



Kissimmee Chain of Lakes Management Area General Management Plan



**Kissimmee Chain of Lakes Management Area
General Management Plan
(2025 through 2035)**

2025

Land Stewardship Section
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406

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ABBREVIATIONS

CARL	Conservation and Recreation Lands
District	South Florida Water Management District
FDHR	Florida Division of Historical Resources
FE	Federally-designated Endangered
FFS	Florida Forest Service
FISC	Florida Invasive Species Council
FNAI	Florida Natural Areas Inventory
FT	Federally-designated Threatened
FT(S/A)	Federally-designated Threatened because of similarity of appearance
FY	Fiscal Year
FWC	Florida Fish and Wildlife Conservation Commission
HRS	Headwaters Revitalization Schedule
PSGHA	Public Small Game Hunting Area
SE	State-designated Endangered
ST	State-designated Threatened
TIITF	Board of Trustees of the Internal Improvement Trust Fund
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

1. EXECUTIVE SUMMARY

The Florida Legislature established the Water Management Lands Trust Fund Section 373.59, Florida Statutes, in 1981, which allowed water management districts to acquire environmentally sensitive land for the purposes of water management, water supply and conservation and protection of water resources through the Save Our Rivers (SOR) program. The South Florida Water Management District (District) used these funds to acquire properties around the shoreline of the Kissimmee Chain of Lakes. The District owns 31,132 acres in fee and shared title fee interest and manages 28,613 acres as the Kissimmee Chain of Lakes Management Area (KCOL MA).

Pursuant to Section 373.1391, Florida Statutes, the District is responsible for managing lands acquired under the SOR program. This General Management Plan (GMP) guides the management of the KCOL MA through the 10-year period of 2024-2034 and was peer-reviewed by external professionals, as directed by Section 373.591, Florida Statutes, and approved by the District's Governing Board. Goals identified for the next ten years include managing natural communities and modified habitats to protect and enhance water, floral, and faunal resources; providing resource-based public use opportunities; maintaining area infrastructure; and providing security and resource protection.

2. INTRODUCTION

KCOL MA is located in Polk and Osceola counties, south of Orlando, about 11 miles south of St. Cloud, and 9 miles east of Lake Wales. The property is about 12 miles east of U.S. 27, roughly 18 miles south of I-4, and 3 miles west of Florida's Turnpike (**Map 1**). The predominant land uses around the property include conservation and agriculture, such as cattle grazing, citrus and sod farming, and ranchette subdivisions, with limited residential and commercial developments. Vehicle access to the property is mainly through unimproved roads and private easements. The KCOL MA is divided into twelve (12) separate management units that surround much of the conservation area around Cypress Lake, Lake Hatchineha, and Lake Kissimmee (**Map 2**).

The London Creek Unit (1,986 acres) covers the floodplain that surrounds the mouths of Lake Marion Creek and London Creek to the north of Port Hatchineha. This tract lies between other conservation lands along the northern shores of Lake Hatchineha: the Disney Wilderness Preserve to the east and the Creek Ranch to the south.

The Catfish Creek Unit (1,113 acres) covers the floodplain along the western shore of Lake Hatchineha between Port Hatchineha and Rolling Meadows. This tract is adjacent to the Allen David Broussard Catfish Creek Preserve State Park and Rolling Meadows.

The Rolling Meadows Unit (5,810 acres) covers the floodplain between Lake Hatchineha, Lake Pierce, and Lake Rosalie. It is bordered to the north by Lake Hatchineha, to the west by Catfish Creek and the Allen David Broussard Catfish Creek Preserve State Park, and to the south by Camp Mack Road, Lake Kissimmee State Park, and Lake Rosalie. The property is divided into two parcels. The northeastern parcel, which encompasses 1,979 acres, is managed by the District as the Rolling Meadows Unit. The southwestern parcel, which covers 3,831 acres, is managed by FDEP along with the Allen David Broussard Catfish Creek Preserve State Park. The northeastern

parcel was previously diked, ditched, and drained to support agricultural operations prior to its acquisition. Since then, it has been enhanced into a marsh community.

The Johnson Island Unit (1,876 acres) and the Rough Island Unit (4,158 acres) cover the floodplain between Lake Hatchineha and Cypress Lake, bordering the lower Reedy Creek and its surrounding lands, including the Disney Wilderness Preserve. The Johnson Island Unit and the north and western portions of Rough Island lie within the eastern boundary of Polk County, while the southern portion of Rough Island is situated within the western limits of Osceola County.

The Cypress Lake Unit (1,406 acres) covers the narrow strip of land along the northern shore of Cypress Lake, between the Rough Island and Gardner-Cobb Marsh units. This area includes the historical flowway between Lake Tohopekaliga and Cypress Lake and is located mostly between the sovereign Cypress Lake bottom and the 54-foot contour (NGVD29).

The Gardner-Cobb Marsh Unit (11,583 acres) covers the floodplain between Cypress Lake, Lake Hatchineha, and Lake Kissimmee. In the 1940s, a drainage system was installed on the property to enhance cattle grazing and farming operations. The impact of this drainage system has resulted in a series of over-drained marshes and wet prairies.

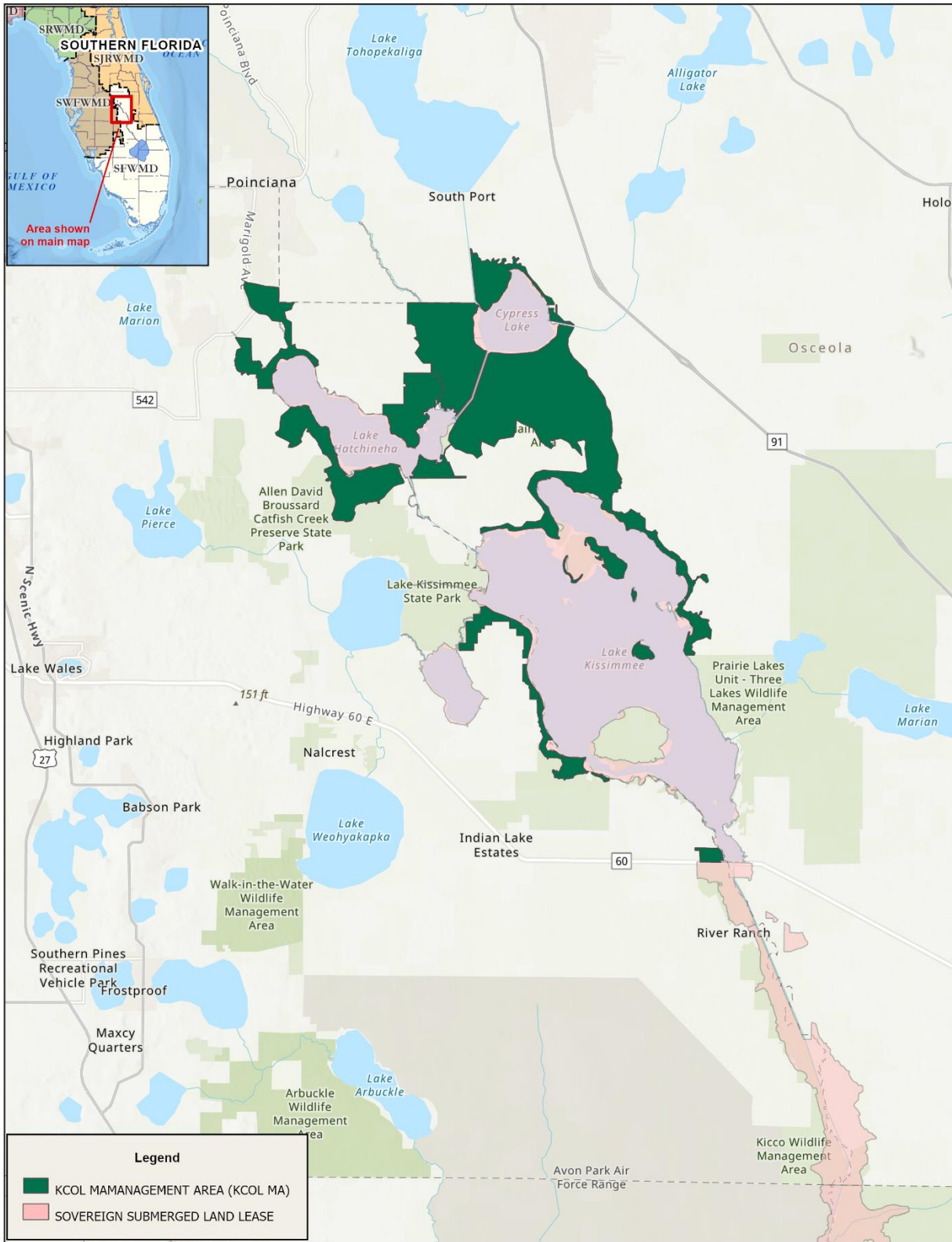
The Drasdo Unit (543 acres) covers the small floodplain on the southeastern shore of Lake Hatchineha, located between Rolling Meadows and Gardner-Cobb units.

The West Shore Unit (1,695 acres) and the East Shore Unit (1,278 acres) cover the shoreline of Lake Kissimmee and lie mostly between the sovereign Lake Kissimmee bottom and the 54-foot contour (NGVD29). The West Shore Unit is bordered by Lake Kissimmee State Park and Lake Wales Ridge State Forest. The East Shore Unit is adjacent to Three Lakes WMA.

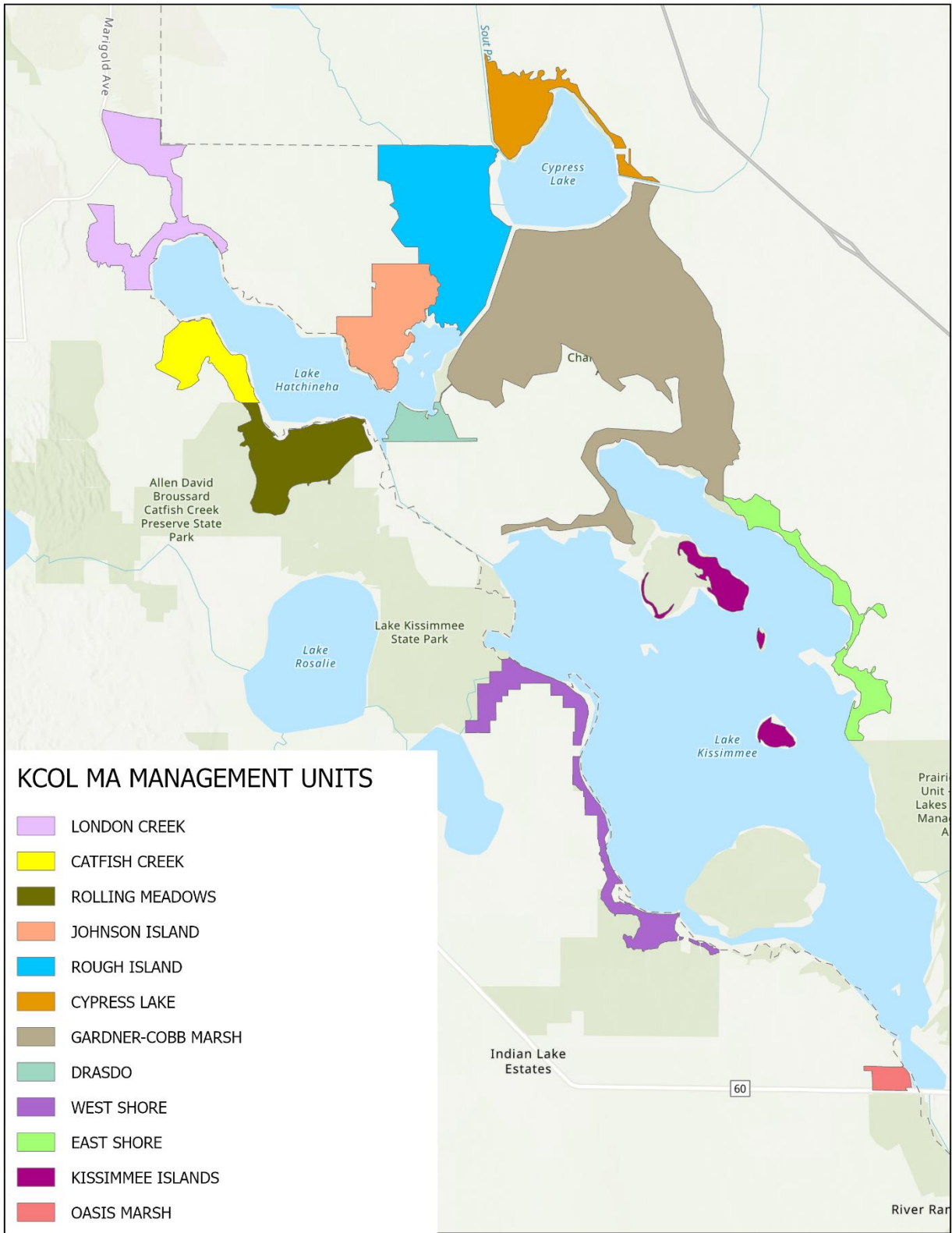
The Kissimmee Islands Unit (755 acres) is comprised of Bird Island, Sturm Island, and Rabbit Island, the northeastern islands within Lake Kissimmee.

The Oasis Marsh Unit (241 acres) is the southernmost management unit. It covers an isolated tract lying on the southwest corner of Lake Kissimmee, just north of State Road 60.

Kissimmee Chain of Lakes Management Area General Management Plan 2025 – 2035
 South Florida Water Management District, Land Stewardship Section



Map 1. KCOL MA location map.



Map 2. KCOL MA management units.

2.1. Acquisition Purpose and Significance of the Area

The Water Resources Development Act of 1992 authorized the Kissimmee River Restoration Project and allowed the District and the U.S. Army Corps of Engineers (USACE) to enter a cost-sharing cooperative agreement in 1994 to acquire lands for the project. This led to the acquisition of land along the upper and lower portions of the Kissimmee River, allowing for the reconnection and reconstruction of the river's original shape. Land acquisition focused on properties crucial for increasing seasonal water storage capacity to provide year-round flow for the Kissimmee River. To date, the District has acquired 25,322 acres in fee simple, 5,810 acres in shared title fee interest, and 8,260 acres in flowage and conservation easements in Polk and Osceola counties. The District also has a lease for the sovereign submerged lands below the ordinary high water of 52.5 feet around the chain of lakes. Before being acquired for the restoration project, most of these properties were used as grazing land for beef cattle production. The ranchers had made various changes to the land, such as building an extensive network of drainage ditches and planting pasture grasses. Since the acquisition, the District has been gradually removing the agricultural infrastructure, shoreline berms, and filling agricultural ditches to restore the natural floodplain habitat.

The Kissimmee River Restoration Project is designed to restore over 40 square miles of the river-floodplain ecosystem, including nearly 12,398 acres of wetlands and 40 miles of the historic river channel. The success of the restoration project depended on acquiring properties within the historic river floodplain that were susceptible to flooding. The acquired properties along the Kissimmee Chain of Lakes made it feasible to reconstruct the river to its historic form in the restored sections. This reconstruction allowed the river to rise while maintaining flood protection within the Kissimmee River basin. The acquisition also allowed the expansion of the lakes' littoral zones to recreate conditions favorable to those native wetland plants, wading birds, and aquatic species that once thrived in the area. Because of its significance, almost 100,000 acres have been acquired for the Kissimmee River Restoration Project. Most of these lands are surrounded by nonprofit, state, and local government lands managed as natural conservation areas and open to public recreation.

2.2. Legal Requirements of Management

The KCOL MA properties were purchased with funds from the SOR land acquisition program to protect lands that have important water resource values through acquisition, restoration, and management for environmental benefits. SOR was one of several programs funded through the 1981 Water Management Lands Trust Fund legislation (§373.59, Florida Statutes) using documentary stamp tax revenue. The SOR program was eventually replaced by the 1999 Florida Forever Act, which consolidated the legislative directives of SOR and Preservation 2000, a program enacted in 1990 to provide additional funding for land acquisition. Lands acquired with funds from the trust are required to satisfy the requirements outlined in Sections 373.139, Florida Statutes.

Section 373.1391, Florida Statutes, requires the District to balance resource conservation and public recreational use. This legislation reinforces the Water Management Lands Trust Fund requirements by directing the District to utilize lands titled to the District for public recreation

purposes to the extent possible while considering the environmental sensitivity and suitability of those lands for recreation.

Public use on District lands is also governed by Chapter 40E-7, Florida Administrative Code (§40E-7.511-539), which allows the District to establish regulations governing public access to District lands and use of said lands for appropriate nature-based recreation and allied purposes whenever possible and not in conflict with other District objectives. As the steward, the Land Stewardship Section is responsible for protecting, enhancing, restoring, and preserving District lands for the beneficial use and enjoyment of existing and future generations.

To support the statutory directives in Section 373.1391, the District has partnered with the Florida Fish and Wildlife Commission (FWC) to establish certain District properties as Wildlife Management Areas (WMA), Wildlife and Environmental Areas (WEA), Public Small Game Hunting Areas (PSGHA), or Miscellaneous Areas through their authority under Chapter 379, Florida Statutes. This partnership allows the FWC to promulgate rules under Chapter 68, Florida Administrative Code, in coordination with the District, to regulate public use on these properties. The Kissimmee Chain of Lakes has been established as a Miscellaneous Area (KCOLA) under FWC rules.

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

- Consistency with the acquisition purposes, including protecting natural ecosystems.
- Restrictions by easements, leases, reservations, adjacent land ownership, or conditions of the purchase agreement.
- Existing infrastructure and facilities, including fences, gates, signage, access, trails, campsites, etc.
- Available funding.
- Limitations on use resulting from endangered species and sensitive natural or archeological resources.
- Public health, safety, and welfare.

Management activities on sovereign submerged land leases are also subject to the requirements for State Lands as set forth in Section 259.032, Florida Statutes.

2.3. General Management Plan Development

General Management Plans for the District are developed for selected areas established as management areas to guide management over a 10-year period. When the plans are updated, staff reviews the previous plan, identifies accomplishments made on prior goals and objectives, and develops new goals and objectives for the coming ten years. These updated goals and objectives are based on District priorities, previous public input through meetings of the Recreation Forum and other venues, and current best management practices. This process is designed to also meet State requirements for management plans (§259.032, Florida Statutes) on areas leased from the

State of Florida. The draft plan is provided to the management review team specified in Section 373.591, Florida Statutes, and comments from this multi-agency and stakeholder management review team on the draft and past management are included in the updated plan.

Common resource management and public use activities implemented by the District in management areas include:

- Prescribed fire to mimic the natural fire frequency in the fire-dependent habitats.
- Vegetation management, such as shredding and/or mowing to control invasive woody shrubs and eliminate hazardous fire fuels.
- Wildlife management, including surveys and habitat management.
- Nuisance and invasive vegetation control.
- Monitoring the health of the natural communities and the impact of management practices on them.
- Hydrologic restoration of wetlands to establish optimal flows and hydroperiods.
- Providing public use facilities that support hunting, boating, hiking, fishing, birding, canoeing, camping, nature appreciation, geocaching, and biking.
- Utilizing volunteers and user group organizations to support the public use program.
- Providing security and hunting opportunities through partnership with FWC.
- Providing educational programs through partnerships with external educational organizations.
- Leveraging staff time through contracts with the private sector when appropriate.

The KCOL GMP serves as the basic statement of management intent and consolidates relevant information about the KCOL MA to guide management actions for the 2025 to 2035 period. This includes land management goals and objectives, past and present land uses, resource data, restoration and management needs, public use programs, and administrative duties.

3. MANAGEMENT AREA GOALS AND OBJECTIVES

Management of Wildlife and Habitats

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

Objectives:

- Continue to utilize prescribed fire to maintain all fire-dependent management units within their appropriate fire return intervals.
- Continue to utilize mechanical vegetation control to minimize encroachment of woody vegetation into wet prairies and seasonal wetlands.
- Mechanically treat dense vegetation and reduce hazardous fuel along firelines to reduce spot-over potential.
- Continue to use prescribed grazing functions as a resource management tool in areas compatible with the acquisition's purpose and the management objectives.
- Secure funding to support habitat enhancement for wading birds and waterfowl through partnerships with other agencies and local interests.

Goal 2: Maintain, improve, or restore listed species populations and habitats.

Objectives:

- Increase herbaceous vegetation coverage in flatwoods to improve gopher tortoises foraging habitat.
- Enhance potential Florida scrub jay habitats in the Drasdo management unit through mechanical and fire treatments.

Nuisance and Invasive Species Management

Goal 3: Manage invasive species to minimize their negative impacts on natural communities.

Objectives:

- Continue controlling select nuisance and invasive species to maintain the number of management units in maintenance condition (Condition Class 1) while systematically improving the status of the remaining units.
- Continue to target invasive species infestations in identified areas as they become priorities to achieve maintenance levels.
- Continue to implement Early Detection Rapid Response treatments of nuisance and invasive species as needed.
- Continue seeking additional funding through the FWC Upland Invasive Plant Management Program to expand invasive species treatment within the management area.

- Continue to expand control measures for wild hog populations.
- Participate in local Cooperative Invasive Species Management Areas.

Hydrological Management

Goal 4: Protect and enhance hydrological resources

Objectives:

- Continue developing new hydrologic restoration projects through partnerships with other government agencies and local interests to restore the hydrology for Cypress Lake, Rolling Meadows, and Gardner-Cobb Marsh management units.
- Improve the quality, quantity, timing, and distribution of flows throughout the KCOL MA and maintain the restored condition.

Public access and Recreational opportunities

Goal 5: Provide nature-based public use opportunities

Objectives:

- Continue to provide compatible public use opportunities such as hunting, camping, airboating, canoeing, kayaking, fishing, and wildlife viewing.
- Continue to identify potential locations for new shelters and campsites in coordination with volunteers and user groups.
- Provide resource protection through partnerships with local and state law enforcement agencies.
- Continue to implement the public use program through coordination with FWC, local partners, adjacent landowners, and recreation user groups.
- Continue to participate in the District's Public Recreational Forum to facilitate public use planning with stakeholders and user groups.
- Provide interpretive and educational information using brochures, signage, and kiosks at public use amenities such as airboat shelters.

Operation and Maintenance of Capital Facilities and Infrastructure

Goal 6: Maintain and improve facilities and infrastructure

Objectives:

- Maintain present public-use improvements (signs, primitive camping areas, structures) using a combination of District staff, volunteers, and private contractors.
- Continue to maintain the firelines and service roads within the management area.
- Continue to maintain and manage the MA boundaries through posting, fencing, and fireline maintenance.

Cultural Resource Management

Goal 7: Protect existing cultural resources

Objectives:

- Ensure all known sites are recorded in the Florida Division of Historical Resources Master Site file.
- Continue to monitor, protect, and preserve all known/identified sites.
- Coordinate with the Florida Division of Historical Resources (FDHR) to assess the need to conduct additional cultural resource surveys.
- Ensure at least one member of staff has attended the FDHR cultural resource training program.

4. AREA HISTORY

The name Kissimmee is derived from the Jororo tribes, who were among the first to settle in the Kissimmee River Valley. Historical maps from the 1700s referred to the river and the city on Lake Tohopekaliga as "Cacema." (**Figure 1**). Over time, Cacema became the current spelling, Kissimmee (Robinson, 2003). The KCOL MA would have fallen within the Jororo territory, a likely stronghold for the early Native American culture until the Creek raids in the early to mid-1700s.



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

Figure 1. Historical map of South Florida.

In 1818, the Spanish king granted the Duke of Alagon over 12 million acres of land, which included the Kissimmee Chain of Lakes and most of central Florida's land west of the St. John's River and north of Lake Okeechobee. The Duke received the grant after he assured the king that he would work with various private enterprises to settle and develop the land for agricultural production. However, the Duke sold the land to Richard S. Hackley, a Virginian, who later leased some of it to a private corporation in 1836. The treaty that ceded Florida to the United States included a declaration that declared the land grant void. However, before the treaty was executed, the Spanish king had agreed to become a constitutional monarch instead of an absolute monarch. This meant that he was limited in his powers and could not take private property without compensating the owner and having the action ratified by the Spanish Cortes. As a result, the grant and transfer were disputed by the Territory, then the State of Florida, and after years of being contested, the U.S. Supreme Court ruled in 1853 (*John Doe v. Braden* - Braden was the founder of Bradenton) that the grant and transfer were not valid. The Court ruled that it would be inconsistent with the principles and policies of the government to take ownership of Florida while one individual possessed and owned so much land. With the title cleared by the U.S. Supreme Court and ownership by the Federal Government confirmed, the land could pass unchallenged to the State as part of the Swamp and Overflowed Lands Act passed by Congress in 1850. Ironically, the State later transferred almost all the Alagon/Hackley lands to Hamilton Disston – a wealthy businessman from Pennsylvania - in 1881 for the same purpose that the king had granted the land to the Duke of Alagon.

