tropical signalgrass	Non-Native
Urtica chamaedryoides	heartleaf nettle	Native
Utricularia sp.	bladderwort	Native
Utricularia sp.	bladderwort	Native
Vaccinum corybossum	highbrush blueberry	Native
Vaccinum myrsinites	shiny blueberry	Native
Vallisneria americana	tapegrass	Native
Verbena scabra	sandpaper vervain; harsh vervain	Native
Vicia acutifolia	fourleaf vetch	Native
Vigna luteola	cowpea; hairypod cowpea	Native
Vigna speciosa	wandering cowpea	Non-Native
Viola lanceolata	bog white violet	Native
Vitis rotundifolia	muscadine grape	Native
Vitis munsoniana	wild grape	Native
Wolffiella gladiata	sword bogmat; Florida mudmidget	Native
Woodwardia areolata	netted chain fern	Native
Woodwardia sp.	chainfern	Native

Woodwardia virginica	Virginia chainfern	Native
Xyris elliotti	Elliott's yellow-eyed grass	Native
Xyris fimbriata	fringed yellow-eyed grass	Native
Xyris jupicae	Richard's yellow-eyed grasses	Native

Bird Species

		PRESENCE	STATUS	
	E=Endangered T=Threatened S=Species of Special Concern N=Non-native ◆ = Potential ♋ = Confirmed		Federal	State
Common Name	**Scientific Name**			
Acadian Flycatcher	Empidonax virescens	◆		
American Bittern	Botaurus lentiginosus	♋		
American Crow	Corvus brachyrhynchos	♋		
American Goldfinch	Carduelis tristis	◆		
American Kestrel	Falco sparverius	♋		
American Redstart	Setophaga ruticilla	♋		
American Robin	Turdus migratorius	♋		
American Wigeon	Anas Americana	◆		
American Woodcock	Scolopax minor	♋		
Anhinga	Anhinga Anhinga	♋		
Bachman's Sparrow	Aimophila aestivalis	◆		
Bald Eagle	Haliaeetus leucocephalus	♋		
Bank Swallow	Riparia riparia	◆		
Barn Owl	Tyto alba	♋		
Barn Swallow	Hirundo rustica	♋		
Barred Owl	Strix varia	♋		
Belted Kingfisher	Ceryle alcyon	♋		
Black-and-white Warbler	Mniotilta varia	◆		
Black-billed Cuckoo	Coccyzus erythropthalumus	◆		
Brown Pelican	Pelecanus occidentalis	◆		
Black-whiskered Vireo	Vireo altiloquus	◆		
Black Duck	Anas rubripes	◆		
Black Rail	Laterallus jamaicensis	◆		
Black Vulture	Coragyps atratus	♋		
Blackpoll Warbler	Dendroica striata	◆		
Blk-crowned Night-heron	Nycticorax nycticorax	♋		
Blk-throated Blue Warbler	Dendroica caerulescens	♋		
Blk-throated Green Warbler	Dendroica virens	◆		
Blue Jay	Cyanocitta cristata	♋		
Blue-gray Gnatcatcher	Polioptila caerulea	♋		

American Anhinga	Anhinga anhinga	♋		
Blue Grosbeak	Guiraca caerulea	◆		
Boat-tailed Grackle	Quiscalus major	♋		
Bobolink	Dolichronyx oryzivorus	♋		
Bobwhite Quail	Colinus virginianus	♋		
Brewer's Blackbird	Euphagus cyanocephalus	♋		
Brown-headed Cowbird	Molothrus ater	♋	N	N
Brown Pelican	Pelecanus occidentalis	◆		
Brown Thrasher	Toxostoma rufum	♋		
Burrowing Owl	Athene curicularia	♋		S
Canvasback	Aythya valisineria	◆		
Carolina Wren	Thryothorus ludovicianus	♋		
Cattle Egret	Bubulcus ibis	♋	N	N
Cliff Swallow	Petrochelidon pyrrhonota	◆		
Common Flicker	Colaptes auratus	◆		
Common Grackle	Quiscalus quiscula	♋		
Common Ground Dove	Columbina passerina	♋		
Common Loon	Gavia immer	◆		
Common Snipe	Gallinago gallinago	♋		
Common Yellowthroat	Geothlypis trichas	♋		
Common Tern	Sterna hirundo	◆		
Connecticut Warbler	Oporonis agilis	◆		
Cooper's Hawk	Accipiter cooperii	◆		
Crested caracara	Caracara cheriway	♋		
Downy Woodpecker	Picoides pubescens	♋		
Eastern Screech-owl	Megascops asio	♋		
Eastern Wood-pewee	Contopus virens	♋		
European Starling	Sturnus vulgaris	♋	N	N
Everglades Snail Kite	Rostrhamus sociabilis	◆	E	
Fish Crow	Corvus ossifragus	◆		
Glossy Ibis	Plegadis falcinellus	◆		
Grasshopper Sparrow, FL	Ammodramus savannarum floridanus	◆	E	
Gray Catbird	Dumetella carolinensis	♋		
Great Egret	Ardea alba	♋		
Great Horned Owl	Bubo virginianus	♋		
Great White Heron	Ardrea herodias	◆		
Greater Yellowlegs	Tringa melamoleuca	◆		
Green-winged Teal	Anas crecca	♋		
Green Backed Heron	Butorides virescens	♋		
Hairy Woodpecker	Picoides villosus	◆		
Henslow's Sparrow	Ammodramus henslowii	◆		
Hooded Warbler	Wilsonia citrina	◆		
House Sparrow	Passer domesticus	♋	N	N
House Wren	Troglodytes aedon	◆		

