SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Land Stewardship Section
3301 Gun Club Road
West Palm Beach, Florida 33406

Kissimmee Chain of Lakes Management Area

Ten-Year General Management Plan 2014 through 2024

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March, 2014

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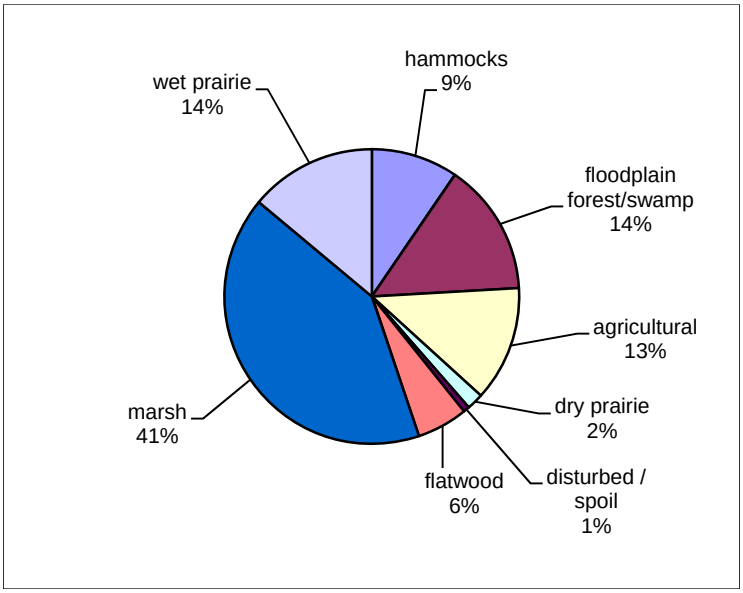
1. Executive Summary

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 early 1990s it was determined that not enough water would be available in the upper chain of lakes to provide year round base flow for the restored Kissimmee River. In response, the District expanded the scope of the Kissimmee River Restoration project to include the acquisition of land around the shoreline of the Kissimmee Chain of Lakes between elevations 52.5 feet and 54.0 feet. To date, 30,807 acres have been purchased in fee-simple and 7,800 acres have been acquired in flowage and conservation easements in Polk and Osceola counties with funding from the Save Our Rivers, Preservation 2000, and Florida Forever programs. This plan addresses management of the parcels acquired in fee-simple by the District and the sovereign submerged lands leased to the District within the 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 management activities and objectives for the management area.

NATURAL SETTING

The natural character of the management area is defined by 6 distinct soil categories as classified by the Natural Soil Landscape Positions soil classification system: flats soils, flatwoods soils, knolls, made lands, muck depression soils, and sand depression soils. Living on these soils are 20 distinct plant communities as described by the Florida Natural Areas Inventory. These have been collapsed and summarized in the chart below, excluding open water.



RESOURCE MANAGEMENT

Resource management actions implemented on the management area include:

- Prescribed fire to mimic the natural fire frequency in the fire-dependent natural communities.
- Forestry and vegetation management such as shredding or mowing overgrown understories.
- 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

The District is has used in-house funds to finance the restoration of several wetland areas including Gardner-Cobb Marsh, Rough Island, Otter Slough, and the Oasis Marsh. Most of the earthwork for these projects was completed in 2009. Rolling Meadows is being restored with mitigation funds. Current restoration work involves a gradual multi-decade ecological improvement through exotic species control, vegetation management, and prescribed burning. During the plan period grant funding will be sought to support the restoration of an additional 2,500 acres of Gardner-Cobb Marsh wetlands.

MONITORING

The District performs vegetative community monitoring and faunal monitoring associated with the Kissimmee River Restoration Project. Additional faunal monitoring is conducted by the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service.

PUBLIC USE

Suitable lands and infrastructure for recreational activities including boating, airboating, canoeing, bicycling, camping, equestrian, fishing, hiking, and hunting are provided in the management area.

2. Introduction and Management Plan Purpose

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 to accommodate raising the regulation stage of the Kissimmee Chain of Lakes from 52.5' to 54'. The plan called for the increased water supply in the headwaters to be available to provide the seasonal flow needed by the restored river downstream. The District obtained a lease over the sovereign submerged lands, those below the ordinary high water of 52.5 feet, which had been the regulated high-water stage since 1965. Additionally, the District acquired 30,807 acres in fee-simple, and 7,800 acres of flowage and conservation easements located between 52.5 feet and 54 feet. (**Map 1**).

This General Management Plan consolidates relevant information about the Kissimmee Chain of Lakes Management Area 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.

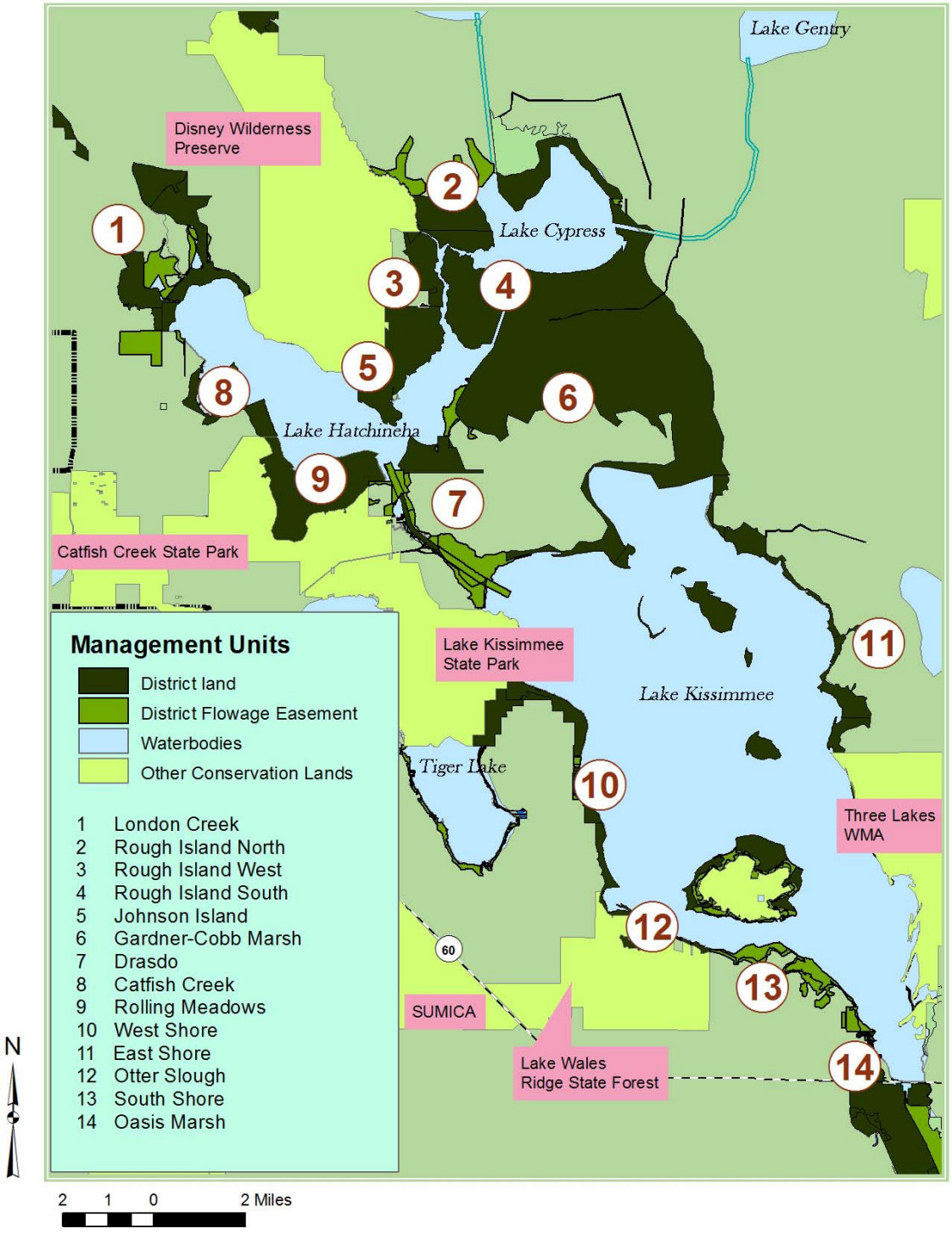
State statutes direct the District to provide natural resource protection and management while allowing compatible multiple uses on public lands. This mission statement and requirements set forth in Florida Statutes provide three primary goals for the Land Stewardship Section:

- 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 Program 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

Map 1. Kissimmee Chain of Lakes Management Area and other public lands



The plan consolidates current site information and general guidelines for management of the area. It also updates and replaces the 2008-2013 General Management Plan for the area. As such, it serves as a collective information source for management staff, partners, and the general public.

2.1 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:

- Continue the regular application of fire through a well-planned and documented prescribed burning program. Staff will burn approximately 3,000 to 6,000 acres per year throughout the management area.
- Continue an aggressive, integrated exotic plant management program. Areas of treatment will be prioritized based on severity of infestation. Treatments will be documented and coordinated with other management activities. District staff and contractors will treat approximately 2,000 to 3,000 acres each year.
- Continue to utilize mechanical vegetation control to minimize encroachment of woody vegetation encroachment in wet prairies and short hydroperiod wetlands.
- Evaluate the continued use of prescribed grazing as a resource management tool.
- Continue and enhance the monitoring and evaluation of restoration activities on area vegetation and wildlife. Conduct game and non-game wildlife population surveys.
- Provide resource protection through partnerships with the Florida Fish and Wildlife Conservation Commission, Polk County Sheriff's Department and Osceola County Sheriff's Department.
- Continue to maintain and implement new hydrologic restoration projects. Seek funding to restore the hydrology of sites that have been altered by ditching and past agricultural practices.

Goal 2: Provide resource-based public use opportunities.

Objectives:

- Continue public use program through coordination with the Florida Fish and Wildlife Conservation Commission, local partners, adjacent landowners and recreation user groups.

- Maintain, and expand if appropriate, existing nature-based recreational opportunities including hiking, biking, equestrian use, hunting, camping, airboating, fishing, and wildlife viewing.
- Provide environmental education through the use of area brochures, signage, and the installation of kiosks at public access points.
- Identify potential trail routes with the Florida Trail Association for the Florida National Scenic Trail throughout the management area.
- Continue to participate in the Water Resources Advisory Committee's Recreation Issues Workshop which facilitates public use planning with stakeholders and user groups.
- Update and maintain information kiosks at points of public access.
- Identify potential areas with user groups for new shelters and campsites whithin the area and working with volunteers on proposed projects.

Goal 3: Maintain public use facilities and area infrastructure.

Objectives:

- Maintain present public-use improvements (airboat crossings, parking/trailheads, signs, structures) using a combination of District resources, contracts, and volunteer involvement.
- Complete trailhead improvements at the West Shore Management Unit parking area when funding is available.
- Continue to maintain and manage the management area boundaries through posting, fencing, and fireline maintenance.

3. Site History

The Management Area has been inhabited by humans for at least 2000 years. There are scattered early habitation sites present. During the Spanish colonial period the area was regarded as wilderness and was seldom visited. It was not mapped or surveyed during their entire 300 year rule of Florida. The Spaniards apparently had difficulty penetrating the Kissimmee Chain of Lakes region. The nearest Franciscan mission was likely either La Concepcion de Atoyquime or San Joseph de Jororo, both were just north of present-day Orlando from 1685 to 1697. These frontier outposts had several missionaries killed by the local population, and were subsequently abandoned.

Florida Indians as observed by early French settlers trapping fish - left, and tilling and sowing fields - right

The first description of what was likely Lake Kissimmee came in 1564 when two Spanish shipwreck survivors were brought to a French fort, Ft. Caroline, on the Atlantic near present-day St. Augustine. The French had heard rumors that two Europeans were living with two nearby chiefs that they described as Indian kings, Mathiaca and Onachaquara. One of the Spaniards told the French Captain at the fort of a journey he had made while serving as a messenger from the Calusa King, Calos, at Estero Bay to his close ally, King Oathaqua of the Ais, who lived at Cape Canaveral (Cañaveral was a Spanish term for a marsh, or reedbed). Approximately half way on the journey they came across a large lake five leagues (15 miles) from one end to the other called Sarrope which contained a large island of the same name (**Maps 2-3**).This matches the location and physical description of Lake Kissimmee and Brahma Island.

The island held a population that was considered to be one of the most fierce and warlike in Florida. The inhabitants of Sarrope cultivated a large quantity and variety of crops that they would trade, particularly coontie root which was used as a meal to make high quality breads. The Spaniard said they had become quite wealthy from this trade and had a sphere of influence that extended in a 15 mile radius from the Lake. The Spaniard also told a tale that demonstrated the island population's strength and confidence that they could anger both the Ais and the

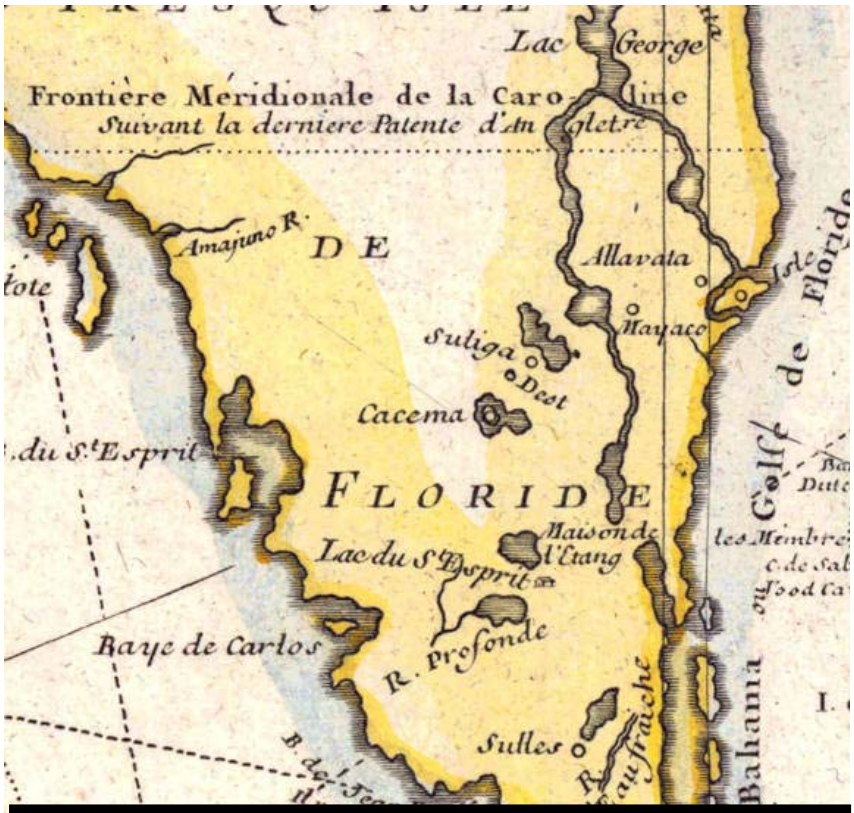
Calusa without fear of retribution. King Oathaqua sought to secure his alliance with Calos by arranging a marriage between his daughter and Calos. The bride and her entire retinue of maiden attendants were seized by the Sarrope inhabitants on their way to the Calusa and were forced to remain on the island and marry the local men instead.

Maps 2 & 3. Two early maps showing Lake Kissimmee (then called Sarrope), 1591 – left, and 1703- right

The Kissimmee Chain of Lakes would have fallen within the Jororo territory. The Jororo were hunter-gatherers who also tended small plots of maize and a few other vegetables. It likely remained a stronghold for the early Native American culture until the Creek raids in the early to mid 1700s, although the impact of the Creek raids isn't certain in this area since nearly all accounts are from the northern Florida tribes and from the coastal areas. It is clear, though, that the raids were the start of massive declines in the tribes that were endemic to Florida. In 1708, a Carolinian named Thomas Nairne traveled with 30 Yamasee warriors on an Indian slaving raid through the central part of Florida. The notes from his journey called the village on Brahma Island "Cacema," from which the name "Kissimmee" was derived. (**Map 4**) The Jororo and most of the surrounding tribes migrated to St. Augustine for protection and became known as the Costas, or Spanish Indians.

During the British period beginning in 1763, the region experienced immigration from the Creek and Yamasee. Throughout the Second Spanish Period, the surviving Costas from the interior worked for Spanish fishing villages and rounded up native-range cattle, driving them to the coast for sea-transport to the other Spanish colonies. Two other villages appeared in maps of the Chain of Lakes vicinity. One was called Dest and the other Suliga. It isn't clear exactly where these settlements were situated. Dest was described as being situated on

the shore of a small lake and is depicted on period maps as being between Lake Toho and Lake Kissimmee, which makes it seem probable that it was Lake Cypress.



Map 4. A 1780 map showing the Indian towns of Cacema on Brahma Island, Dest, and Suliga near Lake Toho

The Kissimmee Chain of Lakes remained practically unknown to most Floridians until the Second Seminole War. In 1837 the military began making detailed surveys of the area and established a system of frontier forts intended to keep the Seminoles south of Lake Okeechobee. Fort Gardner, named after a lieutenant that was one of the last to die in the Dade battle of the first Seminole War, was an important outpost on the Kissimmee River between Lake Hatchineha and Lake Kissimmee. It was from this fort that Colonel Zachary Taylor (the future President) along with 600 soldiers marched out in December 1837 to engage in the largest battle of the war, north of Lake Okeechobee on Christmas day.

Zachary Taylor

The Duke of Alagon Land Grant

In 1818, just before the end of the Second Spanish period, the Spanish king granted over 12 million acres to the Duke of Alagon. This was the largest land grant in Florida and included the Kissimmee

Chain of Lakes and most of the rest of central Florida west of the St. John's River and north of Lake Okeechobee. The land was granted to the Duke because he had assured the king that if he had possession of it he would work with various private enterprises to make sure the land was settled and improved for agricultural production. The Duke promptly sold the land to Richard S. Hackley, of Virginia, who in turn leased some of it to a private corporation in 1836.

The treaty that ceded Florida to the United States included a written declaration as an exhibit that declared the land grant void. However, prior to the treaty being executed, the Spanish king had just agreed to become a constitutional monarch, rather than an absolute monarch; and so was limited in his powers and could not exercise eminent domain to take private property without compensating the owner, and then having the action ratified by the Spanish Cortes. After years of being contested by the Territory, then the State of Florida, the U.S. Supreme court decided in 1853 [John Doe v. Braden (Braden was the founder of Bradenton)] that the grant and transfer was not valid because the treaty must be considered supreme law of the land unless it violates the U.S. Constitution, not the Constitution of Spain. Since the transfer to Hackley occurred before the final ratification of the treaty in February, 1821 it became a political decision rather than a judicial one; the treaty assumed the King had the necessary power to annul the grant so the U.S was under no obligation to recognize the validity of the land grant.

The Court stated that taking ownership of Florida while so much land was in possession and ownership by a single individual would be "...altogether inconsistent with the principles and policy upon which this government is founded." With the title being cleared by the U.S. Supreme Court and ownership by the Federal Government confirmed, the land was able to pass unchallenged to the State as part of the Swamp and Overflowed Lands Act that was passed by Congress in 1850. It is ironic, then, that the State would transfer nearly all of the Alagon/Hackley lands to another single individual, Hamilton Disston, in 1881 for the same purpose that the king had granted the land to the Duke of Alagon: improving the land for agricultural production and encouraging settlement, making Disston the largest individual land owner in the United States.

1840s-1860s

English speaking settlers began moving to present day Polk and Osceola Counties during the 1840s and 1850s and were for the most part cattlemen and homesteaders who lived mainly off the land and had their own small vegetable plots. The government would routinely grant 160 acre tracts to single men or heads of households through successive acts of Congress, such as the Armed Occupation Act of 1842. This act granted 160 acres to anyone who submitted a permit to the regional land office to build and live in a house on the parcel and cultivate at least 5 acres of it for at least 5 years. The 160 acre parcels had to be no closer than 2 miles to an existing military outpost. Since Ft. Gardner (**Map 5**)

was situated between Lake Kissimmee and Lake Hatchineha, most of the early settlements in the area occurred on the southwest and eastern shores of Lake Kissimmee, beyond the two mile radius. Many settlers were veterans of the Second Seminole War who had familiarized themselves with choice parcels during their routine patrols. These early settlers were few and far between, the Armed Occupation Act of 1842 only authorized 1,250 homesteads for the entire peninsula south of Palatka. With the limited umber of homesteads, the Brighton Seminoles were still largely free to roam the countryside and had hunting and trading camps established on the west shore of Lake Kissimmee.

Map 5. 1856 Military Map of Florida

Beginning in the first year of statehood in 1845 the Florida legislature passed a series of resolutions to drain the Everglades and interior Florida wetlands. The ability to successfully drain those areas had been demonstrated when several large areas of wetlands on the east coast were drained and successfully converted to sugar cane and other crops in the late 1700s by English settlers. The feasibility of an Everglades drainage project had been assessed by several military engineers and surveyors beginning in 1823 when the Seminole boundaries were being determined under the Treaty of Ft. Moultrie. It was discovered, to the surprise of the surveyors, that the Everglades basin was several feet above sea level and could be drained by dredging canals that tie into the natural river systems on the coast. In 1847, U.S. Senator J.D. Westcott Jr. requested a report on the feasibility of reclaiming interior organic wetland soils through drainage for agricultural production. Buckingham Smith was appointed to create the report and submitted his findings to the U.S. Treasury Department in 1848. His report outlined how high quality organic soils in the Kissimmee Chain of Lakes, around Lake Okeechobee, and within the Everglades basin could be drained and cultivated by lowering the water level of Lake

Buckingham Smith

Okeechobee by 5 to 6 feet with a series of drainage canals that would simultaneously create a cross-state navigable waterway through the lake.

In 1850 the U.S. Congress passed the Swamp and Overflowed Lands Act that granted to states federally owned wetlands for the purpose of developing internal improvements. Florida received ownership of approximately 20 million acres including the lands surrounding the Kissimmee Chain of Lakes and the Everglades. Swamp land would become the currency of the State and would be traded and sold to encourage the settlement and development of south Florida.

During the last two years of the Civil War, many of the Seminole War veteran/homesteaders in the Chain of Lakes region had been serving in armies in the northern states of the Confederacy, but were called home to form a special cavalry battalion to help protect and drive cattle from the interior of the peninsula to Georgia. The land around the Kissimmee Chain-of-Lakes was under the command of Captain Francis A. Hendry, from whom Hendry County is named.

Tourism and Settlement in the 1870s

The 1870s and reconstruction brought a railroad line from Sanford to Tampa and through the new town of Kissimmee on Lake Tohopekaliga. The land around the lakes had been essentially depopulated for 40 years since the first part of the Second Seminole War in the mid 1830s, and as a result area supported a large game and fish pupulation. Kissimmee was the end of the line for many southbound tourists, a frontier town perched on the edge of a vast wilderness. Several adventure books and articles in Harpers and Field and Stream opened the interior country around the Kissimmee Chain-of-Lakes to tourists and sportsmen from the Northern U.S. and from Europe. These adventure seekers were catered to through the Tropical Hotel which was right off the main pier on Lake Toho. A stay at the tropical cost $3.50, little steam launches could be rented for $10 to $15 per day, a sailboat was $3 to $6 per day, and a guide was $1 or more per day. An out of state hunting license was $25 and included no restrictions on the type and quantity of game taken, everything from panthers to bears to manatees allowed to be taken with the license.

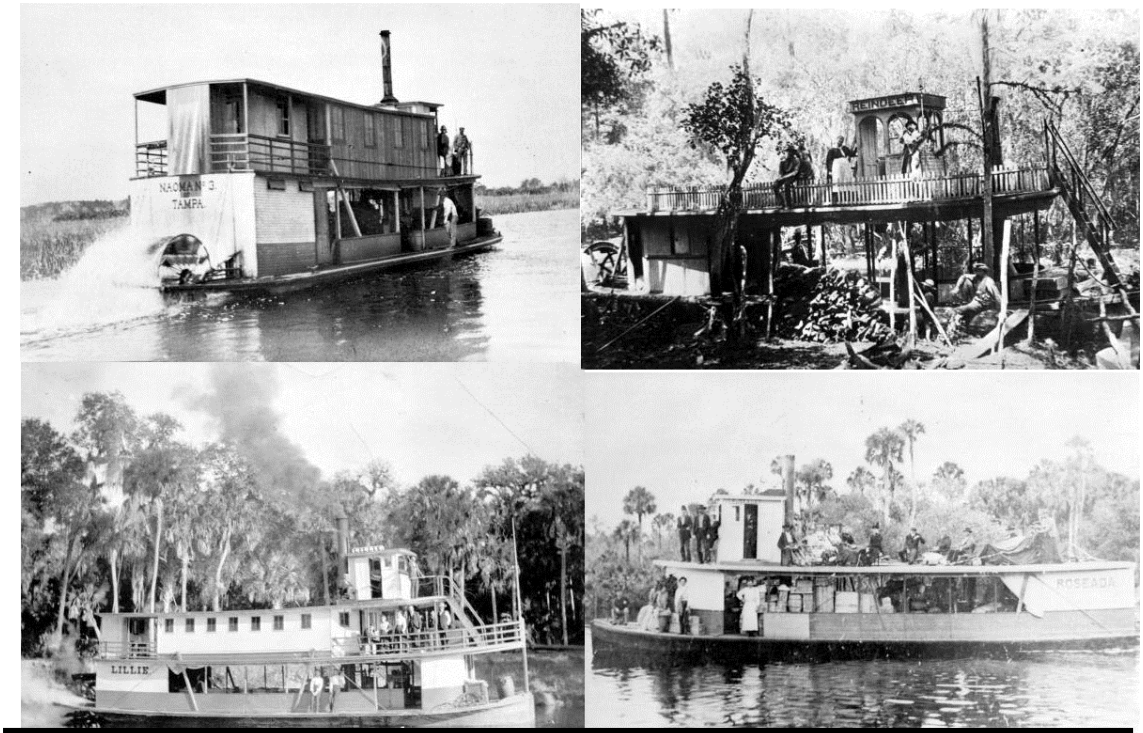
Returning to the Tropical Hotel in Kissimmee following a bountiful fishing expedition in the Chain of Lakes

An illustration of a Chain of Lakes outing appearing in Harpers magazine in 1884

A steam launch, by 1890 there were 50 of them operating out of Kissimmee for “wilderness excursions”

Hunting cabins were established on the eastern shore of Lake Kissimmee. Large bass were reported to be so plentiful that it was often taken for granted that finding dinner would not be a problem, the hunt guides would dangle a hook behind their boats and receive a strike every few minutes as they traveled down stream. Tourists that came for the hunting were said to have rarely gone home empty-handed, the Seminoles camped on the west shore were only too happy to trade trophy horns and hides to returning tourists who had come up short. Brahma Island (then called Bremer Island) was a popular hunting destination, as was the Gardner Marsh area between Lake Kissimmee and Hatchineha.

More settlers began moving into the area as regular service of several 50 foot steamers began traveling the Chain of Lakes and the Kissimmee River. Owner/operator steamers with a two foot draft were all that could be accommodated by the natural river system, and then only in the wet season. The steamer routes went from Kissimmee to Fort Bassinger on a regular basis, as often as water levels would allow. These workhorses of the river included the Mary Bell (sunk in 1884), the Lillie, the Tallulah (which ran aground near Ft Gardner, but was later raised, refurbished and renamed the Reindeer), the Naoma, and the Roseada.

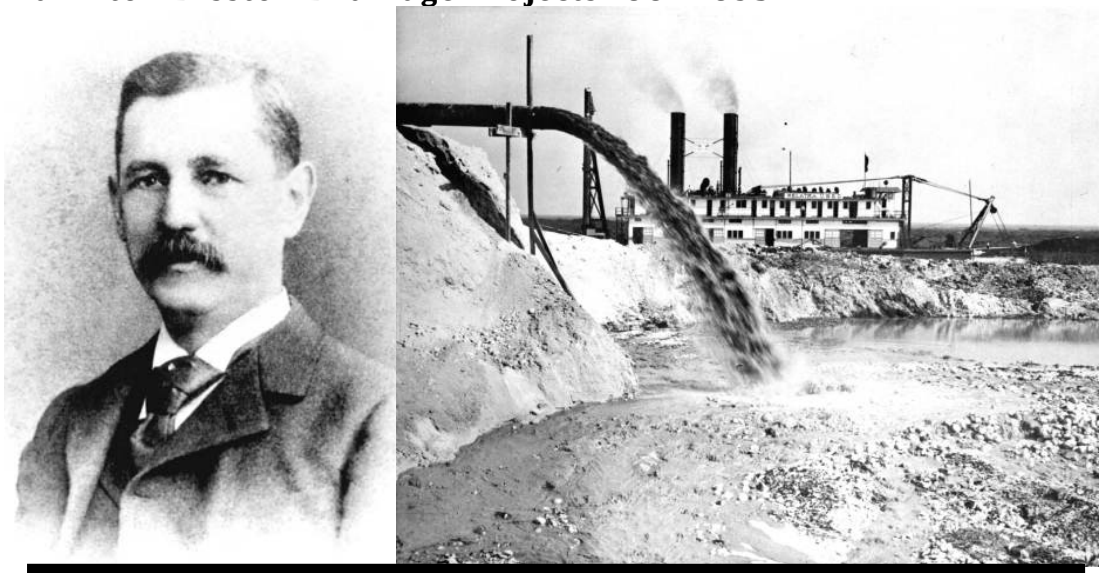


The 50 foot sternwheel steamers of the Kissimmee River system, clockwise from upper left: the Naoma, the Talullah, the Roseada, and the Lillie

These steamers were the primary means of transportation for passengers and commerce. The river system was known to be extremely long and torturous,

sometimes taking three miles to cover by river a distance that was only a quarter mile in a straight line. Every three to four years, dry periods in the winter and spring would close the water route for six to eight months and the settlers would be left to fend for themselves and subsist off of their small garden plots, hunting, fishing, and what meager provisions they could get through small boats and horseback. Commerce came to a complete halt during dry conditions and entire citrus and winter vegetable crops were left to rot in the fields. Local politicians began to lobby Congress for improvements to the river system to accommodate larger steamers with a deeper draft year-round. Congress then directed the Army Corps of Engineers to investigate opening a steamer line from Kissimmee to Florida's southwest coast. The Army Corps completed a feasibility survey in 1882 that provided a cost estimate for dredging shoals, removing snags and overhanging limbs, and creating a series of cutoff canals to shorten the length of the trip and allow for larger steamboats. At about the same time a businessman from Philadelphia, Hamilton Disston, had begun to make these types of improvements to the river under a contract with the State.