Prior to channelization, the Kissimmee River seasonally overflowed its banks, flooding its broad floodplain (**Figure 2**) (SFWMD, 2006). Most of the floodplain would remain inundated throughout the year, except during drought conditions (Toth et al., 1998). During major floods, the Kissimmee River floodplain resembled a vast lake. The early flooding conditions in the Kissimmee River basin resulted from runoff accumulation on the basin's flat lands and the subsequent rise of lake levels due to poor drainage capacity. Hurricane-force winds over the Florida peninsula created problems with tide generation on the larger lakes, which added to the local flooding.

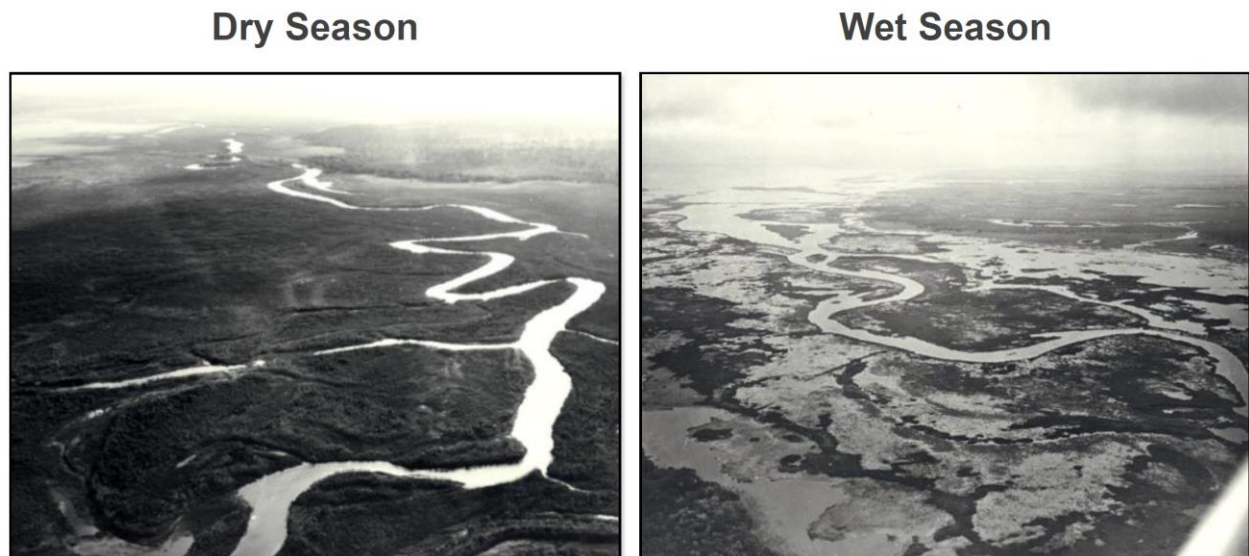


Figure 2. Historic seasonal variations in the Kissimmee River basin.

The Kissimmee Chain of Lakes area was relatively unknown until the Seminole War opened the Kissimmee River basin to settlement. English-speaking settlers began moving to present-day Polk and Osceola counties after the Seminoles were pushed south of Lake Okeechobee during the 1840s and 1850s. These settlers were mainly farmers and ranchers who arrived in the area and began to drain the land for farming. As regular service of several 50-foot steamers began traveling the Chain of Lakes and the Kissimmee River, more settlers moved into the area. These steamboats were the primary mode of transportation for passengers and commerce before the late 1800s when the railroads opened the vast Florida interior. Kissimmee became known as the hub for steamboat travel along the Kissimmee River to South Florida and the Gulf Coast (Robinson, 2003). Initially, the steamboat route from Kissimmee to Fort Bassinger was limited to steamers with a two-foot draft and was restricted by water levels. Periods of drought in the winter and spring would close the water route for several months, causing commerce and travel to halt. Local politicians began to lobby Congress for improvements to the river system to accommodate larger steamers with a deeper draft year-round. Consequently, Congress directed the USACE to study and open a steamer line from Kissimmee to Florida's southwest coast.

The Kissimmee River basin was still sparsely settled in the late 1800s. The Swamp and Overflowed Lands Act of 1850 encouraged development by transferring federal lands to the State to use as currency to finance drainage and levee projects. This led to the drainage of large tracts of land and opened the area to more homesteaders and development by the 1880s. Transportation and commerce also increased following the acquisition of four million acres of land by Hamilton Disston in 1881. Disston began a drainage project to connect the upper Kissimmee basin lakes and began dredging and clearing a navigable route from the Gulf of Mexico to Lake Okeechobee. Between 1881 and 1884, the Southport Canal was dredged to connect Lake Tohopekaliga and Lake Cypress. The St. Cloud Canal was also dredged to connect Lake Tohopekaliga and East Lake Tohopekaliga. By 1885, Kissimmee River and the chain of lakes were navigable by 75-foot steamers from Fort Myers to Kissimmee (Bousquin et al., 2005). These excavations eliminated the meandering river channel, and the spoil deposited along the shorelines destroyed approximately 6,200 acres of floodplain wetland habitat. Newly drained and filled lands along the canals became suitable for ranching and farming. In 1902, Congress authorized additional alterations to complete the 3-foot deep and 30-foot-wide river channel between the city of Kissimmee and Fort Basinger, as well as between Lake Istokpoga and the Kissimmee River.

The establishment of the Everglades Drainage District by the State of Florida in 1907 and the enactment of the General Drainage Act in 1913 contributed to the rapid development in central and south Florida. The rise in population and insufficient flood protection led to severe flooding in the Kissimmee River basin (**Figure 3**). A series of hurricanes followed in 1926 and 1928, producing extensive rainfall and flooding that resulted in significant losses of life and property (USACE, 1991). As a result of the prolonged flooding within the basin, Congress authorized a modification to the Kissimmee navigation project to include a flood control component. Later, over half a million acres were flooded again by a series of hurricanes in 1947. The prolonged flooding prompted a public outcry for federal assistance to reduce flood damage to property in the basin.



Figure 3. 1948 Flood event in the city of Kissimmee.

Consequently, Congress authorized the USACE to initiate construction of the Central and Southern Florida Project in 1948, which led to engineering changes to deepen, straighten, and widen the waterway. The Kissimmee River portion of the project was then authorized in 1954, allowing the channelization and installation of control structures in the upper portion (Upper Basin) and lower portion (Lower Basin) of the Kissimmee River. Between 1962 and 1971, the 103-mile meandering river was channelized by cutting and dredging a 56-mile-long, 30 feet deep, and 300 feet wide (C-38 canal). Inflow from the Kissimmee Chain of Lakes became regulated by six water control structures, creating a series of pools along the C-38 canal upstream of each structure.



Figure 4. Kissimmee River channelization, circa 1962-1971.

While the project achieved flood protection, it also caused severe damage to the biological communities of the river and floodplain ecosystem. The channelization of the river destroyed much of the floodplain-dependent ecosystem that nurtured the threatened and endangered species. While the channelization was ongoing, a drastic decline in bird, fish, and other wetland-dependent species was reported in a U.S. Geological Survey. These impacts on the river's natural resources elicited another public outcry, which led to the grassroots efforts to restore the Kissimmee River. The grassroots efforts prompted the 1971 Governor's Conference on Water Management in South Florida, which later resulted in the Florida legislature enacting the 1976 Kissimmee River

Restoration Act. Following the passing of this Act, the U.S. Congress later authorized the Water Resources Development Act of 1992, which authorized ecosystem restoration of the river, the Kissimmee River Restoration Project as well as the Headwaters Revitalization Project, which authorized changes to several lakes in the Upper Basin to support the Kissimmee River Restoration Project. These projects are designed to restore over 40 square miles of river/floodplain ecosystem, including almost 12,398 acres of wetlands and 40 miles of historic river channel. After extensive planning, construction for the Kissimmee River Restoration Project began in 1999, with backfilling 8 miles of the C-38 canal. In July 2021, the District and the USACE held a ribbon-cutting event to celebrate the completion of the Kissimmee River Restoration Project. This marked the successful backfilling of 22 miles of the C-38 canal between Lakes Kissimmee and Okeechobee and the restoration of the flow to 24 miles of the meandering Kissimmee River.

A more in-depth historical overview of the region can be found in **Appendix A**.

5. RESOURCE DESCRIPTION AND ASSESSMENT

5.1 Infrastructure

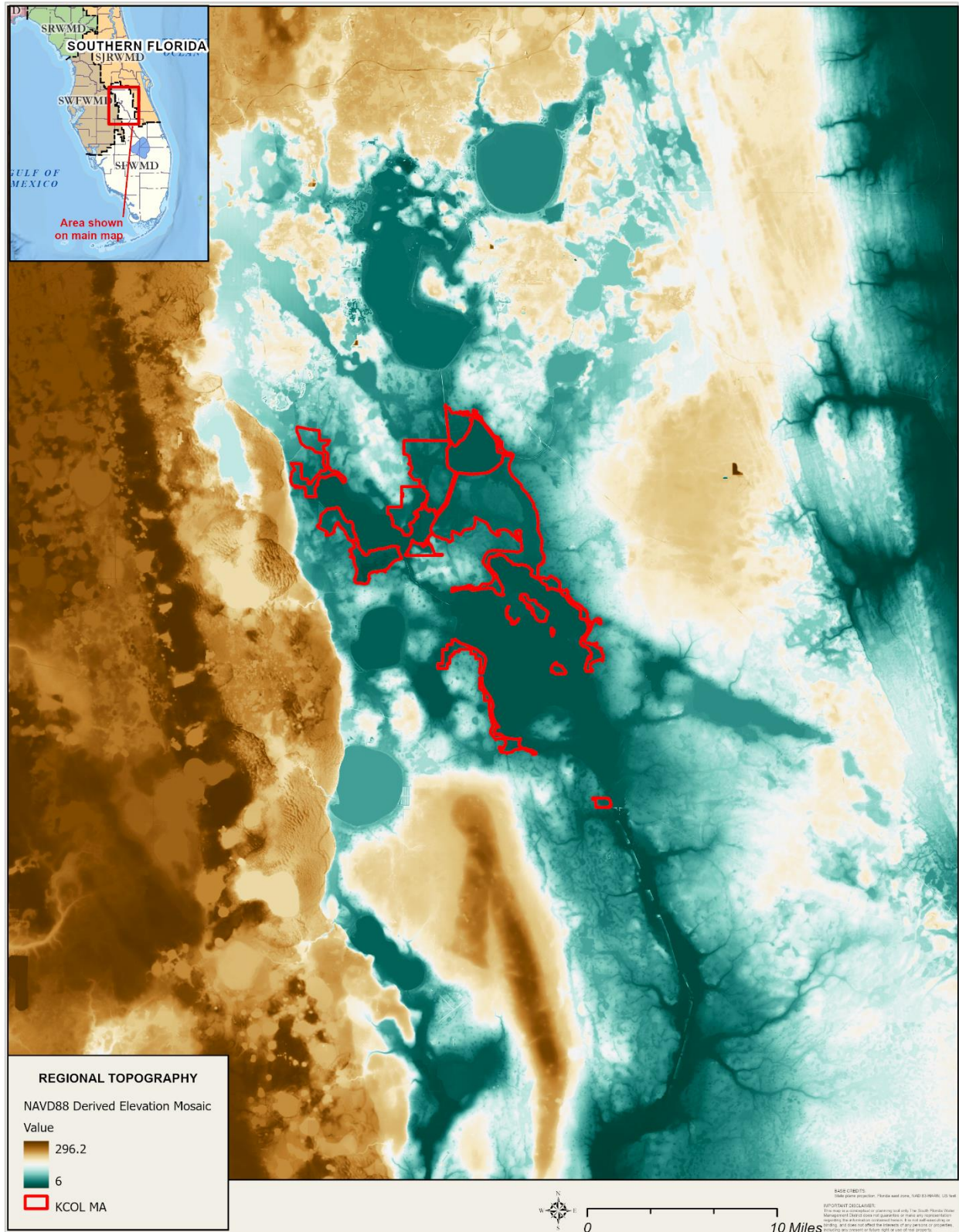
Access to KCOL MA is mainly through boats and airboats from private launches on the C-37 canal and at Port Hatchineha, as well as public boat ramps at Lake Cypress and Lake Kissimmee. The District maintains 66 miles of firelines and 87 miles of service roads through activities such as mowing, tilling, culvert replacement, and road improvements. The District also maintains the perimeter fences semi-annually and conducts periodic repairs or replacements as needed. Additionally, the District maintains eighteen primitive camping areas and seven airboat pavilions with the assistance of dedicated volunteer organizations.

5.2 Physiograph

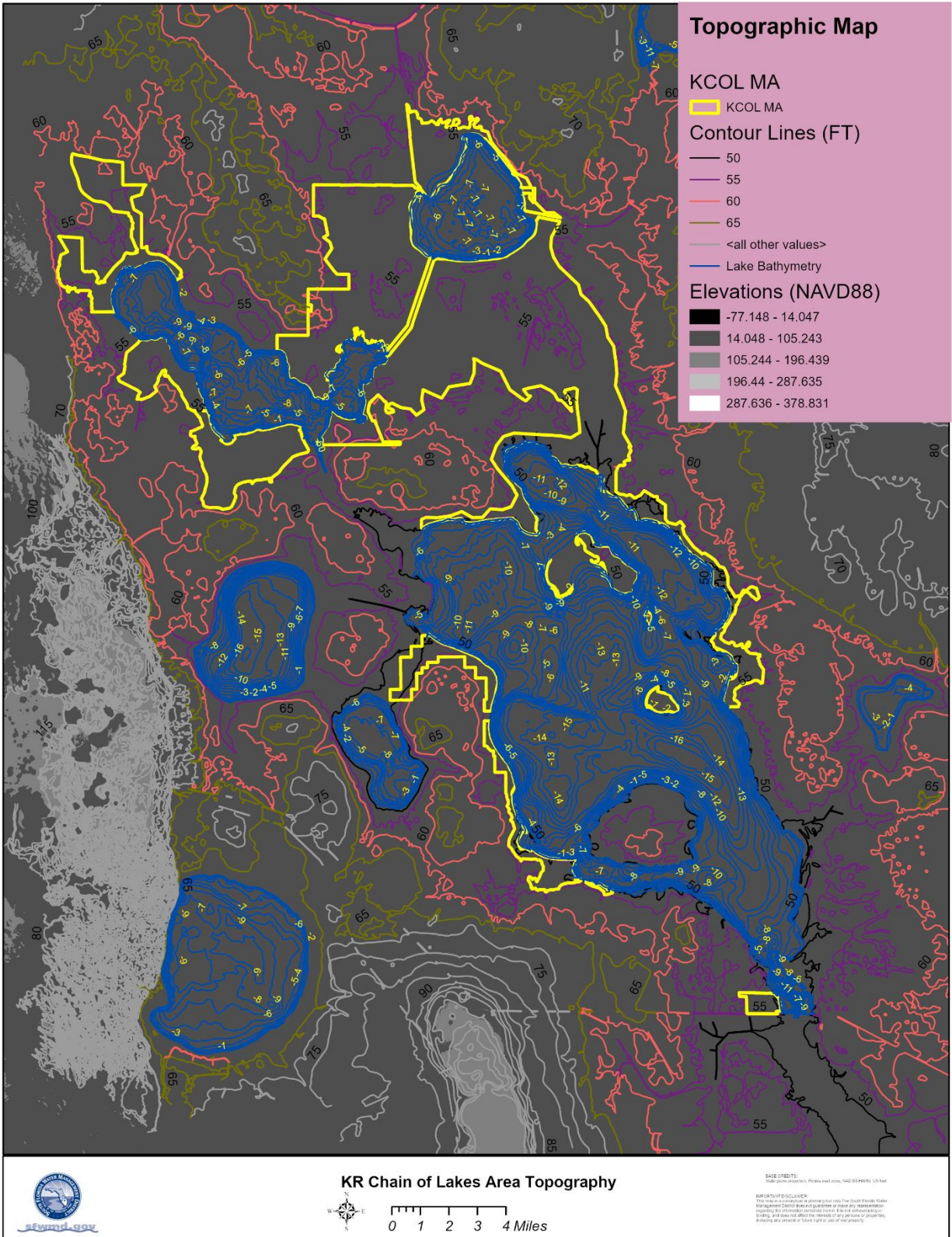
Topography

The natural topography in the KCOL MA (**Maps 3 and 4**) generally slopes towards the low-lying ditches, natural creeks, and, ultimately, the Chain of Lakes. Elevations within the property range from 50 to 65 feet NAVD with the surrounding areas ranging from 30 to 150 feet NAVD. Water depth in the surrounding lakes ranges between 3 to 26 feet.

Kissimmee Chain of Lakes Management Area General Management Plan 2025 – 2035
South Florida Water Management District, Land Stewardship Section



Map 3. Regional topography.



Map 4. KCOL area elevations.

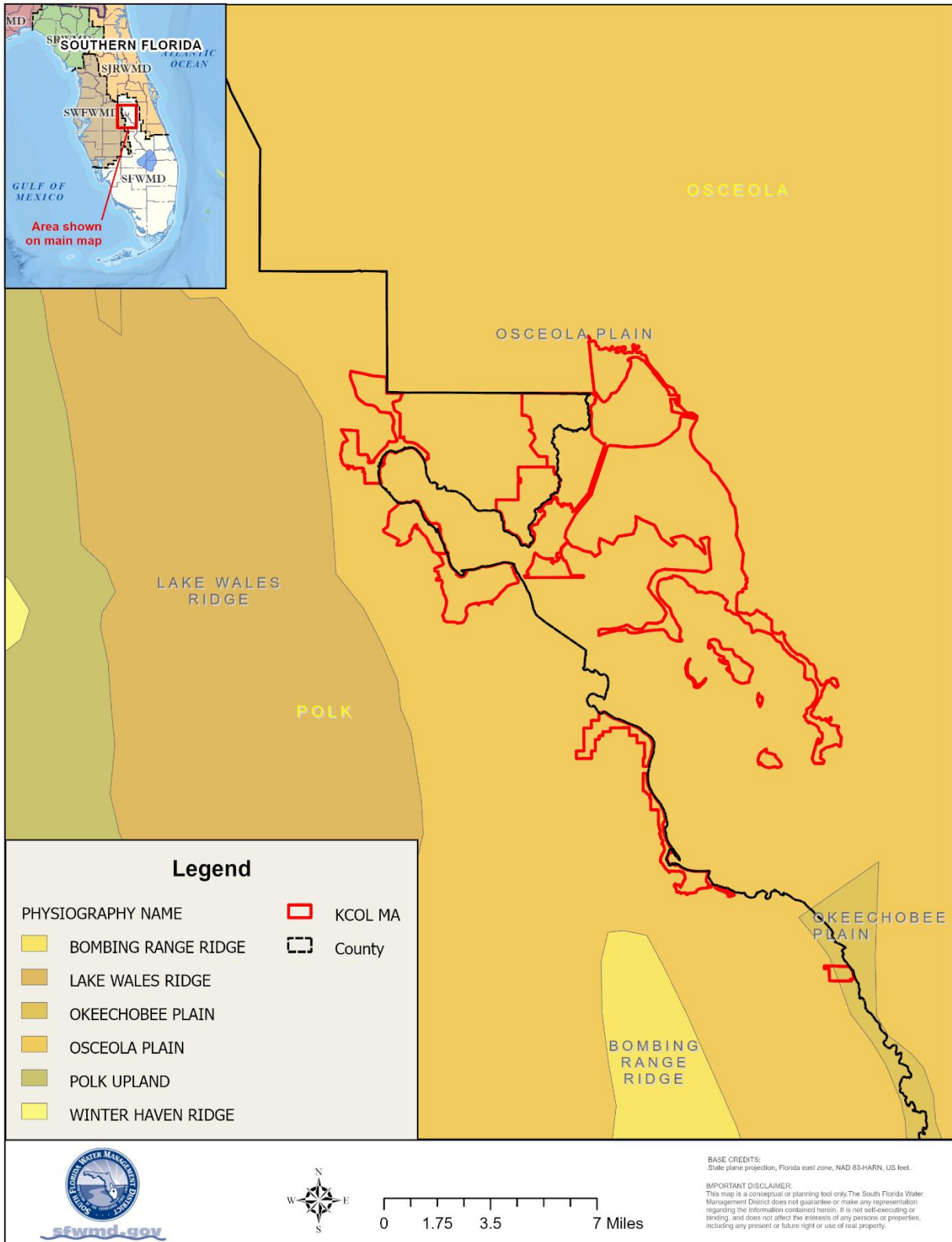
Geology

Kissimmee is located within the Coastal Lowlands of the Coastal Plain physiographic province of the eastern United States. This physiography includes several geomorphic features, including the Atlantic Coastal Ridge, Big Cypress Spur, Big Cypress Swamp, Caloosahatchee Valley, De Soto Plain, Eastern Valley, Everglades, Gulf Coastal Lowlands, Immokalee Rise, Mangrove and Coastal Glades, Osceola Plain, Sandy Flatlands, and the Southwestern Slope. The Kissimmee Chain of Lakes falls with the Osceola and Okeechobee Plains (**Map 5**). The Osceola Plain has little relief with elevations ranging from about 50 to 75 ft (NGVD) and generally slopes southward to a low elevation of 40 ft in Okeechobee County. The Eastern Valley borders it to the east, and the Central Highlands physiography, which includes Lake Wales Ridge, Polk Uplands west, Mount Dora, and Orlando ridges, borders it to the north and the west. The highest elevation of the Osceola Plain occurs in the northwest corner, where it rises to 90 to 95 ft (NGVD). The remainder of the Osceola Plain occurs between 60 and 70 ft (NGVD). Drainage is mainly towards the Kissimmee River basin. A small ridge separates the Osceola Plain from the Okeechobee Plain to the south. The Okeechobee Plain lies mostly south of the Osceola Plain and is characterized by gently sloping, poorly drained sands and organic deposits. Elevations range from elevation 15 ft (NGVD) at Lake Okeechobee to 40 ft elevation in the north from the toe of the scarp that separates it from the Osceola Plain.

The Kissimmee River drainage basin has a complex groundwater system that includes three major hydrogeologic units: the surficial aquifer system, the intermediate confining unit, and the Floridan aquifer system. The surficial aquifer system is primarily recharged by rainfall. The Floridan aquifer system is subdivided into the Upper and the Lower Floridan aquifer, which are separated by a semi-confining unit. The Upper Floridan aquifer in the northern portion of the Kissimmee River drainage basin is recharged by direct downward leakance (e.g., through sinkholes) from the surficial aquifer system and, where present, through the intermediate confining unit. (SFWMD, 2020).

The sandy soils found throughout the Kissimmee drainage basin are derived primarily from marine-deposited silica sands.

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Map 5. KCOL Major geomorphic features.