Indigo Bunting	Passerina cyanea	♋		
Kentucky Warbler	Oporonis formosus	◆		
Killdeer	Charadrius vociferus	♋		
King Rail	Rallus elegans	◆		
Le Conte's Sparrow	Ammodramus leconteii	◆		
Least Bittern	Ixobrychus exilis	♋		
Loggerhead Shrike	Lanius judovicianus	♋		
Marsh Wren	Cistothorus palustris	♋		
Merlin	Falco columbarius	♋		
Mottled Duck	***Pelecanus occidentalis***	♋		
Mourning Dove	Zenaida macroua	♋		
N. Rough-winged Swallow	Stelgidopteryx serpennis	◆		
Northern Bobwhite Quail	Colinus virginianus	♋		
Northern Cardinal	Cardinalis cardinalis	♋		
Northern Harrier	Circus cyaneus	◆		
Northern Mockingbird	Mimus polyglottos	♋		
Northern Oriole	Icterus galbula	◆		
Northern Parula Warbler	Parula americana	◆		
Northern Pintail	Anas acuta	◆		
Painted Bunting	Passerina ciris	♋		
Palm Warbler	Dendroica plamarum	♋		
Peregrine Falcon	Falco peregrinus	♋		
Red-breasted Merganser	Mergus serrator	◆		
Pileated Woodpecker	Dryocopus pileatus	♋		
Pine Warbler	Dendroica pinus	♋		
Prairie Warbler	Dendroica discolor	♋		
Prothonotary Warbler	Protonotaria citrea	◆		
Purple Martin	Progne subis	◆		
Redwing Blackbird	Agelaius phoeniceus	♋		
Ruby-throated Hummingbird	Archilochus colubris	◆		
Rufous-sided Towhee	Pipilo erythrophthalmus	◆		
Sandhill Crane	Grus canadensis	♋		S
Scissor-tailed Flycatcher	Tyrannus forficatus	◆		
Scrub Jay	Aphelocoma coerulescens	◆	T	
S.E American Kestrel	Falco sparverius paulus	♋		T
Sedge Wren	Cistothorus platensis	◆		
White-tailed Kite	Elanus caeruleus	♋		
Sharp-tailed Sparrow	Ammodramus caudacutus	◆		
Short-eared Owl	Asio flammeus	◆		
Short-tailed Hawk	Buteo brachyurus	♋		
Smooth-billed Ani	Crotophaga ani	◆		
Swallow-tailed Kite	Elanoides forficatus	♋		
Snowy Egret	Egetta thula	♋		S