Hamilton Disston Drainage Projects 1881-1895



Hamilton Disston and his steam dredge

Hamilton Disston was an entrepreneur from Philadelphia who organized the Florida Land and Improvement Company and the Atlantic and Gulf Coast Canal and Okechobee Company. The state entered into an agreement with Disston in 1881 where Disston purchased four million acres of odd numbered sections of a nine million acre drainage district that included most of the interior peninsula of Florida, south of Kissimmee. Disston paid 25 cents per acre and was also entitled to half of the remaining sections upon their successful reclamation. Railroad companies also received a large portion of the remaining even numbered sections, because the legislature had promised them 4,000 to 10,000 acres for every mile of railroad constructed. It was the general policy of the railroad companies and Disston to sell off the extra land to settlers and other investors.

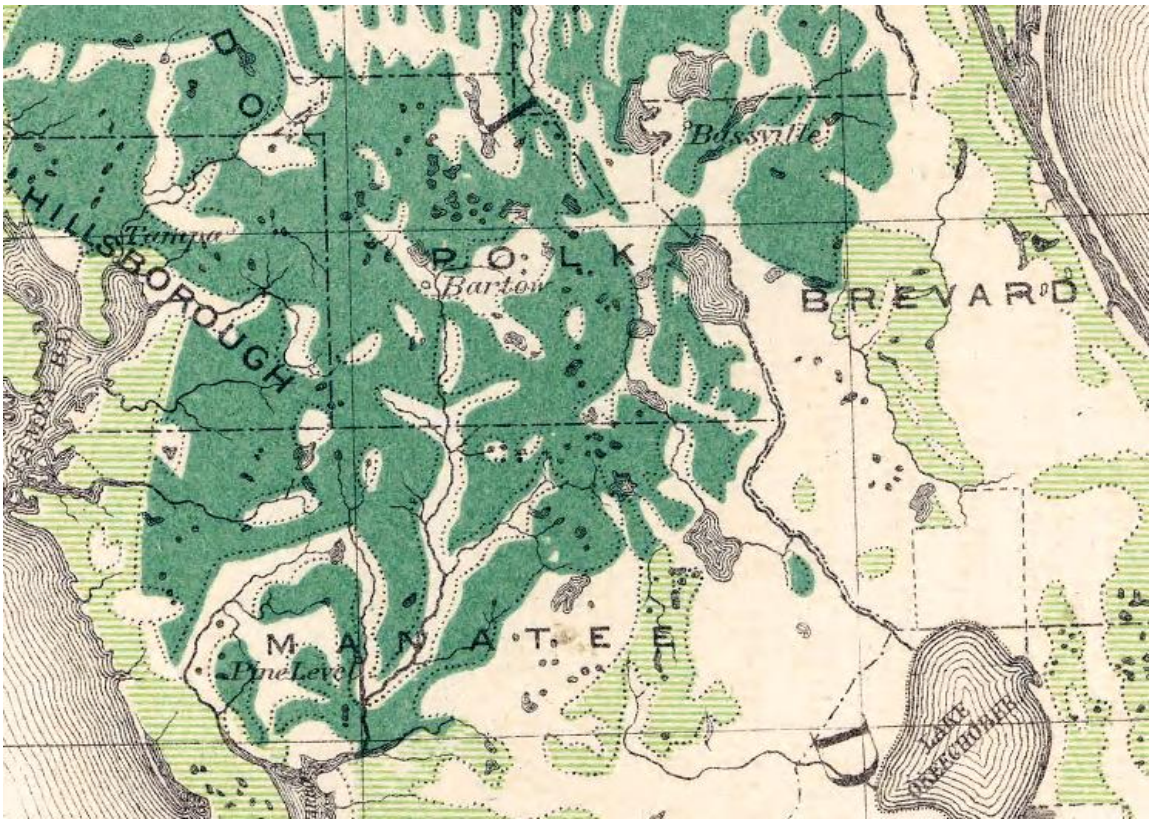
Disston began his reclamation operation by constructing a large steam-powered bucket chain dredge barge that dug a six foot deep canal 37' wide at 12 linear feet per hour. The barge automatically built up a levee on either side as it moved through the prairies. The dredge began a canal connecting Lake Tohopekaliga and Lake Cypress in the summer of 1882 with a crew of 12. Disston employed the steamer Roseada to move the dredge. Progress was aided by having lake water steadily pushing the barge forwards as it made its way towards Lake Cypress. By May 1883 the canal was finished and a steady current of 2½ miles per hour had drained Lake Tohopekaliga by 5 feet, draining 40,000 acres of land. Only a small portion of this land was ever cultivated by Disston with 2,000 acres planted in sugar cane and 6,000 acres in rice.

Disston's company also improved the Kissimmee river navigation by creating cut-off canals, removing snags and limbs, and dredging shoals. By 1884, the Kissimmee River and Chain of Lakes was navigable by 100 foot steamers from Ft Myers to the town of Kissimmee. Disston's Florida enterprises were essentially terminated by plummeting land prices following the 1895 great freeze that came after a previous freeze in 1894, the economic panic of 1893, and the elimination of a two cent per pound subsidy on sugar in 1894.

Timber and Cattle

The improved navigation of the river greatly increased settlement in the area. Most of the land southwest of Lake Kissimmee remained unfenced with numerous homesteads. These residents incorporated into the Kissimmee Island Cattle Company to coordinate the annual drives of the native range cattle. Livestock grazing continued to increase and relied less and less on the free-roaming Spanish cattle that had for so long been part of the landscape. From 1926 – 1929 over 5,000 "purebred" cattle were imported into the area. Improved navigation also opened much of the pinelands surrounding the lakes to timber and turpentine operations (**Map 6**). A turpentine still was located near the southwest shore of Lake Kissimmee, and by 1929 there were 21 sawmills operating in Polk County.

A river steamboat loading rosin for transportation to a turpentine still



Map 6, an 1881 timber map with longleaf pine in dark green and slash pine in light green

From 1902 through 1909, more navigational improvements were made to the Kissimmee Chain of Lakes including clearing out shoals, armoring the entrances to Disston's canals to prevent further shoaling, and creating more cut-off canals. This work was done to secure a minimum three foot deep and 30 foot wide channel navigable from Kissimmee to Ft. Bassinger. The first improved roads didn't reach the area until the 1930s and slowly began to replace the Kissimmee River system as the primary means of transportation. Rapid settlement of the area following World War II led to extensive property damage when a severe hurricane occurred 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 system. 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 Kissimmee Chain of Lakes was regulated by six water control structures (S-65s), the first of which was located at the outflow of the Kissimmee River from Lake Kissimmee. 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.

A major addition to the area's economy was the establishment of Disney World and other tourist attractions in the early 1970s. By the late 1970s, residential development had increased dramatically throughout the Kissimmee-Orlando area. 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 should be managed in an environmentally acceptable manner and restored to their natural state.

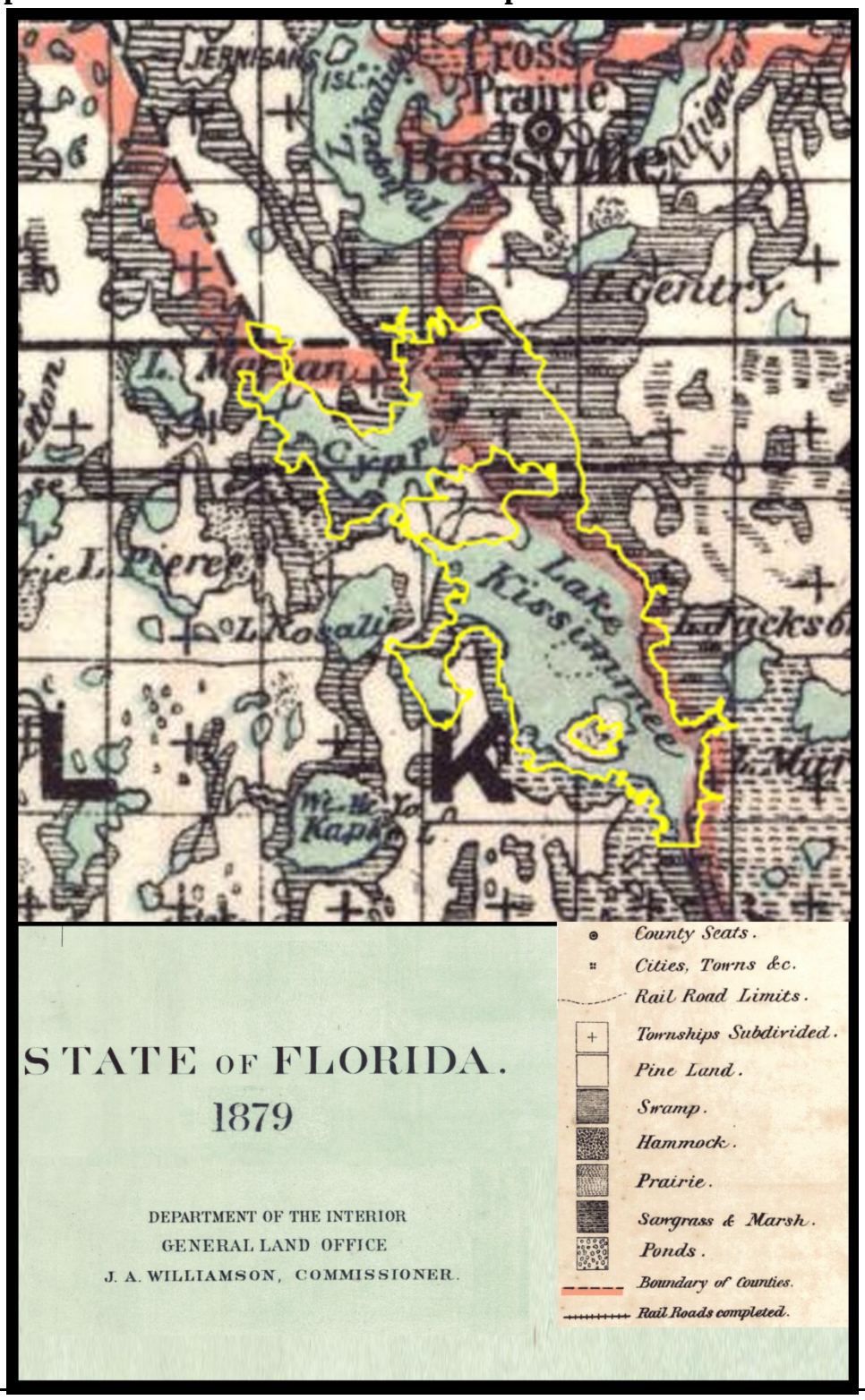
The Kissimmee River Restoration Project was authorized by Congress in the 1992 Water Resources Development Act as a joint partnership between the District and the US Army Corps of Engineers. The project was designed to restore over 40 square miles of river/floodplain ecosystem including 43 miles of meandering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

The District began purchasing lands for water storage, quality, and control that comprise the Kissimmee Chain of Lakes Management Area beginning in 1990 through the Save Our Rivers program when scientists and engineers from the District and U.S. Army Corps of Engineers working on the Kissimmee River Restoration Project determined that not enough water would be available in the upper chain of lakes to provide year round base flow for the restored river. It was estimated that an additional 100,000 acre-feet of water storage was required to provide longer durations and seasonal variability of flow to the lower river basin. The basic strategy was to modify the regulation schedule and operational rules to allow lake stages to fluctuate more naturally with rainfall and associated inflows from the upper basin watershed. The recommended solution was to raise the top of the existing lake regulation schedule from 52.5 feet NGVD to 54.0 feet. Real estate interests including fee title or flowage easements were needed on land around lakes Kissimmee, Cypress, Tiger, and Hatchineha in eastern Polk and southwestern Osceola counties.

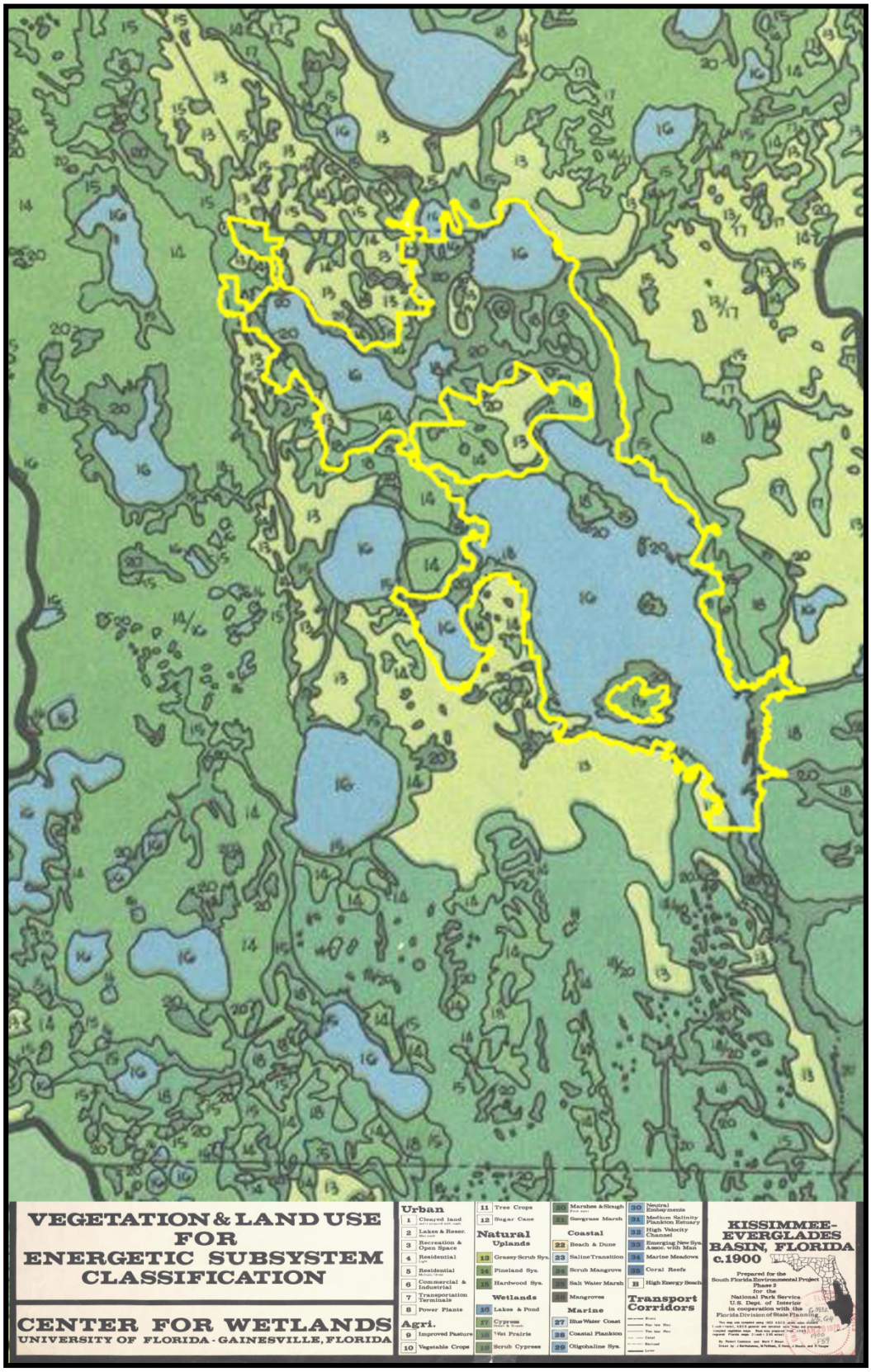
To date nearly 30,807 acres have been acquired, the majority of which was acquired from September 1993 to July 1995. Prior to acquisition, the majority of the property was managed as range land owned by area ranchers for beef cattle production. Ranching improvements included the construction of an extensive interior network of drainage ditches and the planting of exotic pasture grasses.

Maps 7-10 illisutrate the historic character of the Kissimmee Chain of Lakes landscape in comparison to the more developed landscape visible in the 2011 aerial photography, **Map 11**.

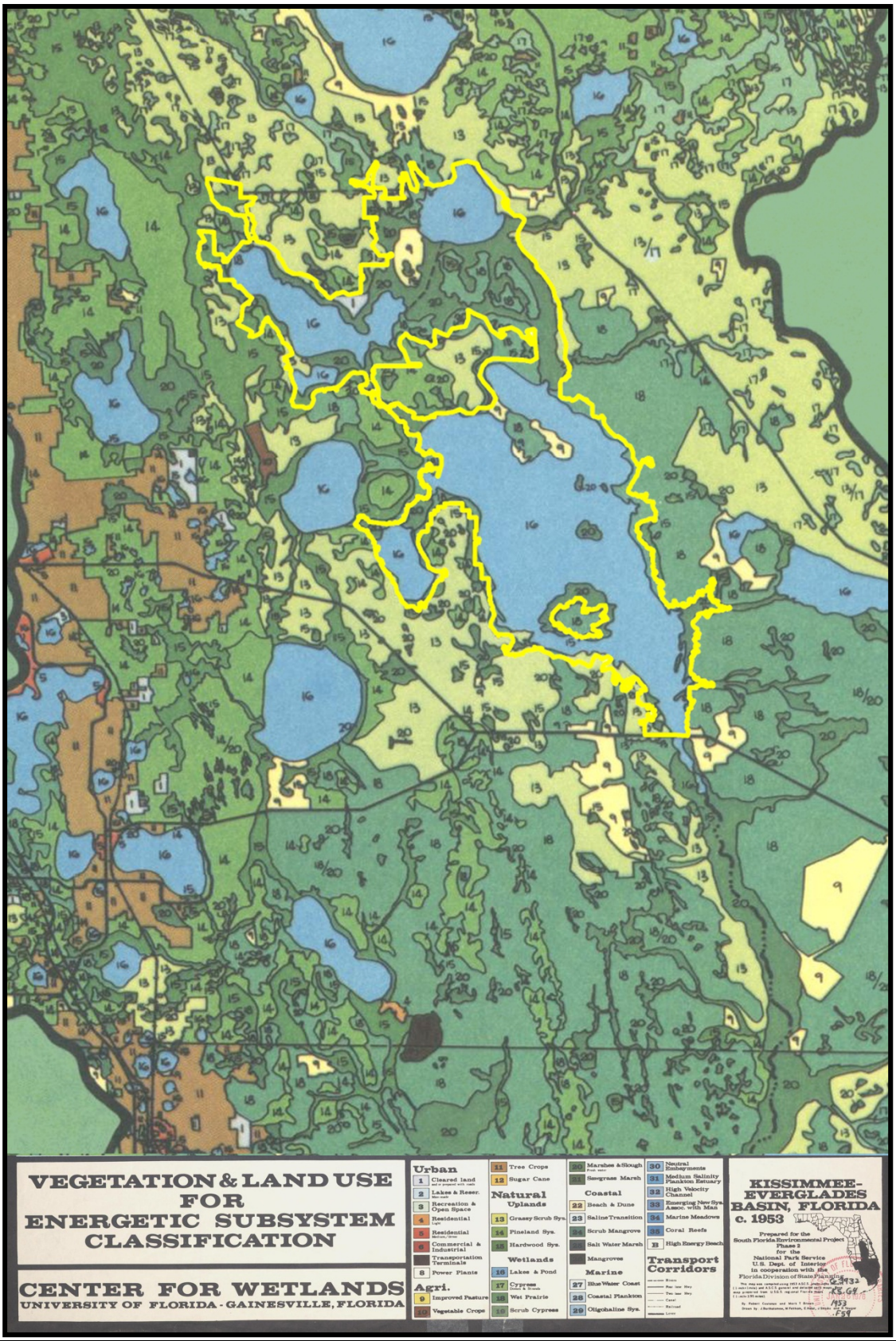
Map 7. 1879 - General Land Office Map with land cover classification



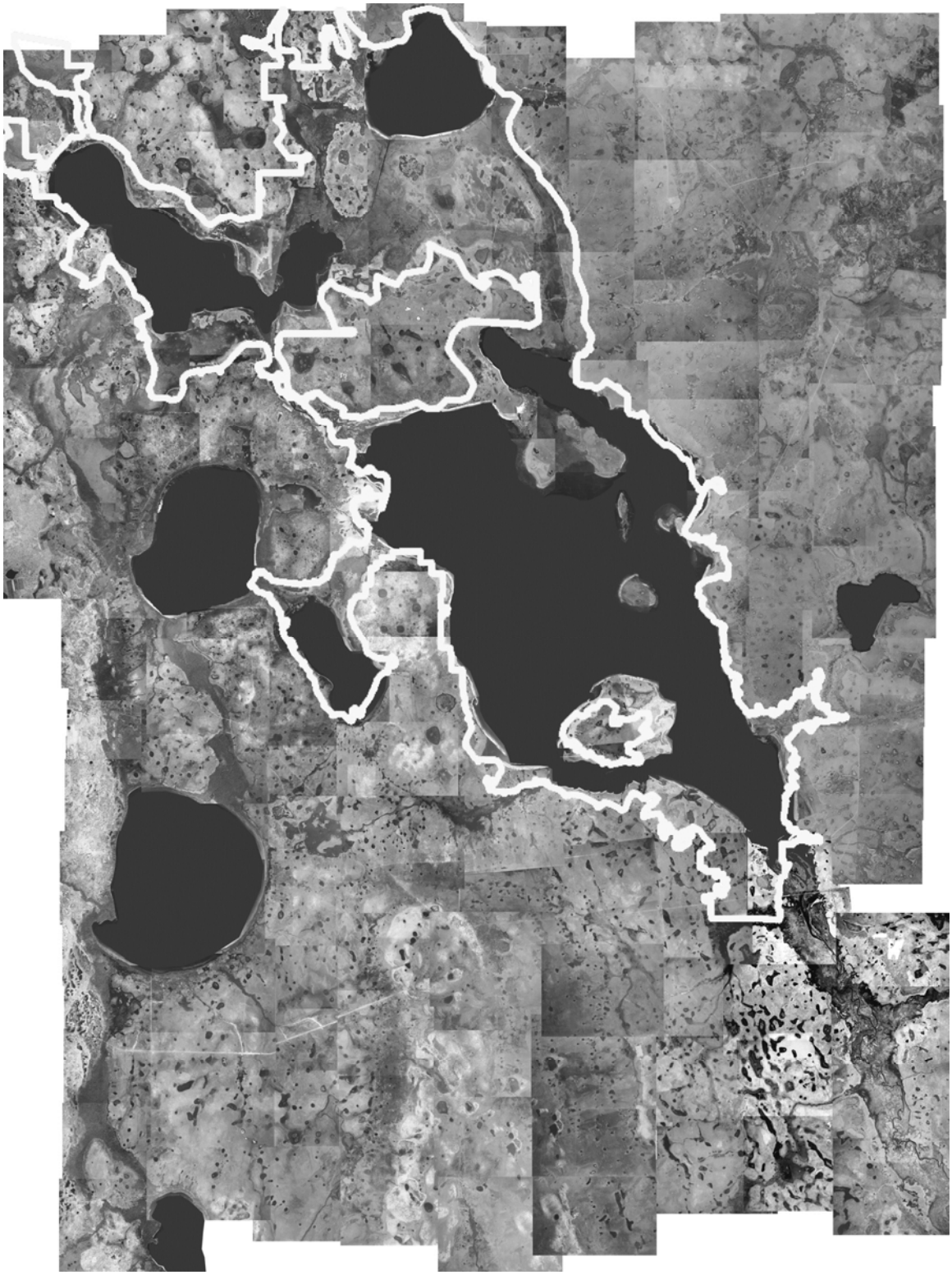
Map 8. 1900 University of Florida Land Cover Map



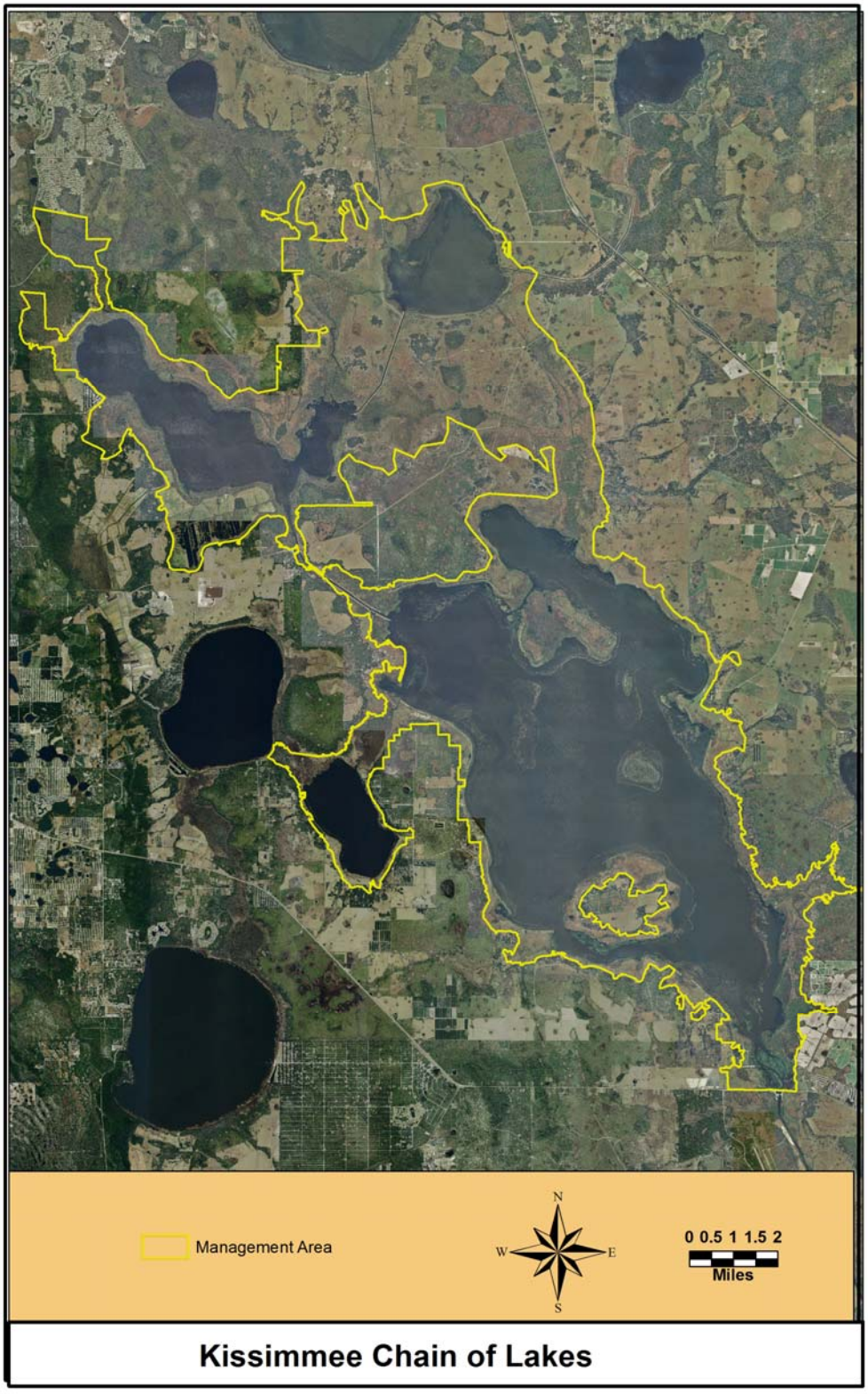
Map 9. 1953 University of Florida Land Cover Map



Map 10. Kissimmee Chain of Lakes Management Area with 1941 (Polk County) and 1944 (Osceola County) aerials



Map 11. 2011 Aerial



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.

Floral and faunal species are inventoried and natural communities are mapped by Land Stewardship personnel, volunteers, or private contractors. The data help 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.

District contractors completed plant inventories in 1997 and 1998 for the West Shore, Catfish Creek, and Gardner-Cobb Marsh unita. Plant inventories were completed for the Kissimmee Islands, Oasis Marsh, Lake Cypress, and Rough Island units by a contractor in 2003. 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.

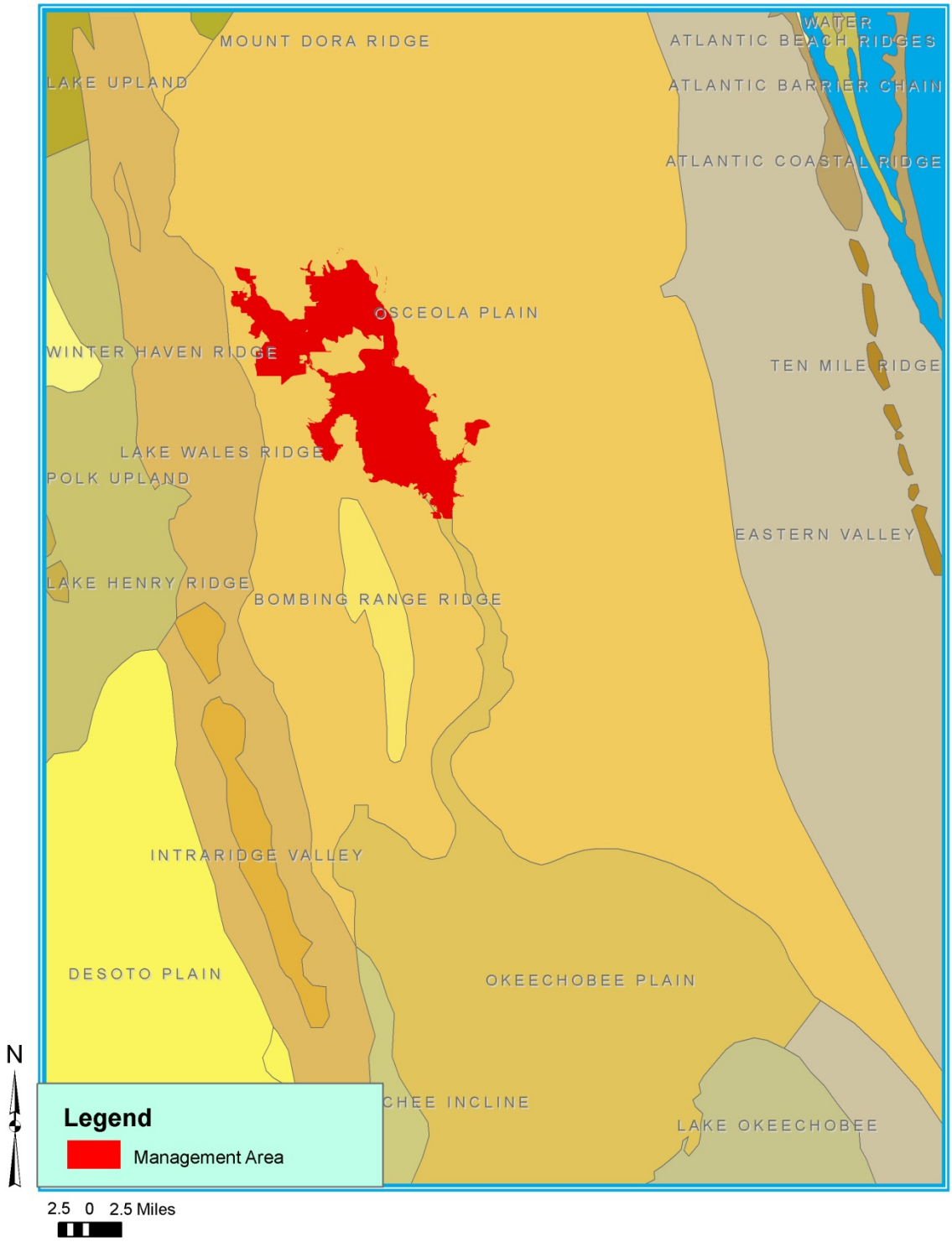
The Kissimmee Chain of Lakes Management Area is located in the middle of the Osceola Plain (**Maps 12-13)**. The lakes had limited outfall capacity through the wildly winding route of the natural Kissimmee River and functioned as natural reservoirs, allowing for storage of water in the wet season, and the continual release of water throughout the remainder of the year. The Management Area lies within four surface water basins as shown in **Map 14** that drains 709 square miles. It also covers just a portion of the larger Upper Kissimmee basin that encompasses a system of more than 25 interconnected lakes across 1,620 square miles.