Climate

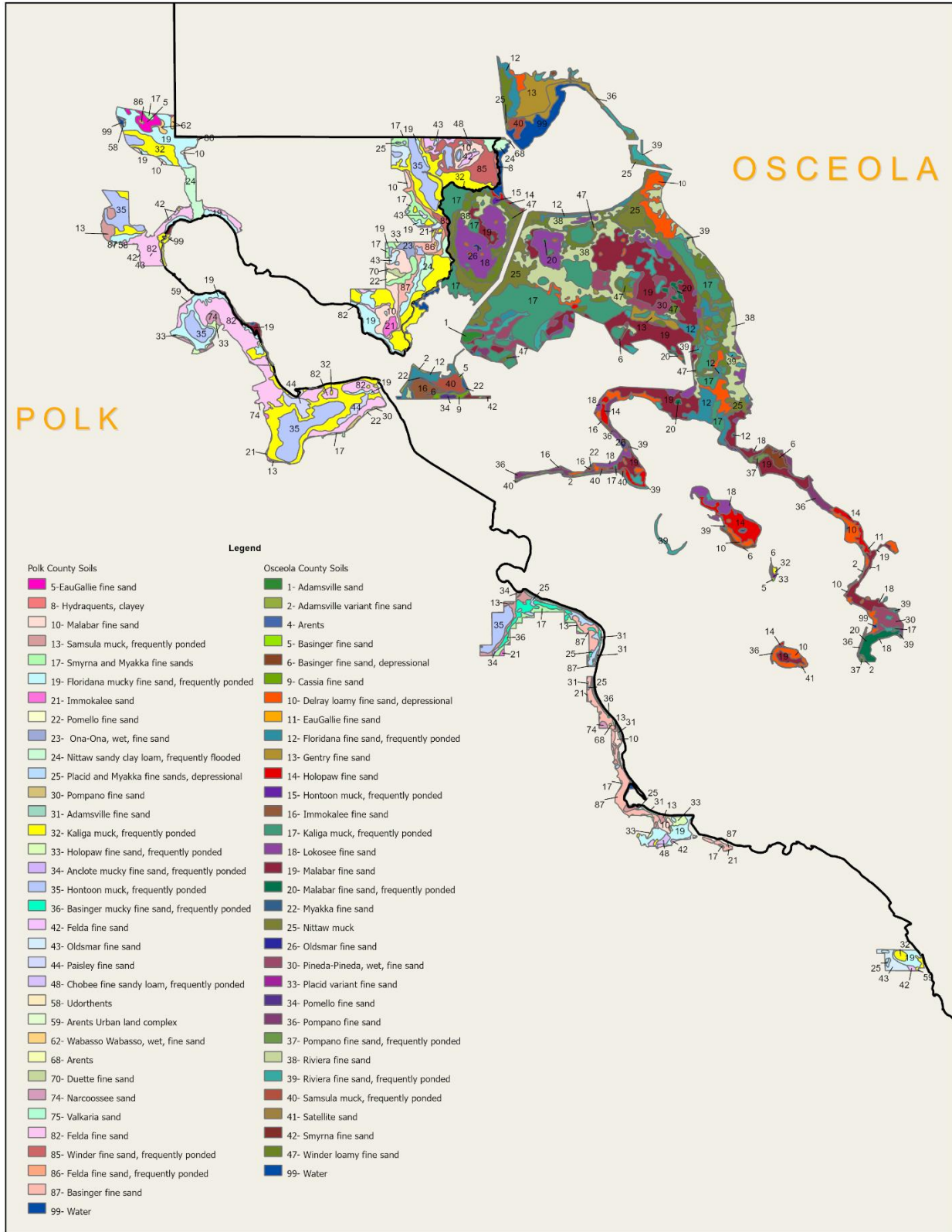
The Kissimmee Basin experiences a humid, subtropical climate with wet and dry seasons of nearly equal length. Average yearly rainfall is 48 inches in the Upper Kissimmee Basin and 45 to 50 inches in the Lower Kissimmee Basin. Most precipitation falls during a distinct wet season (June to October).

Soils

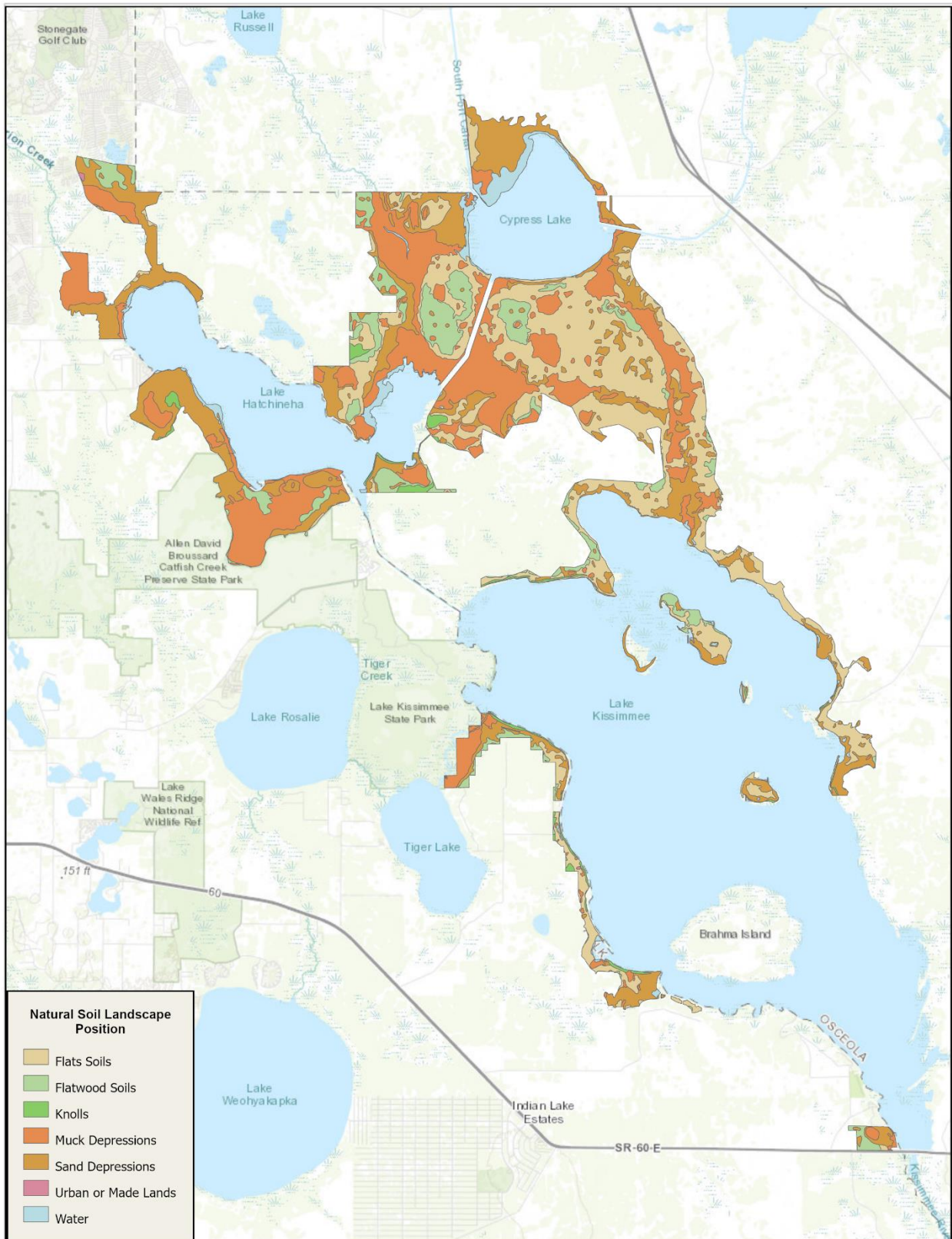
A soil map encompassing the KCOL MA (**Map 6**) was compiled using Polk and Osceola County soil survey data from the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). Most of these soils are dominated by poorly drained soils composed primarily Delray loamy fine sand, Felda fine sand, Floridana mucky fine sand, Hontoon muck, Kaliga muck, Lokese, Malabar fine sand, Nittaw muck, and Riviera fine sand. Other soil inclusions include Adamsville sand, Basinger fine sand, Cassia fine sand, Chobee fine sandy loam, Duette fine sand, Eaugallie fine sand, Felda fine sand, Floridana fine sand, Immokalee sand, Gentry, Holopaw fine sand, Hydraquents, Myakka sands depressional, Narcoossee sand, Oldsmar fine sands, Paisley fine sand, Pineda fine sand, Placid fine sand, Pomello fine sand, Pompano fine sand, Samsula muck, Smyrna fine sand, Wabasso, and Winder fine sand. Information about soils is updated by NRCS periodically and available through the NRCS Web Soil Survey.

Weathering, erosion, climatic conditions, vegetation effects, and topographical locations of resident soils have resulted in numerous differences in soil characteristics. The Natural Soil Landscape Positions (NSLP) classification system groups South Florida soils into 12 categories based on hydrology and soil morphology that reflect the area's local relative topography, hydrology, and vegetation (Zahina et al. 2001). The soils within the KCOL MA are classified into seven distinct soil categories: flats soils, flatwoods soils, knolls, muck depressions, sand depressions, tidal soils, and urban/made lands (**Map 7**). The soil classification database provides a complete description of soil classification, vegetation associations, and map and data files of NSLP (Zahina et al., 2001).

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Map 6. KCOL NRCS soil classifications.



Map 7. KCOL NSLP soil classifications.

Soil Contamination and Excavation Sites

A review of pre-acquisition Phase I Environmental Assessments for the Kissimmee Chain of Lakes properties revealed no major soil contamination sites. The Drasdo unit contained a sawmill with a small area of stained soil beneath the motor, which was satisfactorily excavated and remediated prior to acquisition. Cattle dipping vats were discovered on Strum Island, Lemon Point, and Gardner-Cobb Marsh. Contaminated soil was found at these sites and was subsequently removed and replaced with clean soil. The Department of Environmental Protection (FDEP) has confirmed that no further action was necessary following the cleanup. Due to the property's history of agricultural use, there is a possibility of additional cattle dipping vats being present. The potential for additional vats will continue to be investigated, and any need for additional cleanup will be coordinated with FDEP.

Hydrology

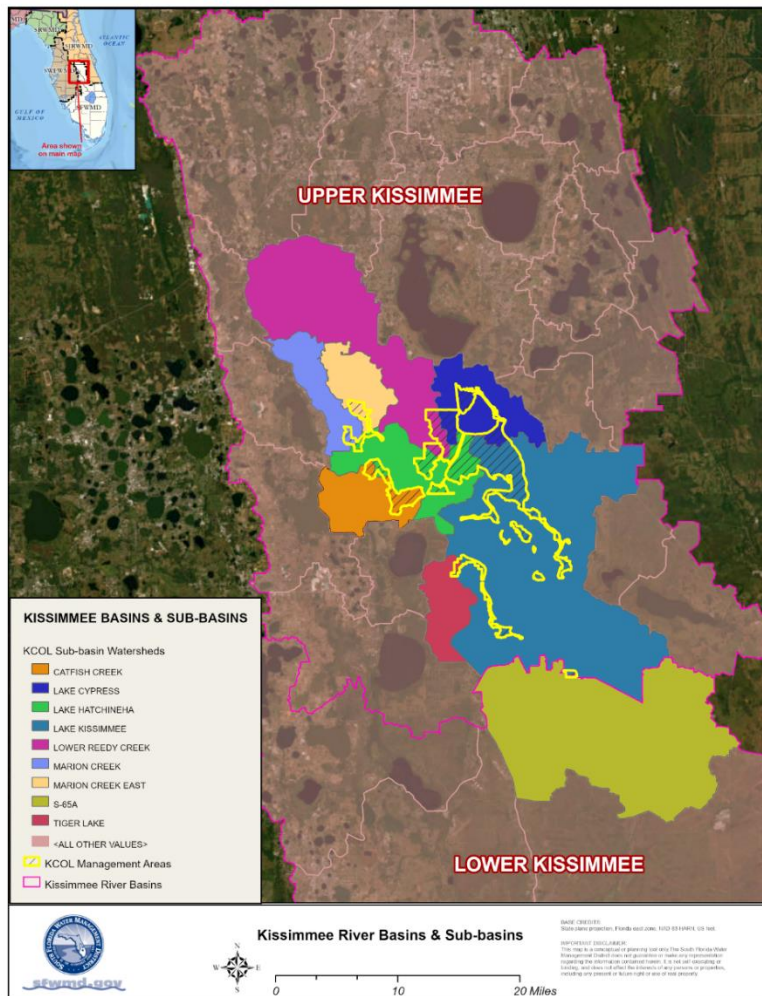
The KCOL MA is located within the Upper Kissimmee Drainage Basin. The Kissimmee Drainage Basin forms the headwaters of the Kissimmee-Okeechobee-Everglades system and is the largest watershed discharging surface water to Lake Okeechobee. The basin is divided into two parts: the Upper Basin, covering 1,633 square miles, including Lake Kissimmee and the east and west chain of lakes area in Orange and Osceola Counties, and the Lower Basin, covering 758 square miles, including the tributary watersheds of the Kissimmee River between the outlet in Lake Kissimmee and Lake Okeechobee (USACE, 1991). The KCOL MA lies within eight of the sub-basins of the Upper Basin: Catfish Creek, Lake Cypress, Lake Hatchineha, Lake Kissimmee, Lower Reedy Creek, Marion Creek, S-65A, and Tiger Lake (**Map 8**). The management area is just a small part of the larger Upper Basin, which includes a system of more than 25 interconnected lakes.

The KCOL MA drainage pattern is influenced by the network of ditches and creeks on the property, but the hydrology of this area and its surroundings is closely connected to the Chain of Lakes, which is currently regulated by the water control structures on the C-38 Canal. Historically, the lakes within the Kissimmee River basin were interconnected by streams and sloughs, and the hydrology was cyclical in response to periods of high and low rainfall. During the wet seasons, the water levels in the Chain of Lakes would rise and overflow, creating expansive, marshy connections between the lakes. Flows through the Upper Basin originated near Alligator Lake, then flowed northward through the East Chain of Lakes to Lake Hart. Then, it continued flowing southward through East Lake Tohopekaliga, Lake Tohopekaliga (Lake Toho), Lake Cypress, Lake Hatchineha, and Lake Kissimmee.

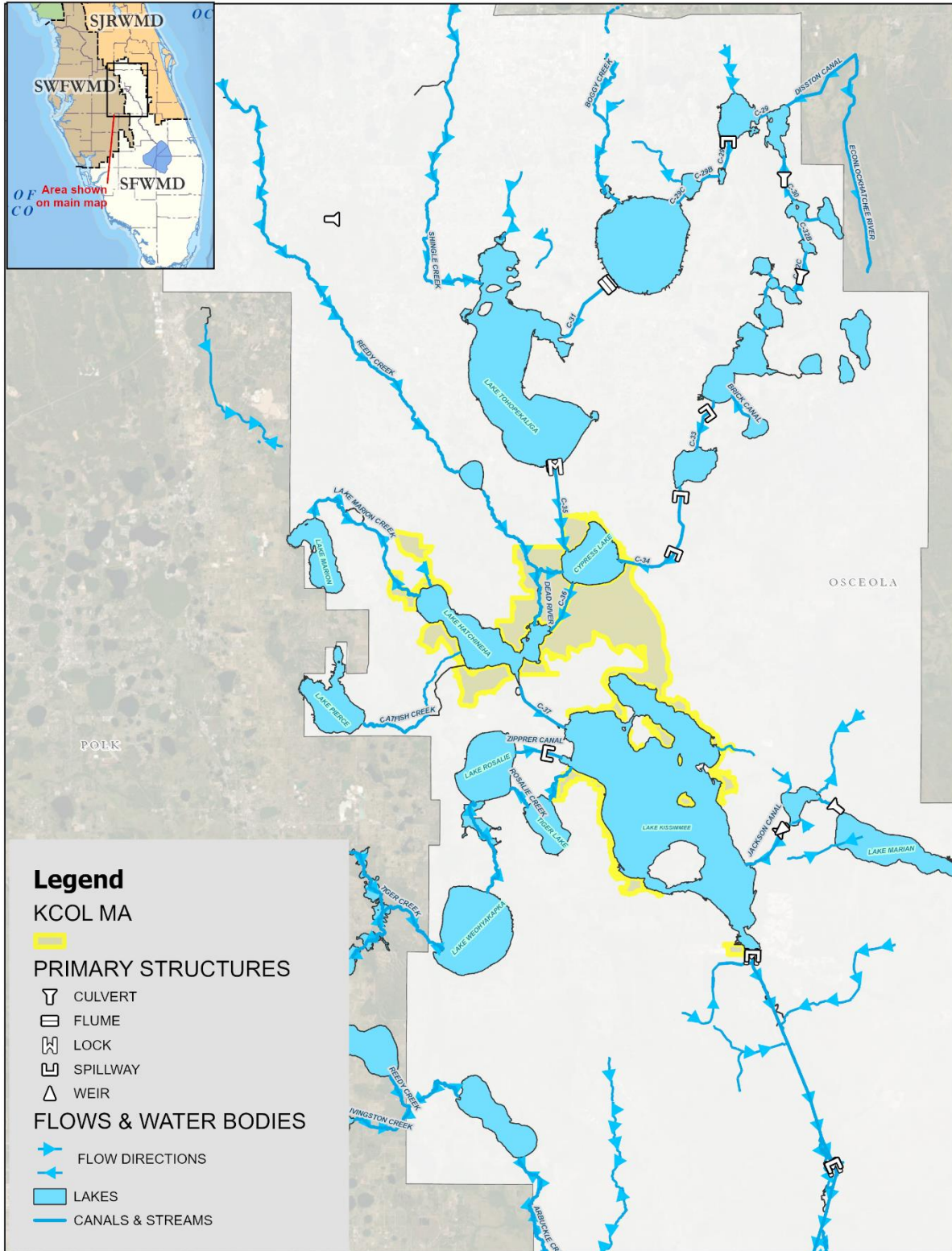
Historically, water stages in Lake Kissimmee ranged from 45 to 56 ft NGVD. The historic Kissimmee River naturally meandered within the narrow river floodplain starting from Lake Kissimmee. The Chain of Lakes had limited outfall capacity through the meandering route of the natural Kissimmee River. This caused them to function as natural reservoirs, allowing for the storage of water in the wet season and the continual release of water throughout the remainder of the year. Between 1964 and 1970, several control structures were installed to regulate water levels and outflows in the Upper Basin (**Map 9**). These structures were part of the Central and South Florida Flood Control Project, which established a system to control water levels in the Chain of

Lakes by following a regulated schedule to minimize the risk of flooding. The schedule outlines criteria for managing lake levels for flood control and water supply. This schedule also establishes the seasonal and monthly stage limits necessary to provide the intended level of flood protection. The structures are equipped with multiple gates that can be opened and closed and operate according to stage regulation schedule. The primary outfall structure, S-65, located at the southern end of Lake Kissimmee, controls the outflow of the Upper Basin watershed.

The regulation schedule for the Chain of Lakes is being modified as part of the Headwaters Revitalization Project. The modification, which will be implemented in several phases, aims to increase water storage in the Kissimmee River and its floodplain wetlands to better match historical flows. The new schedule will gradually increase seasonal water storage in Lake Kissimmee, Lake Cypress, and Lake Hatchineha over the course of several years. Once fully implemented, this schedule will allow lake water levels to rise 1.5 ft higher than the current S-65 schedule allows and will increase the water storage capacity in lakes Kissimmee, Hatchineha, Cypress, and Tiger by approximately 100,000 acre-feet. This modification is also expected to raise water levels in the lakes' littoral zones.



Map 8. KCOL Region basin watersheds and sub-watersheds.



Map 9. Regional hydrography.

5.3 Vegetation

The Kissimmee River basin supports diverse flora and fauna in its wetlands. Its floodplains are home to a rich variety of fish and aquatic life, including unique species of fish and turtles. Because of the large number of fish available, the region is abundant in birds, some of which migrate seasonally from various continents.

A resource inventory has been completed in Catfish Creek, Gardner-Cobb, Kissimmee Islands (Bird, Sturm, and Rabbit Islands), Lake Cypress, Oasis Marsh, and West Shore Management Units. While a full inventory has not been conducted on the other units, the vegetation in these units is representative of the vegetation found in habitat communities inventoried within the KCOL MA.

Eleven distinct natural community types exist within the KCOL MA (Maps 10; Figure 5). The District groups natural community types based on the descriptions in the Florida Natural Areas Inventory (FNAI) Classification system (FNAI, 2010) and the Florida Land Cover Classification System (Kawula & Redner, 2018).

A detailed description of the natural communities is provided in Appendix B.

Percent Coverage of Plant Communities in KCOL MA

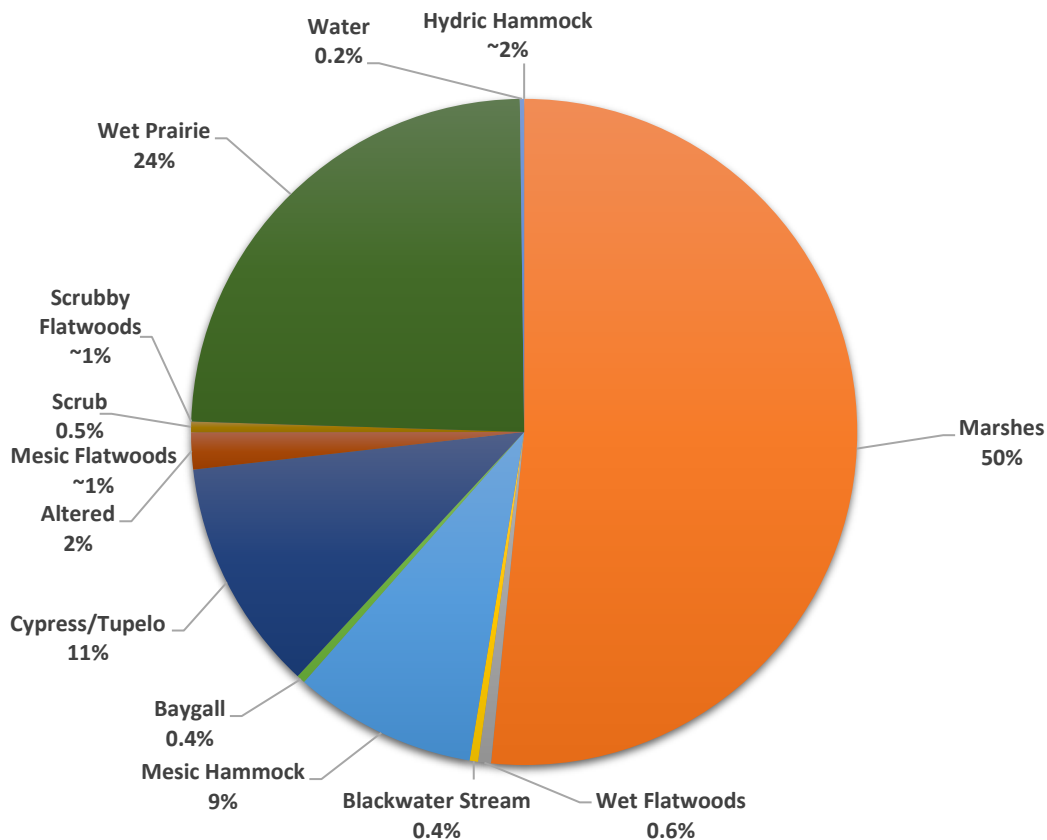
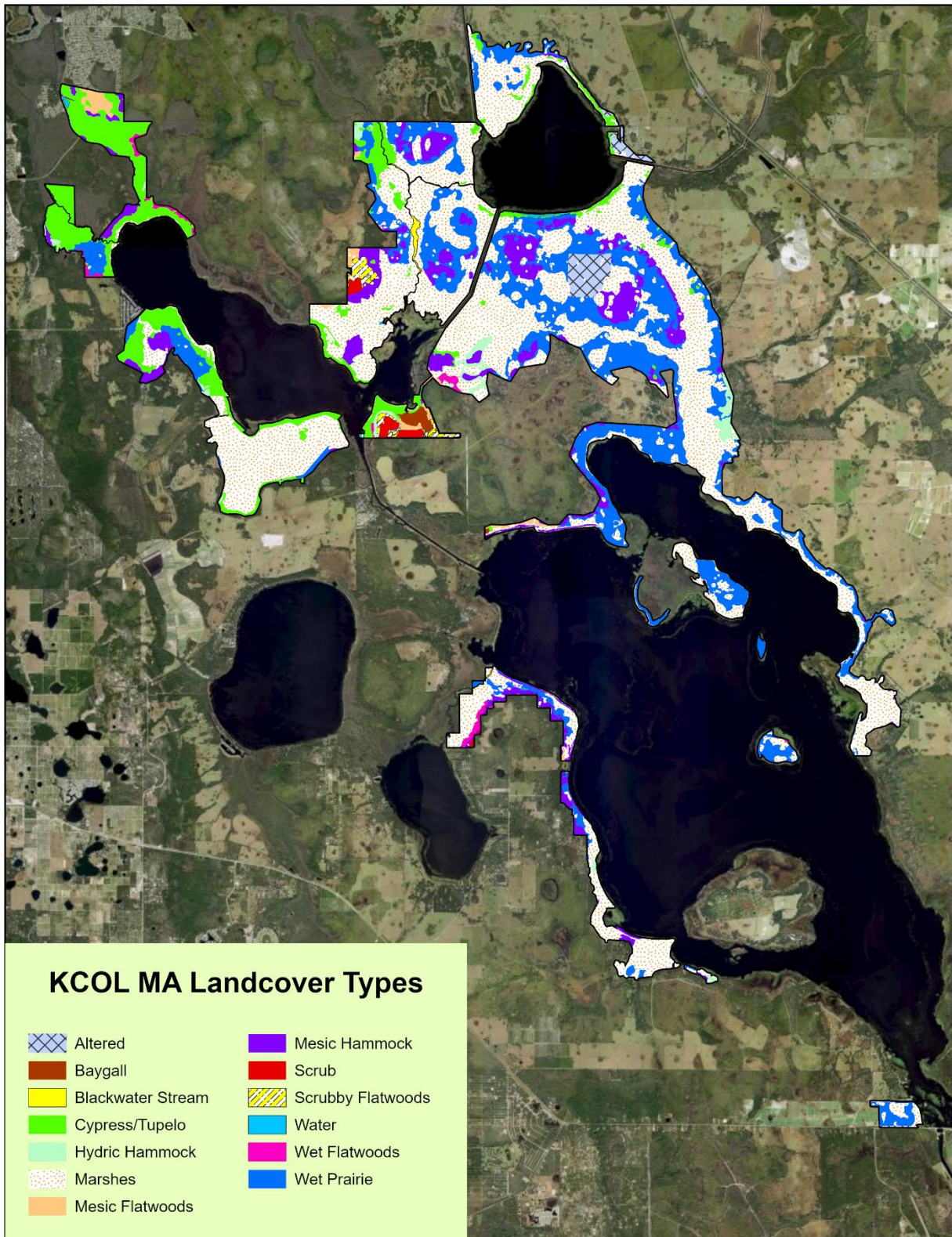


Figure 5. Percent coverage of plant communities in the KCOL MA.