Solitary Sandpiper	Tringa solitaria	◆		
Solitary Vireo	Vireo solitarius	◆		
Song Sparrow	Melospiza melodia	◆		
Tree Swallow	Tachycineta bicolor	♋		
Tricolored Heron	Egretta tricolor	♋		S
Turkey Vulture	Cathartes aura	♋		
Virginia Rail	Rallus limicola	◆		
Water Pipit	Anthus spinoletta	◆		
White-eyed Vireo	Vireo griseus	♋		
White-throated Sparrow	Zonotrichia albicollis	◆		
White-winged Dove	Zenaida asiatica	◆		
White Ibis	Eodcimus albus	♋		S
White Pelican	Accipiter striatus	◆		
Whip-poor-will	Caprimulgus vociferus	♋		
Woodstork	Mycteria americana	♋	E	
Yel-crowned Night-heron	Nyctanassa violacea	♋		
Yellow-bellied Sapsucker	Sphyrapicus varius	◆		
Yellow-billed Cuckoo	Coccyzus americanus	♋		
Yellow-rumped Warbler	Dendroica coronata	♋		
Yellow-throated Vireo	Vireo flavifrons	◆		
Yellow-throated Warbler	Dendroica dominica	♋		

Mammal Species

Data Source: Commission and Land Stewardship Resource Evaluation Program

		PRESENCE	STATUS	
	E=Endangered T=Threatened S=Species of Special concern N=Non-native ◆ = Potential ♋ = Confirmed		**Federal**	**State**
Common Name	**Scientific**			
Armadillo	Dasypus novemcinctus	♋	N	N
Big Brown Bat	Eptesicus fuscus fuscus	♋		
Big Cypress Fox Squirrel	Sciurus niger avicennia	◆		T
Bobcat	Lynx rufus	♋		
Brazilian Free-tailed Bat	Tadarida b. cynocephala	◆		
Cotton Mouse	Peromyscus gossypinus	♋		
Coyote	Canis latrans	◆		
Eastern Cottontail	Sylvilagus floridanus	♋		
Eastern Gray Squirrel	Sciurus carolinensis	♋		

Eastern Mole	Scalopus aquaticus	♋		
Eastern Pipistrel	Pipistrellus subflavus	◆		
Eastern Woodrat	Neotoma floridana	♋		
Evening Bat	Nycticeius humeralis	◆		
Feral Hog	Sus scrofa	♋	N	N
Florida Black Bear	Ursus americanus floridanus	◆		
Florida Bonneted bat	Eumops floridanus	♋	E	
Florida Manatee	Trichechidae manatus	♋	E	
Florida Mastiff Bat	Eumops glaucinus floridanus	◆		T
Florida Mouse	Podomys floridanus	◆		S
Florida Panther	Felis concolor caryi	♋	E	
Florida Water Rat	Neofiber alleni	♋		
Florida Weasel	Mustela frenata peninsulae	◆		
Gray Fox	Uroncyon cinereoargenteus	♋		
Hispid Cotton Rat	Sigmodon hisipus	♋		
Hoary Bat	Lasiurus cinereus	◆		
Leaset Shrew	Cryptotis parva	♋		
Long-tailed Weasel	Mustela frenata	◆		
Marsh Rabbit	Sylvilagus palustris	♋		
Northern Yellow Bat	Lasiurus i. floridanus	◆		
Opposum	Didelphis marsupialis	♋		
Raccoon	Procyon lotor	♋		
Red Fox	Vulpes fulva	◆		
Rice Rat	Oryzomys palustris	♋		
River Otter	Lutra canadenis	♋		
Seminole Bat	Lasiurus seminolus	◆		
Sherman's Fox Squirrel	Sciurus niger shermani	♋		S
Shermans Shorttailed Shrew	Blarina carolinenus shermani	◆		S
Short-tailed Shrew	Blarina c. carolinenus	♋		
Southeastern Big-eared Bat	Plecotus rafinesquii	◆		
Southeastern Brown Bat	Myotis austroriparius	◆		
Southeastern Pocket Gopher	Geomys pinetis	◆		
Southern Florida Mink	Mustela vison evergladensis	◆		T
Southern Flying Squirrel	Glaucomys volans	◆		
Spotted Skunk	Spilogale putorius	♋		
Striped Skunk	Mephitis mephitis	♋		
Whitetail Deer	Odocoileus virginianus	♋		