The flood control structures established by the Central and South Florida Flood Control Project created a system where water levels between the lakes could be controlled following a regulation schedule to minimize the potential for flooding. Nine water control structures were constructed in the Upper Basin portion of the project between 1964 and 1970 to regulate lake levels and outflows (**Map 15**). The primary control structure regulating the outfall of the system is the S-65 structure at the south end of Lake Kissimmee. These structures have multiple gates that can be opened and closed; stage regulation schedules control their operations. Each regulation schedule defines operational criteria used to manage

lake levels for flood control and water supply. The regulation schedules present seasonal and monthly stage limits needed to provide the designed level of flood protection. The present regulation schedules limit annual water level fluctuations to within about two to three feet.

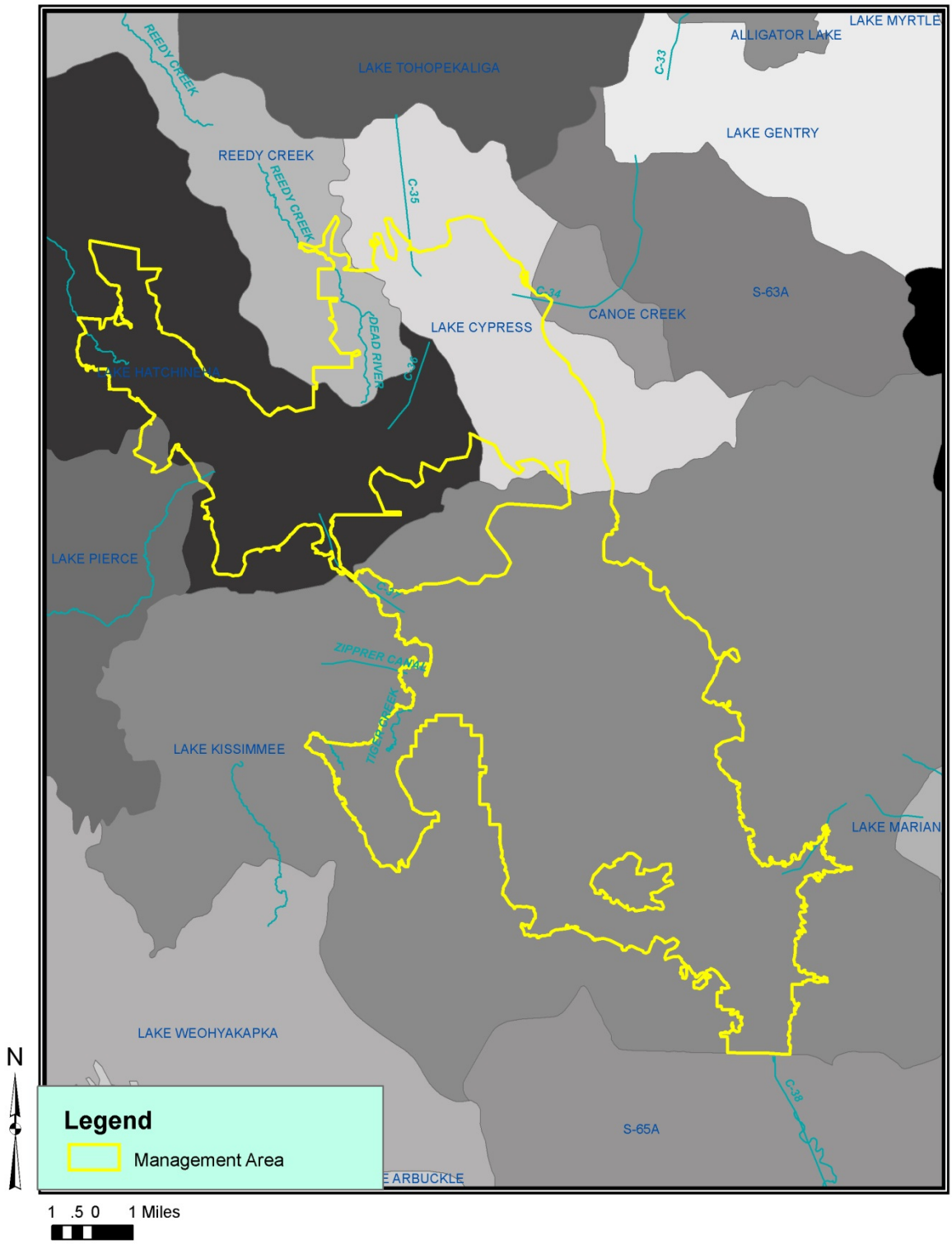
The current regulation schedule will be modified as part the Kissimmee River Restoration Project. The goal of these changes is to improve, enhance and/or sustain lake ecosystem health, while balancing impacts between upstream and downstream ecosystems. The District is the lead agency coordinating the development of the Long-Term Management Plan with six partner agencies including the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, and Florida Department of Agricultural and Consumer Services.

Map 12. Regional Major Geomorphic Features

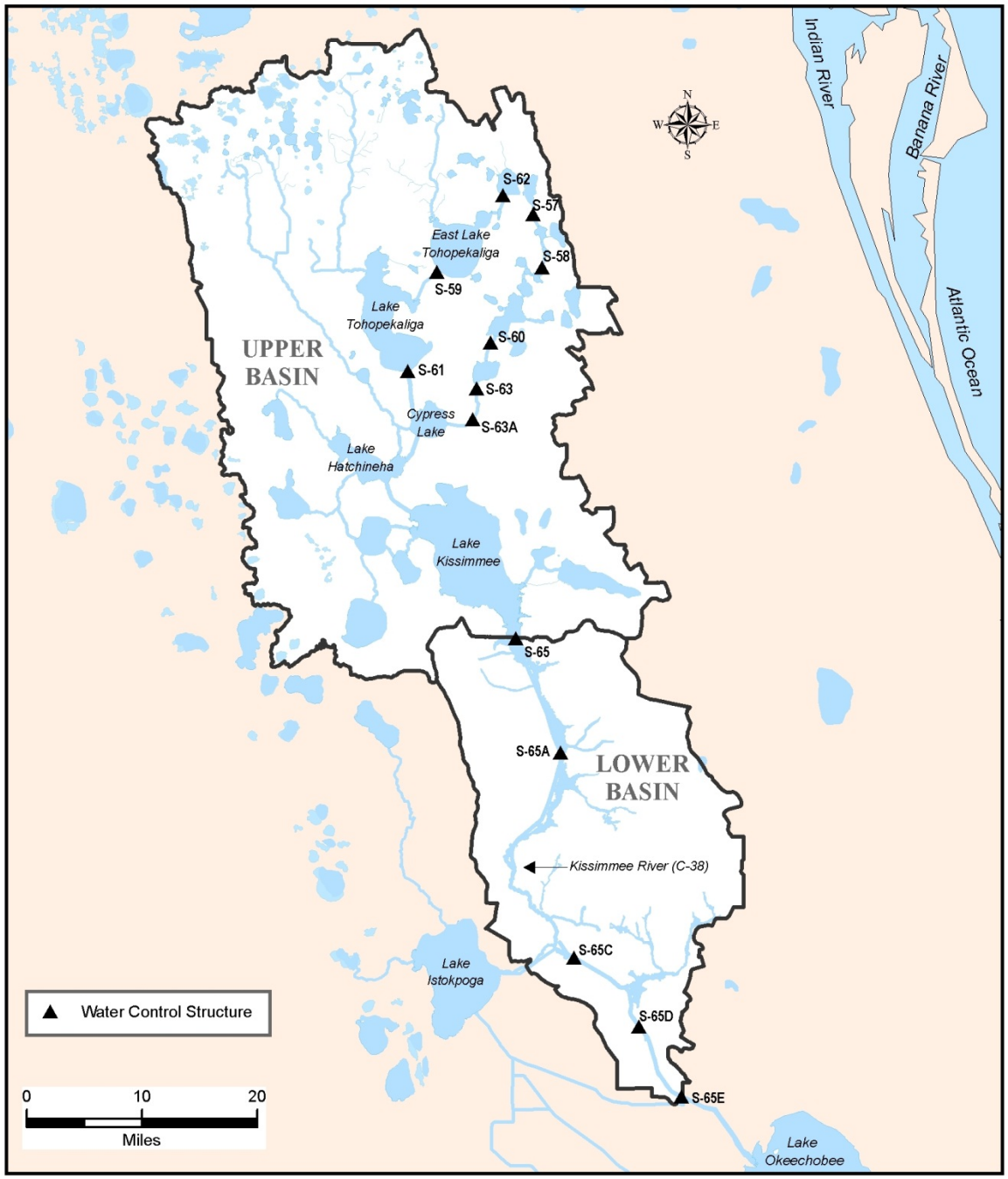


Map 13. Regional Topographic Setting

Map 14. Hydrologic Basins



Map 15. The Regional Water Control Structures



4.2 Soils

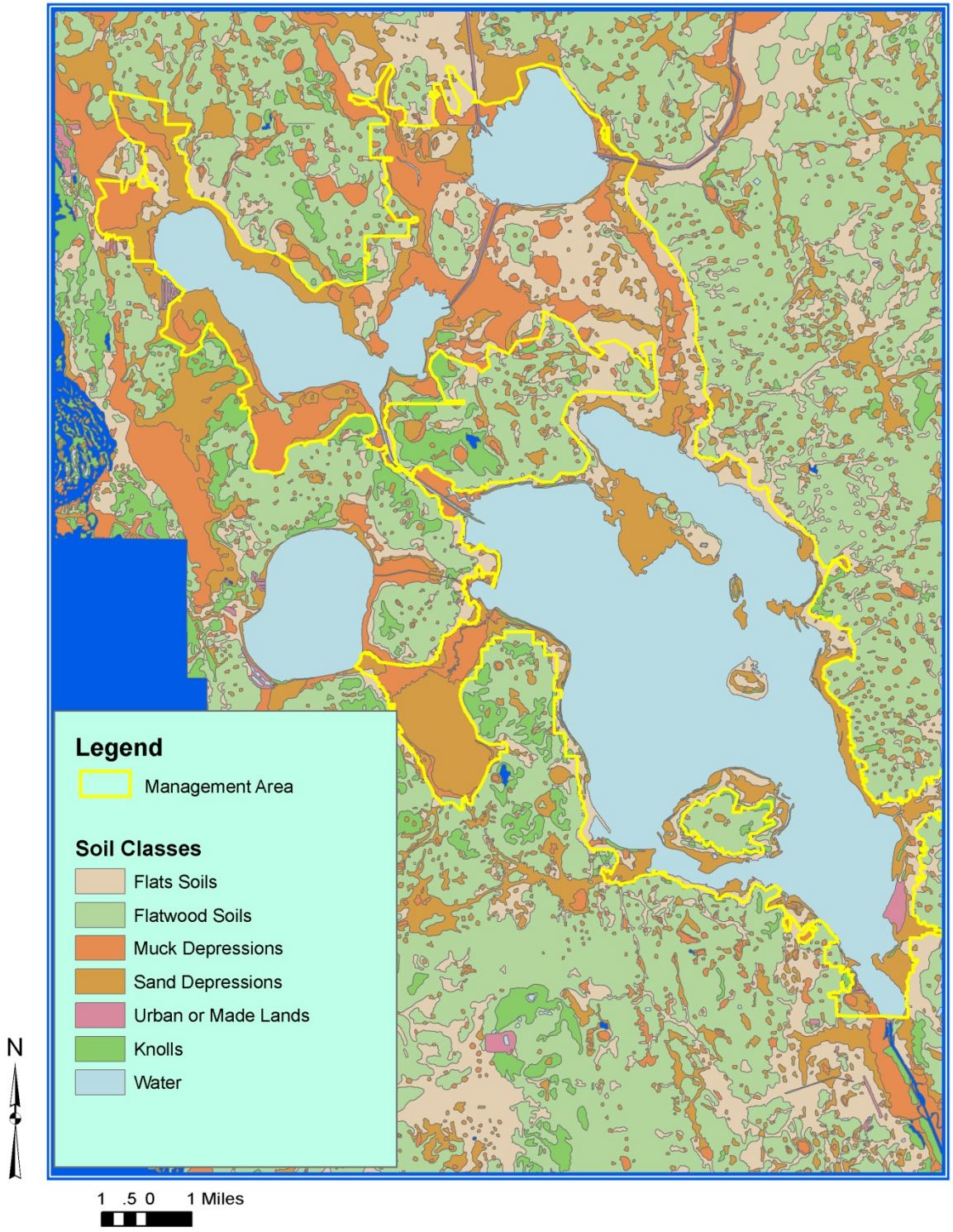
There are six distinct soil categories within the Kissimmee Chain of Lakes Management Area as defined by the Natural Soil Landscape Positions soil classification system: flats soils, flatwood soils, knolls, made lands, muck depression soils, and sand depression soils (**Map 16**). This classification 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

A review of pre-acquisition Phase I Environmental Assessments for the Kissimmee Chain of Lakes Management Area revealed no major soil contamination sites. The Drasdo unit contained a sawmill that had a small area of stained soil beneath the motor which was satisfactorily excavated. This area was remediated prior to acquisition.

Cattle dip vats were located on Strum Island, Lemon Point, and in Gardner-Cobb Marsh. Contaminated soil at these sites were excavated and replaced with clean soil. The Department of Environmental Protection concurred that no further action was required at these sites following remediation.

Map 16. Soils


Legend
Management Area
Soil Classes
Flats Soils
Flatwood Soils
Muck Depressions
Sand Depressions
Urban or Made Lands
Knolls
Water
N
1 .5 0 1 Miles

4.3 Natural Communities

The Land Stewardship Section classifies natural community types by the Florida Natural Areas Inventory classification system. Twenty natural community types have been identified within the Management Area (see **Table 1** and **Map 17**). Community condition varies widely, depending on previous and current land use, hydrologic alteration, exotic infestation, and current management activities. Descriptions are included as **Appendix C.**

Table 1, Natural Community Type Summary by Management Unit

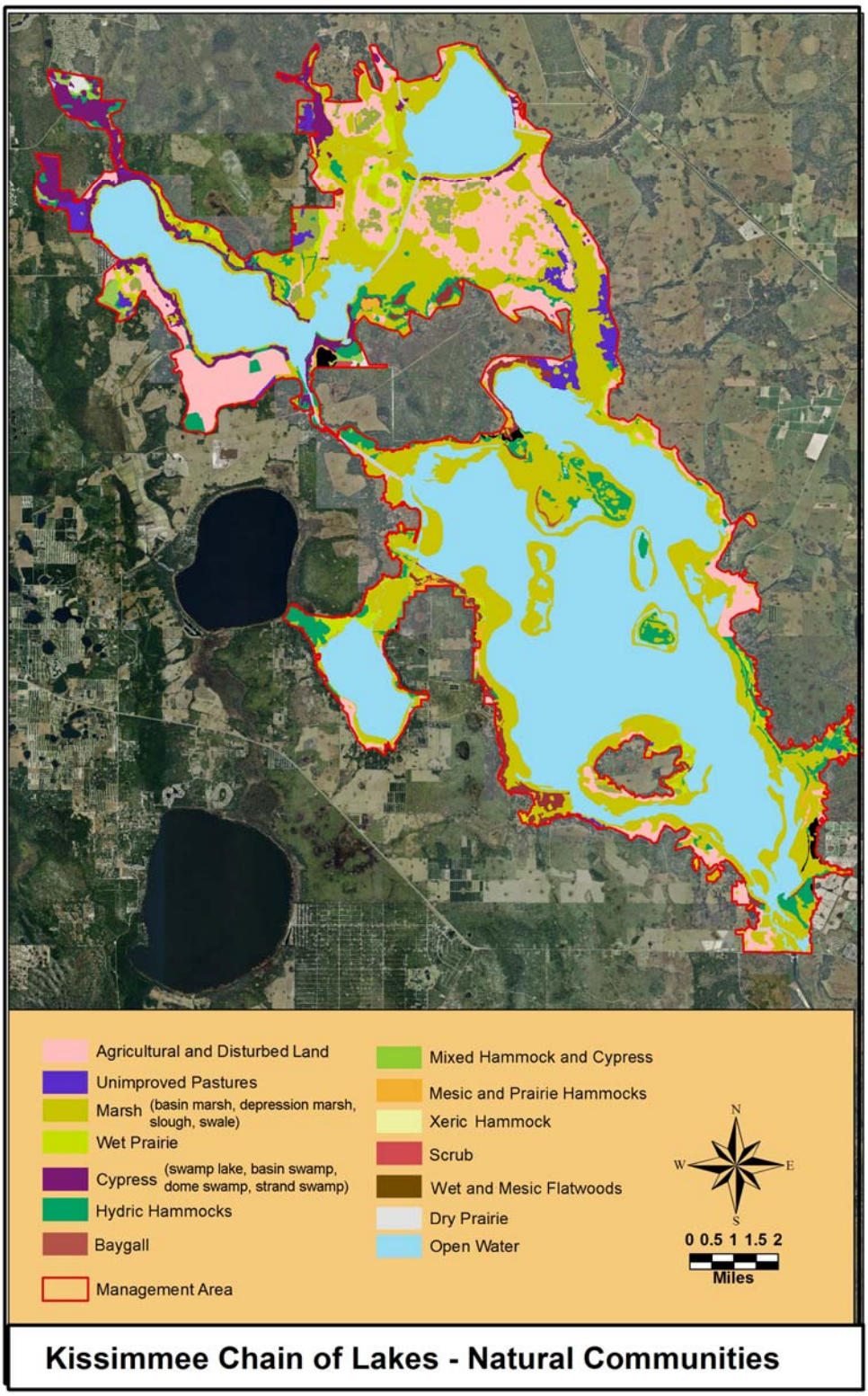
FNAI Community Type	Catfish Creek	Gardner-Cobb	Lake Cypress	Drasdo	Kissimmee Islands	East Shore	West Shore	Oasis Marsh	Rough Island North	Rough Island North	Johnson Island
Basin Marsh	X	X	X	X	X	X		X	X	X	X
Basin Swamp	X		X	X	X	X		X	X		X
Baygall	X										
Depression Marsh	X	X	X	X	X	X	X	X	X	X	X
Dome Swamp	X	X			X						
Dry Prairie		X				X					X
Floodplain Marsh		X					X				
Floodplain Swamp		X					X				
Hydric Hammock				X							X
Mesic Flatwoods		X		X			X				X
Prairie Hammock	X	X		X		X	X	X	X	X	X
Scrub				X			X				X
Scrubby Flatwood				X			X				X
Seepage Stream	X										
Strand Swamp		X									
Swale						X					
Swamp Lake		X		X							
Wet Flatwoods	X						X				X
Wet Prairie	X	X	X	X	X	X	X	X			
Xeric Hammock							X				

Plant inventories were completed by District interns within the Catfish Creek and West Shore Management Unit. Contractors completed flora surveys for Gardner-Cobb, Lake Cypress, Kissimmee Islands (Bird, Sturm, and Rabbit Islands), and Oasis Marsh (These inventories have been combined in **Appendix D** and grouped by those plants found either north or south of Camp Mack Rd.). The East Shore and the Otter Slough units remain to be inventoried. The number of documented species is listed in **Table 2**:

Table 2: Plant Species by Management Unit, the northern units are in black, and the southern units are in blue.

MANAGEMENT UNIT	SPECIES
Catfish Creek	131
Gardner-Cobb	225
Lake Cypress	140
West Shore	356
Oasis Marsh	157
Bird Island	57
Strum Island	174
Rabbit Island	50

Map 17. 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. Initial wildlife inventories on the Management Area were conducted from 1987-1989. As species observations and listing classification change, the species lists are updated accordingly. Wildlife species observed utilizing the property include 108 bird, 18 mammal, and 42 reptile and amphibian species (**Appendix E).** At least 16 species considered, endangered, threatened, or of special concern have been noted.

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.

The District's management goal for cultural resources is historic preservation by identification, evaluation, documentation, protection, and stabilization of known historic or prehistoric sites. The District maintains a database of all known archeological and historical sites on District properties that is periodically updated through the Department of State's Master Site File. Due to its sensitive nature, site-specific data is not made available to the general public.

Fifteen archaeological sites of Native American earthworks are present on the management area and are registered in the Florida Master Site File as sites of archaeological significance. During the summer of 2002, the District contracted for a survey to be conducted for archaeological/historical sites in the Gardner-Cobb Marsh and Drasdo Units. The goal was to locate and identify significant sites within the area for protection, preservation and management. Eleven sites were located. Analysis of artifacts consisted of separating the artifacts into their respective categories: lithics, ceramics, historic artifacts, and faunal or botanical remains. Management of these sites include monitoring for signs of disturbance and coordinating with law enforcement officers when suspicious activity is observed.

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 applied programs wherein activities manipulate, modify, and control natural features within the management area.

All lands acquired through the Save Our Rivers program 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 directed by best management practices. Goals and objectives for the management area clarify resource management guidelines necessary to fulfill the District's land stewardship responsibilities. Land Stewardship resource management activities include the implementation of projects to restore a more natural hydrologic regime, the application of vegetation control activities to restore natural forest structure and composition, the continuation of an aggressive exotic plant control program, the application of a prescribed burn program for the maintenance of fire dependent plant communities, and coordination with the Florida Fish and Wildlife Conservation Commission to implement wildlife management programs.

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.

Wetland Restoration

In 2003, the District developed plans to restore approximately 4,000 acres of shoreline and interior wetlands to enhance wildlife habitat in Rough Island, Gardner-Cobb Marsh and West Shore (Otter Slough) management units. A significant amount of the earthwork was completed on these sites, as well as Oasis Marsh, in 2009. Rough Island and Otter Slough were permitted by the Florida Department of Environmental Protection as mitigation for wetland impacts assosciated with the construction of a pump station at Packingham Slough. Plans for the projects were essentially the same and include several components: hydrologic restoration, exotic species control, mechanical vegetation management to control, prescribed burning, and long-term monitoring. The District conducted detailed site investigations of each restoration area to determine restoration needs in terms of hydrologic enhancement, exotic treatment, vegetation management, prescribed burning, and monitoring.

Surveys were conducted to identify ditch plug and water control structure locations, elevations, and cross-sectional information needed for project design. The shallow swales and ditches that were excavated by previous ranch owners to enhance drainage and increase grazeable areas were blocked with earthen plugs. Plug widths vary from 5 feet - 25 feet, and plug lengths range from 25 feet - 100 feet. All plugs were constructed to one foot above natural grade, following compaction and final grading, and seeded with grass. Baseline inventories have

been established for each site. Permanent photo monitoring stations were installed that will enable panoramic photos to be taken to document changes over time.

Rough Island

Rough Island (**Map 18**) is a 1,750 acre tract that was historically wet most of the year before lake stages in the Kissimmee Chain of Lakes were regulated in the 1960s as part of the Kissimmee River channelization project. Rough Island contains numerous depression marshes and wet prairies that have been drained with a network of swales and shallow ditches that were constructed to provide more land for cattle grazing. Wetland conditions were enhanced on more than 1,000 acres by constructing 11 earthen ditch plugs in the shallow ditches exiting the marshes, and backfilling certain ditches. Plugs were constructed using available onsite material; no fill was imported, and plugs were filled to one foot above natural grade.

Gardner-Cobb Marsh

Gardner-Cobb Marsh (**Map 19**) covers 11,000 acres that were historically floodplain marsh. Aerial photography from the 1940s shows construction of a drainage system that was installed to allow row crop farming. The initial restoration project enhanced 2,500 acres of over-drained marshes and wet prairies that had been impacted by drainage. A large drainage ditch runs through a central slough on the east side of the property. This ditch continues to drain offsite property and no attempts have been made to restrict its flow. A second large ditch drains into Lake Cypress. Additional restoration opportunities will be pursued during this plan period to expand on the initial restoration work that has been completed to date, including the utilization of restoration grant funds.

Otter Slough

Otter Slough (**Map 20**) covers 500 acres that were historically part of the Lake Kissimmee floodplain. The restoration project enhanced the entire site. The State of Florida owns 4,800 acres of adjacent land that is managed by the Florida Forest Service as the Lake Wales Ridge State Forest--Prairie Tract. A single large ditch drains Otter Slough as well as state forest land. The restoration plan consisted of several backfill sites. The Florida Forest Service has undertaken a similar ditch plugging project further upstream under the Wetland Reserve Program, and was designed by the Natural Resource Conservation Service.

Oasis Marsh (**Map 21**)

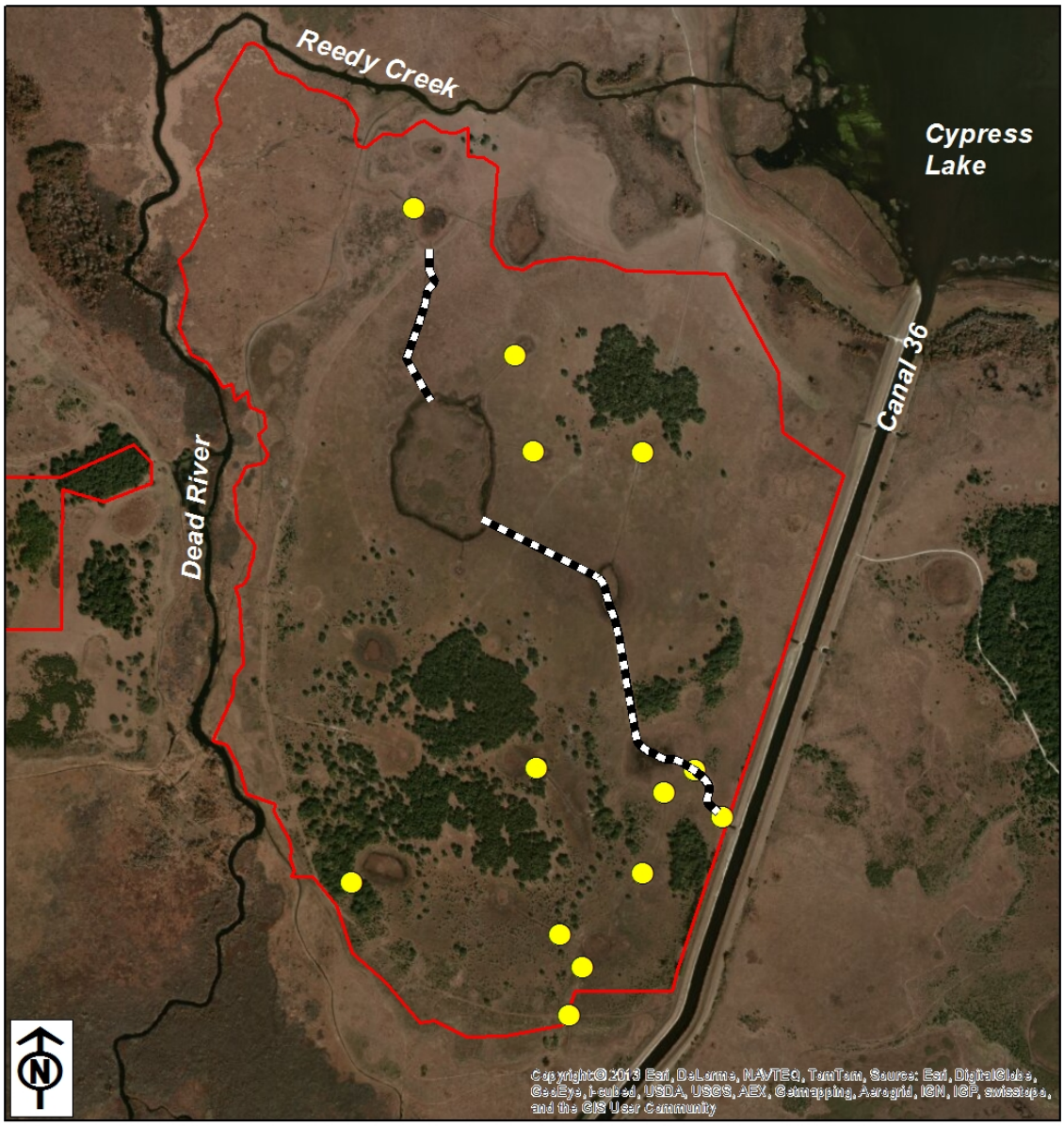
The Oasis wetlands are located in the floodplain of the southwest corner of Lake Kissimmee. This mosaic site of dewatered wetlands and uplands was purchased by the District in 1998 as part of the Kissimmee Chain of Lakes project to raise lake stages. Prior to 1998, the land was ditched by private ownership to dewater the site primarily for cattle farming and thus altered the hydrology of the existing wetlands on site and connectivity to Lake Kissimmee. Several depressional marshes and sloughs were drained by four primary ditches.

In an effort to restore the floodplain function to these wetlands, four ditches totaling 2.4 acres in size were filled with 3,144 cubic yards of sediment material from a levee adjacent to the site in spring 2010. The restoration of the topography of Oasis Marsh restored approximately 77 acres of wetlands and reconnect them to the littoral zone of Lake Kissimmee. This conversion of overdrained habitat types to wetlands improved the water quality of sheetflow runoff and also improved habitat fo aquatic-oriented wildlife. Additionally, when the lake stage increases on lake Kissimmee from 52.5 National Geodetic Vertical Datum (NGVD) to 54 feet NGVD the area will be inundated and provide nursery habitat for fish, foraging habitat for wading birds, and other wildlife functions.