Map 10. KCOL natural communities and altered landcover types.

Listed Species

Listed species include those plants and animals identified as rare, threatened, or endangered by the U.S. Fish and Wildlife Service (FWS), FWC, and the Florida Department of Agriculture and Consumer Services. KCOL and its floodplain provide for several federal and state-listed endangered or threatened plant and animal species. **Table 1** includes a list of these plant species found within the management area.

Table 1. Listed plant species on the KCOL MA and current status.^a

Common Name	Scientific Name	Status
Bulbous wild pine; Northern needleleaf	<i>Tillandsia balbisiana</i>	ST
Cardinal airplant; Stiff-leaved wild pine	<i>Tillandsia fasciculata</i>	ES
Giant orchid	<i>Orthochilus ecristatus</i>	ST
Giant wild pine	<i>Tillandsia utriculata</i>	ES
Giantspiral ladiestresses	<i>Spiranthes longilabris</i>	ST
Hand fern	<i>Ophioglossum palmatum</i>	ES
Yellow butterwort	<i>Pinguicula lutea</i>	ST

a. Key to abbreviations: Species listed by the State of Florida as State-designated Threatened (ST) & State-designated Endangered (ES).

Nuisance and Invasive Plant Species

South Florida’s subtropical climate provides an excellent growth environment for the rapid spread of nuisance and invasive plants that can cause extensive alterations to the natural ecosystems. Nuisance and invasive plant infestations can result in partial or total displacement of native plants, loss of wildlife habitat, and the degradation of public use areas. Environmental changes caused by extensive hydroperiod alterations have been a major factor in the nuisance and invasive plant colonization within the KCOL MA. Without proper land management, nuisance and invasive plant expansion will continue to displace our native plants, reduce wildlife utilization, and degrade public use areas. The District is committed to reducing invasive species' proliferation to protect its management areas' ecological values (SFWMD, 2020).

5.4 Wildlife

The plant communities in the management area provide habitat for various species, including birds, fish, amphibians, reptiles, and mammals. Additionally, the wetlands in the KCOL MA are hydrologically connected to the Chain of Lakes, which allows species, such as fish and birds that inhabit and utilize those lakes also to be found in the KCOL MA. Initial wildlife inventories conducted in the management area between 1987 and 1989 generated a list of species observed, including birds, mammals, reptiles, and amphibians. As new species are observed and classifications change, this species list is updated accordingly. The latest update can be found in Appendix C.

Rare, Threatened and Endangered Listed Species

The Kissimmee Chain of Lakes supports a variety of federally listed animal species. Several listed wildlife species have been observed in the management area, including one (1) listed as endangered, four (4) as threatened, one (1) as threatened nonessential experimental population, and one (1) as threatened due to similarity of appearance. The area also supports seven (7) listed species designated as state threatened. A list of these listed species is included in **Table 2**.

Table 2. Listed wildlife species on the KCOL MA and current status. ^{a,*}

Common Name	Scientific Name	Listing Status
Birds		
Crested Caracara	<i>Caracara cheriway</i>	FT
Everglade Snail Kite	<i>Rostrhamus sociabilis plumbeus</i>	FE
Florida bonneted bat	<i>Eumops floridanus*</i>	FE
Florida Grasshopper Sparrow	<i>Ammodramus savannarum floridanus*</i>	FE
Florida Sandhill Crane	<i>Grus canadensis pratensis</i>	ST
Florida scrub-jay	<i>Apelocoma coerulescens</i>	FT
Little Blue Heron	<i>Egretta caerulea</i>	ST
Reddish egret	<i>Egretta rufescens</i>	ST
Roseate Spoonbill	<i>Platalea ajaja</i>	ST
Southeastern American Kestrel	<i>Falco sparverius paulus</i>	ST
Tricolored Heron	<i>Egretta tricolor</i>	ST
Whooping crane	<i>Grus americana</i>	FXN
Wood Stork	<i>Mycteria americana</i>	FT
Herps		
American Alligator	<i>Alligator mississippiensis</i>	FT/(S/A)
Eastern indigo snake	<i>Drymarchon corais couperi*</i>	FT
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	ST
Gopher Tortoise	<i>Gopherus polyphemus</i>	ST

a. Key to abbreviations: Species listed by the State of Florida as Federally-designated Endangered (FE), Federally-designated Threatened (FT), Federally-designated Threatened because of similarity of appearance [FT(S/A)], FXN Federally-designated Threatened Nonessential Experimental Population.

*Species likely to be present on or near the property based on habitat and species range models, but not documented.

Nuisance and invasive Animal Species

Invasive wildlife species harm native wildlife and can negatively impact native vegetation or seriously interfere with management objectives. Some of the species of concern are Nile monitor, purple swamphen, feral hog, pythons, tegu, and spiny iguana. The District coordinates with FWC to reduce populations of these species through trapping and public hunts, where hunting is allowed. The results of population control efforts are monitored by periodic site evaluations.

Feral hogs have significant impacts on natural communities and land management operations. Their disruption of soil and vegetation through rooting alters natural communities and can be

especially damaging in sensitive habitats that are slow to recover. Land management objectives are affected when rooting disturbance disrupts prescribed burns by limiting the horizontal spread of fire. Areas of disturbed soil can also be more susceptible to nuisance and invasive plant invasion. Rooting can also impact hiking trails, reptile populations, and ground-nesting birds. Feral hogs are the main nuisance and invasive pest species that occur within the management area. Since 2005, the District has also utilized no-cost hog control agents to remove feral hog from the management area when necessary. The District utilizes year-round public hunting as the primary method for hog removal in the KCOL MA.

5.5 Cultural Resources

There are fifteen Native American archaeological earthwork sites in the management area registered in the Florida Master Site File as sites of archaeological significance. In 2002, an archaeological survey was conducted in the Gardner-Cobb Marsh and Drasdo Marsh Units to locate and identify additional significant sites for protection, preservation, and management. A total of eleven sites were found. The artifacts found were analyzed and categorized into lithics, ceramics, historical artifacts, and faunal or botanical remains.

The plan does not specify exact site locations or provide detailed descriptions of cultural resources within the KCOL MA due to the sensitive nature of this information. The District is dedicated to preserving the integrity of cultural resource sites within the management area. The management goal for cultural resources within the KCOL MA is to preserve sites and objects representing Florida's cultural periods. Land managers focus primarily on monitoring and prohibiting ground disturbing activities in and around these archaeological sites. Vegetation management and prescribed burning activities are carefully conducted to reduce the impact on these resources.

5.6 Mitigation

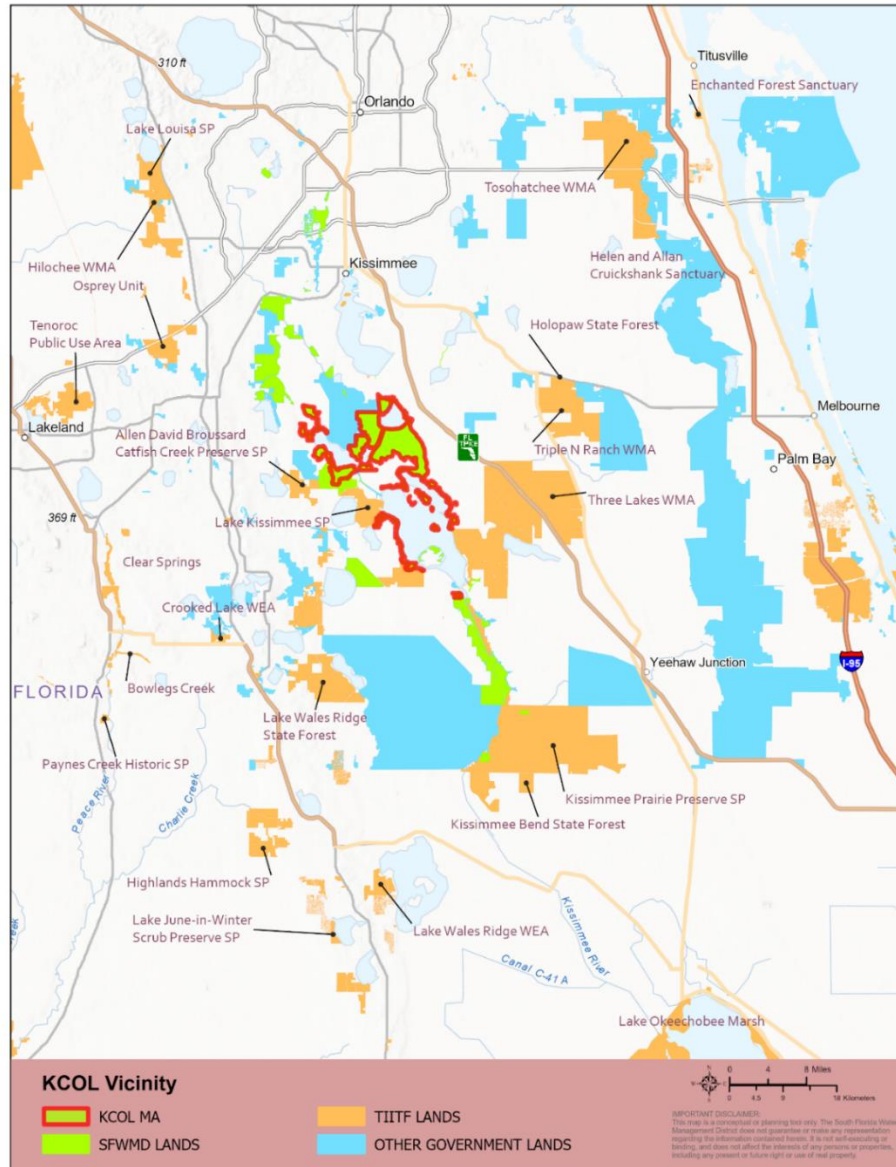
The District started accepting mitigation funds in 1995 pursuant to Section 373.414(1)(b), F.S. and has received funding for the preservation, restoration, and management of various District lands. Although the District no longer accepts new mitigation funds, it continues to utilize available funds from the previous mitigation payments for land management activities.

Mitigation funds were utilized to support the restoration efforts and management activities within the London Creek and Rolling Meadows units.

5.7 Potential Additions

The District acquires land through donations, mitigation, and purchase. Acquiring land within the Kissimmee River watershed helps achieve the environmental benefits of the Kissimmee River Restoration Project. The District and external partners have acquired almost 100,000 acres within the Kissimmee River basin to date. Land acquisition for the Kissimmee River Restoration Project is nearly complete, with approximately 1,263 acres remaining. While most lands within the Kissimmee River Restoration footprint are held in the public interest or easement, some private inholdings are within the Florida Forever acquisition boundary (**Map 11**). Acquiring these parcels

through a willing seller program would improve the continuity of existing conservation lands, access, and recreational opportunities.



Map 11. Conservation lands near the KCOL MA.

6. PUBLIC USE

The District encourages public use of management areas for appropriate natural resource-based activities. District lands are generally available for public use, except in instances where the public use would be incompatible with the purposes for which these lands were acquired, there is no legal public access, or where construction activities prohibit public entry. Public input into the management of these areas is solicited at the District’s quarterly Recreational Forum Meetings. In coordination with partnering agencies, adjustments to public use opportunities are made on an ongoing basis through the Recreational Forum Meetings and rulemaking, if necessary. This plan describes the scope of public use opportunities available or planned as of the date of the

management plan. Compatible recreation on District lands typically includes hiking, biking, hunting, fishing, frogging, horseback riding, canoeing, geocaching, boating, primitive camping, environmental education, wildlife viewing, nature photography, natural history study, and flora and fauna identification. These activities are designed to maximize the diversity and variety of recreational options available while ensuring the necessary resource protection measures are in place. This approach helps to maintain conservation values and ensures long-term benefits for the public.

The recreational opportunities in the KCOL MA include airboating, canoeing, kayaking, fishing, picnicking, camping, hunting, wildlife viewing, and nature photography. The service roads within the KCOL MA are accessible to hikers and bikers, but they are primarily used for hunting purposes. **Maps 12-13 and Table 3** show the locations of recreational points of interest accessible to the public. More information about the recreational opportunities on the KCOL MA can be found on the District's website and in the recreational guide.

The District partners with FWC to manage game species and public hunting opportunities on District lands that have been established as Wildlife Management Areas (WMAs), WEAs, Small Game Hunting Areas, and Public Use Areas. These designations allow FWC to utilize biologists and law enforcement staff to assist in the management of wildlife on District lands and enforce wildlife and public use rules for resource protection purposes. These designations also allow the FWC to establish hunting seasons and promulgate laws regulating public activities in these areas. A hunting brochure (**Appendix D**) outlining the regulations for hunting and other recreational activities in the KCOL Area is available online.

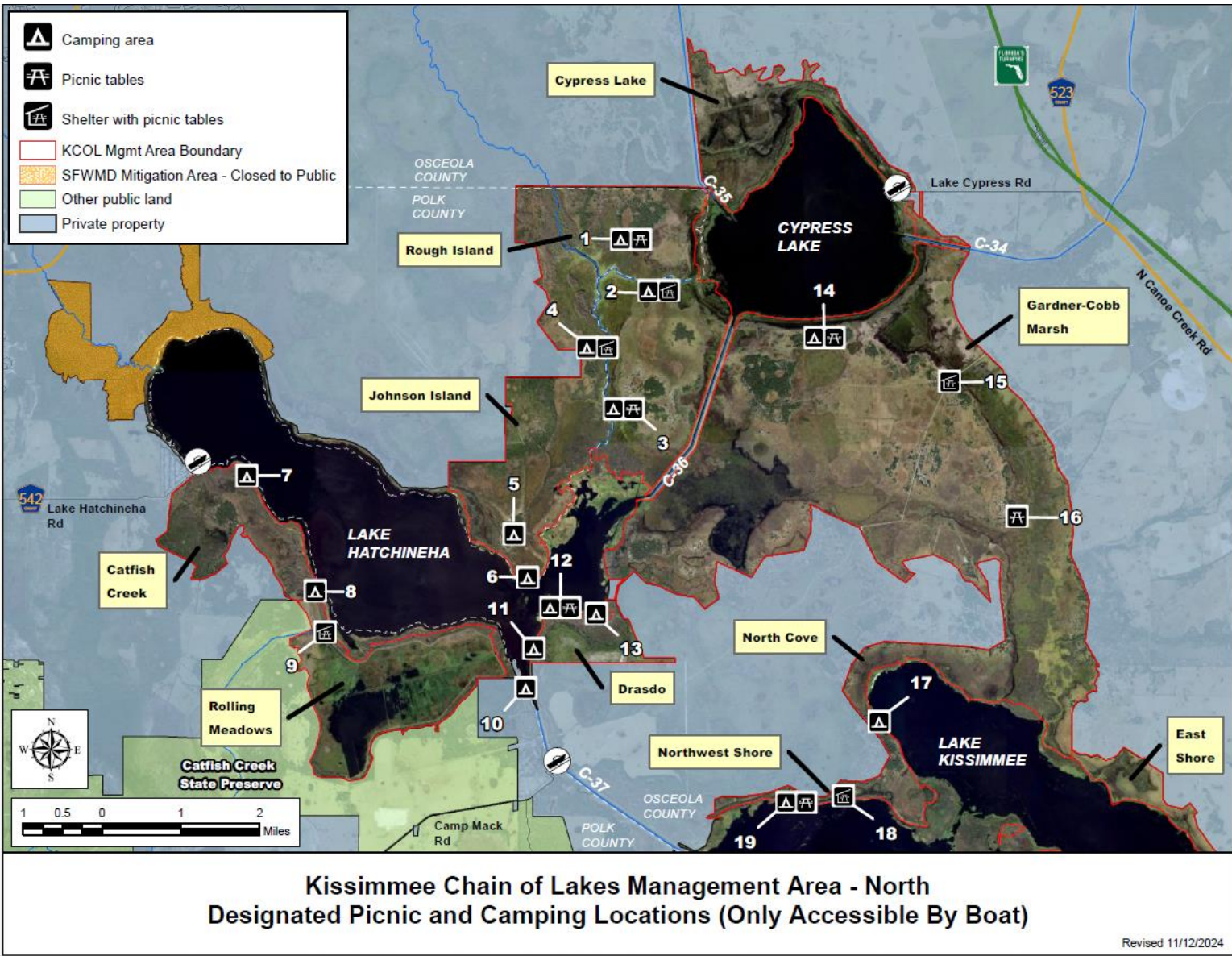
Resource Protection

The District uses law enforcement surveillance to protect natural and cultural resources, safeguard the public, and deter vandalism, dumping, poaching, and other unlawful activities on its lands. As part of the cooperative land management agreement with FWC, the Commission administers hunts for various game species on the KCOL MA and has the authority to enforce regulations concerning wildlife resources, aquatic life, and public use within the area.

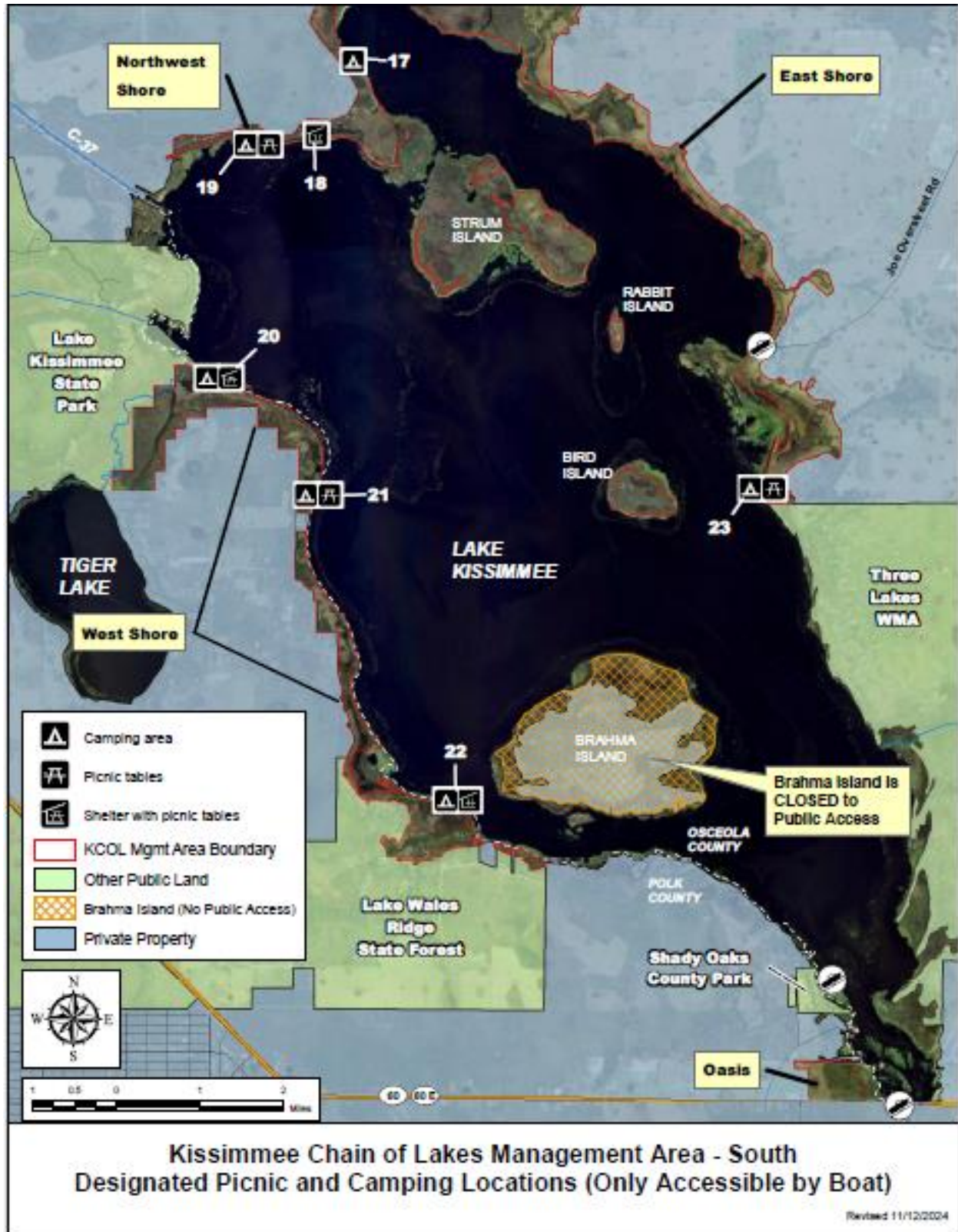
During hunting seasons, FWC maintains a consistent presence in the KCOL MA. The protection of resources on the KCOL MA is further enhanced by establishing and maintaining posted property boundaries and the regular presence of staff in the area. Given its connectivity to other public and private conservation lands and its wetland and lake-dominated landscape, the KCOL MA has limited access points, which contribute to the protection of its natural resources and District assets. Additionally, the KCOL MA upland boundaries have been fenced where necessary, and the perimeter is marked with visible signage in areas where entry is likely.

In addition to this primary level of security, the District has implemented an “enhanced patrol” program to increase law enforcement presence on District lands as needed. This program is designed to increase law enforcement presence on District lands when necessary and allocates funding for additional patrols to conduct targeted operations to address specific law enforcement needs.

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Map 12. KCOL MA public use amenities (North).



Map 13. KCOL MA public use amenities (South).

Table 3. List of recreation points of interest in the KCOL MA.