Reptile and Amphibian Species

	PRESENCE	STATUS

	E=Endangered T=Threatened S=Species of Special concern N=Non-native ◆ = Potential ♋ = Confirmed		Federal	State
Common Name	**Scientific Name**			
SNAKES				
Brown Watersnake	Nerodia taxispilota	◆		
Common Kingsnake	Lampropeltis getulus	♋		
Corn/Red Rat	Elaphe guttata guttata	♋		
Dusty Pygmy	Sistrurus miliarius barbouri	◆		
Eastern Coachwhip	Masticophis flagellum flagellum	◆		
Eastern Coral	Micrurus fulvius fulvius	◆		
Eastern Diamondback	Crotalus adamanteus	♋		
Eastern Hognose	Heterodon platyrhinos	◆		
Eastern Indigo	Drymarchon corais couperi	♋	T	
Eastern Mud	Farancia abacura abacura	◆		
Everglades Racer	Coluber constrictor paluticola	◆		
Everglades Rat	Elaphe obsoleta rossalleni	◆		
Fl. Green Watersnake	Nerodia cyclopion floridana	◆		
Florida Brown Snake	Storeria dekayi victa	◆		
Florida Cottonmouth	Agkistrodon piscivorus conanti	♋		
Florida Pine Snake	Pituophis melanoleucus mugitus	♋		S
Florida Scarlet	Cemophora coccinea coccinea	◆		
Florida Watersnake	Nerodia fasciata pictiventris	◆		
Glossy Crayfish	Regina rigida rigida	◆		
Mole Kingsnake	Lampropeltis calligaster rhombomaculata	◆		
Peninsula Ribbon	Thamnophis sauritus sackeni	♋		
Peninsula Crowned Snake	Tantilla relicta relicta	◆		
Pinewoods	Rhadinaea flavilata	◆		
Rough Green	Opheodrys aestivus	◆		
Scarlet Kingsnake	Lampropeltis triangulum elapsoides	◆		
Short-tailed Snake	Stilosoma extenuatum	◆		
So Florida Rainbow	Farancia erytrogramma seminola	◆		
Southern Black Racer	Coluber constrictor priapus	♋		
Yellow Rat/Chicken	Elaphe obsoleta quadrivittata	♋		
AMPHIBIANS				
Barking Treefrog	Hyla gratiosa	◆		
Bluetailed Mole Skink	Eumeces egregius lividus	◆	T	
Broadheaded Skink	Eumeces laticeps	◆		
Brown Anole	Anolis sagrei sagrei	♋	N	N
Bullfrog	Rana catesbeiana	◆		
Central Newt	Notophthalmas viridescens louisianensis	◆		

Cuban Treefrog	Osteopilus septentrionalis	♋	N	N
Dwarf Salamander	Eurycea quadridigitata	◆		
Eastern Glass Lizard	Ophisaurus ventralis	◆		
Eastern Lesser Siren	Siren intermedia intermedia	◆		
Eastern Narrowmouthed Toad	Gastrophryne carolinensis carolinensis	♋		
Eastern Spadefoot	Scaphiopus holbrooki	◆		
Everglades Dwarf Siren	Pseudobranchus striatus belli	◆		
Florida Chorus Frog	Pseudacris nigrita verrucosa	♋		
Florida Cricket Frog	Acris gryllus dorsalis	♋		
Florida Gopher Frog	Rana areolata aesopus	◆		S
Green Anole	Anolis carolinensis	◆		
Green Treefrog	Hyla cinerea	♋		
Ground Skink	Scincella lateralis	◆		
Little Grass Frog	Limaoedus ocularis	◆		
Narrow-striped Dwarf Siren	Pseudobranchus striatus axanthus	◆		
Oak Toad	Bufo quercicus	♋		
Southeastern Five-lined Skink	Eumeces inexpectatus	♋		
Southern Fence Lizard	Sceloporus undulatus undulatus	◆		
Southern Leopard Frog	Rana sphenocephala	♋		
Southern Toad	Bufo terrestris	◆		
Squirrel Treefrog	Hyla squirella	◆		
Striped Newt	Notophthalmas perstriatus	◆		
Two-toed Amphiuma Congo Eel	Amphiuma means	◆		
TURTLES				
Common Musk	Sternotherus odoratus	◆		
Florida Box	Terrapene carolina bauri	♋		
Florida Chicken	Deirochelys reticularia chrysea	◆		
Florida Mud	Kinosternon subrubrum steindachneri	◆		
Florida Redbelly	Pseudemys nelsoni	♋		
Florida Snapping	Chelydra serpentina osceola	♋		
Florida Softshell	Apalone ferox	♋		
Gopher Tortoise	Gorpherus polyphemus	♋		T
Peninsula Cooter	Pseudemys floridana peninsularis	◆		
Striped Mud	Kinosternon baurii	♋		
CROCODYLIA				
American Alligator	Alligator mississippiensis (*Threatened because of similarity in appearance)	♋	T*	