Rolling Meadows (Map 22)

The restoration of the Rolling Meadows Ranch is part of the federally authorized Kissimmee River Headwaters Revitalization Project, which is part of the overall Kissimmee River Restoration that is being undertaken by the District in conjunction with the U.S. Army Corps of Engineers as part of a regulatory action. The Kissimmee Headwaters Revitalization project includes modifying the regulation schedule for the Upper Chain of Lakes, while maintaining the existing level of flood protection. The overall objective of the Rolling Meadows Wetland Restoration project is to restore, as closely as possible, the natural littoral habitat within Parcel B of the Rolling Meadows site, a large historic floodplain area adjacent to the southwesterly shore of Lake Hatchineha. This area had been previously diked, ditched and drained to support agricultural operations.

Map 18. Rough Island South Restoration



** District project boundaries depicted here may include state sovereign lands not under SFWMD ownership.*

Kissimmee Chain of Lakes Management Area
Rough Island South Hydrologic Restoration

1 inch = 0.29 miles

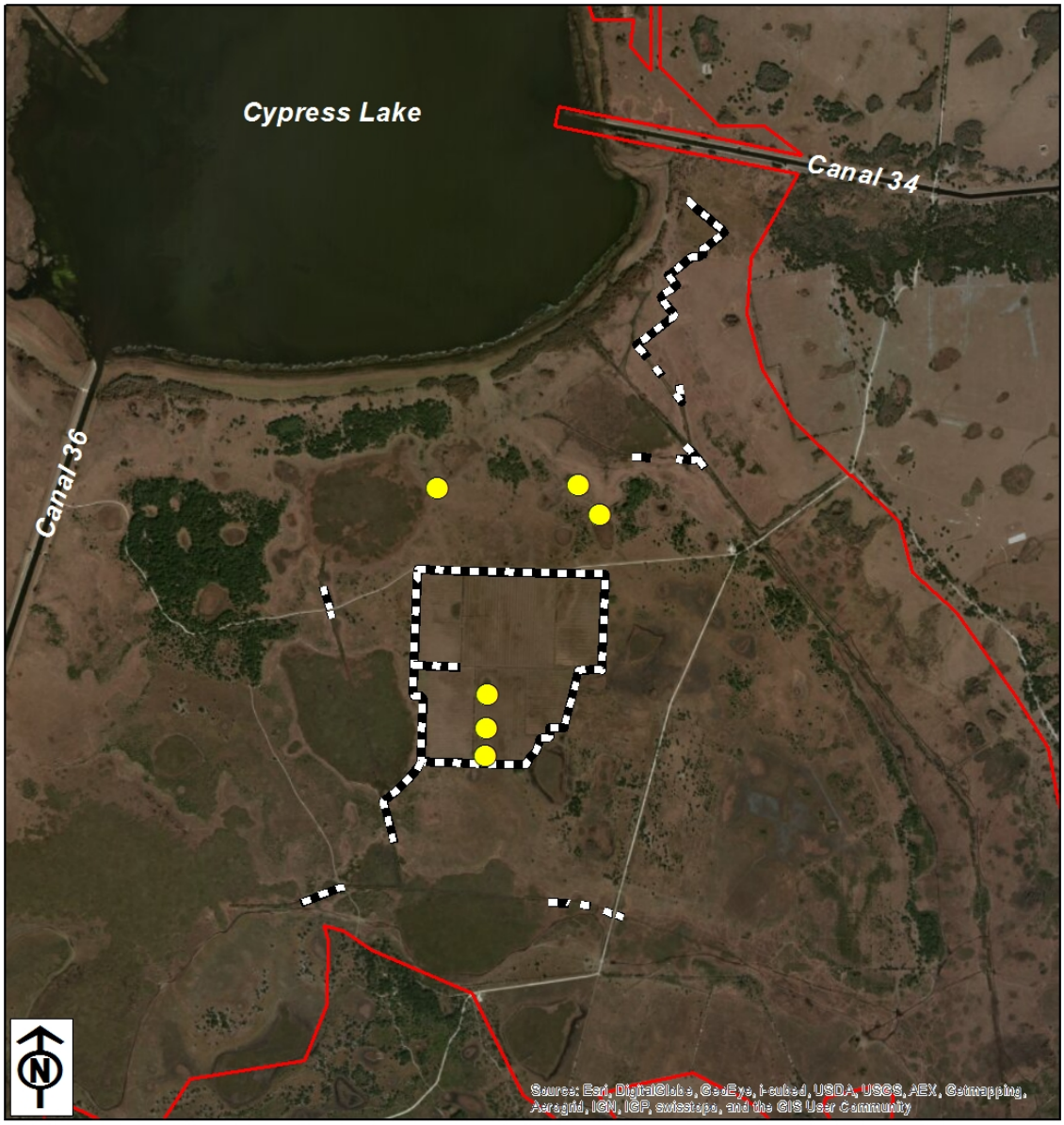
0 0.125 0.25 0.5 Miles

sfwmd.gov

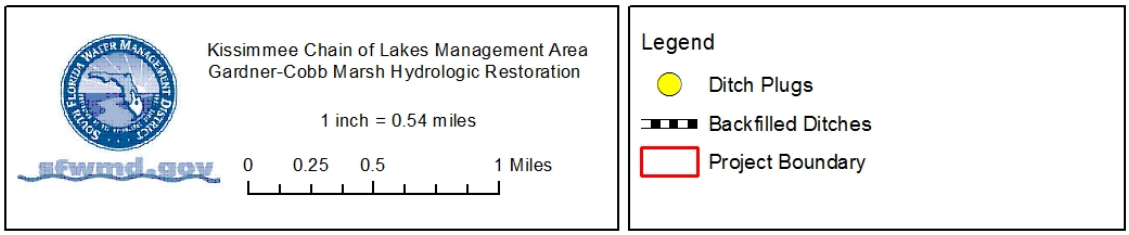
Legend

- Ditch Plug - Completed
- Backfilled Ditches
- Project Boundary

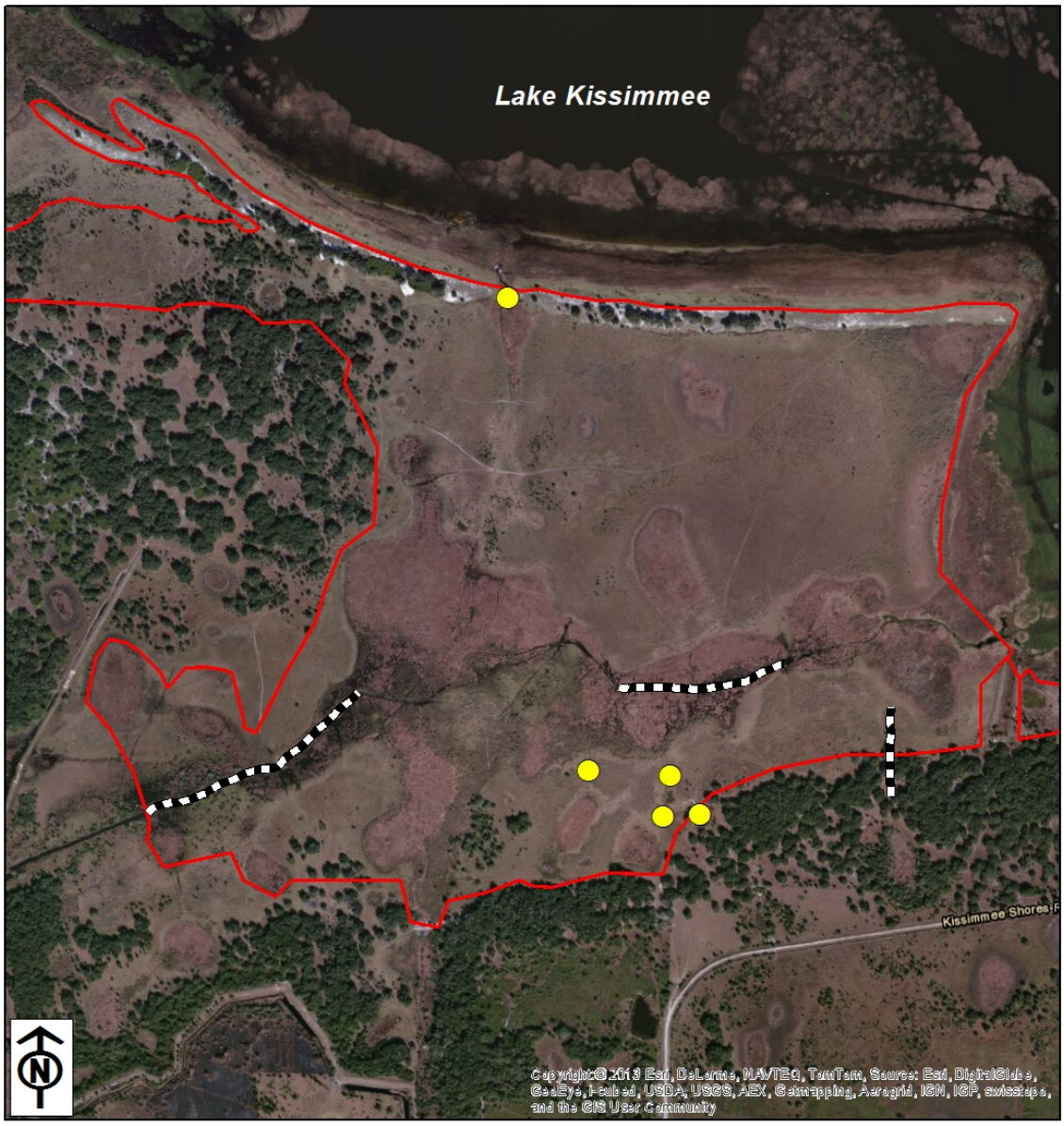
Map19. Gardner-Cobb Marsh Restoration



** District project boundaries depicted here may include state sovereign lands not under SFWMD ownership.*



Map 20. Otter Slough Marsh Restoration



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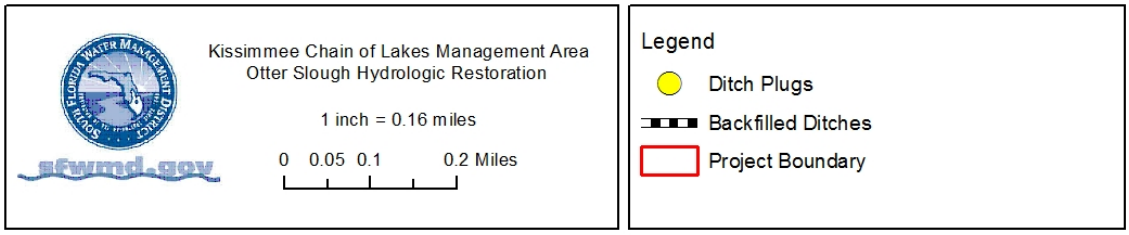
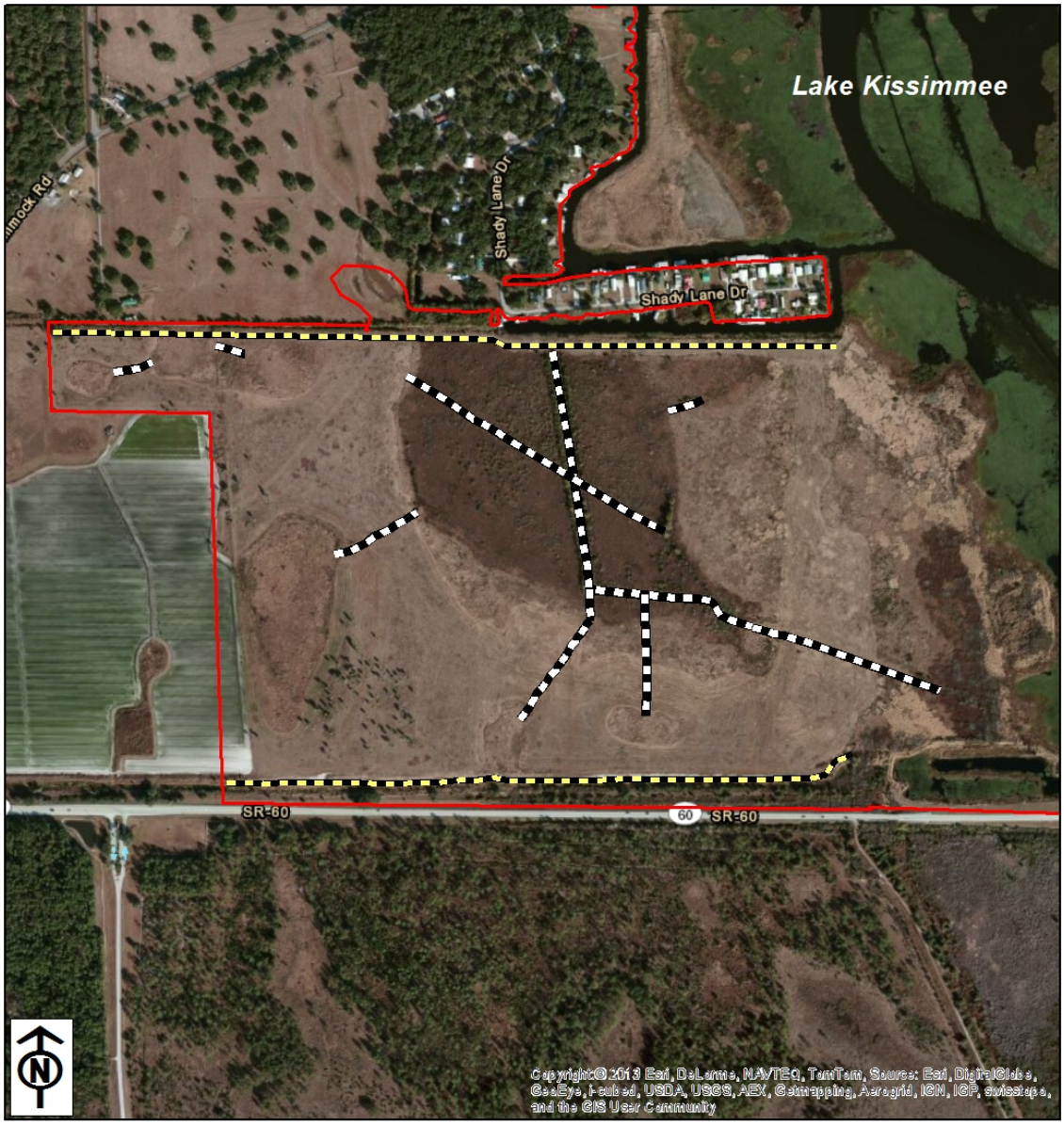


Map 21. Oasis Marsh Restoration



** District project boundaries depicted here may include state sovereign lands not under SFWMD ownership.*

Kissimmee Chain of Lakes Management Area
Oasis Marsh Hydrologic Restoration

1 inch = 0.13 miles

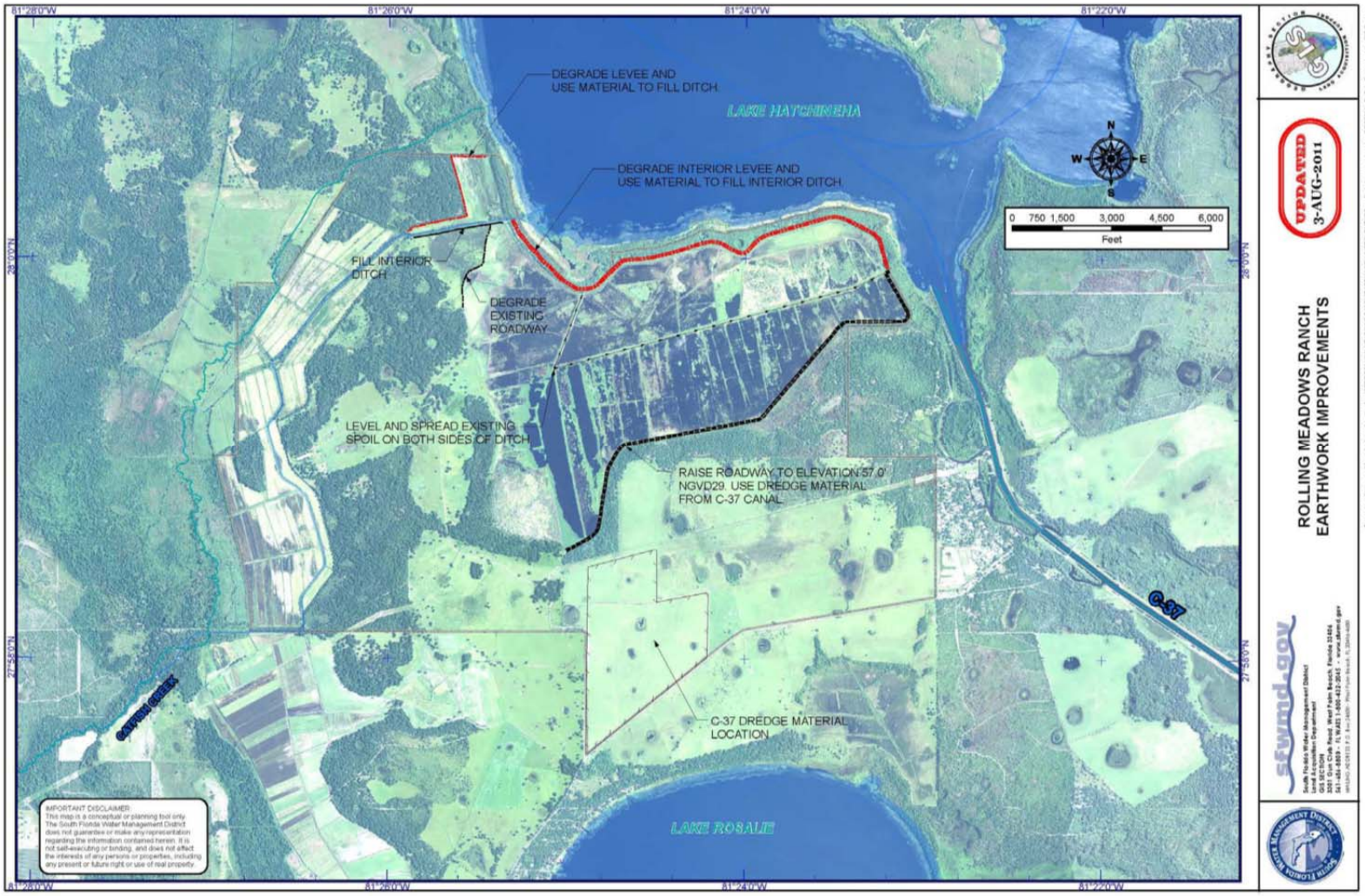
0 0.05 0.1 0.2 Miles

sfwmd.gov

Legend

- Backfilled Ditch
- Degraded Berm
- Project Boundary

Map 22. Rolling Meadows Restoration



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 Area. This helps Land Stewardship monitor the effectiveness of the exotic plant control activities 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.

Additionally, the District has initiated vegetative monitoring and water quality monitoring throughout the Management Area as part of the Kissimmee River Restoration Project, the Kissimmee Basin Modeling and Operations Study, and the Kissimmee Chain-of-Lakes long-term management plan (which covers water stage regulation of the lakes). These programs will provide baseline information for future studies and will help document the success of restoration projects in the Management Area.

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 management needs are identified annually by the regional land manager. Vegetation control and maintenance is executed by District staff or through contracts. Understory restoration will continue in overgrown areas of the Management Area that would benefit from this work.

5.2.1 Exotic/Invasive Plant Species

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 been an important factor in exotic plant invasion. Exotic plant invasion can result in partial or total displacement of native plants, loss of wildlife habitat, and the degradation of public use areas.

Land Stewardship targets Category I and II non-native plant species as identified in the Florida Exotic Pest Plant Council's 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.

Invasive and exotic plant control measures include a combination of herbicide application, biological control, prescribed fire, roller chopping, mowing, cattle grazing and physical removal. Selection of control measures is dependent upon species type, environmental factors, and natural communities impacted. Private contractors conduct exotic plant control activities in cooperation with the District's Vegetation Management Section. In addition, the use of biological control with existing treatment programs provide a comprehensive approach for

controlling exotic vegetation. As an example of biocontrol, the University of Florida Institute of Food and Agricultural Sciences has released the Tropical Soda Apple Leaf Beetle and the Colorado Potato Beetle as biological control agents that have brought some improvements in the control of Tropical Soda Apple.

Exotic plant control is conducted primarily by a contracted crew of applicators. District field technicians also provide supplemental support especially on small or sporadically distributed infestations. Treatments are generally scheduled so that each unit is covered bi-annually, however schedules are adjusted based on current conditions. Areas of treatment are scheduled based on hydrologic conditions, time since last treatment, virulence of infestation, public use, and in accordance with other management operations. All treatments follow herbicide best management practices and use the best available science. Treatment dates, locations, and herbicide are noted and recorded in a GIS database.

Plant inventories have documented 30 exotic species within the Management Area (see Appendix D for a complete plant list):

- West Indian marsh grass (*Hymenachne amplexicaulis*)
- Cogongrass (*Imperata cylindrica*)
- Wright's nutrush (*Scleria lacustris*)
- Alligator weed *(Alternanthera philoxeriodes)*
- Paragrass *(Brachiaria mutica)*
- Climbing cassia *(Cassia coluteoides)*
- Camphor tree *(Cinnamonum camphora)*
- Sour orange *(Citrus aurantium)*
- Bermuda grass *(Cynodon dactylon)*
- Air potato *(Dioscorea bulbifera)*
- Water hyacinth *(Eichhornia crassipes)*
- Hydrila *(Hydrilla verticillata)*
- Water spinach *(Ipomoea aquatica)*
- Pineland elder *(Iva microcephala)*
- Shrub lantana *(Lantana camara)*
- Old World climbing fern *(Lygodium microphyllum)*
- Chinaberry *(Melia azedarach)*
- Torpedo grass *(Panicum repens)*
- Sour paspalum *(Paspalum conjugatum)*
- Bahia grass *(Paspalum notatum)*
- Water lettuce *(Pistia stratiotes)*
- Guava *(Psidium guajave)*
- Indian cupscale grass *(Sacciolepis indica)*
- Chinese tallow tree *(Sapium sebiferum)*
- Brazilian pepper *(Schinus terebinthifolius)*
- Bladderpod *(Sesbania punicea)*
- Jamaican nightshade *(Solanum jamaicensa)*

- Turkeyberry *(Solanum torvum)*
- Tropical soda apple *(Solanum viarum)*
- Caesar weed *(Urena lobata)*

Exotic plant management within the area consists of follow up treatments to maintain minimum population levels or further reduce populations of exotic and nuisance native plants. The follow-up treatments may be conducted on an annual basis by District contractors or directly by District staff.

Management Actions

Johnson and Rough Island Management Units: Tropical soda apple is the primary exotic plant species targeted for mechanical and chemical removal. Other species include Brazilian pepper, Chinese tallow, and guava. Tropical soda apple is controlled by foliar herbicide application while bladder pod (Sesbania sp.) is controlled through mowing. The primary means of eradication for Brazilian pepper is herbicide application by cut stump or basal bark treatment. Wax myrtle is a native nuisance species that occurs in the historical marsh areas of the management units. This plant is controlled using prescribed fire and mechanical means.

Rough Island-West Management Unit: Wright's nutrush, bladder pod and wax myrtle are the major problem plants targeted for eradication. Bladderpod populations will be reduced by repeated mowings, prior to seed production.

Gardner-Cobb Marsh, Lake Cypress, and Drasdo Management Units: Wright's nutrush, tropical soda apple and bladder pod are treated on the site. Other species include Brazilian pepper, Chinese tallow, old world fern, and guava. Tropical soda apple is controlled by foliar herbicide application. The primary means of eradication for Brazilian pepper and Chinese tallow is herbicide application by cut stump or basal bark treatment. Wax myrtle is a native nuisance species that occurs in the historical marsh areas of the management units. This plant is controlled using prescribed fire and mechanical removal. Several small populations of Lygodium fern have been found in Gardner-Cobb Marsh and Drasdo. Immediate treatment following discovery using foliar application has been applied, which has kept this aggressive plant under control.

West Shore, East Shore, and Oasis Marsh Management Units: Tropical soda apple is the primary exotic plant species targeted for mechanical and chemical removal. Other species include Brazilian pepper, Chinese tallow, and guava. Tropical soda apple shall be controlled by foliar herbicide application. Bladder pod and wax myrtle are also major problem plants targeted for treatment by staff. Bladderpod populations will be reduced by repeated mowing prior to seed production. Wax myrtle is a native nuisance species that occurs in the historical marsh areas of the management units. This plant is controlled using prescribed fire and mechanical removal.

Catfish Creek Management Unit: Chinese tallow is the primary exotic plant species targeted for control. Other exotic plant species include Brazilian pepper, tropical soda apple, and guava. Most of the exotic species are located in the cypress strand along Lake Hatchineha. Bladderpod and wax myrtle are minor problems in the historical marsh areas and are controlled using prescribed fire and mowing.

Kissimmee Islands Management Unit: Brazilian pepper, Chinese tallow, and guava are the primary Category I exotics in this unit. Guava is the primary problem on Bird and Rabbit islands. Brazilian pepper is the primary exotic species targeted for removal on Strum Island. There is some Chinese tallow on all three islands. Wax myrtle is dense along the shoreline and is controlled through the use of prescribed fire.

5.2.2 Rare, Threatened and Endangered 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 Area (**Appendix D**) contains several listed species.

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.

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 harvesting
- Harvest or planting would not negatively impact public use
- Timber harvests would return forests to a more natural structure and improved forest health

Only 5% of the management area, or 1600 acres, is pine flatwoods. These are located in small pockets throughout the management area. The West Shore Unit had a total of 90 acres of timber harvested in June 2002 and April 2003. Additional thinning/mechanical treatments may occur during this planning period. Several pine flatwood stands throughout the West Shore along Thomas Landing Road contain thick densities of thin pines that lack a desirable ground cover with few understory shrubs other than woody vines. This area may also be evaluated for possible timber thinning operations.

5.2.4 Agricultural and 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 10 active grazing leases within the Kissimmee Chain of Lakes Management Area covering 16,722 acres. Most of these were leases or reservations were a condition of sale that will expire in 2018; consequently staff will re-evaluate the benefits and need for continued grazing on the properties.

5.3 Fire

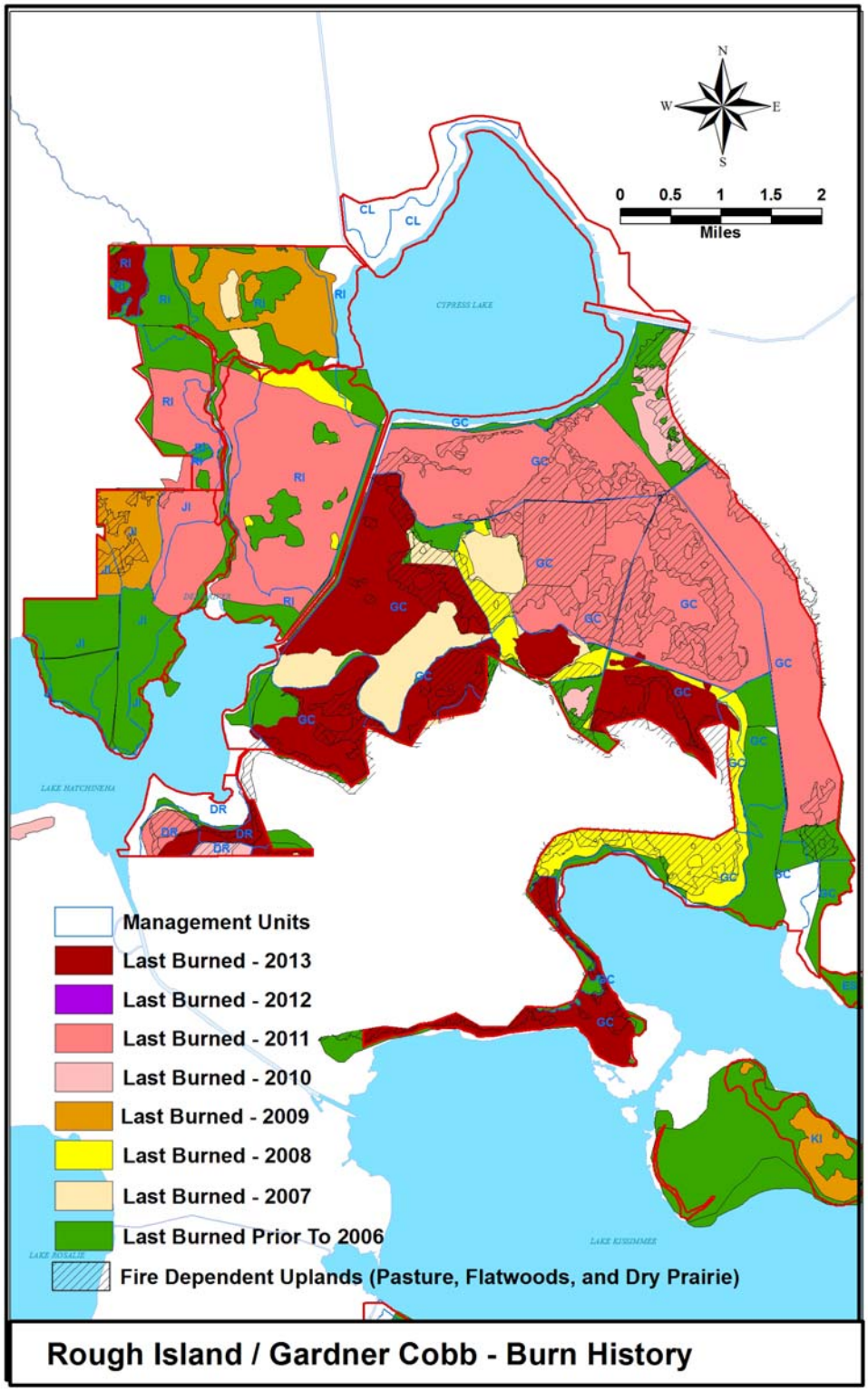
Policy 140-25(5)(c)(3) Prescribed fire will be a primary management tool on District lands and will be applied within fire-maintained communities at appropriate intervals.

The majority of natural communities on District lands require frequent fire to maintain their vegetative characteristics and biodiversity. Wildfires no longer occur with the historical frequency or extent, which 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.