Site ID	Name/Area	Latitude	Longitude
1	Rough Island North	28° 4' 31.25" N	81° 21' 30.96" W
2	Rough Island South - Reedy Creek	28° 3' 57.61" N	81° 21' 13.82" W
3	Rough Island South - Dead River	28° 2' 39.21" N	81° 21' 36.22" W
4	Cowboy Camp	28° 3' 19.59" N	81° 21' 58.10" W
5	Johnson Island Oak Hammock	28° 1' 14.71" N	81° 22' 58.00" W
6	Johnson Island Ridges	28° 0' 44.57" N	81° 22' 46.54" W
7	Catfish Creek North Ridge	28° 1' 53.57" N	81° 26' 17.69" W
8	Catfish Creek South Ridge	28° 0' 36.97" N	81° 25' 27.24" W
9	Rolling Meadows Shelter	28° 0' 8.53" N	81° 25' 19.26" W
10	Lake Hatchineha/C-37 Spoil Island	27° 59' 34.17" N	81° 22' 50.35" W
11	Drasdo West	27° 59' 58.82" N	81° 22' 43.58" W
12	Drasdo Middle	28° 0' 26.13" N	81° 22' 23.18" W
13	Drasdo East	28° 0' 22.71" N	81° 21' 58.30" W
14	Muffler Hammock	28° 3' 26.52" N	81° 19' 9.39" W
15	Gardner-Cobb Marsh Shelter	28° 2' 57.59" N	81° 17' 33.60" W
16	Gumby Hammock	28° 1' 28.47" N	81° 16' 43.55" W
17	North Cove	27° 59' 10.63" N	81° 18' 26.87" W
18	Milk Bus Shelter	27° 58' 22.90" N	81° 18' 52.29" W
19	Northwest Shore	27° 58' 17.87" N	81° 19' 29.00" W
20	Miles Point	27° 55' 53.11" N	81° 20' 10.90" W
21	West Shore	27° 54' 48.10" N	81° 18' 44.89" W
22	Otter Slough	27° 51' 29.56" N	81° 17' 42.41" W
23	East Shore	27° 54' 35.14" N	81° 13' 24.96" W

7. NATURAL RESOURCE MANAGEMENT

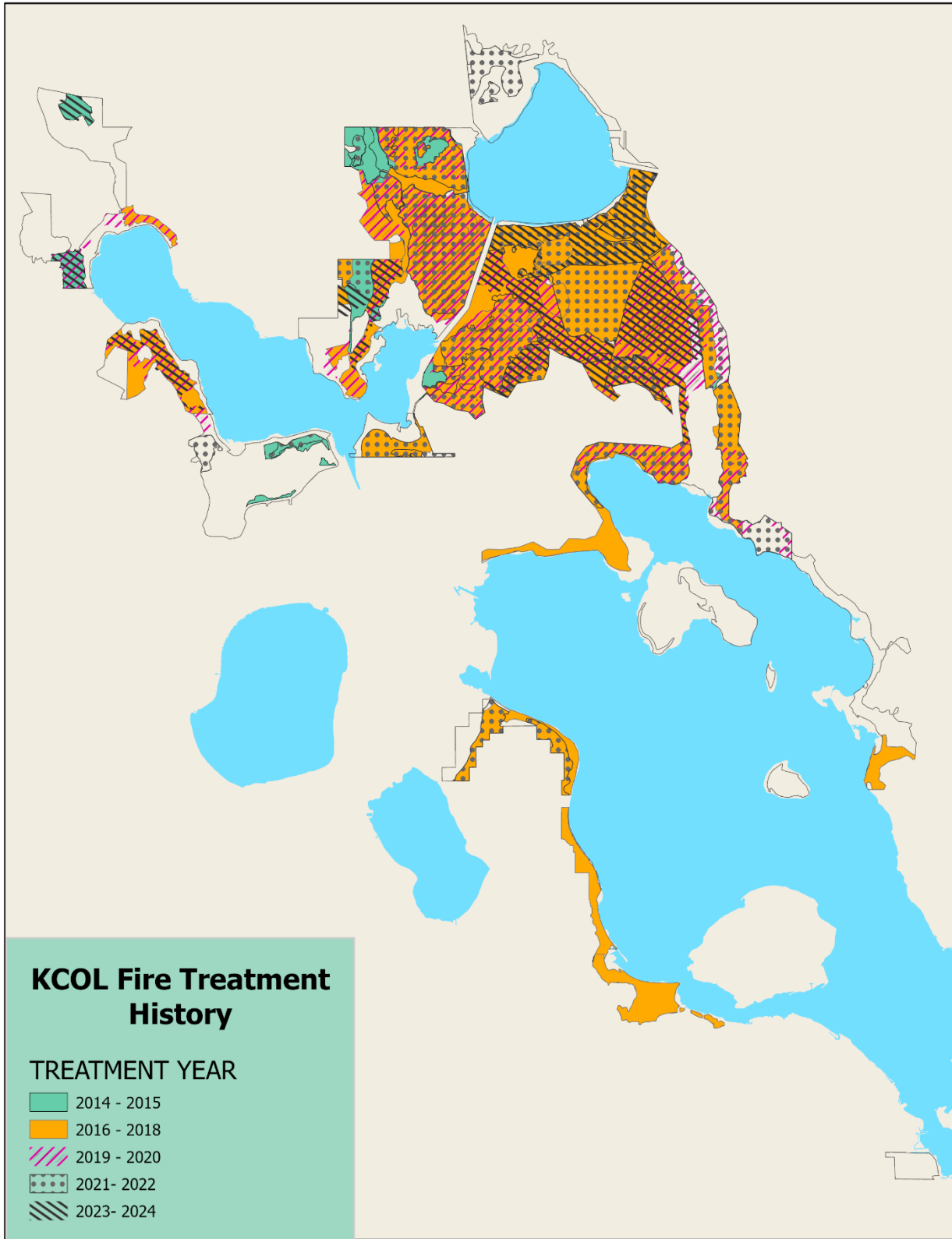
To keep native plant communities healthy and productive, District land managers take appropriate actions to compensate for the loss of natural processes. Several land management practices are utilized to preserve the ecological health and function of the management areas. These practices include prescribed burning fire-dependent plant communities with fire return intervals that mimic natural fire regimes; controlling invasive vegetation through the selective use of herbicides and biological control agents; restoring the physical structure of plant communities and biological diversity through mechanical vegetation management, including mowing, chopping and shredding; and implementing hydrologic restoration activities where the natural hydrology has been altered through ditches, canals, and other surface water drainage features.

7.1. Fire

Fire has shaped the distribution of plants in Florida's ecosystems. Historically, wildfires reduced fuel loads in natural communities. Due to habitat fragmentation and human suppression efforts, these fires no longer occur with historical frequency or extent, resulting in alteration to the natural community structure and function in fire-dependent communities. Most plant communities in Florida are adapted to periodic fires and rely on them to maintain their vegetative characteristics and biodiversity. Land Managers use prescribed burning to reduce hazardous buildup of vegetative fuel load, maintain plant species diversity, enhance wildlife habitat, and encourage restoration of native plant communities. Land Stewardship recognizes the importance of fire as a management tool and has integrated prescribed fire into its land management strategy.

Fire History

Little fire history prior to District acquisition is available for the management area. Native Americans commonly used fire as a tool to clear and encourage the growth of plants for later harvest. Based on the common grazing practices on the property, native ranges were likely burned to improve the forage. Early settlers probably used fire on the property to clear farmlands and rejuvenate the grasses to produce forage for grazing animals. Similarly, wildfires originating from lightning likely played a critical role in maintaining grass communities and fire fuels on the property. Other areas of the property experienced fire exclusion, as evidenced by heavy fuel loads in these areas at the time of acquisition. The District adopted a rigorous prescribed fire program for KCOL MA in 1993. Since the program's initial implementation, a burn rotation has been established for the fire-dependent communities restoring the natural fire regime for the management area.



Map 14. KCOL MA fire history.

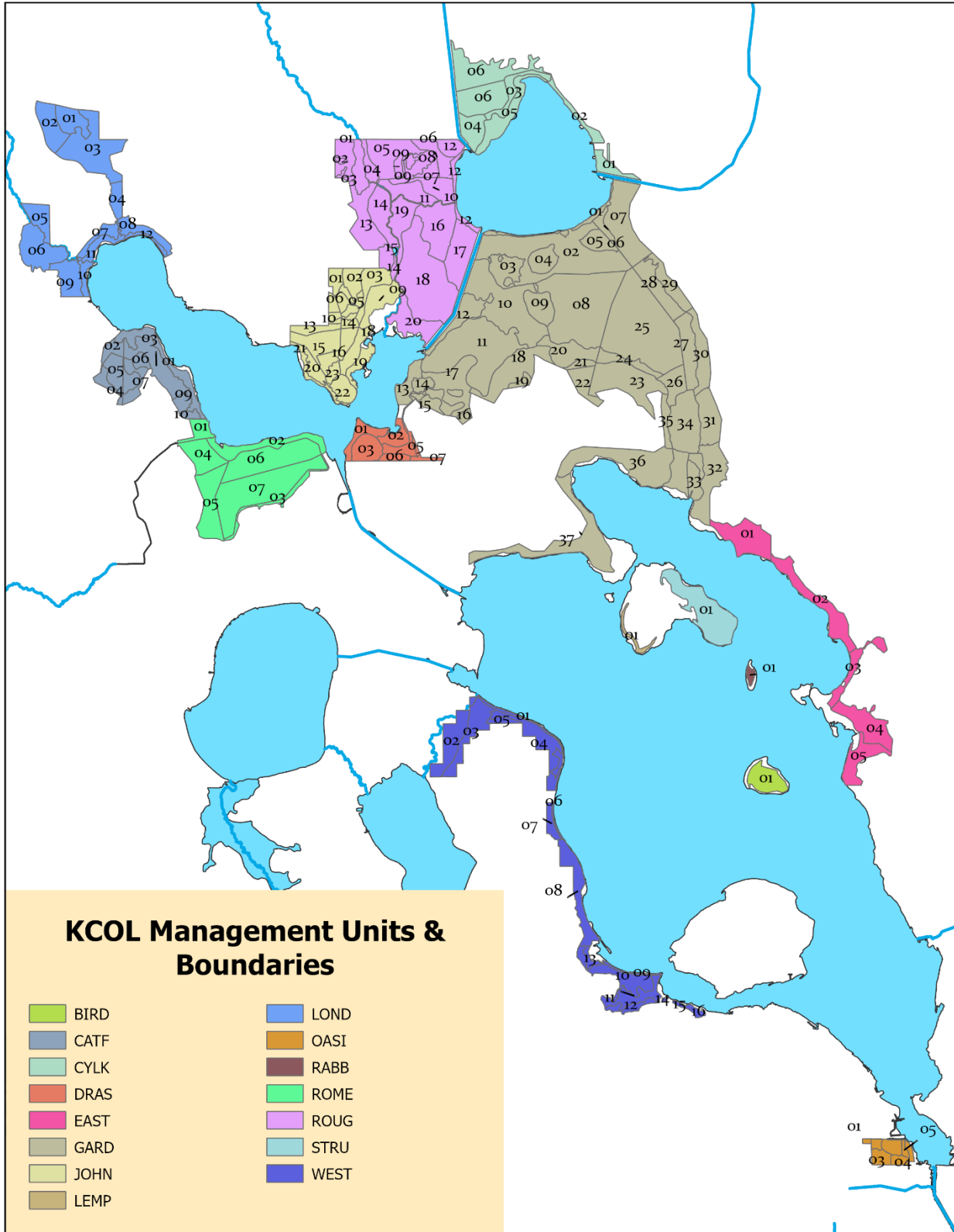
Prescribed Fire Planning

The fire management program for the KCOL MA includes wildfire prevention, detection and suppression, and prescribed burning. Prescribed burn standards and procedures are outlined in the Land Stewardship's Wildlands Fire Manual, which also serves as a centralized resource for information on fire management on District lands. The manual outlines the procedures that must be followed to ensure compliance with statutory requirements in Section 590 Florida Statutes (2018) and Rules 5I-2 and Chapter 62.256, Florida Administrative Code.

KCOL MA is divided into management units for the application of prescribed fire (Map 14). Existing roads and trails, disked firelines, and, where possible, natural firebreaks such as wetlands and ecotones determine the boundaries of these units. Challenges for a robust fire program include smoke management requirements, zigzagging firebreaks that follow elevation contours around private property around the management area, limited accessibility for fireline preparation, and limited resources. Despite the added difficulties of prescribed burning in the area, fuel loads need to be maintained at low levels to protect the KCOL MA from destructive wildfires.

Prescribed fire is applied with different management objectives based on plant community needs, wildlife utilization, and specific species requirements. Prescriptions for these burns identify the environmental conditions, return frequency, and ignition techniques to provide for mosaic burns that do not remove all vegetation while redefining the boundaries of embedded plant communities that are not fire-dependent, such as hammocks or swamps. A healthy fauna in South Florida is integrally tied to fire return intervals, seasonality, and intensities. Frequent fire tends to favor understory vegetation that provides essential forage and mobility for wildlife. Although high-intensity winter burns give the appearance of removing more fuels from the landscape, spring and summer burns achieve a more effective reduction of fuel and are preferred from a wildlife management and ecological perspective. Spring growing season burns provide a mosaic effect allowing for the retention of cover and foraging opportunities for wildlife that winter burns may temporarily eliminate. Late spring and summer burns help to control the spread of hardwoods. Because prolonged dry periods make it increasingly difficult to implement safe and successful spring burns, land managers utilize less intensive summer burns to achieve management goals. Summer burns reduce the likelihood of spot fires and escapes because of the amount of green vegetation and high relative humidity. Burning in late summer and early fall also helps replicate historical fire patterns that occurred in many habitats during occasional lightning strikes. Although spring and summer burns can cause isolated instances of mortality to wildlife and their nests, these species will readily re-nest (i.e., quail, Turkey, etc.), and the summer burns produce ideal brood habitat for fledged young.

Meeting the prescribed fire goals and objectives for each fire-maintained community is largely dependent on weather conditions, personnel, and statewide emergency situations such as wildfires, hurricanes, and other natural disaster responses. Ideally, burn crews would consist of 6-8 or more individuals. While the District Land Stewardship employees successfully conduct most prescribed burns, some prescribed burns require outside assistance to ensure they are conducted in a safe and effective manner. KCOL MA receives assistance from other agencies, including The Nature Conservancy, FWC, FDEP - State Parks, different divisions of the District and regions of Land Stewardship, and trained volunteers.



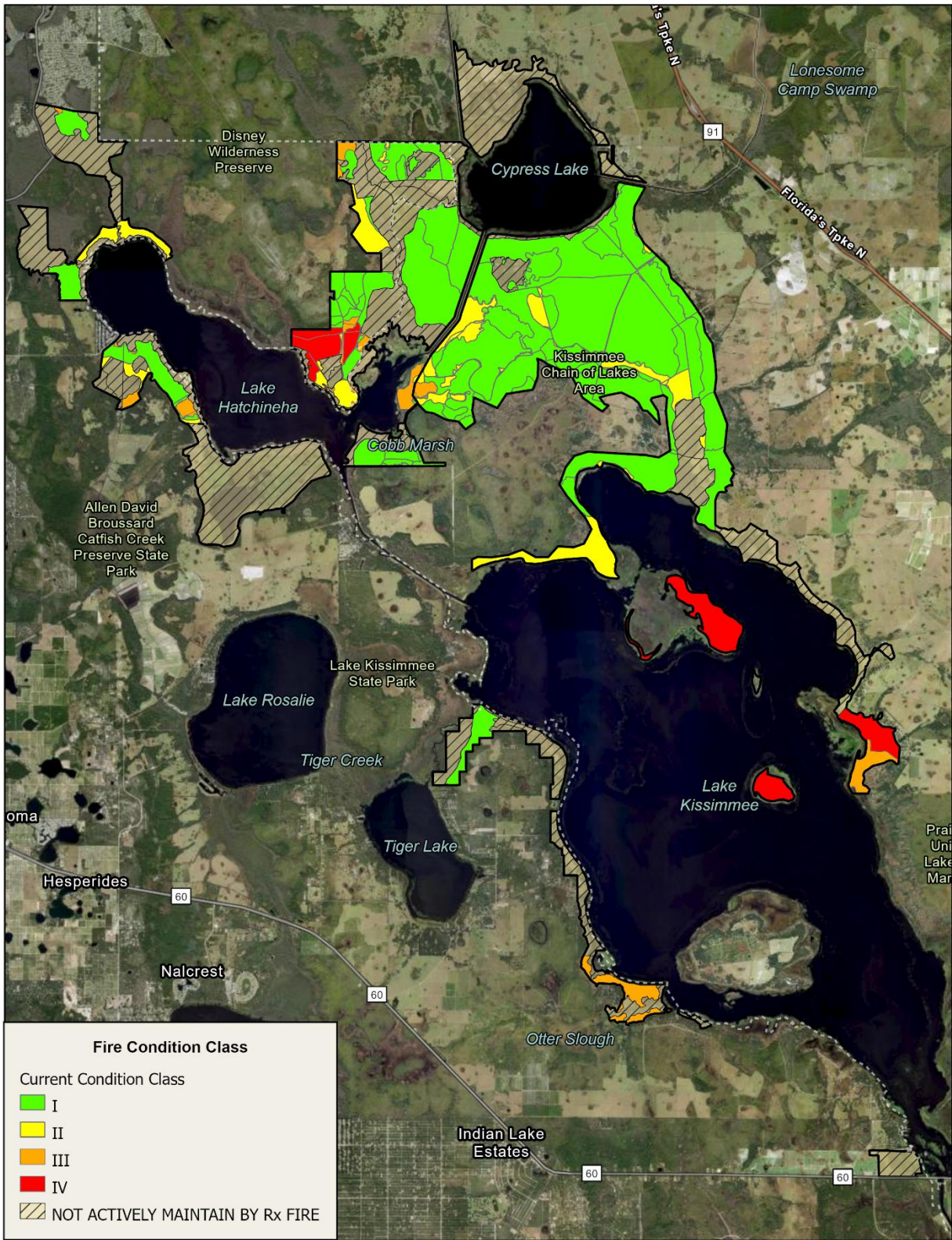
Map 15. KCOL MA management unit boundaries.

Fire Condition Class

The District developed a GIS-based program called “physical condition class” to monitor the status of plant communities based on the time since a physical treatment occurred. Although physical treatments can be mechanical or through cattle grazing, the main tool used by the District is fire due to the natural benefits fire provides. The District uses the physical condition class to prioritize and plan the application of prescribed fire on individual management units.

Management units are delineated by prescribed fire boundaries and the condition of each unit is classified based on fire history and the desired fire-return frequency using FNAI recommendations for the primary fire-dependent communities in each unit (**Map 15**). Most plant communities in South Florida require fire every 4 years or less to remain healthy and productive, so this is the default return frequency assigned to each management unit. If a management unit has been burned within the identified return interval, that unit is identified as being in condition class 1. If the most recent fire in a management unit exceeded the identified return frequency but less than twice this interval, that unit is identified as being in condition class 2. Condition class 3 includes those units having had fire more than two intervals ago but less than three, and condition class 4 are those fire-dependent units that have not experienced fire for more than three of the recommended return intervals or more than 12 years for most of the fire-dependent units in the management area. Fire-excluded habitats, where fire is generally confined to the periphery, are identified as not actively maintained by fire. This process is depicted in **Figure 6**.

Although the default fire-return frequency in the condition class is based on the prevailing plant communities, management units may contain a mosaic of habitats adapted to more variable return frequency than reflected in the fire condition class. In the KCOL MA, mesic and wet flatwoods are burned at a fire-return frequency of 3 to 4 years to promote an open pineland structure. Scrubs are burned at a fire-return frequency of 8 to 15 years, while adjacent scrubby flatwoods have a desired fire rotation of 4 to 8 years. Wet prairies have a desired fire rotation of 2 to 4 years. Cypress domes and other swamp communities are burned with the surrounding fire-dependent communities when the soil is still saturated. These wetland communities have a fire rotation of 4 to 8 years and fire typically only reaches the edges. Baygall species are fire-intolerant and the humid conditions typically inhibit fire except for prolonged drought periods. In the KCOL MA, the baygall communities are burned with the adjacent fire-dependent areas, but fire usually only affects the edges.



Map 16. KCOL MA fire condition class.

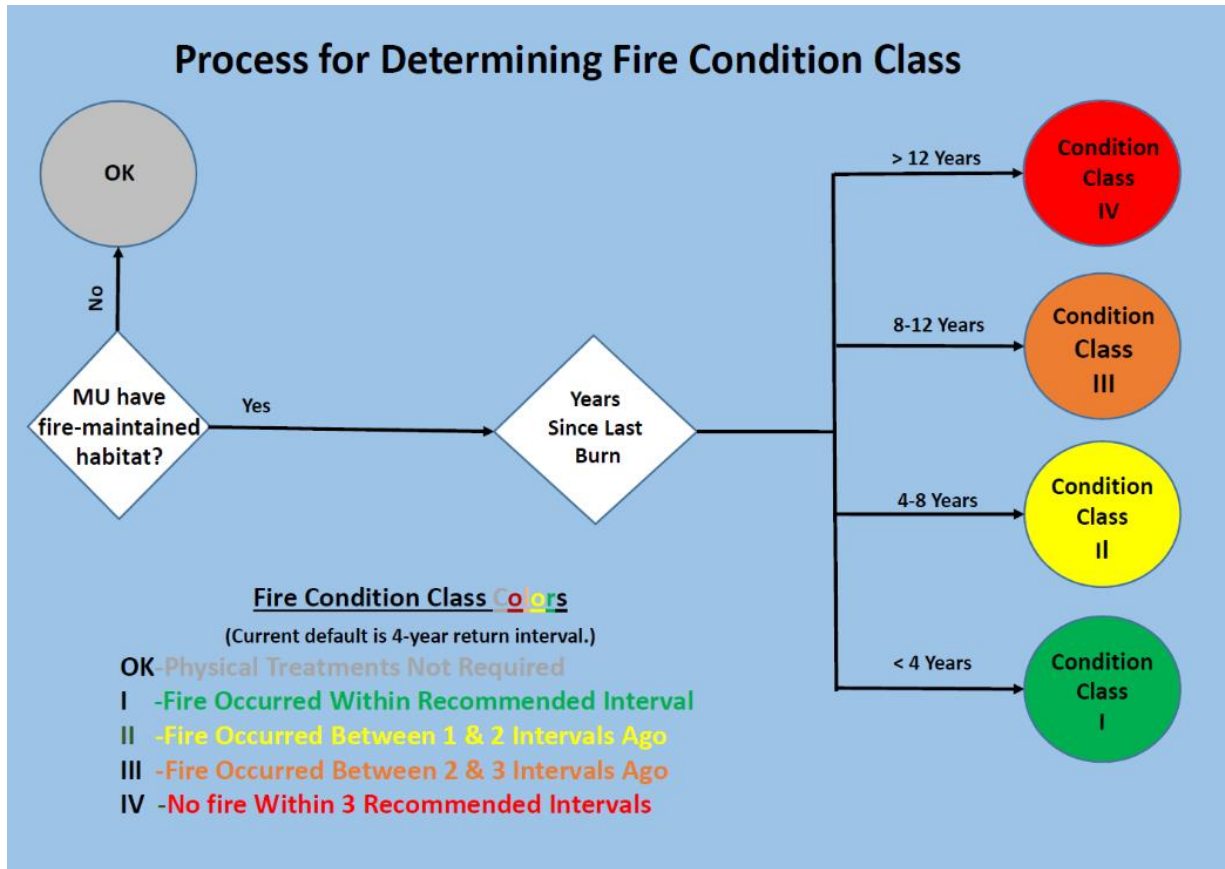


Figure 6. Flowchart illustrating the process for determining fire condition class.

Wildfire Suppression

Wildfires ignited by lightning are a common occurrence throughout Florida. The Florida Forest Service (FFS) is responsible for preventing, detecting, and suppressing wildfires in Florida (§590.01, Florida Statutes). Maintaining fire-dependent habitats with frequent prescribed burns is the main way the District limits the negative impacts of wildfires and increases the ability of the FFS to respond successfully to wildfire events. When a wildfire is detected, the land manager immediately notifies FFS while the Land Stewardship staff responds and, if appropriate, begins fire suppression efforts. Upon arrival, FFS takes command of the fire while the District continues to provide logistical and situational support as needed.

The FFS District office in Orlando is responsible for Gardner-Cobb, Cypress Lake, Drasdo, Rough Island, East Shore Lake Kissimmee, and Kissimmee Islands management units. The Osceola County Fire Station, responsible for the same area, is based in Kissimmee. The FFS District office in Lakeland is responsible for London Creek, Catfish Creek, Rolling Meadows, West Shore, and Oasis Marsh management units. The Polk County Fire Station, responsible for the same area, is based in Bartow.

7.2 Control of nuisance and invasive plant species

The District's vegetation management program utilizes an Integrated Pest Management strategy to maintain nuisance and invasive plant populations at the lowest feasible level. Integrated Pest Management is an ecosystem-based strategy that focuses on the long-term prevention of pests or their damage through the combination of management techniques, including prescribed fire, herbicide application, mechanical treatment, biological control, and physical removal. The selection of control measures is dependent upon species type, environmental factors, and the natural communities impacted.

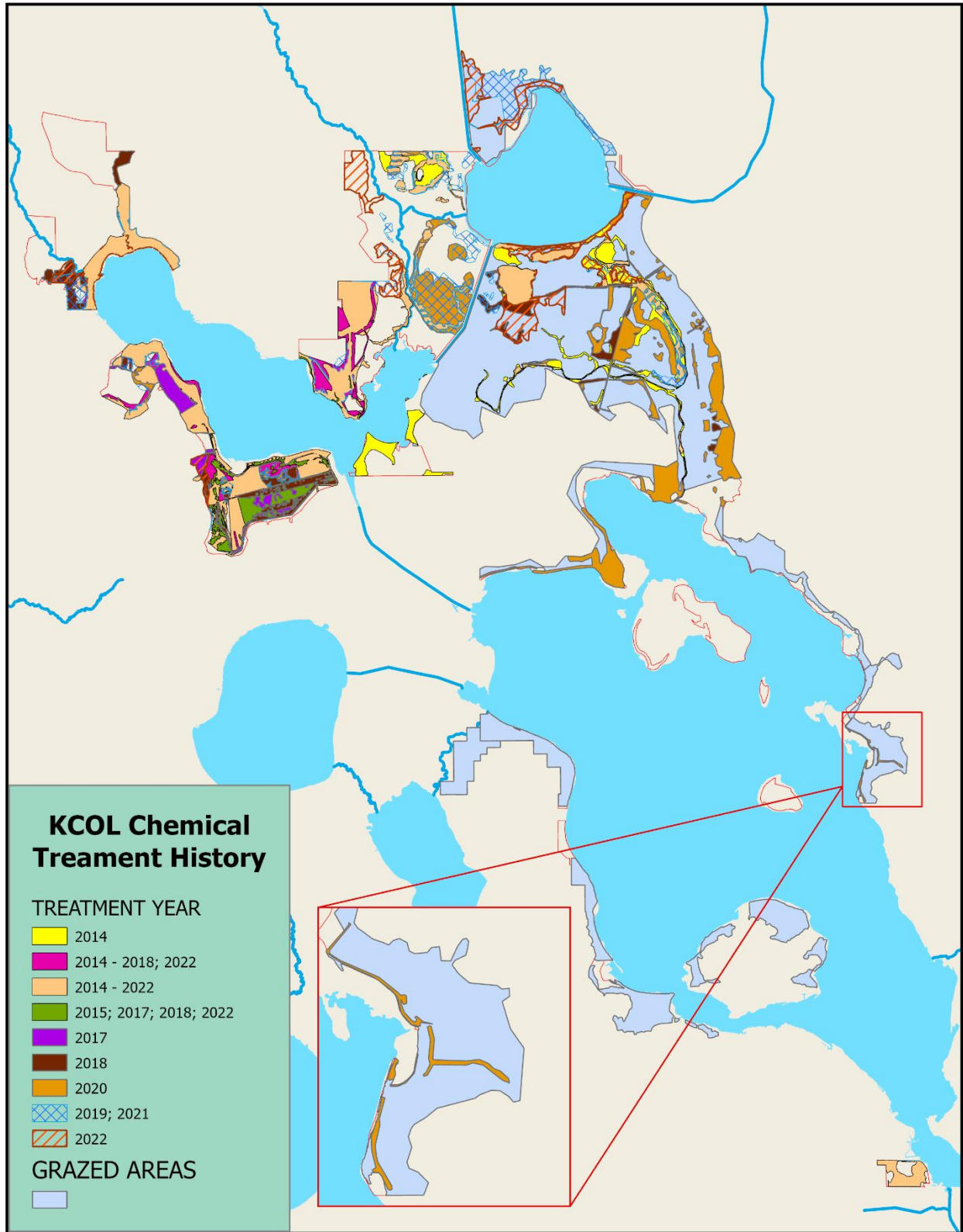
Presently, the main species being targeted for treatment include climbing fern (*Lygodium spp.*), Brazilian pepper (*Schinus terebinthifolius*), Tropical soda apple (*Solanum viarum*), cogon grass (*Imperata cylindrica*), Chinese tallow (*Triadica sebifera*), and tropical nutrush (*Scleria microcarpa*). **Maps 17 and 18** identify the treatment history for the nuisance and invasive species within the KCOL MA over the last decade.