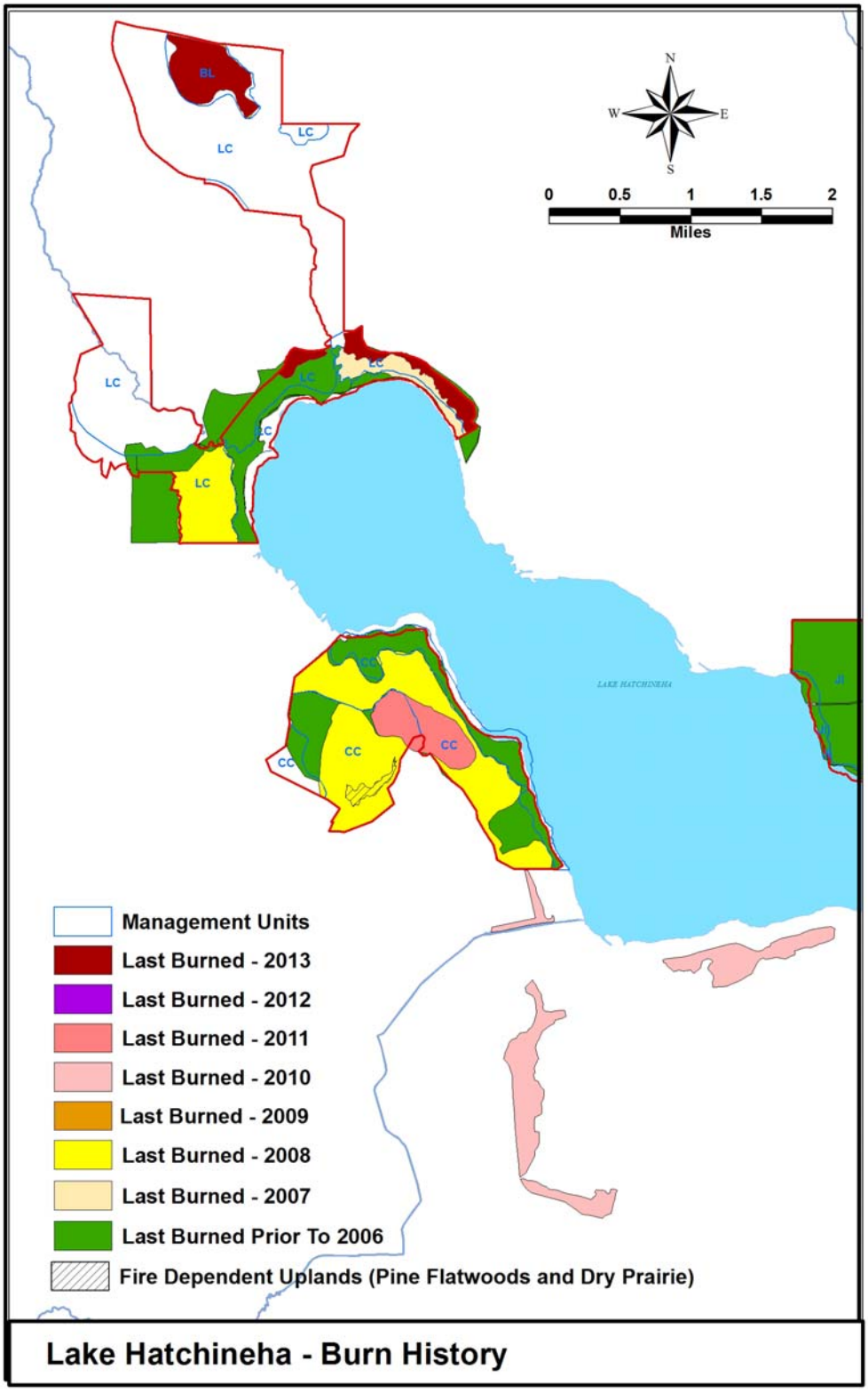
5.3.1 Fire History

Recent fires within parcels owned by the District in the Kissimmee Chain Of Lakes have occurred as prescribed burns and wildfires. Dates and locations of prescribed burns are shown in **Maps 23 - 24**. Most units have experienced at least two fires since District acquisition. The goal of the prescribed burn program is to apply fire, as necessary, to maintain the natural fire regime of the Management Area.

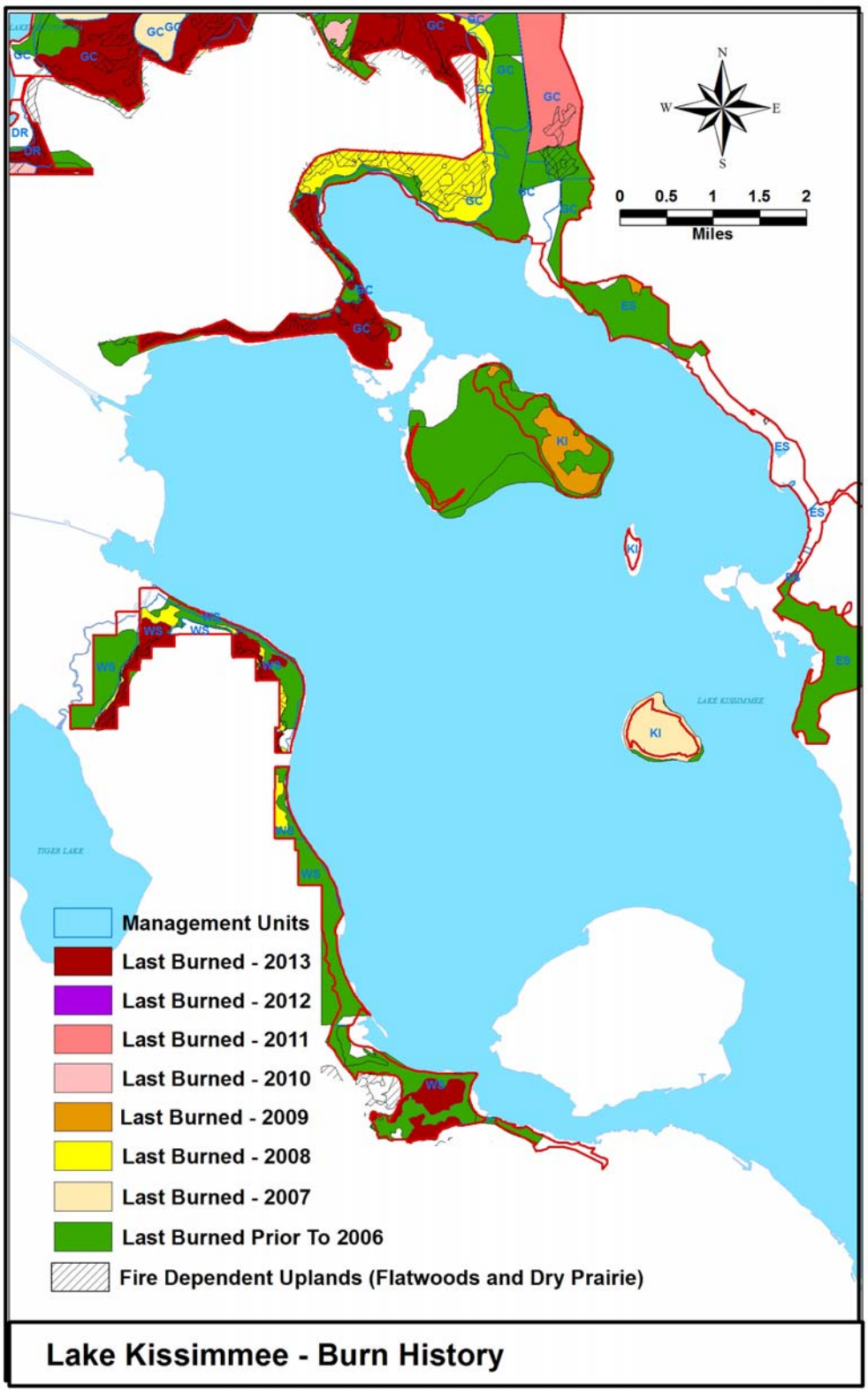
Maps 23a. Fire History for Upland Fire-Dependent Communities



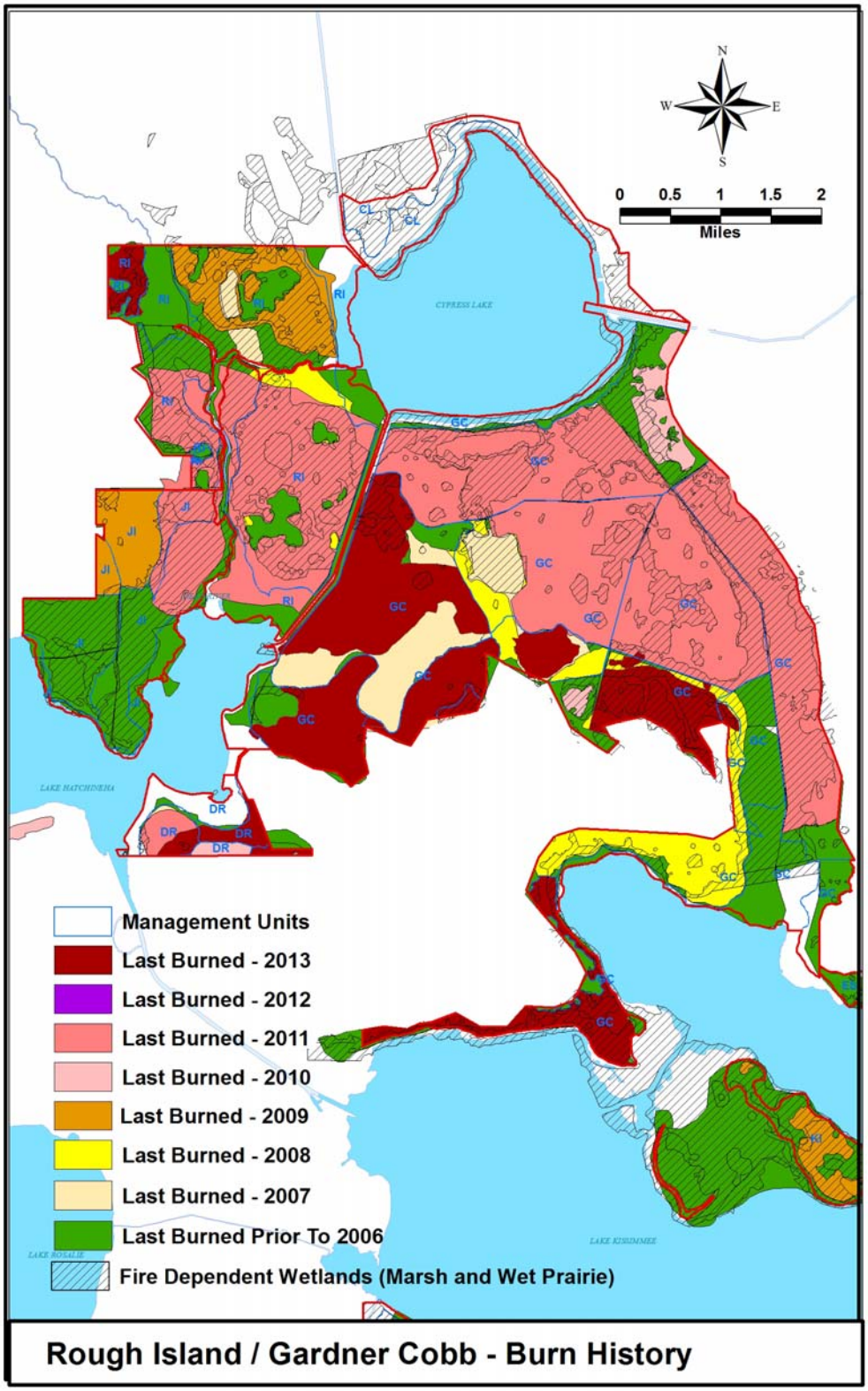
Maps 23b. Fire History for Upland Fire-Dependent Communities



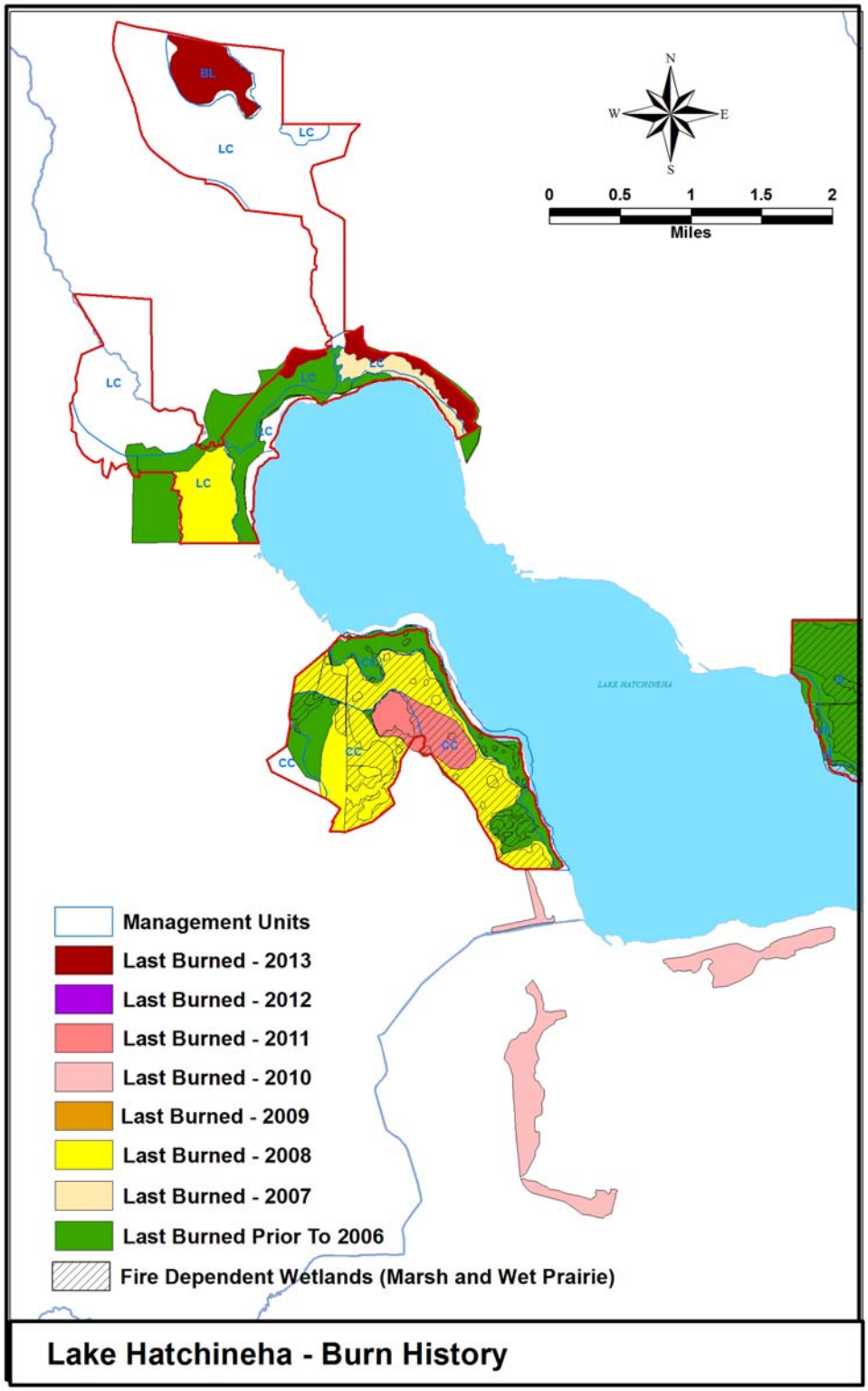
Maps 23c. Fire History for Upland Fire-Dependent Communities



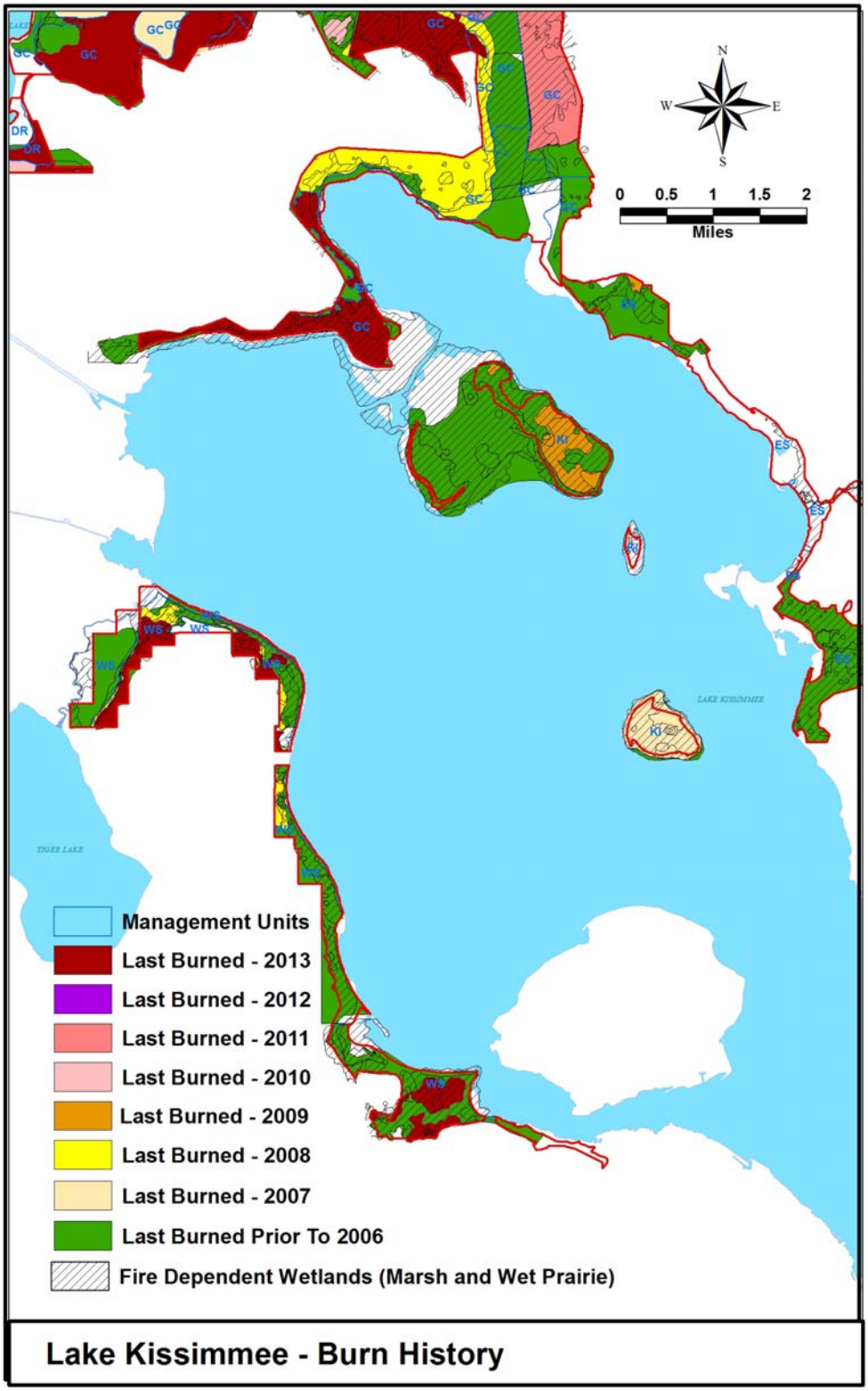
Maps 24a. Fire History for Wetland Fire-Dependent Communities



Maps 24b. Fire History for Wetland Fire-Dependent Communities



Maps 24c. Fire History for Wetland Fire-Dependent Communities



5.3.2 Prescribed Fire Planning

Burn units have been established within the Managent Area. 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 three District staff members assigned to implementing prescribed fire in the Upper Lakes Land Management Region. All Land Stewardship staff have completed the state certified burn course to ensure safety and proper technique.

Prescribed fire is applied within the Management Area 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 achieving annual burn acreage goals within the appropriate fire intervals. District staff may conduct prescribed burns at anytime during the year to take advantage of suitable water levels and weather conditions.

<u>Prescribed Fire and Carbon Sequestration</u>

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 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.

Lightning-caused wildfires are a common occurrence throughout Florida, including the Kissimmee Chain of Lakes Management Area. 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.

If District manpower is available and site conditions are favorable, an authorization will be requested from the Florida Forest Service to incorporate the wildfire into a controlled burn. Allowing these wildfires to burn will help achieve burn objectives and will prevent counterproductive and unnecessary suppression efforts. It is recognized that the best wildfire mitigation for the Management Area is to maintain the area with frequent prescribed to reduce fuel loads and maintain productive plant communities.

The Florida Forest Service District office that is responsible for Gardner-Cobb, Lake Cypress, Drasdo, East Shore Lake Kissimmee, and Kissimmee Islands management units (in Osceola County) is located in Orlando. The Osceola County Fire Station responsible for the same area is based out of Kissimmee. The Forest Service District office that is responsible for Catfish Creek, Lightsey, and Oasis Marsh management units is located in Lakeland. The Polk County Fire Station responsible for the same area is based out of Bartow.

5.4 WILDLIFE MANAGEMENT

A primary objective in the stewardship of the Management Area 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
- 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, developing resource-based hunting regulations, and developing regulations to prohibit activities that have the potential to negatively impact wildlife.

Wildlife management in the Management Area 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 Area 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.

Game density is believed to be relatively high due to the wide array of natural communities within the Kissimmee Chain of Lakes basins. In 2008, the District authorized the Florida Fish and Wildlife Conservation Commission to initiate rulemaking to establish approximately 21,000 acres of District lands within the Kissimmee Chain of Lakes as a managed area for the purpose of hunting and other recreation opportunities. The Commission opened these areas as the Kissimmee Chain of Lakes Managed Area beginning in 2009.

Game management, regulation of hunting activities, and enforcement of hunting laws within areas opened for hunting are conducted under statewide laws and regulations adopted by the Florida Fish and Wildlife Conservation Commission for the Kissimmee Chain of Lakes Managed Area.

All persons wishing to recreate on lands within the Kissimmee Chain of Lakes Managed Area should obtain a current copy of the regulations brochure

produced annually by the Florida Fish and Wildlife Conservation Commission (**Appendix F**).

5.4.2 Exotic/Invasive Animal Species

Wildlife pest species are those non-native species that are harmful to native wildlife and 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 Area. 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.

Public hunting is the primary method used for hog removal in the Management Area where the hunting of hogs is allowed year-round without a size or bag limit. Since 2005, contracted hog control agents have removed some hogs from most of the management units.

5.4.3 Rare, Threatened and Endangered Species

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

Several listed wildlife species are present or have been observed historically on the Management Area (**Table 3**). Impacts to these species from planned land management and recreational activities are of special concern. Activities that might jeopardize the well being of these species may be altered or cancelled. 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.

Management emphasis concerning rare and/or listed wildlife species within the Management Area has centered around three species: the American wood stork, whooping cranes, and the Southeastern big-eared bat.

American Wood Storks

A nesting colony (# 612048 as identified by the Fish and Wildlife Conservation Commission 1991) of American wood storks was located within the Rough Island Management Unit until the late 1990s. The wood stork is a colonial wading bird, generally found socializing with other storks or wading birds. Nesting occurs in wetlands throughout the Southeastern United States, but Florida maintains the largest population of wood storks.

District regulations governing public access to the southern terminus of Reedy Creek within the Rough Island Management Unit, restricted human activity within 100 meters of the historical wood stork colony 24 hours a day between February 15 - August 15. The District's public use rule, 40E-7, F.A.C. is being amended to lift these restrictions because the rookery has not been active in this area since the late 1990s and had relocated to Lake Russell beginning in the 2000 nesting season. In the past, the storks have nested directly north of the Reedy Creek-Dead River divergence. However, wood storks are highly mobile and may roost at other locations along the creek.

Southeastern Big-Eared Bats

A colony of southeastern big-eared bats was discovered in an abandoned trailer on District property in September 1993. These bats may have been roosting at this site as many as 15 years prior to their discovery in 1993. It is the southernmost maternity colony of Corynorhinus species yet confirmed.

The abandoned trailer is located within a fairly remote hardwood hammock in the Rough Island-West Management Unit. In 1996, Land Stewardship Section staff built a "bat house" near the north perimeter of the management unit, adjacent to the existing abandoned trailer. The bat house was built in an attempt to relocate the bats to the new house, leaving the abandoned trailer to be removed from the site. The site has been monitored for presence of bats. The majority of the bats continue to use the abandoned trailer as their colony site.

Whooping Cranes

The federally endangered Whooping Cranes are regularly encountered along the eastern shore of Lake Kissimmee and are occasionally seen along the shore of Lake Hatchineha. Whooping cranes had disappeared from Florida in the 1930s. In 1990, the Florida Fish and Wildife Conservation Commission implemented a program to reintroduce a non-migratory population into Florida centered around

Lake Kissimmee and the Kissimmee Prairie. Birds have been released annually since 1993. The cranes began establishing nests in 1998, but have had very little breeding success. Consequently, the introductions were halted in 2004, and the program was officially discontinued in 2008. Monitoring ceased in 2012, at which time there were approximately 15 birds in the Kissimmee Chain of Lakes.

Table 3. Listed Animal Species: (T) Threatened, (E) Endangered, (SSC) Species of Special Concern

Scientific Name	Common Name	Status	
		Fed	State
Aramus guarauna	Limpkin		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
Falco sparverius paulus	Southeastern American kestrel		T
Gopherus polyphemus	Gopher tortoise		T
Grus canadensis pratensis	Florida sandhill crane		T
Grus Americana	Whooping Crane	E	
Mycteria americana	Wood stork	E	
Pituophis melanoleucus mugitus	Florida pine snake		SSC
Rostrhamus sociabilis plumbeus	Everglades snail kite	E	
Sciurus niger shermani	Sherman's fox squirrel		SSC

6. Public Use

<u>Policy 140-23</u> *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 Commission Recreational Issues Workshops. Adjustments to

public use opportunities are made on an ongoing basis through the Recreational Issues Workshops and by 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, and 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 provided for in the Management Area (**Map 25**) including airboating, bicycling, canoeing, camping, equestrian use, fishing, hiking, amateur astronomy, and hunting. User information concerning recreational activities is located at the District's regional service centers and West Palm Beach office, and at entrances to the Management Area. Information may also be obtained by selecting "Recreation" on the District's website at: www.sfwmd.gov.

6.1 Resource Protection

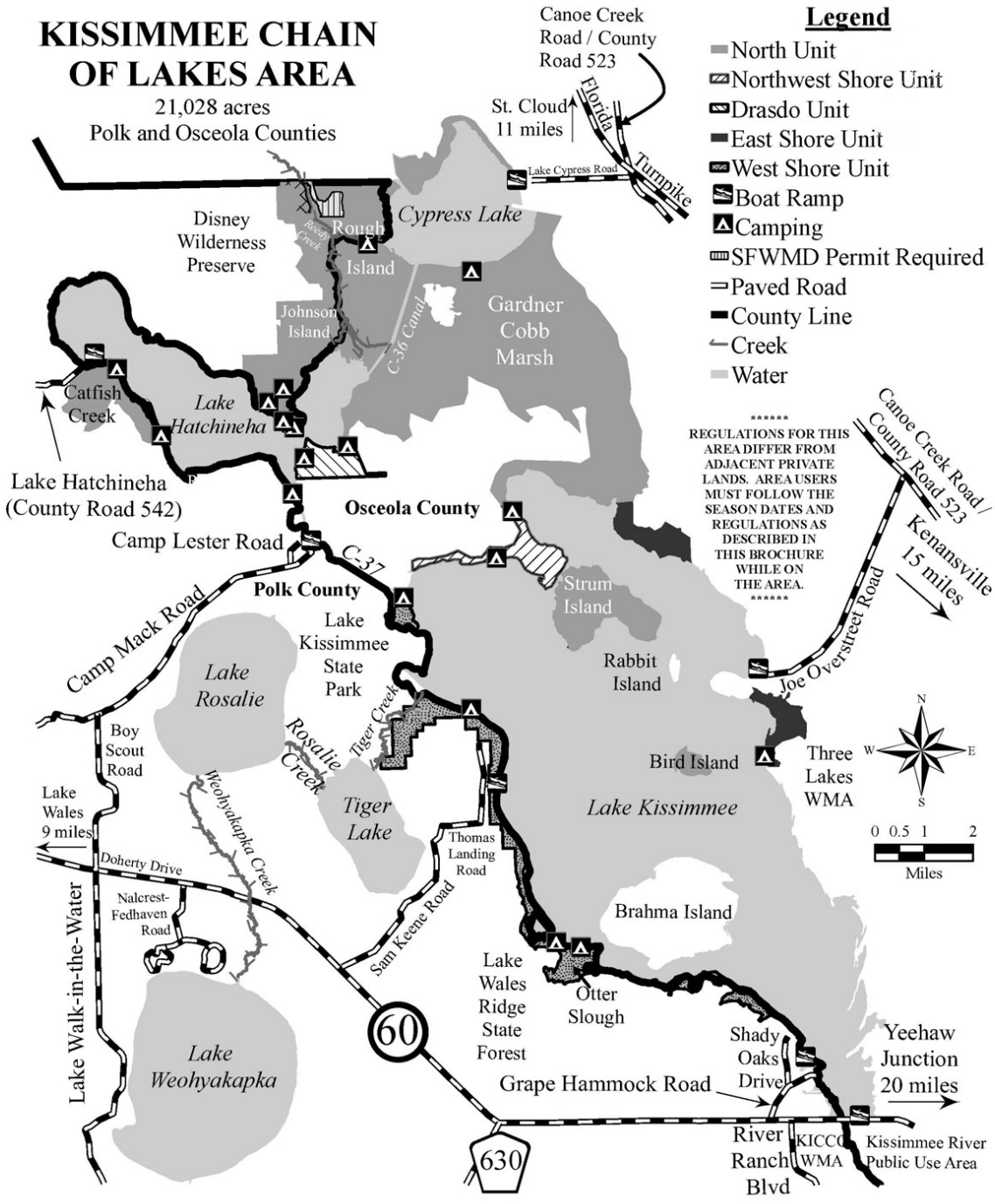
Policy 140-25(1)(d) Public use shall not result in detrimental impacts to water resources. When a public use activity produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.

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 Area are in the District's 40E-7, F.A.C. Public Use Rules, and the Florida Fish and Wildlife

Map 25. Kissimmee Chain of Lakes Area Under FWC Public Use Rules



Conservation Commission's Kissimmee Chain of Lakes Managed Area regulations. The Florida Fish and Wildlife Conservation Commission is responsible for enforcing laws, rules, and regulations applicable to the Management Area, along with the local county sheriffs' offices.

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.

Public outreach and government affairs programs for the Kissimmee Chain of Lakes are coordinated and implemented by District representatives based out of the Orlando Service Center whose staff serves as the primary contacts for media relations, government representative communications, and classroom presentations.

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 Chain of Lakes Management Area 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. Most of the public use infrastructure within the Kissimmee Chain of Lakes is relatively new, consequently there are no anticipated capital refurbishment/replacement costs anticipated for this plan period.

The operational and land management expenses for FY 2014 are included in **Table 4,** below. Utilities and 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 ($13,800) represents costs associated with contracted law enforcement services and is currently only budgeted for the London Creek unit which had mitigation funds available for this purpose. Additionally, the budget figures in Table 4 include several other items that are restricted to either the London Creek or Rolling Meadows units which have dedicated mitigation funding sources. These items include money for exotic species control ($115,000), vegetation management ($35,000), and road maintenance ($16,000). Excluding those items, the FY 2014 budget available for the management of the remaining area was $232,000. Base level funding needs may increase in the future in response to increasing operational expenses including fuel costs and contracted exotic plant control needs.

Table 4. Operational and Land Management Expenses for Fiscal Year 2014.

KCOL		2014 Budget
Contracted Land Mgt. Svcs		$0
Utilities and Operational Expenses		$31,188
Equipment and Infrastructure Maintenance		$77,000
Exotic Species Control		$220,000
Vegetation Management		$118,600
Public Use		$4,000
Site Security		$13,800
	Total	**$464,588**

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 and picnic areas, 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 Area is the primary responsibility of the District's Upper Lakes regional land management staff which currently consists of 2.5 full time employees. Additional management input and support comes from other Land Stewardship staff and Field Station personnel, as well as staff within the Vegetation Management Section.

Staff have access to tools, supplies, equipment, four-wheel drive vehicles, vessels, fire suppression trucks, all terrain vehicles, swamp buggies, an airboat, a dump truck, tractors, a road grader, a backhoe, and a large plow. The District's St. Cloud Field Station crew and equipment, as well as leased equipment, are also available to assist in the Management Area on a limited basis.

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). Land managers have worked with volunteers from the Kissimmee River Valley Sportsmen's Association, Florida Sportsman Association, and the Osceola County Airboat Club when implementing land management activities. The volunteer activities have included fencing and fence removal, perimeter sign posting, trash pickup, airboat transportation, and installing public use amenities. These 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 two contractual management agreements to assist with management:

Contract #LS040808
A 50 year lease from the Trustees of the Internal Improvement Trust Fund to the District that gives the District the management responsibility for sovereign submerged lands throughout the Kissimmee Chain of Lakes system.

Contract # LS060958
A lease from the District to the Florida Department of Environmental Protection, Division of Recreation and Parks to manage the western half of the District's Catfish Creek property as part of the Allen David Broussard Catfish Creek State Park.

7.6 Management Review

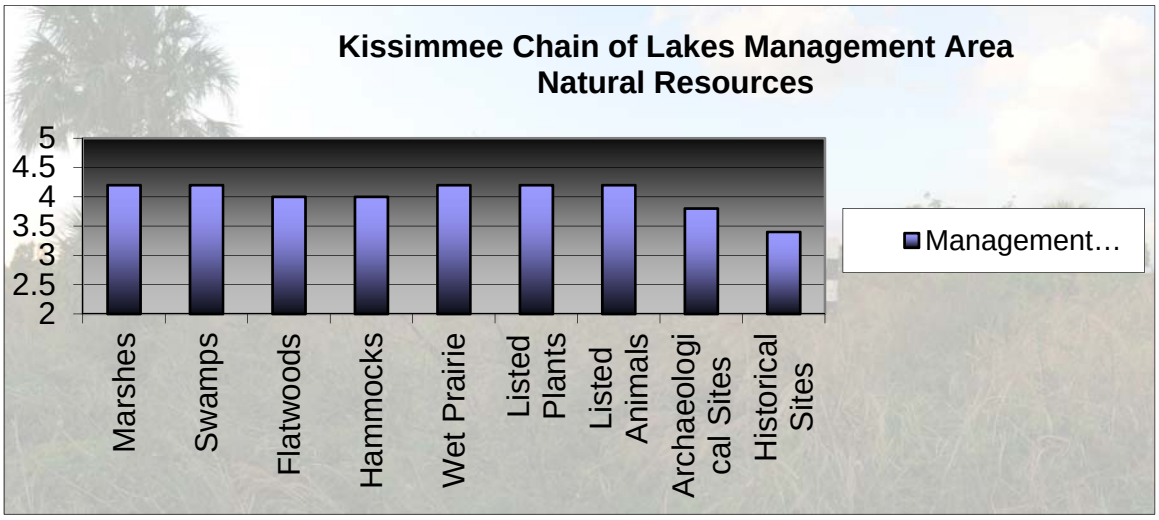
Policy 140-22(j) Section 373.591, Florida Statutes, mandates the District to solicit input on current management programs through professional peer reviews.

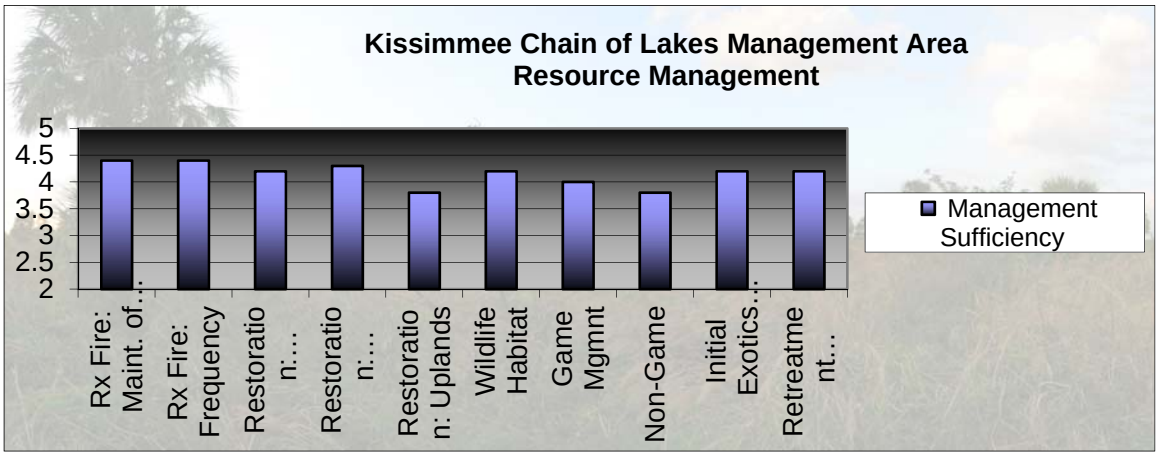
A land management review team is identified for each project area with a General Management Plan. The composition of the review teams are defined by statute (§ 373.591, Fla. Stat.) and include state, county, and private entities that are charged with reviewing management activities to assure they are 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

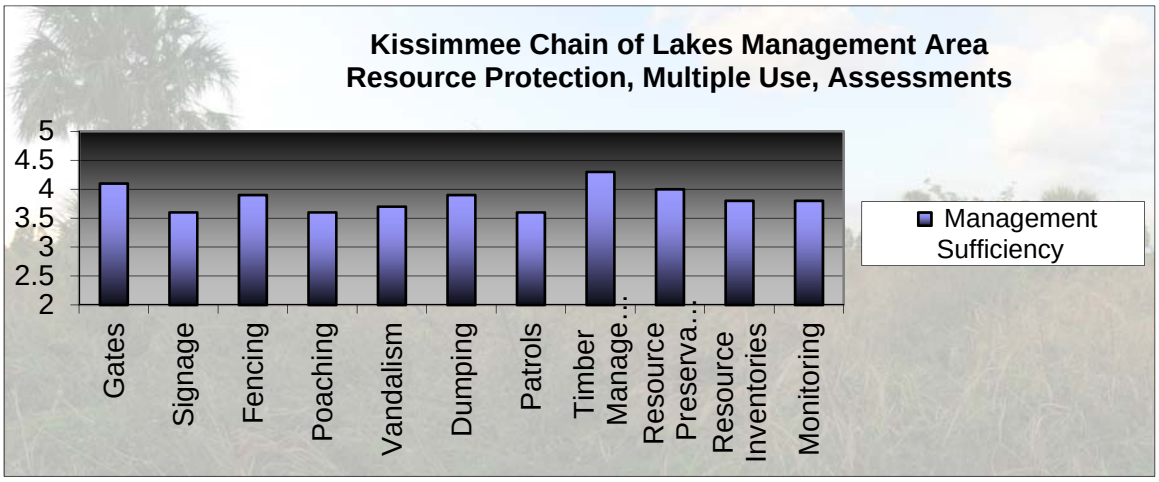
area, defined as attaining an average score of less than 3.0, then the District is to provide a written explanation to the review team along with proposed corrective actions.

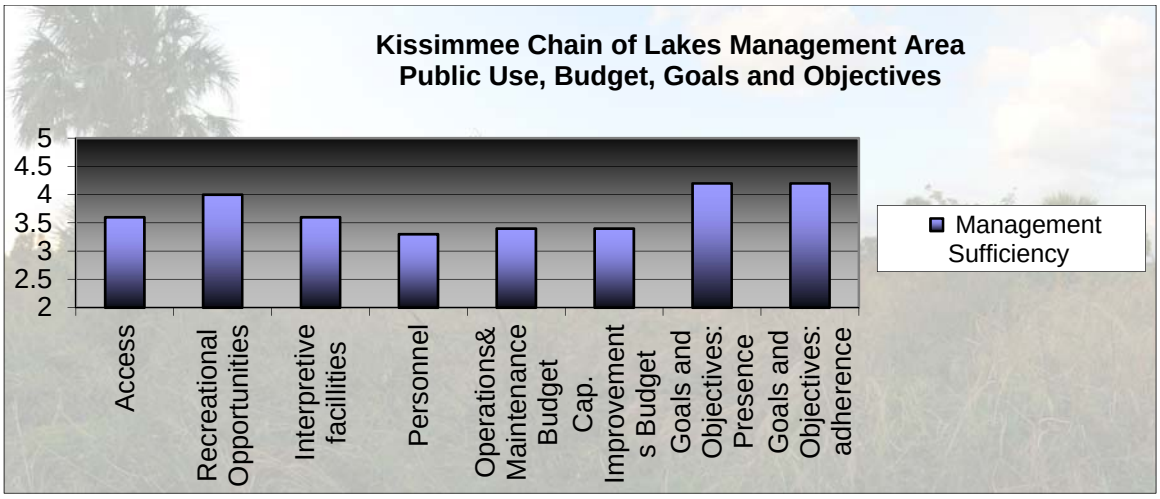
A management review of the Kissimmee Chain of Lakes was conducted on December 17, 2013. The review team provided comments on the condition of the land and the management of the site. Positive comments were received on the quality and quantity of land management and restoration work being accomplished by a small land management team. The review team expressed concern over the staffing level noting that the acreage managed is very large for a two and a half-person field crew. Concern was also expressed about the lack of law enforcement patrols to prevent poaching and vandalism.

The team also rated the land management sufficiency grouped under the broader categories of Natural Resources; Resource Management; Resource Protection, Multiple Use, Assessments; and Public Use, Budget, Goals and Objectives. The average score for each evaluation criteria are identified on the graphs below and indicate the review team felt the Kissimmee Chain of Lakes Management Area was being properly managed:









The average score by the 2013 management review team for the condition of the Natural Resources was 4.0; Resource Management was 4.2; Resource Protection, Multiple Use, and Assessments was 3.8; and Public Use, Budget and Goals and Objectives was 3.7. The relatively low scores received in the Historical Sites criteria

was based on the demolition of a highly detriorated mid-century wooden cabin that had been used as an informal shelter and destination by boaters. District engineers had determined that the structure was no longer suitable for public use and was beyond repair. The removal of the structure was approved by the Division of Historic Resources. The relatively low scores received for the criteria of Personnel, Operations & Maintenance Budget, and Capital Improvement Budget reflect the review team's recognition of the District's current budgetary and staffing challenges.

Appendix A

Land Stewardship Program 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

Flats Soils

Flat (also 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.

Flatwood Soils

Flatwood soils are poorly drained non-hydric, upland soils with sandy marine sediments throughout the profile. Most of the soil series have a subsurface spodic horizon, some of which may have loamy sand substrates. The seasonal high water table can range from 6 to 18 inches below the soil surface for three to six months annually. Some areas may become inundated for less than a couple of weeks during large storm events. Natural communities typical of flatwood soils are dry prairie, mesic flatwoods, and scrubby flatwoods. Typical flatwood soil vegetation includes pine trees with an understory of saw palmetto. Other Common plants are live oak, shiny blueberry, gallberry, tarflower, wax myrtle, chalky bluestem (Andropogon viginicus glaucopsis), and wiregrass.

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 Area, most of the depression marshes 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 Area include the littoral marshes.

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.

Appendix C. FNAI Natural Communities

Basin Marsh

Basin marshes are herbaceous or shrubby wetlands situated in relatively large and irregular shaped basins. Basin marshes are associated with and often grade into Wet Prairie or Lake Communities (FNAI 1990). This community is typified by marsh openings within basin swamps, or extensive marshes occupying large, shallow basin landscape positions (Bridges and Reese 1996). Common species identified are panicum *(Panicum sp.)*, cutgrass (*Leersia sp.)*, pennywort *(Hydrocotyle sp.)*, Spanish needle *(Bidens bipinnata)*, soft rush *(Juncus sp.)*, arrowhead *(Saggittaria sp.)*, elderberry *(Sambucus canbadensis)*, spikerush *(Eleocharis sp.)*, buttonbush *(Cephalanthus occidentalis)*, dog fennel *(Eupatorium compositifolium)*.

Basin marshes that are dominated by herbaceous plants typically experience some fire every three to five years, while Willow/Buttonbush marshes burn every three to ten years (Duever et al. 1976). Exclusion of fire or reduced hydroperiods allow invasions of wax myrtles, saltbush, and exotic woody species while periodic fires increases habitat diversity and foraging opportunities for many species of waterbirds. This community often grades into flatwoods or prairie areas from which fire probably enters the marsh. Without periodic fire in this community, peat would accumulate, raising the ground level, reducing the water storage capacity, and shifting the community to a hardwood swamp (FNAI 1990).

Basin Swamp

Basin swamp is generally characterized as a relatively large and irregularly shaped basin that is not associated with rivers, but is vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod (FNAI 1990). Dominant trees include cypress *(Taxodium sp.)*, Swamp black gum *(Nyssa sylvatica var. biflora)*, and Florida slash pine (*Pinus elliottii var. densa*). Other typical plants include red maple *(Acer rubrum)*, swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasia*nthus), fetterbush (*Lyonia lucidi*), wax myrtle (*Myrica cerifera*), and buttonbush.

Fire generally burns into the edges of basin swamps from adjacent communities. Fire frequencies are quite variable in this community. The edges may experience fire every few years while the interior areas may not burn but once every 100+ years. Typical fire intervals may be anywhere from 5 to 150 years. Occasional fires are necessary in basin swamps to maintain their cypress and pine components, and reduce hardwood invasion. Without fire peat would accumulate, hardwoods would dominate and a basin swamp would shift to a bottomland forest.

Cypress and pines are very tolerant of light surface fires, but muck fires burning into the peat can kill the trees, lower the ground surface and transform a swamp into a pond or lake. Prescribed fire is applied to surrounding natural communities when soils within the basin swamps are saturated.

Depression Marsh

Depression marsh is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often in concentric bands *(FNAI 1990)*. Typical plants include St. John's wort (*Hypericum sp*.), yellow-eyed grass (*Xyris sp.)*, chain fern (*Woodwardia sp*.), primrose willow (*Ludwigia peruviana*), maidencane (Panicum hemitomum), wax myrtle, buttonbush, pickerelweed (*Pontederia cordata*), and bladderwort (*Utricularia sp.)*.

The fire frequency is typically three to ten years, similar to pine flatwoods communities, depending on weather conditions and fuel build-up. Fire preserves the open canopy by limiting invasion of woody vegetation, promoting herbaceous growth, and with the occasional peat fire, slowing succession by deepening the marsh. The Land Sewardship Program coordinates fire schedules to insure depression marshes burn at natural frequencies and during periods of adequate ground moisture.

Dome Swamp

Dome swamps are characterized as shallow, forested, usually circular depressions that generally present a domed profile because smaller trees grow in the shallower waters at the outer edge, while larger trees grow in the deeper water in the interior. Pond cypress (*Taxodium ascendens*) and slash pine (in transition areas) are common trees. Other typical plants include red maple, dahoon holly *(Ilex cassine)*, swamp bay, sweetbay, loblolly bay, virginia willow, fetterbush, chain fern *(Woodwardia virginiana)*, netted chain fern *(Woodwardia areolata)*, poison ivy *(Toxicodendron radicans)*, Spanish moss *(Tillandsia usneoides)*, wild pine *(Tillandsia sp.)*, royal fern *(Osmunda regalis)*, cinnamon fern *(Osmunda cinnamomea)*, maidencane, wax myrtle, St. John's wort, floating heart *(Nymphoides aquatica)*, buttonbush, and alligator flag *(Thalia geniculata)*.

Fire is essential for the maintenance of a cypress dome community. Without periodic fires, hardwood invasion and peat accumulation would convert the dome into a bog. Dome swamps dominated by bays are close to this transition. Fire frequency is greatest at the periphery of the dome and least in the interior where long hydroperiods and deep peat maintain high moisture levels for most of the year. The normal fire cycle might be as short as three to five years along the outer edge, and as long as 100 to 150 years towards the center. The dome's profile is largely attributable to this fire regime. Cypress is very tolerant of light surface fires, but muck fires burning into the peat can kill them, lower the ground surface, and transform a dome into a pond. In order to prevent peat fires in the Management Area, prescribed fire is applied to surrounding natural communities when soils within the domes are saturated.

Floodplain Marsh

Floodplain Marshes are wetlands of herbaceous vegetation and low shrubs that occur in river floodplains. They are associated with, and often grade into, Wet

Prairie or Riverine communities. These marshes are flooded with flowing water for about 250 days a year. Typical plants include maidencane, buttonbush, arrowheads, pickerelweed, panicum, and spikerush.

Floodplain Swamp

Floodplain Swamps occur on flooded soils along stream channels and in low spots and oxbows within river floodplains. Dominant trees are usually buttressed hydrophytic trees such as cypress, the understory and ground cover are generally very sparse. Other typical plants include wax myrtle, dahoon holly, and soft rush.

Strand Swamp

Strand Swamps are shallow, forested, usually elongated depressions or channels dominated by bald cypress. They are generally situated in troughs in flat limestone plain. Typical plants include red maple, laurel oak, cabbage palm, red by, sweet bay, wax myrtle, buttonbush, poison ivy, and royal fern *(Osmunda regalis)*.

Swale

Swales are marshes situated in broad shallow channels with flowing water and characterized by emergent grasses, sedges, and herbs up to ten feet tall. The dominant species is sawgrass. Other typical plants include buttonbush, arrowheads, pickerelweed, and bladderwort.

Baygall

Baygalls are generally characterized as densely forested, peat-filled seepage depressions often at the base of sandy slopes. The canopy is composed of tall, densely packed, generally straight-boled evergreen hardwoods dominated by sweetbay *(Magnolia sp.)* and swamp red bay *(Persea borbonia)* Typical plants include cypress *(Taxodium sp.)*, dahoon holly *(Ilex cassine)*, wax myrtle *(Myrica cerifera)*, and lizards tail *(Soururus cernuus)*. *(FNAI 1990)*

Dry Prairie

Dry prairie is characterized as a nearly treeless plain with a dense ground cover of wiregrass *(Aristida sp.)*, saw palmetto *(Serenoa repens)*, and other grasses, herbs and low shrubs. Typical species include flat-topped goldenrod *(Euthamia minor)*, fetterbush, shiny blueberry *(vaccinium myrsinites)*, sand live oak *(Quercus geminata)*, gallberry *(Ilex glabra)*, Atlantic St. John's-wort *(Hypericum reductum)*, elephant's foot *(Elaphantopus sp.)*, blazing star *(Liatris sp.)* and sedges *(Carex sp.)*. Dry prairie species are similar to mesic flatwoods, and there is speculation as to whether dry prairie is simply a treeless form of the latter.

Fire frequency, intensity, and fuel build-up determines whether a pine over-story develops. Fire occurs naturally in dry prairies every one to four years, which is slightly more frequent than in mesic flatwoods.

Mesic Flatwoods

Mesic Flatwoods are characterized as an open canopy forest of widely spaced pine trees with little or no understory but a dense ground cover of herbs and shrubs. Mesic flatwoods are found on poorly drained, but rarely if ever inundated soils. They occupy extensive flat inter-drainageway plains in central Florida. Several variations of mesic flatwoods are recognized, the most common in the Management Area being and slash pine-gallberry-saw palmetto.

Plant species of this community are adapted to fire frequencies of one to eight years with occasional fire periods of at least four years, which facilitates pine recruitment (FNAI 1990). Historically, numerous small lightening caused fires occurred in the wet season but most acreages burned in the dry season (Abrahamson and Hartnett 1990). Without frequent fires, pinelands are quickly overcome by hardwood species that close the canopy and reduce ground cover herbs and grasses (Abrahamson and Hartnett 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 (FNAI 1990). Prairie hammocks establish on elevated soils surrounded by lower topography. These islands are generally sandy marl flooding only for a short duration during the highest water levels. Canopy species include live oak *(Quercus virginiana*) and cabbage palm, with occasional laurel oak (*Quercus laurifolia*) in lower elevations. An abundance of epiphytes, including listed species, are found in mature canopy trees. As in most prairie hammocks, there is 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, beautyberry (*Callicarpa americana*), and saw palmetto.

These hammocks tolerate occasional ground fires but shading by live oaks limits understory fuel accumulation. Typically the periphery of prairie hammocks are a dynamic edge where fires from surrounding communities enter the hammock and burn fuel along the edge, stopping when the fuel is insufficient to carry fire. The fire frequency is 25–100 years if enough fuel is present to carry fire through the hammock.

Scrubby Flatwoods

Scrubby flatwoods are characterized as an open canopy forest of widely scattered pine trees with a sparse shrubby understory and numerous areas of barren white sand (FNAI 1990). This community occurs on sites slightly higher in elevation than mesic flatwoods, but lower than scrub. Soils are well drained and dry, even during maximum rainfall events. Unlike scrub, the water table is relatively close

to the soil surface. As with typical scrubby flatwoods, Drasdo and Lightsey Units harbor species common to both scrub and mesic flatwoods. Typical species include slash pine, saw palmetto, myrtle oak, sand live oak, fetterbush, goldenrod (*solidago sp*.), and wiregrass. In addition, scrubby flatwoods provide habitat for the gopher tortoise (listed as threatened) and the Florida scrub jay (*Aphelocoma coerulescens*) –a threatened species (FWC 2007).

As a transitional community between scrub and mesic flatwoods, scrubby flatwoods have a natural fire frequency reflecting the transition. Natural fire frequency for this community is at five to 25 year intervals. Sparse ground layer vegetation and relatively incombustible oak litter contributes to slow fuel build-up and extended periods without fire.

Hydric Hammock

Hydric hammock is characterized as a well-developed hardwood and cabbage palm forest with a variable understory often dominated by palms and ferns. Typical plants include cabbage palm *(Sabal palmetto),* red maple, swamp bay, sweetbay, water oak *(Quercus nigra*), wax myrtle, saw palmetto, poison ivy, dahoon holly, royal fern, pepper vine *(Ampleopsis arborea*), and virginia creeper *(Parthenocissus quinque).*

Because of their generally saturated soils and the scarcity of herbaceous ground cover, hydric hammocks rarely burn. Fire maintains this community with frequencies of 30 - 100 or more years (Duever et al. 1976). Typically, fire enters this community from an adjacent area during the dry season and burns until it reaches the deepest water. Cypress trees are very fire tolerant as long as the peat around the roots is not ignited. Prescribed burn planning for adjacent natural communities will consider hydrologic conditions of hydric hammocks prior to application of fire.

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 understory and a dense ground cover of hydrophytic herbs and shrubs, with variations between these extremes (FNAI 1990). A typical species scenario for Kissimmee Chain of Lakes flatwoods is a Florida slash pine and cabbage palm overstory with an under-story of scattered saw palmetto, wax myrtle, gallberry and bluestem (Andropogon sp.). Native ground cover species are frequently displaced by non-native bahia.

Nearly all plants within this community are fire adapted to a frequency of three to ten years (FNAI 1990). Prescribed burning considerations are similar to those for mesic flatwoods. Without frequent fire this community would experience a build up of shrubby undergrowth. Annual litter accumulation minus decomposition is 800 lb/ac (Duever et al. 1976). Thick undergrowth creates heavy fuel loads that if ignited by a wildfire would likely kill the pine overstory.

Fire postpones hardwood succession and thins canopy trees, while promoting under-story growth and fire-adapted species. If fire were totally excluded, this community would develop into a hardwood forest.

Wet Prairie

Wet prairie is characterized as a treeless plain with a sparse to dense ground cover of grasses and herbs, including wiregrass, maidencane, spikerush *(Eleocharis sp.),* and *beakrush (Rhynchospora sp.).* Other typical plants include tickseed *(Bidens sp.),* wax myrtle, St. John's-wort *(Hypericum sp.),* and Panicums (FNAI 1990).

Many locations within the Management Area dominated by wet prairie communities are currently used for cattle grazing. Drainage and seeding for pasture grasses has significantly altered species composition of these wetlands to bahia and crabgrass (Digitaria sp.). Bladderpod (Sesbania sp.) and tropical soda apple are prominent problem species in drained wet prairie sites. Remnant undisturbed areas in their natural hydrologic state display typical wet prairie diversity.

Typical of a grassland community, wet prairies are fire maintained (Ewel 1990). If deprived of fire, these grass-dominated flatlands succumb to shrub encroachment and are especially vulnerable to wax myrtle infestations. Without fire, annual litter accumulation ranges from 1,200 lb/ac to 2,500 lb/ac (Duever et al. 1976). Fire frequencies of two to four years are appropriate while burns during different seasons may stimulate different plant responses (Duever et al. 1976). Without fire, flooding, grazing or some other disturbance, this community will become dominated by wax myrtles (Myrica cerifera) or saltbush (Baccharis halimifolia) thus reducing species diversity.

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 understory (FNAI 1990). The Drasdo, Lightsey, and Johnson Island Units are the only units in which a scrub community is found. Drasdo contains 35 acres and Lightsey has 4 acres of scrub. Typical plants include sand live oak, myrtle oak *(Quercus myrtifolia),* scrub oak *(Quercus inopina),* saw palmetto, fetterbush, and wiregrass. Highest elevations in the Management Area support this community.

Scrub is being lost at an alarming 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, with estimates of 6-20 occurrences (FNAI 1990).

Scrub is a fire maintained community (Fernald 1989; FNAI 1990; Myers 1990), which burns infrequently but violently. A variety of sources state different natural fire frequencies for this community. A range of 10-70 years falls within most predictions (Cox et al. 1987; Fernald 1989; FNAI 1990; and Myers 1990). Fuel buildup is a lengthy process, as vegetation grows relatively slow due to severe environmental conditions. With little fine fuel on the ground, scrub communities do not ignite easily but under dry conditions woody scrub species burn hot and fast. Fire kills scrub oaks and shrubs down to their roots, from which they resprout. Without fire the scrub community would accumulate organic matter and convert to a xeric hammock.

Xeric Hammock

Xeric Hammock is characterized as either a scrubby, dense, low canopy forest with little understories other than palmetto, or a multi-storied forest of tall trees with an open or closed canopy. Several gradations between these extremes exist. Typical plants include live oak *(Quercus virginiana),* sand live oak *(Quercus geminate),* laurel oak *(Quercus laurifolia),* and saw palmetto. (FNAI 1990)

Seepage Stream

Seepage Streams are characterized as perennial or intermittent seasonal watercourses originating from shallow ground waters that have percolated through deep, sandy, upland soils. Seepage Streams typically have clear to lightly colored water maintained at fairly constant temperature of around 70 degrees Fahrenheit and are relatively short, shallow, and narrow.

Percolation through deep soils slows the release of rainwater, filters the water, and buffers temperature extremes. Thus, Seepage Streams often exhibit perennial, slow flow rates of clear, cool, unpolluted water.

Swamp Lake

Swamp Lakes are generally characterized as shallow open water zones, with or without floating and submerged aquatic plants, which are surrounded by Basin Swamp or Floodplain Swamp. They are generally permanent water bodies, although water levels often fluctuate substantially and they may become completely dry during extreme droughts. They are typically lentic water bodies occurring in confined basins or depressions. Except for the fringe of hydrophytic trees, shrubs and scattered emergenst, plants may be absent altogether, or they may almost completely cover the water surface. When present, typical plants include spatterdock *(Nuphar lutea),* duckweed *(Lemna sp.),* water pennywort *(Hydrocotyle bonariensis),* and bladderwort.

Appendix D. Plant Species List, Kissimmee Chain of Lakes Management Area

Southern Management Units: Oasis Marsh, Otter Slough, South Shore, West Shore, East Shore, and Kissimee Islands

Northern Management Units: Gardner-Cobb Marsh, Rough Island North and South, Johnson Island, Catfish Creek, Johnson Island, Drasdo, and London Creek.