Invasive plant control funding represents the largest item in the Land Stewardship Program's annual budget. Land managers have developed specific management area treatment strategies that optimize invasive plant control efforts. Although Category I and II species in the Florida Invasive Species Council (FISC) lists threaten the function and ecological stability of the natural communities, achieving maintenance on all species identified on these lists is currently not feasible with existing budgetary resources. The primary goal of the Land Stewardship's invasive plant management program is to control the spread of 30 priority invasive species (**Table 4**), in addition to area-specific priority species based on early detection/rapid response and locally significant impacts or potential for impacts.

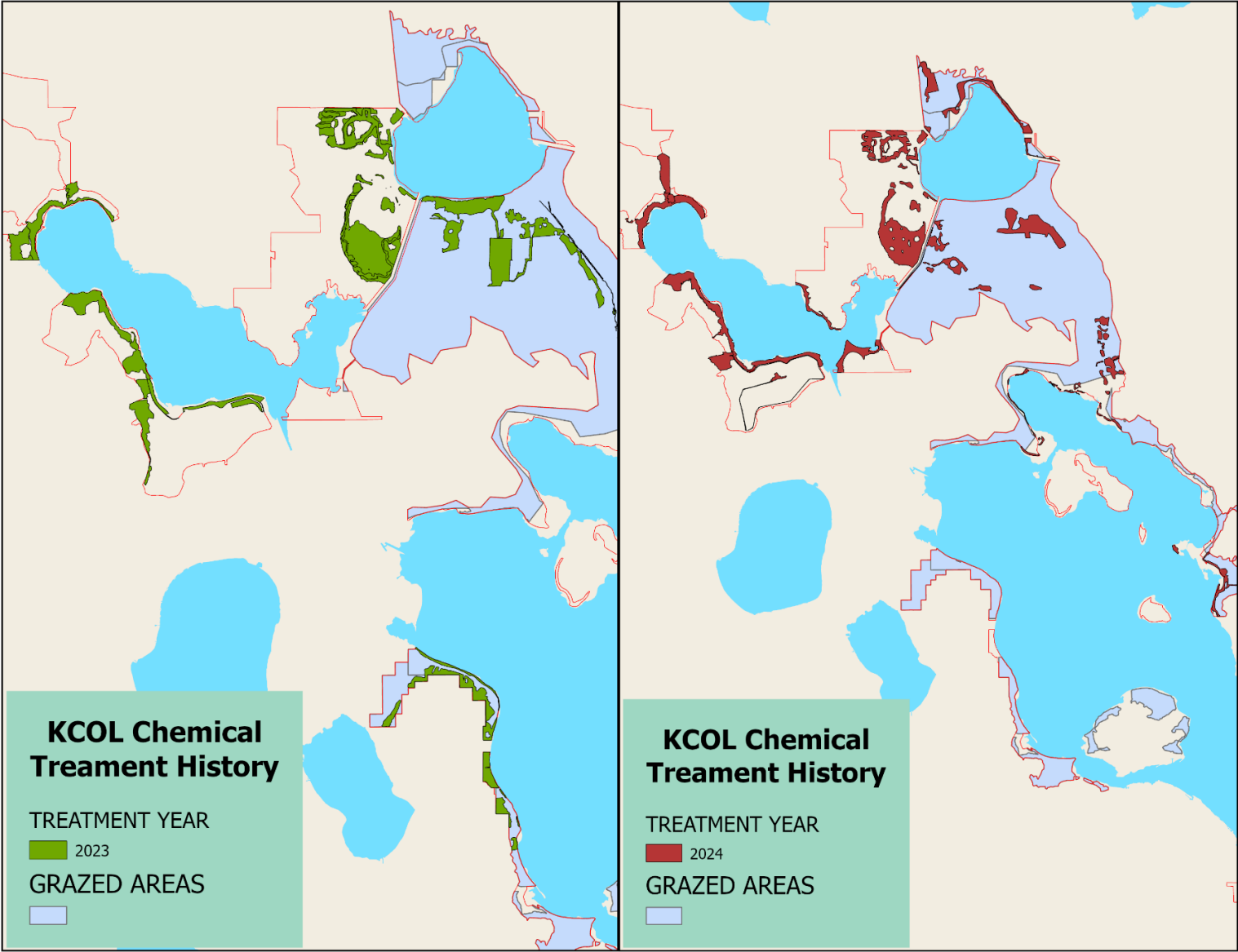
Nuisance and invasive species treatment is primarily conducted by herbicide applicators contracted through the District's Vegetation Management Section. Supplemental efforts by District staff are also conducted on small or sporadically distributed infestations. Treatment areas are scheduled based on the severity of nuisance and invasive plant infestation, time since the last treatment, property access, groundwater conditions, avian nesting seasons, and public use. All treatments follow best management practices for herbicides and use the best available science. Treatment dates, locations, and species treated are recorded in a GIS database. Herbicide use is recorded in the District's nuisance and invasive plant control database.

Table 4. Land Stewardship Section invasive species control priority species.

Scientific Name	Common Name	FISC Category
<i>Abrus precatorius</i>	Rosary Pea	I
<i>Acacia auriculiformis</i>	Earleaf Acacia	I
<i>Albizia julibrissin</i>	Mimosa, Silk Tree	I
<i>Albizia lebeck</i>	Woman’s Tongue	I
<i>Ardisia crenata</i>	Coral Ardisia, Scratchthroat	I
<i>Ardisia elliptica</i>	Shoebuttan Ardisia	I
<i>Bischofia javanica</i>	Bishopwood	I
<i>Casuarina cunninghamiana</i>	River Sheoak, Australian-Pine	I
<i>Casuarina equisetifolia</i>	Australian-Pine, Beach Sheoak	I
<i>Casuarina glauca</i>	Suckering Australian-Pine, Gray Sheoak	I
<i>Colocasia esculenta</i>	Wild Taro	I
<i>Cupaniopsis anacardioides</i>	Carrotwood	I
<i>Dioscorea alata</i>	Winged Yam	I
<i>Imperata cylindrica</i>	Cogon Grass	I
<i>Leucaena leucocephala</i>	Lead Tree	II
<i>Lygodium japonicum</i>	Japanese Climbing Fern	I
<i>Lygodium microphyllum</i>	Old World Climbing Fern	I
<i>Melaleuca quinquenervia</i>	Melaleuca, Paper Bark	I
<i>Mikania micrantha</i>	Mile-A-Minute Vine	II
<i>Mimosa pigra</i>	Catclaw Mimosa	I
<i>Rhodomyrtus tomentosa</i>	Downy Rose-Myrtle	I
<i>Schefflera actinophylla</i>	Schefflera, Australian Umbrella Tree; Octopus Tree	I
<i>Schinus terebinthifolia</i>	Brazilian Pepper	I
<i>Senna pendula var. glabrata</i>	Christmas Senna Climbing Cassia, Christmas Cassia	I
<i>Solanum diphyllum</i>	Twoleaf Nightshade	II
<i>Solanum tampicense</i>	Wetland Nightshade, Aquatic Soda Apple	I
<i>Solanum viarum</i>	Tropical Soda Apple	I
<i>Syzygium cumini</i>	Jambolan-Plum, Java Plum	I
<i>Triadica sebifera</i>	Popcorn Tree, Chinese Tallow Tree	I



Map 17. KCOL MA Chemical Treatment history.



Map 18. KCOL MA 2023-2024 Chemical Treatments.

Nuisance and Invasive Plant Condition Class

The District developed a GIS-based program called “invasive plant condition class” to monitor the status of plant communities based on the population status of prominent nuisance and invasive plant species. The District uses the invasive plant condition class to develop a strategy for treating the KCOL MA. The strategy prioritizes periodic treatments in management units once maintenance is achieved to keep the unit in maintenance status for specific species, expanding efforts to other areas or species only when available resources are sufficient to achieve and retain maintenance status.

The prevalence of invasive plants within management units is estimated and assigned a condition class value (**Map 19**). Each management unit is given an invasive plant condition class based on the maturity of the population of the primarily targeted species (**Figures 7-8**). Annual work plans are developed to minimize the ecological impacts of these invasive species in a cost-effective manner while minimizing the use of herbicides where practical.

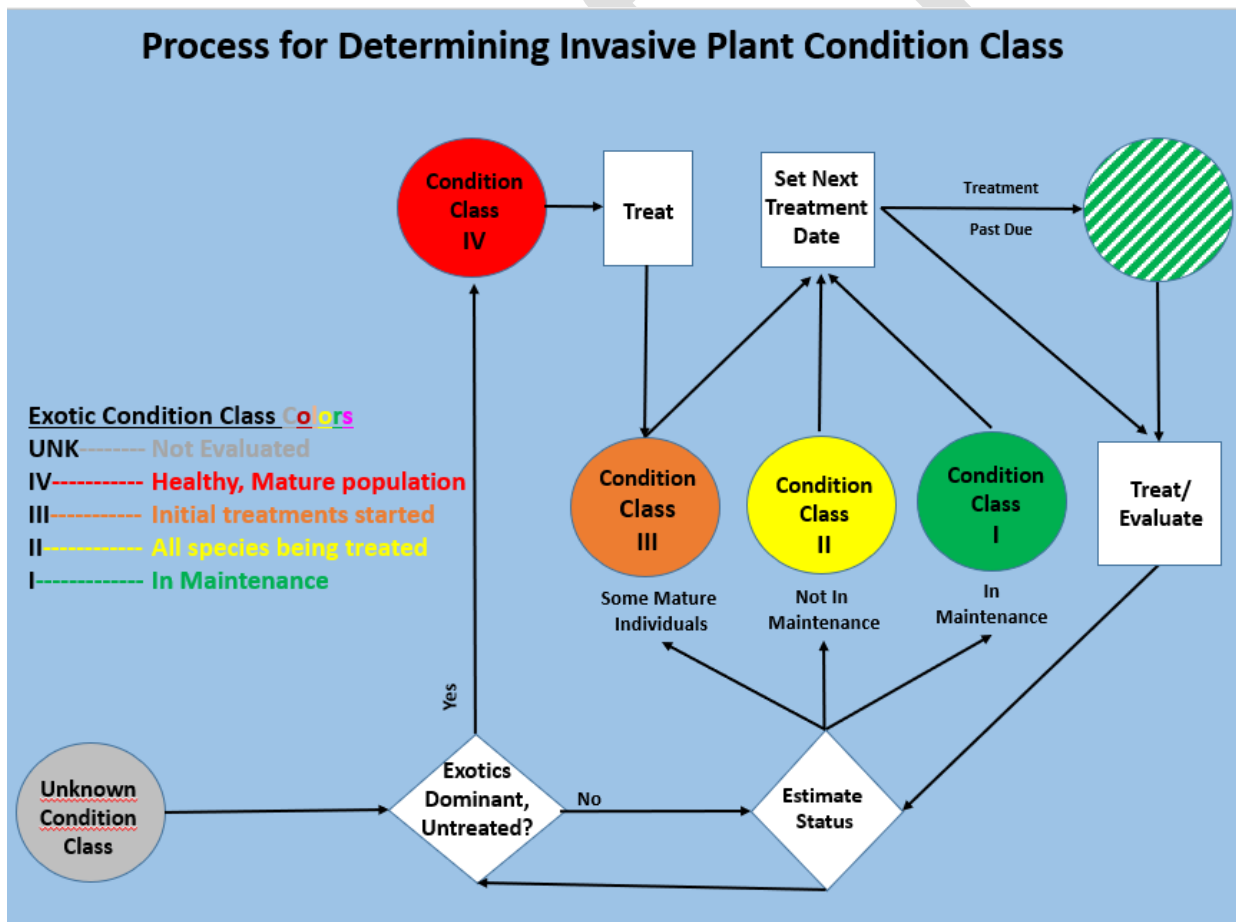
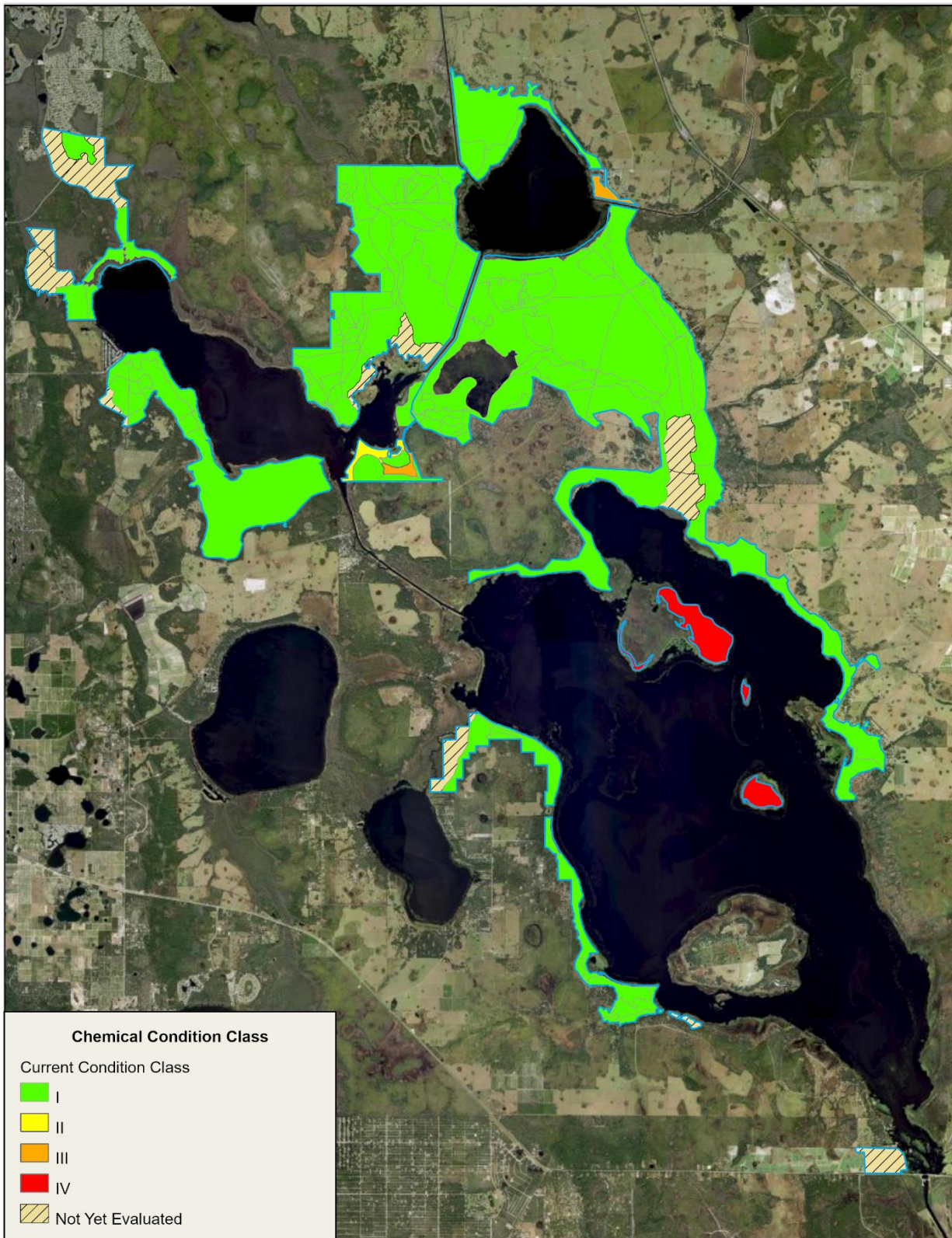


Figure 7. Flowchart illustrating the process for determining invasive plant condition class.

- **Woody vegetation (Melaleuca-Earleaf Acacia-Chinese Tallow-Brazilian Pepper-Ardisia-Senna-Downy Rose Myrtle-Carrotwood-Silk Tree-Mimosa Pigra-Schefflera-Java Plum-Lead Tree-Woman's Tongue)**
 - IV--Tall, dense, mature, many throughout landscape
 - III--Most mature dead, some regrowth/sprouting/isolated misses, many seedlings/suckers
 - II--All or nearly all mature dead, little regrowth, some seedlings
 - I----Occasional seedlings or young plants
- **Vines (Lygodium-Air Potato-Winged Yam-Rosary Pea-Mile-A-Minute Vine)**
 - IV---Heavy blanket covering trees/bushes, dense, some throughout area
 - III---Most trellises dead, lots of sprouting/young plants, some clean areas
 - II----Trellises < 10' high, young plants tending towards "hot spots"
 - I----Limited trellising, mostly young plants in isolated "hot spots"
- **Cogon Grass-Taro**
 - IV—Solid, Dense, Mature Stands
 - III---Main portion mostly dead, regrowth along edges and some internally
 - II----Outlying regrowth and isolated clumps
 - I----Occasional dispersed clumps of fresh growth
- **Tropical Soda Apple**
 - IV---Thick & tall
 - III---Most dead in main concentrations, frequent outliers
 - II----Widely separated plants
 - I----Occasional seedling plants

Figure 8. Invasive characteristics of target species used to assign condition class.



Map 19. KCOL MA chemical condition class.

7.3. Wildlife Management

Wildlife management on the KCOL MA relies on active habitat management that addresses the needs of all species present. The Land Stewardship program accomplishes this by:

- Performing land management activities that maintain and/or improve native wildlife habitat, including prescribed fire and nuisance and invasive plant control;
- Conducting specific management activities that benefit protected species;
- Following management guidelines for listed species protection as determined by the South Florida Multi-Species Recovery Plan, Volume 1 (U.S. Fish and Wildlife Service (USFWS) 1999); and
- Maintaining species lists of confirmed and potential wildlife species.

7.4. Mechanical Vegetation Control

Prescribed fire is the most cost-effective and ecologically beneficial method of vegetation control for fire-maintained habitats in South Florida. In locations where prescribed fire cannot be used as a land management tool, such as urban interface zones, or when other constraints prohibit the use of prescribed fire, mechanical vegetation control is an alternative method for reducing vegetation coverage and fuel loads. Mechanical vegetation control can reduce woody plant growth and increase plant species diversity through the use of mowing, chopping, and shredding. Selective forest thinning may also be used to improve the natural environmental characteristics of certain habitats.

In the KCOL MA, mechanical treatments are used prior to burning to reduce fuel height along the boundaries of management units and minimize the risk of escape. Because low-intensity fires can result in patchy burns, mechanical treatments are also used to re-structure fuels that build up in fire shadows where prescribed burns do not achieve the desired results. When shrubby vegetation, such as wax myrtle (*Myrica cerifera*), saltbush (*Bacharris halimifolia*), and cabbage palm (*Sabal palmetto*) encroaches upon marsh and prairie communities, it can be controlled through mechanical means to reestablish the herbaceous-dominated characteristics and maintain the open grassland community. Additionally, weedy native vegetation such as bladderpod (*Sesbania vesicaria*), dogfennel (*Eupatorium capillifolium*), and blackberry (*Rubus pensilvanicus*) are also treated mechanically when necessary to improve aesthetics and promote species diversity, especially where these species become dominant.

Timber Management

Harvesting timber is another form of mechanical vegetation control. If the District determines that the ecological needs of an area require the timber stand to be thinned, a harvest may be designed for that purpose. However, many listed species depend upon mature pine trees for their survival, so often it is the smaller trees that are targeted. These trees tend not to have the marketability of larger trees, resulting in limited opportunities for a commercial harvest. Any

timber harvest operation on District lands will follow the silvicultural Best Management Practices (BMP) developed by the FFS.

Grazing

The District uses cattle grazing to manage nuisance and invasive pasture grasses. This tool is most effective as an interim management tool for managing vegetation on project lands before the water resource project goes into construction. Some management lands include former ranchlands that have a mixture of native range and improved pasture. Cattle grazing is allowed on these properties to minimize the need for physical manipulation and manage the vegetation coverage until funding is secured to restore the native community. Currently, the District administers eight low-density grazing leases covering approximately 15,319 acres of the KCOL MA.

7.5. Hydrologic and Habitat Restoration

The District continues to develop plans to restore wetlands and enhance wildlife habitat within the KCOL MA. Site investigations and detailed surveys are conducted for each restoration area to determine restoration needs in terms of hydrologic enhancement, nuisance and invasive treatment, vegetation management, and prescribed burning. Plans for restoration projects are designed based on these necessities and funding availability.

Over the past ten years, the District has completed multiple projects to restore and improve the quality of wetland communities in the KCOL MA. The most significant projects and additional upcoming restoration efforts in the next decade are as follows:

Gardner-Cobb Marsh

The Gardner-Cobb Marsh property underwent an initial restoration project in 2010 to improve 2,500 acres of marshes and wet prairies affected by the drainage. A large drainage ditch on the property continues to drain without any flow restriction, and another ditch drains into Lake Cypress. In 2021, the District, in partnership with Ducks Unlimited, expanded on the initial restoration work to further improve the natural hydrology on the property. This expansion involved installing culverts, leveling existing spoil piles, and installing ditch plugs to increase water in the prairie wetland system. This effort is expected to enhance the hydrology of nearly 6,400 acres of the Gardner-Cobb Marsh. Additional restoration opportunities will be pursued to build on the completed work, including seeking additional grant funding.