Found in both northern and southern units

Species	Common Name	Listing
Acer rubrum	Red maple	
Acrostichum danaeifolium	Giant Leather Fern	Exploited - FDA
Achyranthes aspera var aspera	Devil's horsewhip	
Achyranthes indica	Devil's horsewhip	
Agalinis linifolia	Flax-leaf false foxglove	
Aletris lutea	Yellow colic-root	
Alternathera flavescens	Yellow joyweed	
Alternanthera philoxeriodes	Alligator weed	Exotic
Amaranthus australis	Southern water-hemp	
Amaranthus blitum	Purple amaranth	
Amaranthus floridanus	Florida amaranth	
Amaranthus hybridus	Slim amaranth (pigweed)	
Amaranthus spinosus	Spiny pigweed	
Ambrosia artemisiifolia	Common ragweed	
Ampelopsis arborea	Pepper vine	
Amphocarpum muhlenbergianum	Blue maidencane	
Andropogon brachystachys	Shortspike bluestem	
Andropogon floridanus	Florida bluestem	
Andropogon glomeratus	Bushy broom grass	
Andropogon gyrans v. gyrans	Elliott's bluestem	
Andropogon ternarius v. cabanisii	Silver bluestem	
Andropogon virginicus	Broom grass	
Andropogon virginicus v. glaucopsis	Chalky blue stem	
Apios americana	Groundnut	
Aristida beyrichiana	Wiregrass	
Aristida gyrans	Corkscrew threeawn	
Aristida purpurescens	Arrowfeather	
Aristida spiciformis	Bottlebrush threeawn grass	
Aristida stricta	Wiregrass	
Asclepias currassavica	Scarlet milkweed	
Asclepias connivens	Fragrant milkweed	

Asclepias incarnata	Swamp milkweed	
Asclepias longifolia	Florida milkweed	
Asclepias pedicellata	Savanna milkweed	
Asclepias perennis	Swamp milkweed	
Asimina obovata	Big-flower pawpaw	
Asimina reticulata	Flatwoods pawpaw	
Aster carolinianus	Climbing aster	
Aster reticulatus	Pine barren white-top aster	
Aster subulatus	Annual marsh aster	
Aster tortifolius	White topped aster	
Axonopus affinis	Common carpet grass	
Axonopus fissifolius	Common carpetgrass	
Axonopus furcatus	Big carpet grass	
Azolla caroliniana	Mosquito fern	
Baccharis glomeruliflora	Silverling	
Baccharis halimifolia	Groundsel bush	
Bacopa caroliniana	Lemon bacopa	
Bacopa monnieri	Smooth water-hyssops	
Balduina angustifolia	Coastal-plain honeycomb head	
Befaria racemosa	Tarflower	
Bidens bipinnata	Spanish needles	
Bidens laevis	Bur marigold	
Bidens mitis	Marsh begger-tick	
Bidens sp	Beggar-tick	
Bigelowia nudata	Rayless goldenrod	
Blechnum serrulatum	Swamp fern	
Boehmeria cylindrica	False nettle	
Brachiaria mutica	Paragrass	Exotic
Buchnera americana	Common blue hearts	
Bulbostylis ciliatifolia	Hair sedge	
Bulbostylis sp.	Bulbostylis sp.	
Bulbostylis warei	Hair sedge	
Bumelia reclinata	Scrubby buckthorn	
Callicarpa americana	Beauty berry	
Calocasia esculenta	Wild taro	
Calystegia sepium	Hedge bind weed	
Campyloneurum phyllitidus	Strap fern	Endangered
Canna flacida	Bandana-of-the-everglades	
Carex albolutescens	Caric sedge	
Carex alata	Broadwinged sedge	
Carex gigantea	Large sedge	
Carex lupuliformis	False hop sedge	
Carex verrucosa	Warty sedge	
Carphephorus corymbosus	Tall deer tongue	
Carphephorus odoratissimus	Vanilla plant	
Carphephorus paniculatus	Deer tongue	
Cassia chamaecrista	Patridge pea	
Cassia obtusifolia	Sicklepod	
Cassia occidentalis	Coffee senna	

Catharanthus roseus (exotic)	Madagascar periwinkle	
Celtis laevigata	Hackberry	
Cenchrus echinatus	Southern sandspur	
Cenchrus incertus	Sandspur	
Centella asiatica	Coinwort	
Cephalanthus occidentalis	Buttonbush	
Ceratiola ericoides	Florida rosemary	
Chamaesyce cordifolia	Round-leaf spurge	
Chamaecrista nictitans v. nictitans	Sensitive partridge pea	
Chapmannia floridana	Alicia	
Chenopodium ambrosioides	Mexican tea	
Chryeoppoio eoabrella	Rough goldenrod	
Chrysopsis scabrella	Coastal-plain golden-aster	
Cinnamomum camphora	Camphor tree	Exotic
Cirsium horridulum	Horrible thistle	
Cirsium nuttallii	Nuttall's thistle	
Citrus aurantium	Sour orange	Exotic
Cladium jamaicense	Saw-grass	
Clematis crispa	Swamp leather flower	
Commelina diffusa	Dayflower	
Commelina erecta	Dayflower	
Conoclinium coelestinum	Blue mistflower	
Conyza canadensis	Horseweed	
Conyza canadensis var. pusilla	Dwarf danadian horseweed	
Coreopsis floridana	Common tickseed	
Coreopsis gladiata	Southeastern tickseed	
Coreopsis leavenworthii	Common tickseed	
Cornus foemina	Swamp dogwood	
Crotalaria pallida v. obovata	Smooth rattlebox	
Crotalaria rotundifolia	Prostate rattlebox	
Croton argyranthemus	Silver leaf croton	
Croton glandulosus	Tropic croton	
Croton linearis	Rushfoil	
Crotonopsis linearis	Rushfoil	
Cuphea carthagenensis	Columbia waxweed	
Cuscuta gronovii	Scaldweed	
Cuscuta obtusiflora	Peruvian dodder	
Cynanchum scoparium	Vine milkweed	
Cynodon dactylon	Bermuda grass	Exotic
Cyperus articulatus	Jointed flat sedge	
Cyperus brevifolius	Shortleaf spikesedge	
Cyperus compessus	Galigale sedge	
Cyperus croceus	Globe sedge	
Cyperus cuspidatus	Coastal-plain flat sedge	
Cyperus difformis	Variable flat sedge	
Cyperus distinctus	Marshland flat sedge	
Cyperus erythrorhizos	Red-root flat sedge	
Cyperus esculentus	Yellow nut-sedge	
Cyperus filiculmis	Slender sedge	

Cyperus flavescens	Flat sedge	
Cyperus globulosus	Baldwin flat sedge	
Cyperus haspan	Jointed flat sedge	
Cyperus lanceolatus	Epiphytic flat sedge	
Cyperus lecontei	Flat sedge	
Cyperus ligularis	Snail rush	
Cyperus odoratus	Flat sedge	
Cyperus polystachyos	Texas sedge	
Cyperus retrorsus	Flat sedge	
Cyperus rotundus	Common sedge	
Cyperus sesquiflorus	Annual Kyllinga	
Cyperus stringosus	Sharp rush	
Cyperus surinamensis	Flat sedge	
Cyperus virens	Greenish sedge	
Dactyloctenium aegyptium	Crowfoot grass	
Decodon verticillatus	Swamp loosestrife	
Desmodium incanum	Creeping beggarweed	
Desmodium triflorum	Sagotia Beggar-weed	
Dichanthelium communtatum	Broad leaf panicum	
Dichanthelium dichotomum	Cypress witchgrass	
Dichanthelium ensifolium v. unciphyllum	Panic grass	
Dichanthelium laxiflorum	Drooping panicum	
Dichanthelium sp.	Dichanthelium sp.	
Dichanthelium stringosum	Flatwoods panicum	
Dichondra caroliniensis	Carolina ponysfoot	
Dichromena colorata	White-top sedge	
Dichromena latifolia	White-top sedge	
Digitaria bicornis	Indian crabgrass	
Digitaria ciliaris	Southern crab grass	
Digitaria decumbens	Pangolagrass	
Digitaria longiflora	Indian crabgrass	
Digitaria sanguinalis	Common crabgrass	
Digitaria serotina	Blanket crab grass	
Diodia teres	Poor joe	
Diodia virginiana	Buttonweed	
Diospyros virginiana	Common persimmon	
Drosera brevifolia	Dwarf sundew	
Drosera capillaris	Common pink sundew	
Drymaria cordata	Heartleaf drymary	
Dulichium arundinaceum	Three-way sedge	
Echinochloa crusgalli	Barnyard grass	
Echinochloa muricata	Rough barnyardgrass	
Echinochloa parvulus	Dwarf burhead	
Echinochoa walteri	Coast cockspur-grass	
Echinodorus parvulus	Dwarf burhead	
Eclipta alba	Yerba de tajo	
Eclipta prostrata	False daisy	
Eichhornia crassipes	Water hyacinth	Exotic
Eleocharis baldwinii	Hairgrass	

Eleocharis cellulosa	Club-rush	
Eleocharis geniculata	Pantropic spikerush	
Eleocharis interstincta	Jointed spikerush	
Eleocharis mocrocarpa	Small-fruit spikerush	
Eleocharis olivacea	Spikerush	
Eleocharis sp.	Eleocharis sp.	
Eleocharis vivipara	Sprouting spikerush	
Elephantopus elatus	Elephant foot	
Eleusine indica	Yard grass	
Emilia fosbergii	Florida tasselflower	
Emilia sonchifolia	Purple tasselflower	
Encyclia tampensis	Butterfly orchid	Commercially Exploited
Eragrostis atrovirens	Thailia love grass	
Eragrostis elliotii	Elliott's love grass	
Eragrostis refracta	Coastal love grass	
Eragrostis spectabilis	Purple love grass	
Eragrostis virginica	Meadow love grass	
Erechtites hieracifolia	Fireweed	
Erianthus giganteus	Sugarcane plume grass	
Erigeron quercifolius	Southern fleabane	
Erigeron strigosus	Daisy fleabane	
Erigeron vernus	Fleabane	
Eriocaulon compressum	Soft-head pipewort	
Eriocaulon decangulare	Hard-head pipewort	
Eriocaulon ravenelii	Ravenel's pipewort	
Eryngium sp.	Thistle	
Eryngium baldwinii	Baldwin's eryngo	
Eupatorium coelestinum	Mistflower	
Eupatorium compositifolium	Dog fennel	Nuisance
Eupatorium leptophyllum	Falsefennel	
Eupatorium recurvans	Coastal plain thoroughwart	
Eupatorium rotundifolium	Round-lead thoroughwart	
Eupatorium serotinum	Thoroughwort	
Euphorbia polyphylla	Many-leaved spurge	
Euthamia caroliniana	Slender goldenrod	
Euthamia minor	Flat-toppped goldenrod	
Euthamia tenuifolia	Flat-toppped goldenrod	
Fabaceae sp.	Fabaceae sp.	
Ficus aurea	Strangler fig	
Fimbristylis autumnails	Fringe-rush	
Fimbristylis dichotoma	Forked fringerush	
Fimbristylis miliacea	Annual brown-top sedge	
Fimbristylis puberula	Vahl's hairy fringe rush	
Fimbristylis schoenoides	Ditch fringerush	
Fimbristylis sp.	Fimbristylis sp.	
Fimbristylis spathacea	Hurricane-grass	
Fraxinus pennsylvanica	Red/Green Ash	
Fuirena breviseta	Short-bristled umbrella grass	

Fuirena pumila	Dwarf umbrella-gras	
Fuirena scirpoidea	Rush fuirena	
Fuirena squarrosa	Lake-rush	
Galactia elliottii	White milk-pea	
Galactia pinetorum	Milkpea	
Galium tinctorium	Stiff marsh bedstraw	
Gaylussacia dumosa	Dwarf Huckleberry	
Gaylussacia frondosa v. tomentosa	Dangleberry	
Gaylussacia nana	Creeping huckleberry	
Gelsemium sempervirens	Yellow jesmine	
Geranium carolinianum	Carolina cranesbill	
Gnaphalium falcatum	Narrow leaved cudweed	
Gnaphalium obtusifolium	Sweet everlasting	
Gnaphalium pensylvanicum	Pennsylvania everlasting	
Gordonia lasianthus	Loblolly bay	
Gratiola hispida	Scrub-hyssop	
Gratiola pilosa	Hairy hedge-hyssop	
Gymnopogon chapmanianus	Chapman's skeleton grass	
Habenaria repens	Water-spider orchid	
Hedyotis uniflora	Clustered mille graine	
Helianthemum corymbosum	Clustered rock-rose	
Helianthemum nashii	Scrub rock-rose	
Heliotropium polyphyllum	Pineland heliotrope	
Heterotheca subaxillaris	Camphorweed	
Hibiscus coccineus	Scarlet rosemallow	
Hibiscus grandiflorus	Big rose-mallow	
Hieracium gronovii	Hawkweed	
Hieracium megacephalon	Hawk's beard	
Hydrilla verticillata	Hydrila	Exotic
Hydrochloa caroliniensis	Watergrass	
Hydrocotyle bonariensis	Water pennywort	
Hydrocotyle ranunculoides	Floating marshpennywort	
Hydrocotyle umbellata	Marsh pennywort	
Hydrocotyle verticillata	Whorled pennywort	
Hypericum brachphyullum	Short-leaved sandweed	
Hypericum cistifolium	Cluster-leaf St. John's wort	
Hypericum fasciculatum	Marsh St. John's wort	
Hypericum hypericoides	St. Andrew's cross	
Hypericum mutilum	St. Johns Wort	
Hypericum myrtifolium	Myrtle-leaved St. John's wort	
Hypericum reductum	Matted sandweed	
Hypericum sp.	Hypericum sp.	
Hypericum tetrapetalum	Heart-leaved St. Peter's wort	
Hypoxis juncea	Common stargrass	
Hyptis alata	Musky mint	
Hyptis radiata	Bitter mint	
Ilex cassine	Dahoon holly	
Ilex glabra	Gallberry	
Indigofera hirsuta	Rough hairy indigo	

Indigofera pilosa	Indigo	Exotic
Ipomoea aquatica	Water spinach	Exotic
Ipomoea tenuissima	Rockland mornigglory	
Iris hexagona v. savannarum	Prairie iris	
Itea virginica	Virginia willow	
Iva microcephala	Pineland elder	
Juncus dichotomous	Forked rush	
Juncus effusus	Soft rush	
Juncus elliottii	Bog rush	
Juncus marginatus	Shore rush	
Juncus maegacephalus	Large-headed rush	
Juncus polycephalus	Many-headed rush	
Juncus scirpoides	Needle-pod rush	
Juniperus virginiana	Red cedar	
Justica angusta	Narrow-leaf waterwillow	
Justicia ovata	Water-willow	
Kosteletzkya virginica	Virginia saltmarsh mallow	
Kummerowia striata (Lespedeza striata)	Japanese-clover	
Kyllinga brevifolia	Shortleaf spikesedge	
Kyllinga odorata	Fragrant spikesedge	
Lachnanthes caroliniana	Bloodroot	
Lachnocaulon anceps	Little white bog-button	
Lachnocaulon beyrichianum	Little bog-button	
Lachnocaulon minus	Small's bog button	
Lachnocaulon sp.	Lachnocaulon sp.	
Lantana camara	Shrub lantana	Exotic
Lechea torreyi	Compact pinweed	
Leersia sp.	Cutgrass	
Leersia hexandra	Southern cutgrass	
Lemna sp.	Duckweed	
Lemna valdiviana	Valdivia duckweed	
Lepidium virginicum	Virginia pepperweed	
Leptochloa fascicularis	Bearded sprangle-top grass	
Liatris gracilis	Blazing star	
Liatris tenuifolia	Narrow-leaf blazing star	
Licania michauzii	Gopher apple	
Limnobium spongia	Frog's-bit	
Linaria canadensis	Old field toadflax	
Linaria floridana	Florida toadflax	
Lindernia anagallidea	Variable false-pimpernel	
Lindernia grandiflora	Large-flowered false-pimperne	
Lipocarpha maculata	Common ditchgrass	
Lippia nodiflora	Frog's-bit	
Liquidambar styraciflua	Sweetgum	
Lobelia feayana	Bay lobelia	
Ludwigia arcuata	False loosestrife	
Ludwigia brevipes	Ludwigia brevipes	
Ludwigia maritima	Coastal plain seedbox	
Ludwigia microcarpa	Little seedbox	

Ludwigia octovalvis	Primrose willow	
Ludwigia palustris	Water-purslane	
Ludwigia peruviana	Primrose willow	Nuisance
Ludwigia repens	Creeping primrosewillow	
Ludwigia sp.	Ludwigia sp.	
Ludwigia suffruticosa	Headed seedbox	
Luziola fluitans (Hydrochloa caroliniensis)	Water grass	
Lycopus sp.	Bugleweed	
Lycopus rubellus	Taper-leaf water hoarhound	
Lygodesmia aphylla	Rosebush	
Lyonia Ferruginea	Rusty staggerbush	
Lyonia fruticosa	Staggerbush	
Lyonia ligustrina v. foliosiflora	Maleberry	
Lyonia lucida	Fetterbush	
Macroptilium lathyrodies	Macroptilium lathyrodies	
Magnolia virginiana	Sweet bay	
Mecardonia acuminata	Mecardonia acuminata	
Melia azedarach	Chinaberry	Exotic
Melothria pendula	Creeping cucumber	
Micranthemum glomeratum	Mudflower	
Micranthemum umbrosum	Shade mudflower	
Mikania cordifolia	Hempweed	
Mikania acandens	Climbing hempweed	
Mitchella repens	Twinberry	
Mitreola sessilifolia	Miterwort	
Momordica charantia	Wild balsam-apple	
Morrenia odorata	Latexplant	
Morus rubra	Red mulberry	
Murdannia nudiflora	Dove weed	
Myrica cerifera	Wax myrtle	Nuisance
Myriophyllum aquaticum	Parrot's-feather	
Nephrolepis exaltata	Boston fern	
Nerium oleander	Oleander	
Nuphar advena	Spatterdock	
Nuphar lutea	Spatterdock	
Nymphaea odorata	Fragrant water-lily	
Nymphaea mexicana	Yellow waterlily	
Nymphoides aquatica	Floating hearts	
Nyssa biflora	Black gum	
Nyssa sylvatica var. biflora	Swamp black gum	
Oplismenus setarius	Woodsgrass	
Opuntia humisfusa	Prickly-pear cactus	
Opuntia pusilla	Cock's-spur prickly pear	
Osmunda cinnamomea	Cinnamon fern	Commercially Exploited
Osmunda regalis	Royal fern	Commercially Exploited
Oxalis corniculata	Common yellow woodsorrel	
Oxalis florida	Yellow wood sorrel	
Palafoxia feayi	Palafoxia	

Panicum anceps	Beaked panicum	
Panicum aciculare	Narrow-leaf panic grass	
Panicum chamaelonche	Small-fruit panic grass	
Panicum ciliaris	Fringed panic grass	
Panicum ciliatum	Fringed panic grass	
Panicum commutatum	Variable panicum	
Panicum dichotomiflorum	Fall panicum	
Panicum ensifolium	Cypress panic grass	
Panicum erectifolium	Erect-leaf panic grass	
Panicum gymnocarpum	Savannah panicum	
Panicum hemitomon	Maidencane	
Panicum laxiflorum	Open-flower panic grass	
Panicum longifolium	Panic grass	
Panicum repens	Torpedo grass	Exotic
Panicum rigidulum	Redtop panic grass	
Panicum sp.	Panic grass	
Panicum spretum	Eaton's panic grass	
Panicum tenerum	Bluejoint panicum	
Panicum verrucosum	Warty panicum	
Parietaria floridana	Florida pellitory	
Parthenocissus quinquefolia	Virginia creeper	
Paspalum acuminatum	Brook crowngass	
Paspalum caespitosum	Blue paspalum	
Paspalum conjugatum	Sour paspalum	Exotic
Paspalum dilatatum	Dallisgrass	
Paspalum dissectum	Mudbank crowngrass	
Paspalum distichum	Knotgrass	
Paspalum fibriatum	Fringed paspalum	
Paspalum floridanum	Florida paspalum	
Paspalum laeve	Field paspalum	
Paspalum notatum	Bahia grass	Exotic
Paspalum plicatulum	Brown-seed paspalum	
Paspalum repens	Water paspalum	
Paspalum setaceum	Thin paspalum	
Paspalum sp.	Paspalum sp.	
Paspalum urvillei	Vasey grass	
Persea borbonia	Red bay	
Persea palustris	Swamp bay	
Petiveria alliacea	Guinea-hen weed	
Phanopyrum gymnocarpon	Savannah panicum	
Phlebodium aureum	Golden polypody	
Phyla nodiflora	Frog-fruit	
Phlebodium aureum	Golden serpent fern	
Phoebanthus grandiflorus	Florida false sunflower	
Phoradendron leucarpum	Oak mistletoe	
Phoradendron serotinum	Mistletoe	
Phyllanthus tenellus	Long-stalked phyllanthus	
Phyllanthus urinaria	Leaf-flower	
Phytolacca americana	Pokeberry	

Piloblephis rigida	Wild penny royal	
Pinguicula lutea	Yellow butterwort	Threatened (S)
Pinguicula pumila	Small butterwort	
Pinus clausa	Sand pine	
Pinus elliottii var. densa	Slash pine	
Pinus palustris	Longleaf pine	
Pinus serotina	Pond pine	
Pluchea camphorata	Camphorweed	
Pluchea odorata	Sweetscent	
Pluchea rosea	Rosy camphorweed	
Piriqueta caroliniensis	Piriqueta	
Piriqueta cistoides	Pitted stripeseed	
Pistia stratiotes	Water lettuce	Exotic
Pityopsis graminifolia	Golden aster	
Plantago major	Common plantain	
Plantago virginica	Southern plantain	
Pluchea foetida	Marsh fleabane	
Pluchea longifolia	Tall white fleabane	
Pluchea odorata	Salt marsh fleabane	
Pluchea rosea	Perennial marsh fleabane	
Polygala cymosa	Tall milkwort	
Polygala grandiflora	Large-flowered polygala	
Polygala incarnata	Procession flower	
Polygala lutea	Candy weed	
Polygala nana	Dwarf bachelor's button	
Polygala rugelii	Yellow milkwort	
Polygala setacea	Coastal-plain milkwort	
Polygonella polygama v. polygama	Jointweed	
Polygonum densiflorum	Smartweed	
Polygonum hirsutum	Hairy smartweed	
Polygonum hydropiperiodes	Smartweed	
Polygonum pensylvanicum	Pennsylvania smartweed	
Polygonum punctatum	Dotted smartweed	
Polygonum setaceum	Stubble smartweed	
Polypodium polypodioides	Resurrection fern	
Polypremum procumbens	Rustweed	
Pontederia cordata var. lancifolia	Pickerelweed	
Portulaca pilosa	Pink purslane	
Proserpinaca palustris	Marsh mermaid-weed	
Proserpinaca pectinata	Cut-leaf Mermaid-weed	
Psidium guajava	Guava	Exotic
Psilocarya nitens	Bald-rush	
Psilotum nudum	Whisk fern	
Pteridium aquilinum v. latiusculum	Bracken fern	
Pterocaulon pycnostachyuum	Blackroot	
Pterocaulon virgatum	Blackroot	
Pteroglossasplis ecristate	Giant orchid	Threatened (S)
Ptilimnium capillaceum	Mock Bishop's weed	
Pyrrhopappus carolinianus	Carolina false dandelion	

Quercus chapmanii	Chapman's oak
Quercus geminata	Sand live oak
Quercus hemispherica	Upland laurel oak
Quercus incana	Bluejack/Gray oak
Quercus inopina	Scrub oak
Quercus laevis	Turkey oak
Quercus laurifolia	Laurel oak
Quercus lyrata	Overcup oak
Quercus minima	Dwarf live oak
Quercus myrtifolia	Myrtle oak
Quercus pumila	Running oak
Quercus nigra	Water oak
Quercus virginiana	Live oak
Rhexia cubensis	Meadowbeauty
Rhexia mariana var. mariana (God)	Meadowbeauty
Rhexia nashii	Nash's meadow beauty
Rhexia nuttallii	Nuttall's meadow beauty
Rhexia petiolata	Ciliate meadow beauty
Rhus copallina	Winged sumac
Rhynchelytrum repens	Red natalgrass
Rhynchospora caduca	Falling beakrush
Rhynchospora cephalantha	Clustered beakrush
Rhynchospora chalarocephala	Large headed beakrush
Rhynchospora cilaris	Ciliated Beakrush
Rhynchospora colorata (Dichromena colorata)	White-top sedge
Rhynchospora corniculata	Horned rush
Rhynchospora fascicularis	Fascicled beakrush
Rhynchospora fernaldii	Fernald's beakrush
Rhynchospora globularis	Round headed beak rush
Rhynchospora intermedia	Flatwoods beak rush
Rhynchospora inundata	Inundated beakrush
Rhynchospora latifolia	Giant white-top sedge
Rhynchospora megalocarpa	Sandy-field beak sedge
Rhynchospora microcarpa	Little-seed beakrush
Rhynchospora microcephala	Southern beakrush
Rhynchospora micropehala	Small headed beakrush
Rhynchospora miliacea	Swamp beak rush
Rhynchospora mixta	Mingles beakrush
Rhynchospora odorata	Fragrant beaksedge
Rhynchospora pleiantha	Coastal beaksedge
Rhynchospora plumosa	Flatwoods beak rush
Rhynchospora pusilla	Fairy beakrush
Rhynchospora nitens	Bald-rush
Rhynchospora sp.	Beakrush
Rhynchospora tracyi	Narrow beak rush
Rhynchospora wrightiana	Wright's beakrush
Richardia brasiliensis	Mexican clover
Richardia scabra	Rough diamond flower

Rorripa teres	Southern marsh yellowcress	
Rubus argutus	Highbush blackberry	
Rubus betulifolius	Blackberry	
Rubus cuneifolius	Sand blackberry	
Rubrus trivialis	Southern dewberry	
Rumex hastatulus	Hastate-leaved dock	
Rynchospora decurrens	Swamp-forest beakrush	
Rynchospora inundata	Horned beakrush	
Sabal minor	Dwarf palmetto	
Sabal palmetto	Sabal palm	
Sabatia brevifolia	White sabatia	
Sabatia grandiflora	Rose-gentian	
Saccharum giganteum	Sugarcane plumegrass	
Saccharum officinarum	Sugarcane	
Sacciolepis indica	India cupscale grass	Exotic
Sacciolepis striata	American cupscale	
Sagittaria graminea	Grassy arrowhead	
Sagittaria isoetiformis	Quillwort arrowhead	
Sagittaria kurziana	Springtape	
Sagittaria lancifolia	Arrowhead	
Sagittaria latifolia	Common Arrowhead	
Sagittaria subulata	Water arrowhead	
Sagittaria subulata v. stagnorum	Dwarf arrowhead	
Salix caroliniana	Carolina willow	
Salvia lyrata	Lyre-leaved sage	
Salvinia minima	Water spangles	
Sambucus canadensis	Elderberry	
Sapium sebiferum	Chinese tallow	Exotic
Sarcostemma clausum	White twinvine	
Saururus cernuus	Lizard's tail	
Schinus terebinthifolius	Brazilian pepper	Exotic
Schizachyrium stoloniferum	Creeping bluestem	
Scirpus californicus	Giant Bulrush	
Scirpus cubensis	Bulrush	
Scirpus tabernaemontani	Softstem bulrush	
Scirpus validus	Soft bulrush	
Scleria ciliata	Nut rush	
Scleria pauciflora	Few-flower nutrush	
Scleria reticularis	Reticulated nut-grass	
Scleria triglomerata	Tall nutgrass	
Scleria verticillata	Pineland nut rush	
Scoparia dulcis	Goat-weed	
Senecio glabellus	Butterwweed	
Senna ligustrina	Privet wild sensitive plant	
Senna obtusifolia	Sicklepod	
Senna occidentalis	coffee senna	
Serona repens	Saw palmetto	
Sesbania emerus	Hemp sesbania	
Sesbania punicea	Red-flowered sesbania	Exotic

Sesbania vesicaria	Bagpod	
Setaria geniculata	Knotroot bristlegrass	
Setaria parviflora	Yellow bristlegrass	
Seymeria pectinata	Piedmont seymeria	
Sida acuta	Broomweed	
Sida cordifolia	Broomweed	
Sida rhombifolia	Arrow-leaf sida	
Sida santaremensis	Moth fanpetals	
Sisyrinchium angustifolium	Narrow-winged blue-eyed grass	
Sisyrinchium atlanticum	Easter blue-eyed grass	
Sisyrinchium exile	Yellow blue-eyed grass	
Smilax auriculata	Greenbriar	
Smilax bona-nox	Catbrier	
Smilax havanensis	Sarsaparilla	
Smilax laurifolia	Bamboo-vine	
Smilax pumila	Dwarf smilax	
Smilax smallii	Lance-leaf greenbrier	
Smilax tamnoides	Bristly greenbrier	
Smilax walteri	Coral breenbrier	
Solanum americanum	Common Nightshade	
Solanum capsicoides	Soda apple	Exotic
Solanum carolinense	Horse-nettle	
Solanum jamaicensa	Jamaican Nightshade	Exotic
Solanum viarum	Tropical soda apple	Exotic
Solanum torvum	Turkeyberry	Exotic
Solidago gigantea	Giant Goldenrod	
Solidago fistulosa	Marsh goldenrod	
Solidago latissimifolia	Elliott's goldenrod	
Solidago odora v. chapmanii	Sweet goldenrod	
Solidage sempervirens	Goldenrod	
Solidago tortifolia	Twisted-leaf goldenrod	
Sonchus asper	Spiny-leaved sow thistle	
Sonchus oleraceus	Common sow thistle	
Sorghastrum secundum	Lopsided indiangrass	
Sparganium americanum	American burreed	
Spartina bakeri	Sand cord grass	
Spermacoce assurgens	large-leaf button weed	
Spermacoce verticillata	White head broom	
Spiranthes longilabris	Giantspiral ladiestresses	
Sphagnum sp.	Sphagnum moss	
Spiranthes vernalis	Spring ladies'-tresses	
Sporobolus indicus	Smutgrass	
Stachys floridana	Hedgenettle	
Stillingia sylvatica	Upland queen's delight	
Stipulicida setacea	Wireweed	
Syngonanthus Flavidulus	Bantam-button	
Taxodium ascendens	Pond cypress	
Taxodium distichum	Bald cypress	
Tephrosia hispidula	Spreading hoary-pea	

Teucrium canadense	Wood sage	
Thalia geniculata	Alligator flag	
Thelypteris augescens	Cypress shield fern	Threatened (S)
Thelypteris hispidula	Hairy maiden fern	
Thelypteris interrupta	Spreading tri-vein fern	
Thelypteris kinthii	Southern shield fern	
Tillandsia bartramii	Wild pine	
Tillandsia balbisiana	Bulbous wild pine	
Tillandsia fasciculata	Stiff-leaved wild pine	Endangered
Tillandsia recurvata	Ball moss	
Tillandsia setacea	Wild pine	
Tillandsia simulata	Wild pine	
Tillandsia usneoides	Spanish moss	
Tillandsia utriculata	Giant wild pine airplant	
Toxicodendron radicans	Poison ivy	
Triadenum virginicum	St. John's Wort	
Trifolium repens	White clover	
Typha domingensis	Southern cattail	
Typha latifolia	Common cattail	Nuisance
Typha sp.	Cattail	
Ulmus americana	American elm	
Urena lobata	Ceasarweed	Exotic
Urochloa mutica	Paragrass	Exotic
Urtica chamaedryoides	Heartleaf nettle	
Utricularia cornuta	Horned bladderwort	
Urticularia floridana	Florida baldderwort	
Utricularia foliosa	Flat-stem bladderwort	
Utricularia gibba	Humped bladderwort	
Utricularia subulata	Zigzag bladderwort	
Vaccinium corymbosum	Highbush	
Vaccinium darrowii	Glaucous blueberry	
Vaccinium myrsinites	Shiny blueberry	
Vaccinium staminoides	Deerberry	
Verbena scabra	Harsh verbena	
Verbesina virginica	Frostweed	
Vicia acutifolia	Fourleaf vetch	
Viola lanceolata	Long leaf violet	
Viola primulifolia	Primrose-leaved violet	
Vitis cinerea var. floridana	Florida grape	
Vitis munsoniana	Southern fox grape	
Vitis rotundifolia	Fox grape	Nuisance
Vitis shuttleworthii	Calusa grape	
Vitis sp.	Wild grape	
Vitis vulpina	Frost grape	
Vittaria lineata	Shoestring fern	
Woodwardia areolata	Netted chain fern	
Woodwardia virginina	Virginia chain fern	
Ximenia americana	Hog plum	
Xyris ambigua	Morning yellow-eyed grass	