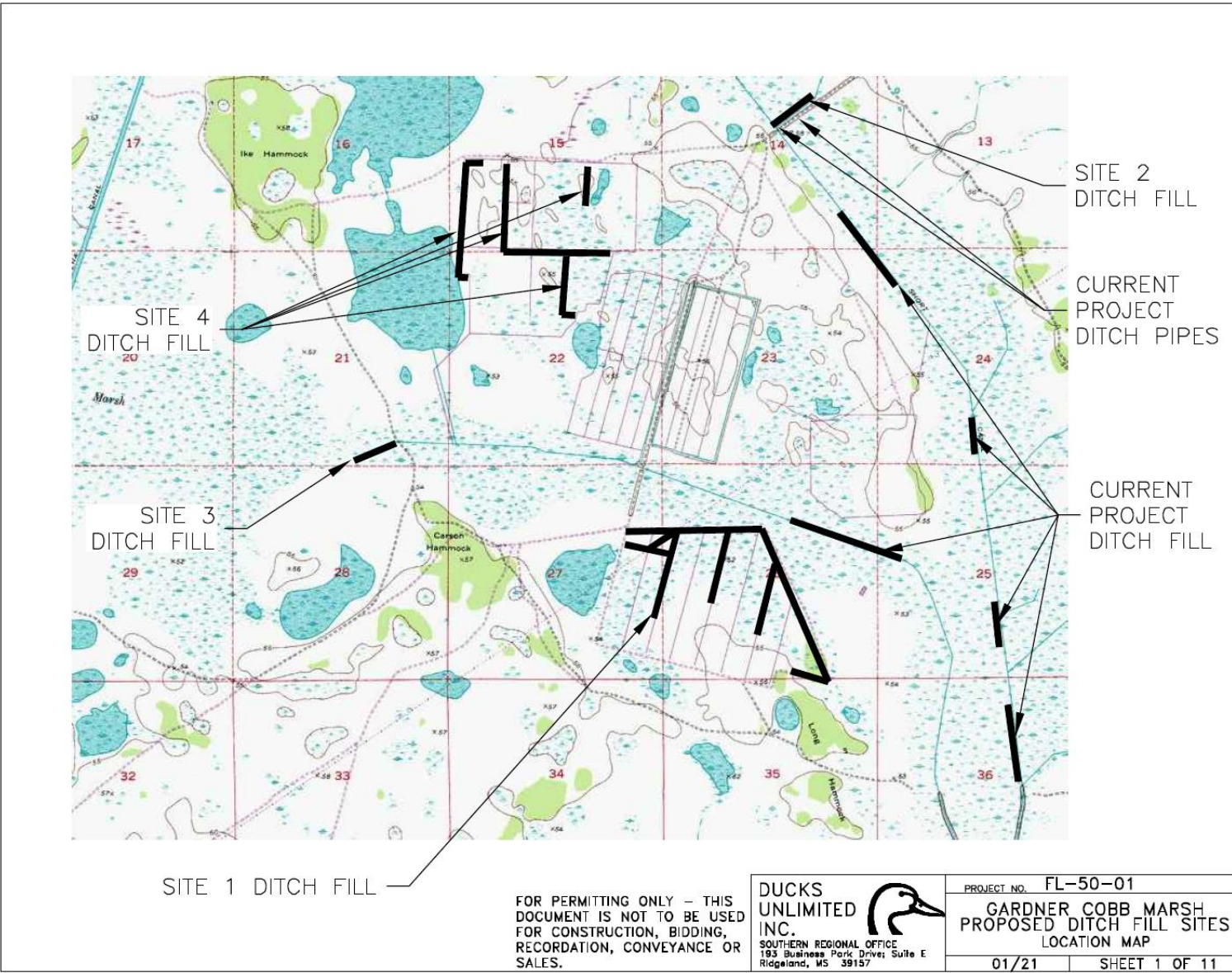


Figure 9. Overview of the Gardner Cobb Marsh hydrological restoration project.

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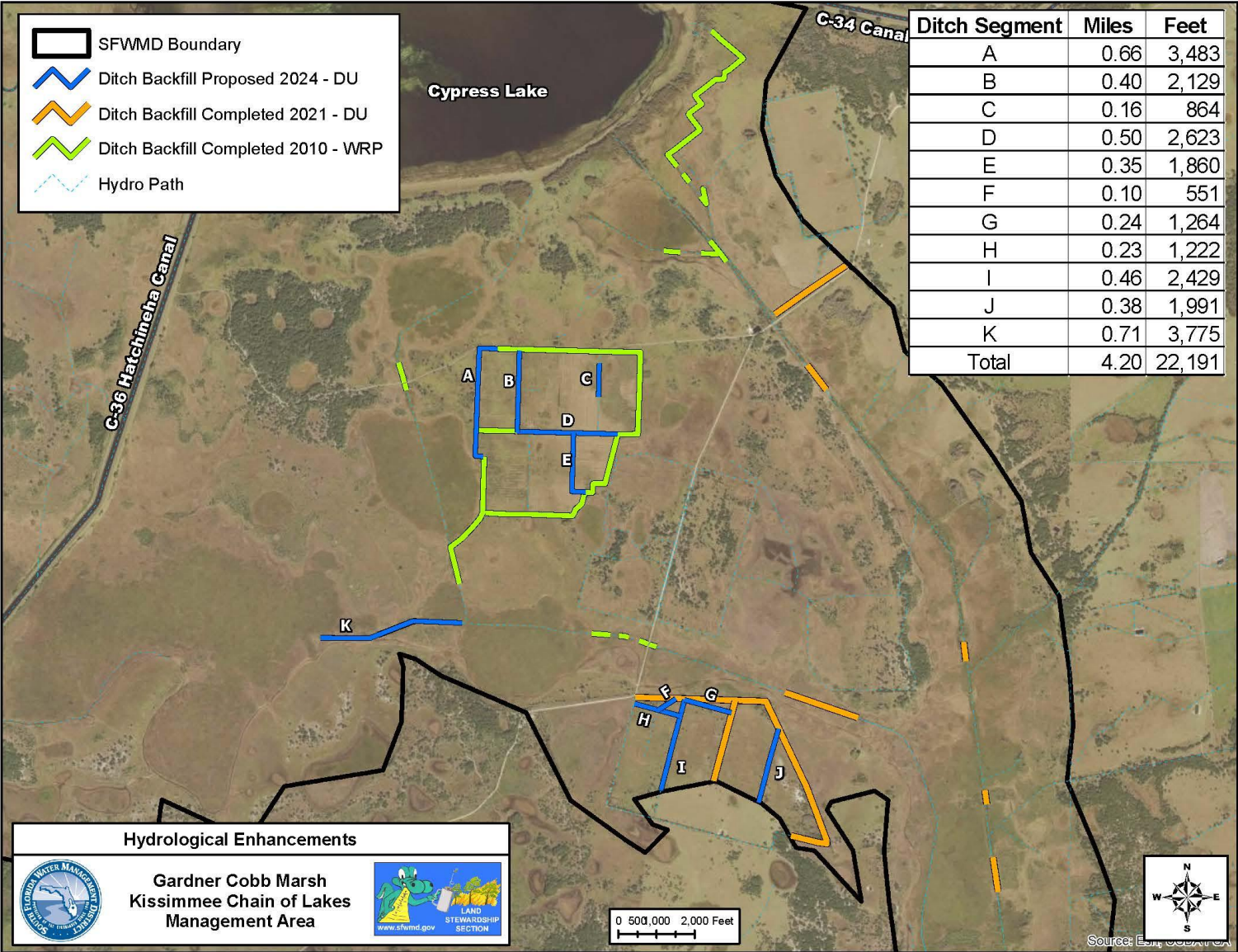


Figure 10. Gardner Cobb Marsh hydrological restoration project status.

Rolling Meadows

The initial wetland restoration project in Rolling Meadows was completed as part of the federally authorized Kissimmee River Headwaters Revitalization Project, which is a component of the overall Kissimmee River Restoration being undertaken by the District and USACE. The main goal was to redirect Catfish Creek, which flows from Lake Pierce to Lake Hatchineha, into the Rolling Meadows management unit. The project also aimed to expand the littoral zone around Lake Hatchineha by reestablishing the connectivity between Rolling Meadows and Lake Hatchineha. This was achieved by diverting some of the flow from Catfish Creek into Rolling Meadows through an existing breach in the perimeter berm. The process involved filling or plugging ditches, grading and leveling disturbed areas to natural ground elevation, constructing water control structures, and enhancing existing berms and maintenance roads on the property. As a result, the 1,600 acres of former sod field was converted into an impoundment, restoring the historic lake wetland littoral zone. Since the initial restoration in March 2017, Land Stewardship has been working to restore the physical structure of the plant communities in Rolling Meadows through vegetation management. In 2022, an additional 36-acre vegetation treatment project was completed in partnership with FWC to reduce the presence of shrub vegetation in the northeastern portion of Rolling Meadows.

During this management period, the Land Stewardship Section plans to conduct additional restoration efforts to enhance 185 acres within the northwestern portion of Rolling Meadows to achieve the desired hydroperiod. Future restoration plans involve the installation of a 150-foot ditch plug to redirect flow bypassing through the perimeter ditch to reestablish sheetflow across the northeastern portion of the wetland. Additionally, approximately 1,300 linear foot internal berm will be reconstructed to increase residence time across the northwest portion of the site. The reestablished berm will be fitted with a 100 linear foot emergency spillway to increase flows during high water levels. In addition to the anticipated improvements, other restoration opportunities will continue to be explored, including securing more grants for additional grading and leveling and periodic mechanical treatment of the woody vegetation to achieve the desired herbaceous wetland structure on the property.

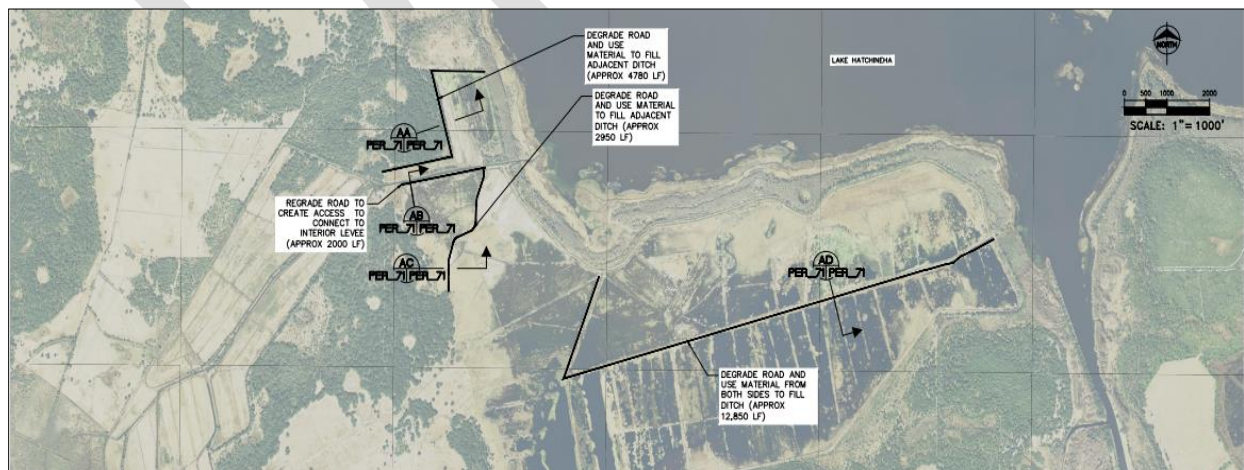


Figure 11. Initial road and ditch removal locations within Rolling Meadows.

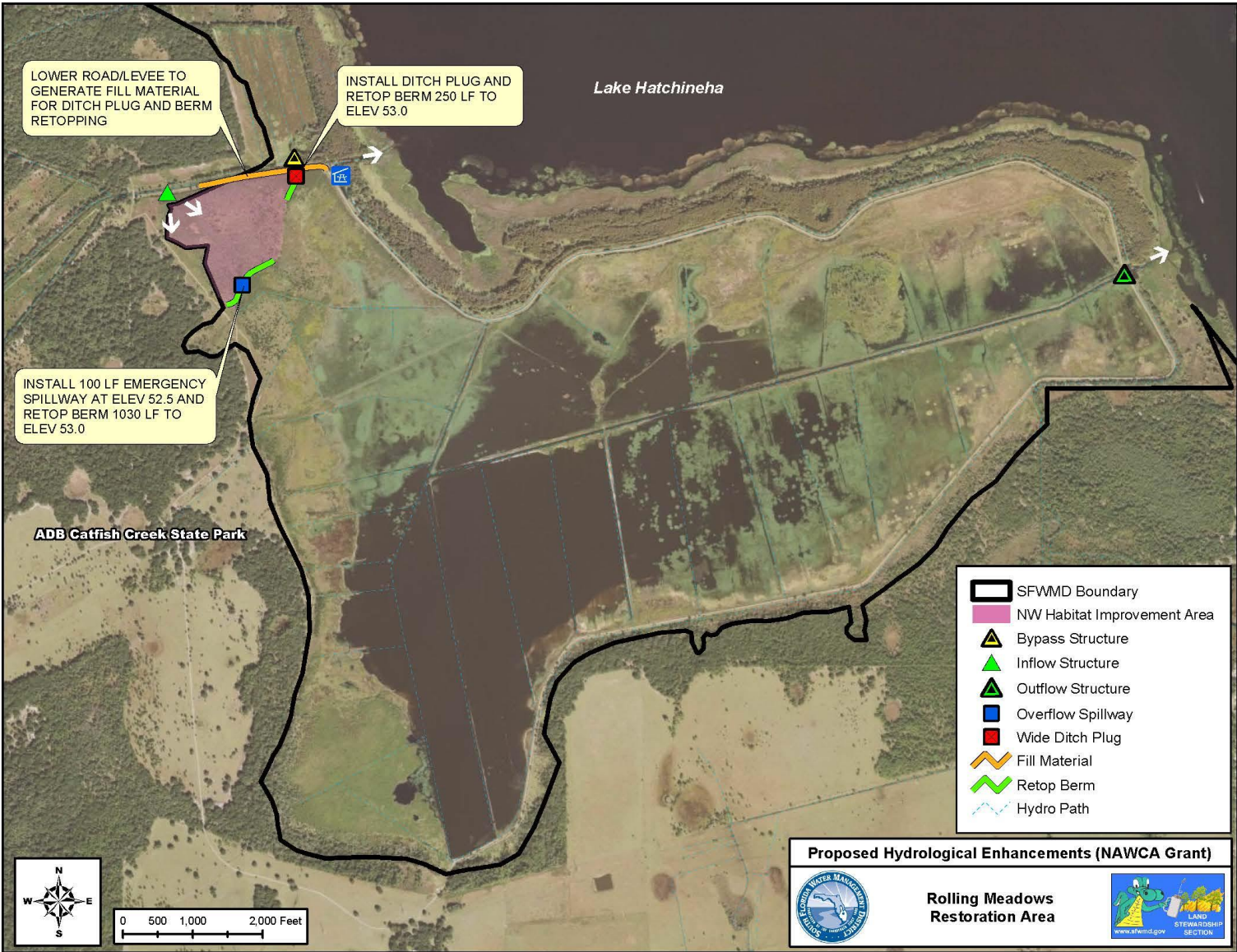


Figure 12. Proposed additional hydrological improvements within Rolling Meadows.

Cypress Lake

The Cypress Lake Bronson Levee Gapping project was completed On the Cypress Lake management unit in 2018 as part of the Kissimmee River Headwaters Revitalization project. The Bronson levee on the northern side of the Cypress Lake management unit needed modification to meet the new regulation schedule, which aimed to increase water elevation in Cypress Lake, Lake Hatchineha, and Lake Kissimmee to 54 ft NGVD. This modification involved breaching the levee in 3 locations to restore the littoral zones for Cypress Lake and provide storage capacity for the Kissimmee River Environmental Restoration. These breaches were estimated to be at least 100-foot gaps at approximately every 1,000-foot along the levee alignment. While these breaches were strategically placed to provide some hydrologic relief to the Cypress Lake management unit during periods of high water, the levee continues to hinder the natural hydroperiod of the wetlands on both sides. The District, in partnership with Ducks Unlimited and other partners, is proposing to expand the restoration effort during this plan period. The proposed project will involve leveling the remaining section of the Bronson Levee, using the material to fill the adjacent ditches, and installing twelve 300 linear foot ditch plugs at strategic locations within the secondary internal ditches upstream of the levee. This restoration aims to restore the topography and reestablish sheetflow across the marsh to enhance the wetland habitat and maximize the storage capacity of the lake floodplain.

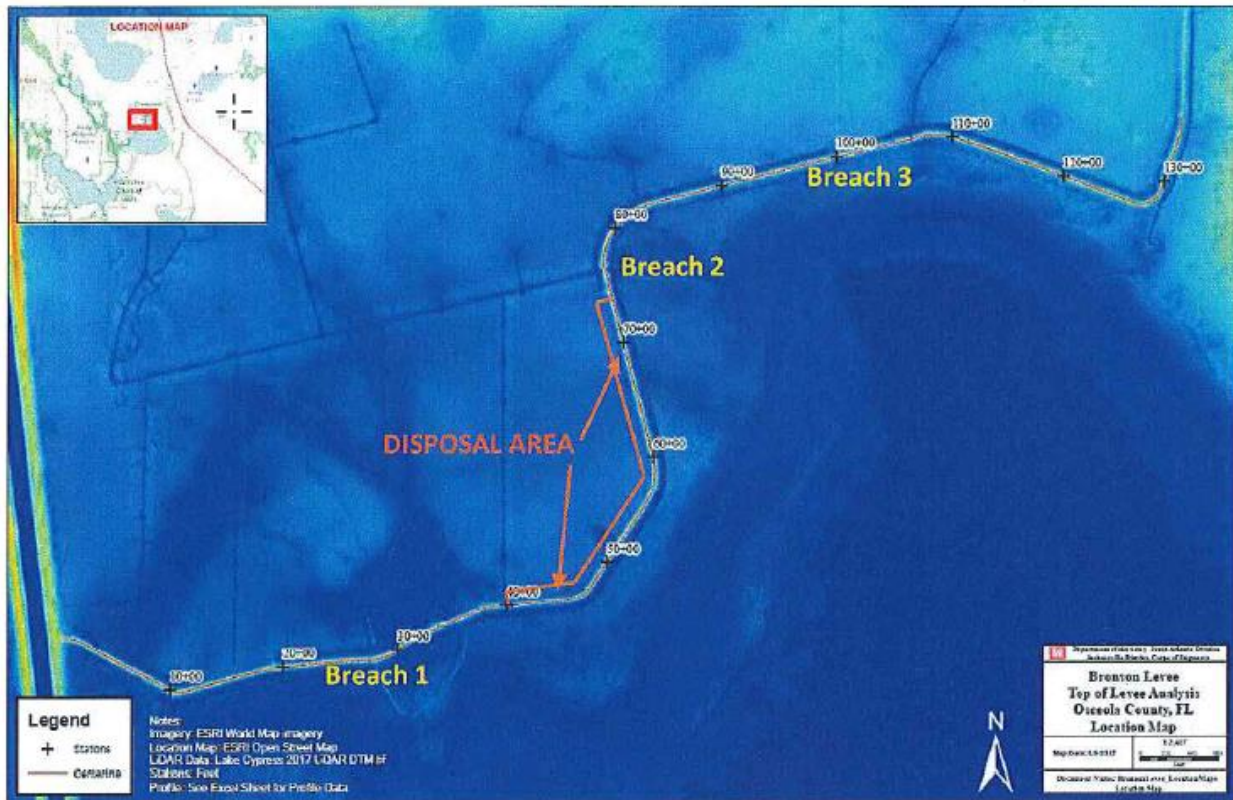


Figure 13. Initial hydrological restorations within the Cypress Lake unit.



Figure 14. Proposed additional hydrological restorations within Cypress Lake.

Oasis Marsh

The Oasis Marsh unit was ditched before it was acquired in 1998 to make the site suitable for cattle grazing, which changed the hydrology of its wetlands and their connection to Lake Kissimmee. Four primary drainage ditches on the site were draining several marshes and sloughs. To restore the hydrology and floodplain function of the Oasis Marsh unit, these four ditches totaling 2.4 acres were filled with approximately 3,144 cubic yards of sediment material from an adjacent levee in the spring of 2010. The topography of approximately 77 acres of wetlands was also restored to reconnect the wetlands to the littoral zone of Lake Kissimmee. During this plan period, the Land Stewardship Section plans to continue restoring the physical structure of the plant communities through vegetation management.

Rough Island

The Rough Island unit contains many depression marshes and wet prairies that have been drained using a network of swales and shallow ditches to create more land for cattle grazing. Restoration efforts within the Rough Island unit were conducted in 2009 as part of regulatory mitigation linked to the construction of a pump station at Packingham Slough. The restoration plan included hydrologic and habitat restoration. As part of the regulatory mitigation, wetland conditions were enhanced on more than 1,000 acres by constructing 11 earthen ditch plugs and backfilling some of the shallow ditches to improve the hydrology of the depression marshes. Restoration of the natural community within the Rough Island unit was also accomplished by removing nuisance and invasive vegetation and applying prescribed fire. During this plan period, the Land Stewardship section plans to continue enhancing the plant communities' physical structure through vegetation management.

Otter Slough

The Otter Slough unit contained several canals that were built for irrigating and drainage for a grove operation. The restoration effort on this unit was also part of regulatory action associated with the Packingham Slough pump station. The restoration, completed in 2009, involved removing two berms and backfilling five segments of the main ditch that drains the slough and its adjacent communities. Similarly, the Florida Forest Service undertook a ditch plugging project upstream to plug segments of the ditch on the Lake Wales Ridge State Forest Prairie tract, which adjoins the District-owned tract. These combined efforts significantly enhanced the hydrology of the Otter Slough unit. During this plan period, the Land Stewardship Section plans to continue enhancing the plant communities' physical structure through vegetation management.

7.6. Research and Monitoring

The District has an environmental monitoring program that supports various restoration projects, including the Everglades, Kissimmee River, Lake Okeechobee, Big Cypress Basin, and the water conservation and stormwater treatment areas. This program routinely monitors surface water, fish, and sediment and analyzes them for nutrients, pesticides, trace metals, and ultra-trace mercury.

The natural resources within the Kissimmee River Basin have been studied for several decades. Since 1995, the District has partnered with Florida Atlantic University's Center for Environmental Studies to manage the Riverwoods Field Lab, which serves as a research and education center, providing support staff for the scientific evaluation program for the Kissimmee River. The monitoring data analysis from the studies conducted on the KCOL and the Upper Kissimmee River Basin includes hydrology, dissolved oxygen, floodplain vegetation, fish studies, wading bird and waterfowl abundance. The KCOL fishery is monitored by FWC via electrofishing and creel (angler) surveys. FWC also monitors the relative abundance of the American alligator (*Alligator mississippiensis*) population in many public water bodies throughout the state, including KCOL and the Upper Kissimmee River Basin. The University of Florida conducts an annual Snail Kite survey that covers most wetlands with snail kite breeding activity statewide. The surveyed areas within the KCOL include East Lake Tohopekaliga, Lake Runnymede, Lake Tohopekaliga, Lake Kissimmee, and Lakes Jackson, Cypress, Hatchineha, and Marian. Additionally, the District has conducted bathymetric surveys and collected five years of monitoring data from permanent photo-monitoring plots established in East Lake Tohopekaliga, Lake Tohopekaliga, and Lake Kissimmee have been collected by the District to establish baseline conditions for comparison with data collected after the implementation of the Headwaters Revitalization Schedule (HRS). Since 2005, the results from Kissimmee River Basin monitoring studies conducted by the District and other partnering agencies as part of the Kissimmee River Restoration Evaluation Program (KRREP) have been analyzed and reported in the South Florida Environmental Report, published annually by the District.

The Land Stewardship Section's primary monitoring objective is to evaluate and document the effects of land management activities such as fire and herbicide applications. Land managers for the KCOL MA monitor natural communities for invasive species while conducting management activities and periodically during condition class assessments. Vegetative response to prescribed fire is also monitored to help burn managers understand the relationships between variables such as weather, fuel accumulation, season, and water levels and how they affect the vegetation. In addition to gathering data on prescribed burning, Land Stewardship staff monitors the condition and structure of habitats to detect gradual desirable or undesirable changes related to burning and other factors, such as changes in hydrology.

8. ADMINISTRATION

Administration of District lands is directed through the Land Stewardship Section within the Land Resources Bureau. Policy decisions, planning and budgeting, procurement of personnel and equipment, contract administration, and program development issues are administrative tasks coordinated through the Land Stewardship Section. Input is provided by regional land managers located over the 16-county area. Regional land managers handle regular administrative duties from their field locations to ensure quick response to local concerns and management issues. Administrative activities for KCOL MA will be handled through the District's field office at the St. Cloud Field Station and the District's headquarters in West Palm Beach.

8.1. Planning and Budgeting

Planning is a major component of the Land Stewardship Section and is critical to maintaining proper program focus, direction, and coordination with other agencies. This document forms the framework for prioritizing and creating targeted plans for the activities to be conducted within the appropriated budget for the next 10 years.

The principal sources of funding for land management operations on the KCOL MA include lease revenue, ad valorem tax revenue, and special grants. Overall funding availability determines management activities. Budget distribution among the District’s five land management regions is based on a programmatic prioritization of management activities. Operational funds are distributed to accomplish the management objectives of each management area most effectively. The continued operation and maintenance of the KCOL MA includes costs to cover staffing, ongoing land management expenses, and capital refurbishment/replacement of aging infrastructure. Current conditions and anticipated serviceability determine capital infrastructure needs. Priorities for capital refurbishment/replacement are made on a Districtwide basis. Utilities and operational expenses include supplies, electric service, business travel, and safety equipment. Public use costs include maintenance costs for public use facilities. Base-level funding needs may increase in the future in response to increasing operational expenses, including fuel costs, contracted nuisance and invasive plant control needs, equipment and infrastructure repairs, and increasing public expectations. Specific projects on which to spend these funds are prioritized annually to address each management goal. The Fiscal Year 2025 (FY2025; October 1, 2024–September 30, 2025) budget for the KCOL MA and projected expenditures through FY2030 are identified in **Table 5**.

Table 5. KCOL MA FY 2025 budget and proposed expenditures through FY 2030.