Xyris brevifolia	Short-leaved Yellow-eyed grass
Xyris caroliniana	Yellow-eyed grass
Xyris difformis v. floridana	Yellow-eyed grass
Xyris elliottii	Elliott's yellow-eyed grass
Xyris fimbriata	Yellow-eyed grass
Xyris flabelliformis	Savannah yellow-eyed grass
Xyris jupicai	Tropical yellow-eyed grass
Xyris platylepis	Twisted yellow-eyed grass
Xyris smalliana	Yellow-eyed grass
Xyris sp.	Yellow-eyed grass
Zanthoxylum clava-herculis	Hercules-club

Appendix E. Animal Species List, Kissimmee Chain of Lakes Management Area

Birds

FWC = Florida Fish & Wildlife Conservation Commission
SSC = Species of Special Concern
State = (s) Federal = (f)

T = Threatened
E = Endangered

Species Name	Common Name	Listing Status
Acciper striatus	Sharp shinned hawk	
Accipiter cooperii	Cooper's hawk	
Actitis macularia	Spotted sandpiper	
Agelaius phoeniceus	Red-winged blackbird	
Aix sponsa	Wood duck	
Anas discors	Blue winged teal	
Anas fulvigula	Mottled duck	
Anas rubripes	Black duck	
Anhinga anhinga	Anhinga	
Aphelocoma coerulescens	Florida scrub jay	
Aramus guarauna	Limpkin	SSC
Ardea herodias	Great blue heron	
Aythya affinis	Lesser scaup	
Aythya tollaris	Ring necked duck	
Botaurus lentiginosus	American bittern	
Bubo virginianus	Great horned owl	
Bubulcus ibis	Cattle egret	
Buteo jamaicensis	Red tailed hawk	
Buteo lineatus	Red-shouldered hawk	
Buteo platypterus	Braod winged hawk	
Butorides striatus	Green heron	
Butorides virescens	Green heron	
Caprimulgus carolinensis	Chuck will's widow	
Caracara cheriway	Crested Caracara	T(f)
Cardinalis cardinalis	Northern Cardinal	
Casmerodius albus	Great egret	
Cathartes aura	Turkey Vulture	
Ceryle alcyon	Belted kingfisher	
Charadrius vociferus	Killdeer	
Chordeiles monor	Common nighthawk	
Circus cyaneus	Marsh hawk	
Coccyzus americanus	Yellow billed cuckoo	
Colaptes auratus	Northern flicker	
Colinus virginianus	Northern bobwhite	
Columbina passerina	Common ground dove	

Contopus virens	Eastern wood pewee	
Coragyps atratus	Black vulture	
Corvus brachyrhynchos	American crow	
Corvus ossifragus	Fish crow	
Cyanocitta cristata	Blue jay	
Dendroica caerulescens	Black throated blue warbler	
Dendroica discolor	Prairie warbler	
Dendroica dominica	Yellow throated warbler	
Dendroica palmarum	Palm warbler	
Dendroica pinus	Pine warbler	
Dryocopus pileatus	Pileated woodpecker	
Dumetella carolinensis	Gray catbird	
Egretta caerula	Little blue heron	SSC
Egretta thula	Snowy Egret	SSC
Egretta tricolor	Tricolored (=Louisiana) heron	SSC
Elanoides forficatus	Swallow-tailed kite	
Eudocimus albus	White ibis	SSC
Falco sparvarius paulus	SE American kestrel	T(s)
Fulica americana	American coot	
Gallinago gallinago	Common snipe	
Gallinula chloropus	Common moorhen	
Geothlypis trichas	Common yellowthroat	
Grus americana	Whooping crane	E(f)
Grus canadensis pratensis	Florida sandhill crane	T(s)
Haliaeetus leucocephalus	Bald eagle	
Himantopus mexicanus	Black-necked stilt	
Lanius ludovicianus	Loggerhead shrike	
Larus delawarensis	Ring billed gull	
Melanerpes carolinus	Red bellied woodpecker	
Melanerpes erythrocephalus	Red headed woodpecker	
Meleagris gallopavo	Wild turkey	
Mimus polyglottis	Mockingbird	
Mniotilta varia	Blank and white warbler	
Mycteria americana	Wood stork	E(f)
Myiarchus crinitus	Great crested flycatcher	
Otus asio	Eastern screech owl	
Pandion haliaetus	Osprey	
Parula americana	Northern parula	
Parus bicolor	Tufted titmouse	
Phalacrocorax auritus	Double crested cormorant	
Picoides pubescens	Downy woodpecker	
PicoidesVillosus	Hairy woodpecker	
Pipilo erythrophthalmus	Rufous sided towhee	
Piranga rubra	Summer tanager	
Plegadis falcinellus	Glossy ibis	
Podilymbus podiceps	Pied billed grebe	
Polioptila caerulea	Blue gray gnatcatcher	
Porphyrula martinica	Purple gallinule	
Progne subis	Purple martin	

Quiscalus major	Boat tailed grackle	
Quiscalus quiscula	Common grackle	
Rostrhamus sociabilis plumbeus	Everglades kite	E(f)
Sayornis phoebe	Eastern phoebe	
Seiurus motacilla	Louisiana waterthrush	
Seiurus noveboracensis	Northern waterthrush	
Setophaga ruticilla	American redstart	
Sialia sialis	Eastern bluebird	
Sterna forsteri	Forster's tern	
Strix varia	Barred owl	
Sturnella magna	Eastern Meadowlark	
Tachycineta bicolor	Tree Swallow	
Thryothorus ludovicianus	Carolina wren	
Toxostoma rufum	Brown thrasher	
Tringa flavipes	Lesser yellowlegs	
Tringa melanoleuca	Greater yellowlegs	
Turdus migratorius	American robin	
Tyrannus tyrannus	Eastern kingbird	
Tyto alba	Common barn owl	
Vireo flavifrons	Yellow throated vireo	
Vireo griseus	White eyed vireo	
Vireo olivaceus	Red eyed vireo	
Vireo solitarius	Solitary vireo	
Zenaida macroura	Mourning dove	

Mammals

Species Name	Common Name	Listing Status
Blarina brevicauda	Short tailed schrew	
Cryptotis parva	Least schrew	
Corynorhinus rafinesquii	Southeastern big-eared bat	
Dasypus novemcinctus	Nine-banded Armadillo	
Didelphis marsupialis	Opossom	
Equus caballus	Horse	
Felis rufus	Bobcat	
Lutra canadensis	River otter	
Neofiber alaleni	Round tailed muskrat	
Odocoileus virginianus	White-tailed deer	
Oryzomys palustris	Eastern rice rat	
Peromyscus gossypinus	Cotton mouse	
Procyon lotor	Raccoon	
Sciurus carolinensis	Eastern grey squirrel	
Sciurus niger shermani	Sherman's fox squirrel	SSC
Sus scrofa	Feral hog	
Sylvilagus floridanus	Eastern cottontail	
Sylvilagus palustris	Marsh rabbit	

Reptiles and Amphibians

Species Name	Common Name	Listing Status
SNAKES		
Agkistrodon piscivorus conanti	Florida cottonmouth	
Coluber constrictor	Black racer	
Diadophis punctatus punctatus	Southern ringneck snake	
Drymarchon corais couperi	Eastern indigo snake	T(f)
Elaphe guttata guttata	Corn snake	
Elaphe obsoleta quadrivittata	Yellow rat snake	
Lampropeltis getulus	Common kingsnake	
Nerodia cyclopion floridana	Green water snake	
Nerodia fasciata pictiventris	Florida water snake	
Ophedrys aestivus	Rough green snake	
Pituophis melanoleucus mugitus	Florida pine snake	SSC
Reginal alleni	Striped crayfish snake	
Sistrurus miliaris barbouri	Dusky pygmy rattlesnake	
Thamnophis sirtalis sirtalis	Eastern garter snake	
OTHER REPTILES		
Alligator mississippiensis	American Alligator	
Anolis carolinensis	Green anole	
Anolis sagrei sagrei (exotic)	Brown anole	
Apalone ferox	Florida softshell turtle	
Chelydra serpentina	Snapping turtle	
Cnemidophorus sexilineatus	Six lined racerunner	
Deirochelys reticularia chrysea	Florida chicken turtle	
Eumeces inexpectatus	Southeastern five lined skink	
Gopherus polyphemus	Gopher tortoise	T(s)
Kinosternon subrubrum	Florida mud turtle	
Ophisaurus ventrailis	Eastern glass lizard	
Pseudemys floridana peninsularis	Peninsual cooter	
Pseudemys neisoni	Florida redbelly turtle	
Sceloporus undulatus undulatus	Southern fence swift	
Scincella lateralis	Ground skink	
Sternotherus odoratus	Common stinkpot turtle	
Terrapene carolina carolina	Florida Box turtle	
AMPHIBIANS		
Acris gryllus dorsalis	Florida cricket frog	
Bufo quercicus	Oak toad	
Bufo terrestris	Southern toad	
Eurycea quadridigitata	Dwarf salamander	
Hyla cinerea	Green treefrog	
Hyla femoralis	Pinewoods treefrog	
Hyla squirella	Squirrel treefrog	
Notophthalmus viridescens	Peninsula newt	

Rana grylio	Pig frog
Rana sphenocephala	Southern Leopard frog
Rana utricularia	Southern Leopard frog

Appendix F. FWC Public Use Regulations and Hunting Brochure, 2014

2013-2014 Hunting Season

Kissimmee Chain of Lakes Area

Regulations Summary and Area Map
July 1, 2013 - June 30, 2014

A cooperative public wildlife and recreational area

South Florida Water Management District

Florida Fish and Wildlife Conservation Commission

MyFWC.com

This brochure is designed to provide the public with information and a summary of regulations pertaining to hunting and other recreational use on the Kissimmee Chain of Lakes Area. **Regulations that are new or differ substantially from last year are shown in bold print.** Area users should familiarize themselves with all regulations. For exact wording of the wildlife laws and regulations, see the Florida Fish and Wildlife Conservation Commission's wildlife code, on file with the Secretary of State and state libraries. This brochure, the Florida Hunting Regulations handbook and quota permit worksheets should provide the information necessary for you to plan your hunting activities. These publications are available from any Commission office, county tax collector and at MyFWC.com.

Persons using this area are required to have appropriate licenses, permits and stamps. The following persons are exempt from, all license and permit requirements (except for quota permits when listed as "no exemptions," recreational use permits, antlerless deer permits and the Migratory Bird Hunting and Conservation Stamp [federal duck stamp]): Florida residents who are 65 years of age or older; residents who possess a Florida Resident Disabled Person Hunting and Fishing Certificate; residents in the U.S. Armed Forces, not stationed in Florida, while home on leave for 30 days or less, upon submission of orders; and children under 16 years of age. Children under 16 years of age are exempt from the federal duck stamp. Anyone born on or after June 1, 1975 and 16 years of age or older must have passed a Commission-approved hunter-safety course prior to being issued a hunting license, except the Hunter Safety Mentoring exemption allows anyone to purchase a hunting license and hunt under the supervision of a licensed hunter, 21 years of age or older.

Licenses and permits may be purchased from county tax collectors, license agents, at MyFWC.com/license or by telephone at 888-486-8356. A no-cost Migratory Bird Permit is available when purchasing a hunting license. Any waterfowl hunter 16 years of age or older must possess a federal duck stamp; available where hunting licenses are sold, at most post offices or at www.duckstamp.com.

Quota Permit Information:
Quota permits are not required for this area.

General Area Regulations:
All general laws and regulations relating to wildlife and fish shall apply unless specifically exempted for this area. Hunting or the taking of wildlife or fish on this area shall be allowed only during the open seasons and in accordance with the following regulations:

1. Any person hunting deer or accompanying another person hunting deer shall wear at least 500 square inches of daylight fluorescent-orange material as an outer garment, above the waistline. These provisions are not required when hunting with a bow and arrow during archery season.
2. Taking of spotted fawn, swimming deer or roosted turkey is prohibited. Species legal to hunt are listed under each season.
3. It is illegal to hunt over bait or place any bait or other food for wildlife on this area.
4. Driving a metal object into any tree, or hunting from a tree into which a metal object has been driven, is prohibited.
5. No person shall cut, damage or remove any natural, man-made or cultural resource without written authorization of the landowner or primary land manager.
6. Taking or attempting to take any game with the aid of live decoys, recorded game calls or sounds, set guns, artificial light, net, trap, snare, drug or poison is prohibited. Recorded calls and sounds can be used to hunt furbearers, wild hog and crows.
7. The wanton and willful waste of wildlife is prohibited.
8. Hunting or fishing is prohibited on any portion of the area posted as closed to those activities.
9. Taking or herding wildlife from any motorized vehicle, aircraft or boat, which is under power is prohibited until power, and movement from that power, has ceased.
10. Most game may be hunted from ½ hour before sunrise until ½ hour after sunset (see exceptions for each season).
11. The head and evidence of sex may not be removed from the carcass of any deer or turkey on the area.
12. Wild hog may not be transported alive.
13. A hunting license is not required for the take of wild hog.
14. Littering is prohibited.
15. It is unlawful to set fire to any forest, grass or woodlands.
16. A Fish and Wildlife Conservation Commission Law Enforcement Officer may search any camp, vehicle or boat, in accordance with law.
17. Falconers may hunt during the statewide falconry season anytime this area is open for public access. Crows may be hunted during the first phase of crow season only.

Public Access and Vehicles:
1. Open to public recreational access year round.
2. Parked vehicles may not obstruct a road, levee, maintenance berm, gate or water control structure.
3. Use of airboats is prohibited in those areas posted as closed to airboat use.

4. A South Florida Water Management District Special Use License is required to access that portion of the Rough Island Unit, as referenced on the map and posted on site. Licenses (50) are issued beginning on June 1. For information on how to obtain a license, call 561-924-5310, extension 3333.
5. See #4 under the South Florida Water Management District Rules section of this brochure.

Hunters:
1. Erecting or maintaining treestands is prohibited from 11 days after the end of **spring turkey** season to 11 days before the start of archery season.
2. Wild hog may be hunted year round.
3. Wild hog may only be hunted with a firearm or archery equipment from ½ hour before sunrise to ½ hour after sunset.
4. Wild hog may be hunted with dogs at night. Hunting with a gun (including archery equipment) at night is prohibited.

Guns:
1. The discharge of a firearm outside of periods open to hunting or in areas closed to hunting is prohibited per s. 790.15 FS.
2. Hunting with centerfire rifles is prohibited on the Northwest Shore, East Shore Marshes, West Shore and Drasdo Units.
3. Hunting at night with a gun is prohibited.
4. Muzzleloading guns used for taking deer must be .40 caliber or larger, if firing a single bullet, or be 20 gauge or larger if firing 2 or more balls.
5. Hunting deer with rimfire or non-expanding, full metal jacket (military ball) ammunition is prohibited.
6. **Air guns may be used to hunt gray squirrel and rabbits during the small game and general gun seasons**.
7. Children under the age of 16 hunting with a firearm or air gun must be in the presence of a supervising adult.
8. No person shall discharge a firearm or have a loaded firearm in hand while under the influence of alcohol or drugs.
9. For hunting non-migratory game, only shotguns, rifles, pistols, muzzleloading guns, bows, crossbows (allowed during archery season by permit only) or falconry may be used. Hunting during the spring turkey season with firearms other than shotguns or using a shot size larger than #2 is prohibited.
10. For hunting migratory game, only shotguns, bows, crossbows or falconry may be used. Shotguns shall not be larger than 10 gauge and shall be incapable of holding more than 3 shells in the magazine and chamber combined.
11. Hunting with full automatic or silencer-equipped firearms, centerfire semi-automatic rifles having a magazine capable of holding more than 5 rounds, explosive or drug-injecting devices and set guns is prohibited.

Dogs:
1. Hunting deer and furbearers with dogs is prohibited.
2. Wild hog may be hunted with dogs year round.
3. Dogs on leashes may be used for trailing wounded game.

Camping:
1. Allowed on a first-come, first-served basis only at campsites designated by the South Florida Water Management District.
2. Camping is primitive and camping areas will be designated by brown signs with white lettering that say, "Designated Primitive Camping Area."
3. See #3 under the South Florida Water Management District Rules section of this brochure.

Bag and Possession Limits:
1. Antlered deer - Daily limit 2, possession limit 4. Hunting antlerless deer is prohibited.
2. Wild hog - No size or bag limit.
3. Turkey - Daily limit 1, all fall seasons combined limit 2, spring season limit 2, possession limit 2.
4. Gray squirrel, quail and rabbit - Daily limit 12, possession limit 24 for each.
5. Raccoon, opossum, armadillo, beaver, coyote, skunk and nutria - No bag limits.
6. Bobcat and otter - Prohibited.
7. Migratory birds - See Migratory Bird Hunting Regulations pamphlet.

Regulations for this area differ from adjacent private lands. Area users must follow the season dates and regulations as described in this brochure while on the area.

Archery Season:
October **19** through November **17**.
Permit, Stamp and License Requirements - Hunting license, archery permit, deer permit (if hunting deer), wild turkey permit (if hunting wild turkey) and migratory bird permit (if hunting migratory birds.
Legal to Hunt - Deer with at least 1 antler 5 inches or more in length, wild hog, bearded turkey or gobbler, gray squirrel, quail, rabbit, armadillo and migratory birds in season.
Regulations Unique to Archery Season -
1. Hunting with guns or crossbows (except by disabled crossbow permit) is prohibited, except centerfire shotguns are allowed for hunting migratory birds when 1 or more species are legal to hunt (see Migratory Bird section and the current Migratory Bird Hunting Regulations pamphlet) and hunting wild hog with a firearm is allowed, but hunting with centerfire rifles in the Northwest Shore, East Shore Marshes, West Shore and Drasdo Units is prohibited.
2. Hunting deer is prohibited in the Drasdo, East Shore Marshes and West Shore Units.
3. Raptors are allowed for hunting game birds, crows and game mammals.

Crossbow Season:
November **18-22**.
Permit, Stamp and License Requirements - Hunting license, crossbow permit, deer permit (if hunting deer), wild turkey permit (if hunting wild turkey) and migratory bird permit (if hunting migratory birds).
Legal to Hunt - Deer with at least 1 antler 5 inches or more in length, wild hog, bearded turkey or gobbler, gray squirrel, quail, rabbit, armadillo and migratory birds in season.
Regulations Unique to Crossbow Season -
1. Only bows, crossbows and raptors may be used for hunting (raptors can be used for hunting game birds, crows and game mammals), except that centerfire shotguns are allowed for hunting migratory birds when 1 or more species are legal to hunt (see Migratory Bird section and the current Migratory Bird Hunting Regulations pamphlet) and firearms are allowed for hunting wild hog, provided that hunting with centerfire rifles in the Northwest Shore, East Shore Marshes, West Shore and Drasdo Units is prohibited.
2. Hunting deer is prohibited in the Drasdo, East Shore Marshes and West Shore Units.

Muzzleloading Gun Season:
November **23** through December **6**.
Permit, Stamp and License Requirements - Hunting license, muzzleloading gun permit, deer permit (if hunting deer), wild turkey permit (if hunting wild turkey), migratory bird permit (if hunting migratory birds) and state waterfowl permit and federal duck stamp (if hunting waterfowl).
Legal to Hunt - Deer with at least 1 antler 5 inches or more in length, wild hog, bearded turkey or gobbler, gray squirrel, quail, rabbit, armadillo and migratory birds in season.
Regulations Unique to Muzzleloading Gun Season -
1. Hunting with firearms, other than muzzleloading guns, is prohibited, except that centerfire shotguns are allowed for hunting migratory birds when 1 or more species are legal to hunt (see Migratory Bird section and the current Migratory Bird Hunting Regulations pamphlet) and firearms are allowed for hunting wild hog, provided

that hunting with centerfire rifles in the Northwest Shore, East Shore Marshes, West Shore and Drasdo Units is prohibited.
2. Bows, crossbows and raptors are allowed for hunting; raptors can be used for hunting game birds, crows and game mammals.
3. Hunting deer is prohibited in the Drasdo, East Shore Marshes and West Shore units.

General Gun Season:
December **7** through February **23**.
Permit, Stamp and License Requirements - Hunting license, deer permit (if hunting deer), wild turkey permit (if hunting wild turkey), migratory bird permit (if hunting migratory birds), and state waterfowl permit and federal duck stamp (if hunting waterfowl).
Legal to Hunt - Deer with at least 1 antler 5 inches or more in length, wild hog, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria and migratory birds in season. Bearded turkey or gobbler through February **2**.
Regulations Unique to General Gun Season -
1. Hunting deer is prohibited in the Drasdo, East Shore Marshes and West Shore Units.
2. Hunting with centerfire rifles in the Northwest Shore, East Shore Marshes, West Shore and Drasdo units is prohibited.

Small Game Season:
October 12 through March **2**.
Permit, Stamp and License Requirements - Hunting license, migratory bird permit (if hunting migratory birds), and state waterfowl permit and federal duck stamp (if hunting waterfowl).
Legal to Hunt - Wild hog, gray squirrel, rabbit, armadillo and migratory birds in season. Raccoon, opossum, beaver, coyote, skunk and nutria through February **23**. Quail beginning November **9**.
Regulations Unique to Small Game Season - Hunting with centerfire rifles in the Northwest Shore, East Shore Marshes, West Shore and Drasdo units is prohibited.

Trapping Season:
December **7** through February **23**.
Permit, Stamp and License Requirements - Trapping license.
Legal to Trap - Raccoon, opossum, armadillo, beaver, coyote, skunk and nutria.

Spring Turkey Season:
Youth Turkey: March **8**-**9**.
Spring Turkey: March **15** through April **20**.
Permit, Stamp and License Requirements - Hunting license and wild turkey permit.
Legal to Hunt - Bearded turkey or gobbler.
Regulations Unique to Spring Turkey Season -
1. Legal shooting hours are ½ hour before sunrise until sunset.
2. Hunting animals other than wild hog, rabbit, armadillo and wild turkey is prohibited.
3. Hunting wild turkey with firearms other than shotguns or using a shot size larger than #2 is prohibited.
4. During the youth turkey hunt, only youth under 16 years of age may hunt wild turkey and must be under the supervision and in the presence of an adult not younger than 18 years of age. Adults with required licenses and permits for taking wild turkeys may participate when in the presence of a youth, but may not harvest any wildlife.

Migratory Bird Seasons:
Rails, common moorhen, mourning dove, white-winged dove, snipe, ducks, geese, coot and woodcock may be hunted during seasons established by the Commission for these species. Crows may be hunted during the first phase of crow season only.
Permit, Stamp and License Requirements - Hunting license, migratory bird permit, and state waterfowl permit and federal duck stamp (if hunting waterfowl).
Legal to Hunt - See Migratory Bird Hunting Regulations pamphlet.
Regulations Unique to Migratory Bird Seasons - All Migratory Bird Regulations shall apply.
1. Hunting ducks, geese and coot with lead shot is prohibited.
2. Centerfire shotguns are allowed for hunting during established area seasons when 1 or more migratory birds are legal to take.

Fishing and Frogging:
Allowed year round.
Permit, Stamp and License Requirements - Fishing license (not required when frogging).
Legal to Take - See Florida Freshwater Fishing Regulations Summary.
Regulations Unique to Fishing and Frogging - All General Freshwater Fishing Regulations shall apply. Shooting frogs is allowed only with the legal methods of take during each particular season.

General Information:
1. Information for persons with disabilities can be found at MyFWC.com/ADA.
2. If you have any questions about this material, please call the Fish and Wildlife Conservation Commission at 352- 732-1225 (TDD 800-955-8771).
3. The FWC is not responsible for protection of personal property and will not be liable for theft of or damage to personal property.
4. Please report the location of any sick or extremely skinny deer to the Chronic Wasting Disease hotline, toll free at 866-293-9282.

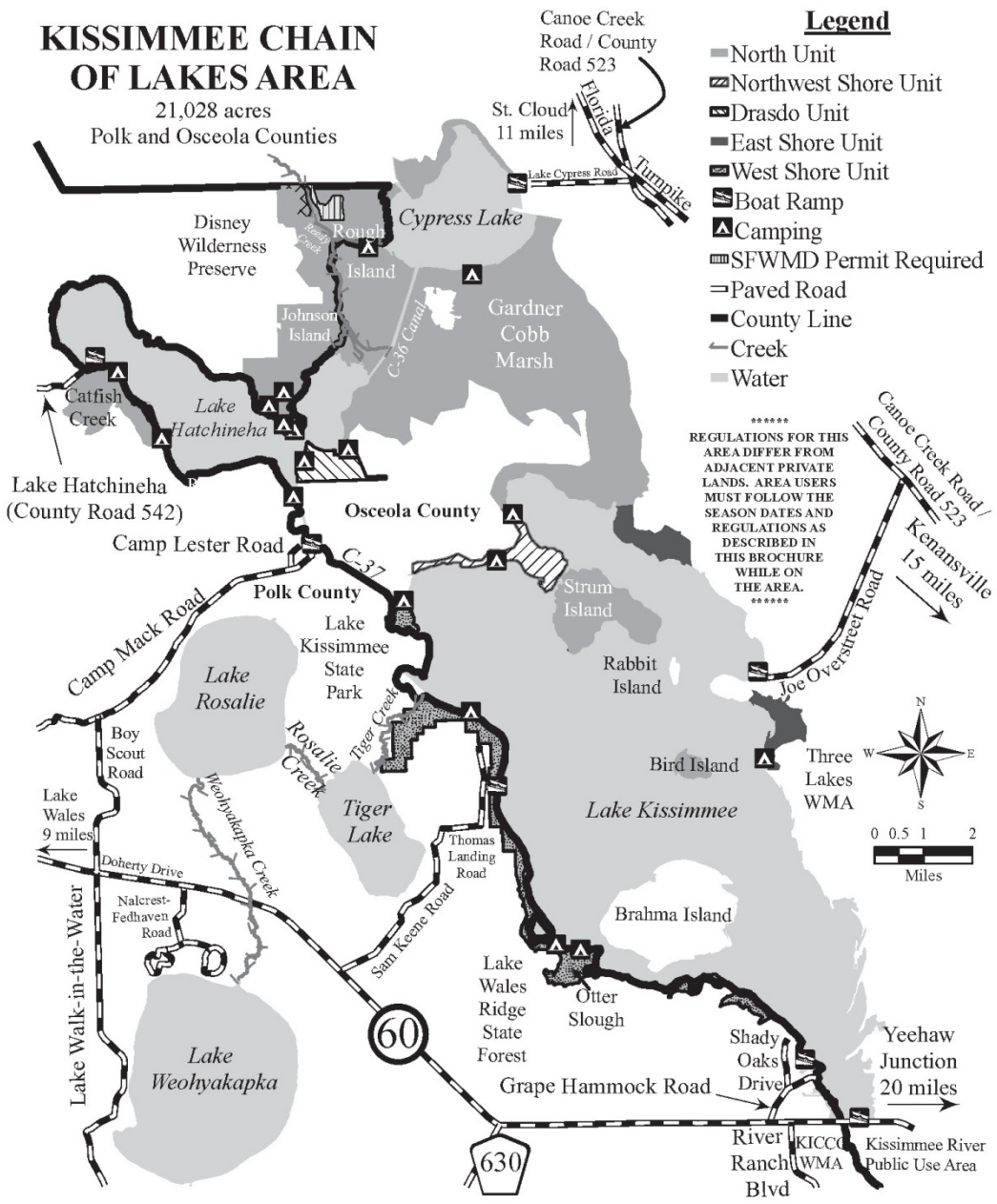
South Florida Water Management District Rules:
1. Use of all-terrain vehicles, swamp buggies or tracked vehicles is prohibited.
2. For purposes other than hunting, dogs are allowed, but must be kept under physical restraint at all times.
3. Overnight camping or the presence of camping equipment shall be limited to 5 consecutive days or 30 total days per year, unless authorized by Special Use License from the South Florida Water Management District.
4. Persons may enter and exit Gardner Cobb Marsh from Lake Cypress, Lake Hatchineha, Lake Kissimmee and the C-36 canal.

Cooperation Requested:
If you see law violators or suspicious activities, contact your nearest Commission regional office or call 888-404-FWCC. You may qualify for a cash reward from the Wildlife Alert Reward Association.

The U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex or handicap. If you believe that you have been discriminated against in any program, activity or facility as described above, or if you desire further information, please write to: The Office for Human Resources, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D.C. 20240. The project described in this publication is part of a program funded by federal dollars under the Wildlife Restoration Act. Federal funds pay 20 percent of the cost of the program.

Wildlife Alert Reward Program
Report fishing, boating or hunting law violations, you may qualify for a cash reward.

888-404-FWCC (3922)
***FWC or #FWC on cellular phones**
TIP@MyFWC.com by text message


KISSIMMEE CHAIN OF LAKES AREA
21,028 acres
Polk and Osceola Counties
Legend
North Unit
Northwest Shore Unit
Drasdo Unit
East Shore Unit
West Shore Unit
Boat Ramp
Camping
SFWMD Permit Required
Paved Road
County Line
Creek
Water
Canoe Creek Road / County Road 523
St. Cloud 11 miles
Florida Turnpike
Lake Cypress Road
Cypress Lake
Disney Wilderness Preserve
Reedy Creek
Rough Island
Johnson Island
C-36 Canal
Gardner Cobb Marsh
Catfish Creek
Lake Hatchineha
Lake Hatchineha (County Road 542)
Camp Lester Road
C-37
Osceola County
Polk County
Camp Mack Road
Lake Kissimmee State Park
Lake Rosalie
Rosalie Creek
Tiger Creek
Tiger Lake
Strum Island
Rabbit Island
Bird Island
Three Lakes WMA
Lake Kissimmee
Joe Overstreet Road
Canoe Creek Road / County Road 523
Kenansville 15 miles
****** REGULATIONS FOR THIS AREA DIFFER FROM ADJACENT PRIVATE LANDS. AREA USERS MUST FOLLOW THE SEASON DATES AND REGULATIONS AS DESCRIBED IN THIS BROCHURE WHILE ON THE AREA. ******
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W
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S
0 0.5 1 2
Miles
Boy Scout Road
Lake Wales 9 miles
Doherty Drive
Nalcrest-Fedhaven Road
Weohyakapka Creek
Lake Walk-in-the-Water
Lake Weohyakapka
Thomas Landing Road
Sam Keene Road
Brahma Island
Lake Wales Ridge State Forest
Otter Slough
60
630
Shady Oaks Drive
Grape Hammock Road
Yeehaw Junction 20 miles
River Ranch Blvd
KICCO WMA
Kissimmee River Public Use Area