Management Activities	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Resource Management						
Mechanical Vegetation Mgmt.	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000
Chemical Vegetation Mgmt.	\$675,000	\$675,000	\$650,000	\$650,000	\$625,000	\$625,000
Prescribed Burning/Site Prep	\$85,000	\$85,000	\$85,000	\$85,000	\$85,000	\$85,000
Solid Waste/Debris Removal	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Habitat Restoration	\$1,235,000	\$0	\$0	\$0	\$0	\$0
Capital Improvements						
Facilities & infrastructure improvements	\$0	\$0	\$160,000	\$0	\$0	\$0

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Fencing	\$120,000	\$50,000	\$50,000	\$125,000	\$50,000	\$50,000
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Table 5 (continued). KCOL MA FY 2025 budget and proposed expenditures through FY 2030.

Management Activities	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Rec. Facilities Maint.	\$10,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Support & Administration						
Infrastructure Maint.	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Prescribed Burn PPE	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Contingent Staffing	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000	\$75,000
Vehicle Replacement	\$0	\$0	\$150,000	\$0	\$0	\$0
Vehicle Fuel & Maint.	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000
Equipment Replacement	\$0	\$80,000	\$0	\$0	\$40,000	\$80,000
Equipment Fuel & Maint.	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Small Tools & Equipment	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000	\$6,000
Total *	\$1,073,000	\$1,198,000	\$1,278,000	\$983,000	\$1,023,000	\$1,073,000

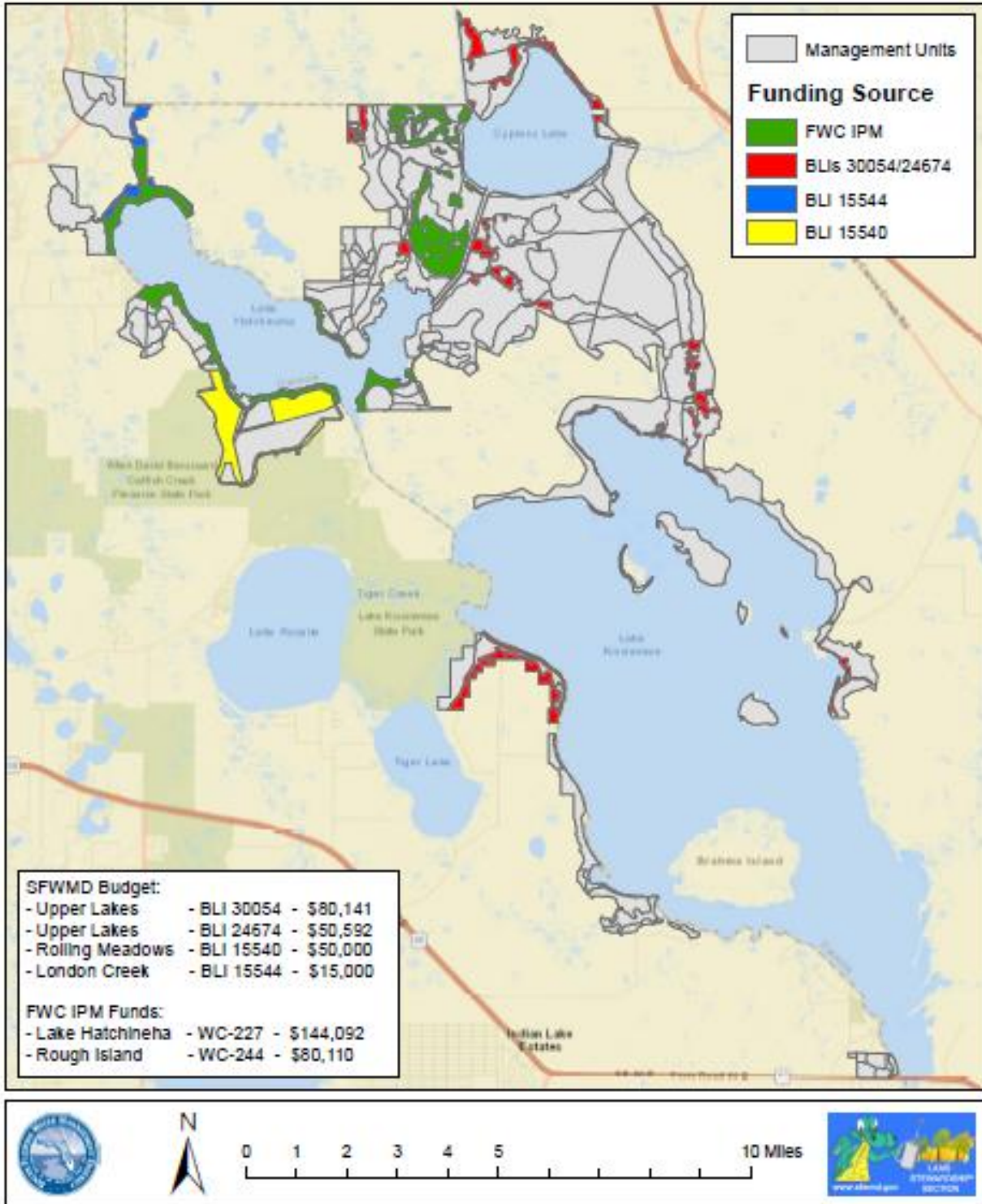
The FY 2024 invasive plant control strategy for the KCOL MA (**Figure 15, Map 20**) identifies how nuisance and invasive plant control funding was distributed to achieve the control of nuisance and invasive plants based on current and expected future nuisance and invasive plant condition classes for each management unit. Through this process, efforts are directed toward maintaining nuisance and invasive plant infestations at the most cost-effective levels while minimizing negative impacts on natural communities. This strategy also minimizes the use of herbicides by keeping populations of nuisance and invasive plants at low levels in areas of maintenance.

KCOL MA Invasive Plant Control Strategy

Fiscal Year 2024

- **What have we done so far?**
 - Herbicide treatments have been conducted on various units within the KCOL MA since 1998. The KCOL MA consists of several SFWMD-owned properties that border Lakes Kissimmee, Hatchineha, and Cypress in Osceola and Polk counties.
 - In FY2023, herbicide treatments occurred on 4,418 acres in the KCOL MA using service contracts costing \$500,079. Treatment costs averaged approximately \$113/acre across the entire area and ranged from \$60/acre to \$197/acre. Funding was provided by SFWMD (\$213,394) and FWC IPM (\$286,685).
 - Contractors covered areas of known infestations within management units due for treatment. The objective was to maximize treatment efforts by spending more time spraying and less time sweeping large tracts searching for target species.
- **What are the main species we are targeting?**
 - Primary target species in the KCOL MA include *Scleria microcarpa*, tropical soda apple, cogon grass, Chinese tallow, Brazilian pepper, *Lygodium spp.*, and *Praxelis clematidea*.
- **What are costly species not currently targeted?**
 - Most aquatic grasses and floating vegetation in large open-ended areas and drainage ditches.
 - Brazilian Pepper, guava, and *Lygodium* on the islands in Lake Kissimmee.
 - Caesar weed, natal grass, and *Hyptis brevipes* scattered throughout where frequent re-treatment for effective control is not possible.
- **What are we doing in FY 2024?**
 - The FY2024 invasive plant contractual services budget is \$419,935 (SFWMD - \$195,733 and FWC IPM - \$224,202).
 - During FY2024, contract services will be awarded to treat management units as identified in the Treatment plan. Most of the work will take place in terrestrial and semi-aquatic habitats. Due to limited funding, those management units intensely managed with prescribed fire and mechanical treatment will be the priority for herbicide application, except at Rolling Meadows and the Lake Hatchineha cypress fringe.
 - District staff will continue to provide in-house treatment for small, isolated infestations near roads, trails, and firebreaks.
- **Where are we going?**
 - Obtain results that show a progressive reduction in annual treatment costs.
 - Achieve maintenance levels on those management units that are intensely managed with prescribed fire and mechanical treatments.
 - Expand control efforts in the cypress swamps within the Reedy Creek floodplain.
 - Minimize the expansion of easily controlled and accessible target species.
 - Develop strategies to successfully treat widespread infestations of aquatic grasses and sedges.
- **Challenges to treatment?**
 - High probability of re-infestation due to many uncontrollable factors that facilitate dispersal within large wetland and floodplain systems.
 - Limited equipment mobility to effectively support ground crews with supplies.
 - Lack of access to floodplain marshes embedded with dense woody vegetation such as Carolina willow and buttonbush.
 - Sudden fluctuations in hydrology due to storm events and District operations.

Figure 15. KCOL MA 2024 Invasive plant management strategy.



Map 20. KCOL FY24 invasive plant treatment plan.

Similarly, strategies prioritizing equipment and infrastructure replacement (including fencing, public use facilities, administrative structures, and hydrologic components), areas for prescribed fire, and public use needs are also updated annually. These strategies and budgets are developed in concert with District-wide operational priorities and budgetary cycles and prioritized across all areas managed by the Land Stewardship Section.

8.2. Personnel and Equipment

The Land Stewardship Section is separated into five geographic regions. Each region is assigned a Science Supervisor (Land Manager), one to three Land Management Technicians, and, based on the need in some areas, a Land Management Assistant, Scientist III, and/or Scientist IV position. A Section Leader provides direct oversight and supervision for the land managers. Additional leadership and assistance come from the Land Stewardship Section Administrator, Land Stewardship Senior Scientist, Wildlife and Public Use Section, Vegetation Management Section, and other support personnel from the District's headquarters in West Palm Beach and the St. Cloud Field Station. Management of the KCOL MA property is the primary responsibility of the Upper Lake Region's Science Supervisor, one Land Management Technician, one Senior Land Management Assistant, and one Scientist IV.

Staff have access to tools, supplies, four-wheel drive vehicles, fire suppression trucks, all-terrain vehicles, swamp buggies, and other heavy equipment. This equipment is maintained through the St. Cloud Field Station. Equipment from the other regions, as well as leased equipment, are also available if needed.

8.3. Volunteers

Section 373.1391, Florida Statutes, 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. The Land Stewardship Section provides a range of volunteer opportunities for both individuals and groups. These opportunities include creating and maintaining public use trails, maintaining public use facilities and amenities, leading field interpretations and guided tours, organizing clean-ups of trails and waterways, conducting invasive plant sweeps, and helping with District-sponsored public events like Earth Day and Public Lands Day.

In Fiscal Year 2024, District Lands benefited from 17,036 volunteer hours, which is valued at \$538,508 based on Florida's average volunteer service rate of \$31.61 per hour. Volunteer efforts at KCOL are supported by dedicated organizations, including the Kissimmee River Valley Sportsman Association and the Osceola Airboat Association. These organizations help maintain airboat shelters and organize trash cleanups.

8.4. Contractual Management

Effective operation and management of District properties require the services and cooperation of private organizations, other governmental agencies, and volunteers. Contractual management

is authorized through a management agreement signed by both the District and contracting entity, with the document defining the responsibilities of each party.

In addition to the contractual services for the KCOL MA, the District has established agreements to facilitate efficient management and protection of its resources, including the following:

Lease Agreement

A 50-year lease with the Trustees of the Internal Improvement Trust Fund conveying the management responsibility for sovereign submerged lands throughout the Kissimmee Chain of Lakes system to the district (Contract LS040808, Lease No. 4099).

FWC Agreement

A cooperative agreement with FWC to regulate public use for the management and protection of wildlife and aquatic life on specific District lands. (Multi-Site agreement No. 4600000961).

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9. MANAGEMENT REVIEW

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Appendix A. KCOL Area History

Historic Overview

Humans have inhabited the Kissimmee Chain of Lakes and its surrounding regions for over 2000 years. There are still scattered early habitation sites present today. During the Spanish colonial period, the region was considered wilderness and was rarely visited. The Spaniards did not map or survey the area during their 300-year rule of Florida, likely due to the difficulties posed by the Kissimmee Chain of Lakes region. The nearest Franciscan mission during this time was likely La Concepcion de Atoyquime or San Joseph de Jororo, both located just north of present-day Orlando from 1685 to 1697. These frontier outposts had several missionaries killed by the local population and were ultimately 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 Ft. Caroline, a French fort on the Atlantic near present-day St. Augustine. The French had heard rumors that two Europeans were living with two nearby chiefs described as Indian kings, Mathiaca and Onachaquara. One of the Spaniards told the French Captain at the fort about his journey 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). About halfway through the journey, they came across a large lake, 15 miles from one end to the other, called Sarrope. The lake contained a large island of the same name (**Figure 1**). This matches the location and physical description of Lake Kissimmee and Brahma Island.

The island was home to a population that was one of the most fierce and warlike in Florida. The inhabitants of Sarrope were skilled in cultivating a wide variety of crops, particularly coontie root, which they traded and used to make high-quality bread. The Spaniards noted that they had become quite wealthy from trading these crops. Their sphere of influence extended 15 miles from

the Lake. The Spaniard also recounted a story that demonstrated the island population's strength and confidence. According to the Spaniard, the inhabitants of the island were so confident in their strength that they angered both the Ais and the Calusa without fear of retribution. King Oathagua had attempted to secure an alliance with the Calusa by arranging a marriage between his daughter and Calos. However, 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.



Figure 1. Early maps of 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. The area likely served as a stronghold for the early Native American culture until the Creek raids in the early to mid-1700s. Although it is not entirely clear how much the Creek raids impacted this specific area since most of the accounts are from northern Florida tribes and coastal areas, it is evident that these raids marked the beginning of a significant decline in the tribes that were indigenous to Florida. In 1708, a man named Thomas Nairne from Carolina led 30 Yamasee warriors on an Indian slaving raid through central Florida. According to the notes from his journey, the village on Brahma Island was called "Cacema," which eventually gave rise to the name "Kissimmee" (Figure 2). Eventually, the Jororo and most of the nearby tribes migrated to St. Augustine seeking protection and came to be known as the Costas or Spanish Indians.

During the British colonial period that began in 1763, the region experienced immigration from the Creek and Yamasee tribes. Throughout the Second Spanish Period, the surviving Costas from

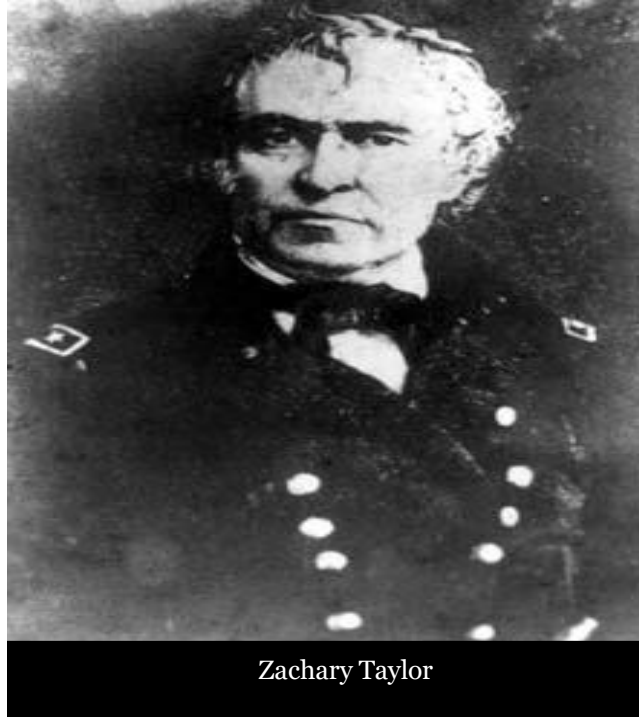
the interior worked for Spanish fishing villages and rounded up native-range cattle, driving them to the coast for transportation to other Spanish colonies. Two other settlements appeared on maps of the Kissimmee Chain of Lakes area: Dest and Suliga. It is not clear exactly where these settlements were situated. Dest was located on the shore of a small lake and is depicted on period maps as being between Lake Toho and Lake Kissimmee, which suggests that it was situated on Cypress Lake.



Figure 2. 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 who 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) and 600 soldiers marched out in 1837 to engage in the largest battle of the war, north of Lake Okeechobee, on Christmas day.



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 it 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 ensure that the land was settled and improved for agricultural production. However, 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 that declared a land grant void. However, before the treaty was executed, the Spanish king had just agreed to become a constitutional monarch instead of an absolute monarch. Hence, he was limited in his powers and could not take private property without compensating the owner and then, having the action ratified by the Cortes. As a result, the grant and transfer were disputed by the Territory, then the State of Florida. After years of being contested, the U.S. Supreme Court decided in 1853 (*John Doe v. Braden* - Braden was the founder of Bradenton) that the grant and transfer were not valid. The court asserted that the treaty was considered the supreme law of the land unless it violated the U.S. Constitution, not the Constitution of Spain, and assumed that the King had the necessary power to annul the grant. 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 not obliged 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 could pass unchallenged to the State as part of the Swamp and Overflowed Lands Act passed by Congress in 1850. Ironically, the State later transferred nearly all the Alagon/Hackley lands to Hamilton Disston - a single individual - 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. This made Disston the largest individual landowner 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 mostly 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 (**Figure 3**) 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 number of homesteads, the Brighton Seminoles were still largely free to roam the countryside and established hunting and trading camps on the west shore of Lake Kissimmee.



Figure 3. 1856 Military Map surrounding the Kissimmee Chain of Lakes.

From the year of statehood in 1845, the Florida legislature passed several resolutions to drain the Everglades and wetlands in the interior of Florida. The ability to successfully drain those areas had already been proven that the successful drainage of these areas was possible when English



Buckingham Smith

settlers drained and converted large areas of wetlands on the east coast to sugar cane and other crops in the late 1700s. 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. To the surprise of the surveyors, it was discovered 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

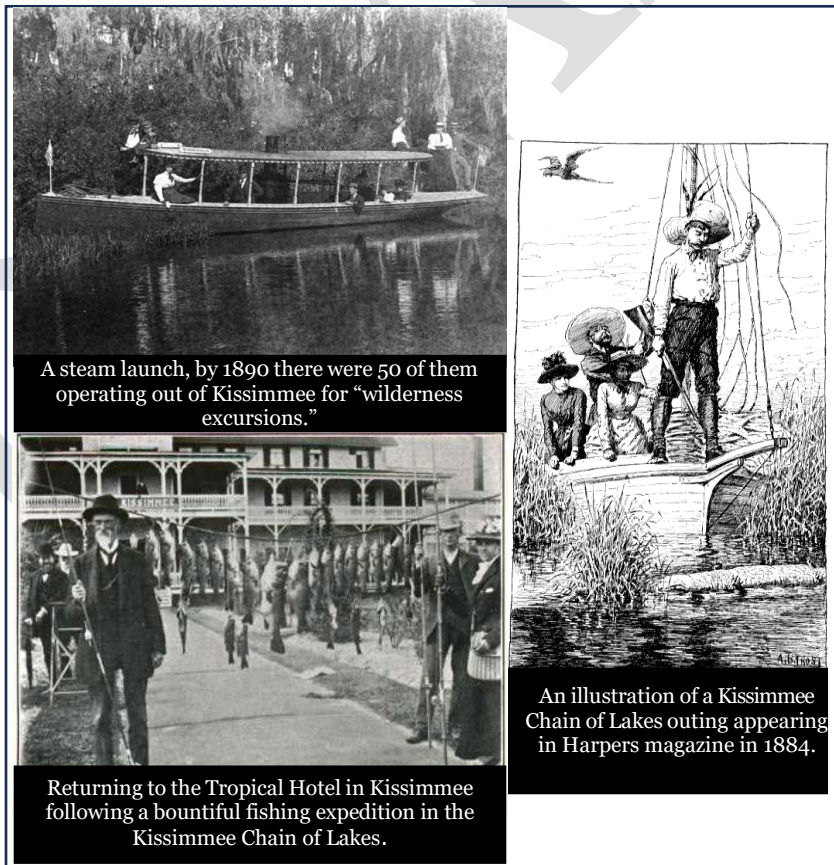
and cultivated by lowering the water level of Lake Okeechobee by 5 to 6 feet with a series of drainage canals that would simultaneously create a cross-state navigable waterway through the lake.

In 1850, the U.S. Congress passed the Swamp and Overflowed Lands Act, which granted states federally owned wetlands to develop 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 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 veterans/homesteaders in the Kissimmee 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, the area supported a large game and fish population. 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 Europe. These adventure seekers were catered 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 was allowed to be taken with the license.



Hunting cabins were established on the eastern shore of Lake Kissimmee. Largemouth 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 downstream. 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 Lake Hatchineha.

More settlers started migrating to the area as regular service of several 50-foot steamers began traveling the Kissimmee 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 Basinger 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.

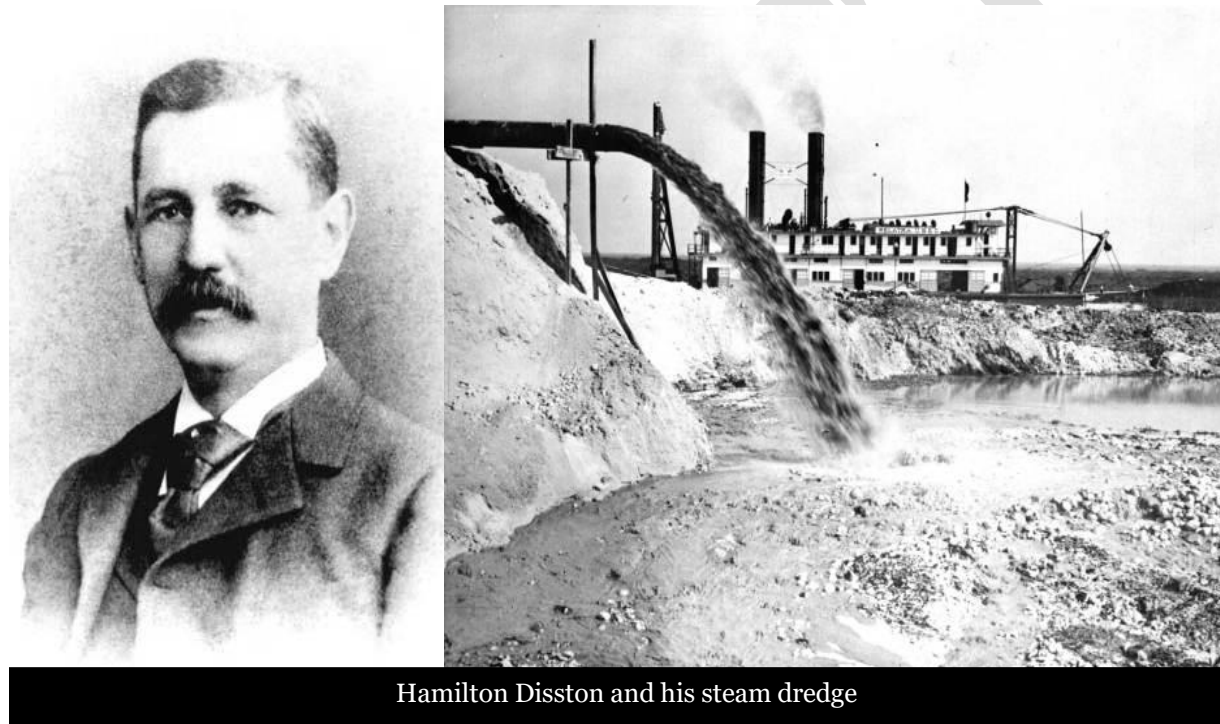


The 50-foot sternwheel steamers of the Kissimmee River system, clockwise from upper left: the Naoma, the Talullah, the Roseada, and the Lillie.

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 the 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 USACE to investigate opening a steamer line from Kissimmee to Florida's southwest coast. The USACE 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 was an entrepreneur from Philadelphia who organized the Florida Land and Improvement Company and the Atlantic and Gulf Coast Canal and Okeechobee 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. The general policy of the railroad companies and Disston was to sell off the extra land to settlers and other investors.

In 1882, Disston initiated a reclamation operation by constructing a large steam-powered bucket chain dredge barge. The barge could dig a 37-foot wide and 6-foot-deep canal at a speed of 12 linear feet per hour. As the barge moved through the prairies, it automatically built a levee on either side. A crew of 12 worked on the dredge to begin constructing a canal that connected Lake Tohopekaliga and Cypress Lake during the summer of 1882. Disston employed the steamer Roseada to move the dredge. The barge was propelled by the lake water, which pushed it towards Cypress Lake. By May 1883, the canal was completed, and a steady current of 2½ miles per hour had drained Lake Tohopekaliga by 5 feet, draining 40,000 acres of land. However, Disston only cultivated a small portion of this land, 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 Kissimmee Chain of Lakes were 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, which 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.

Between 1902 and 1909, several additional improvements were made to the Kissimmee Chain of Lakes to enhance navigation. These included 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. Basinger.

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 were 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. Between 1926 and 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 (**Figure 4**). A turpentine still was located near the southwest shore of Lake Kissimmee. By 1929 there were 21 sawmills operating in Polk County.



A river steamboat loading rosin for transportation to a turpentine still.

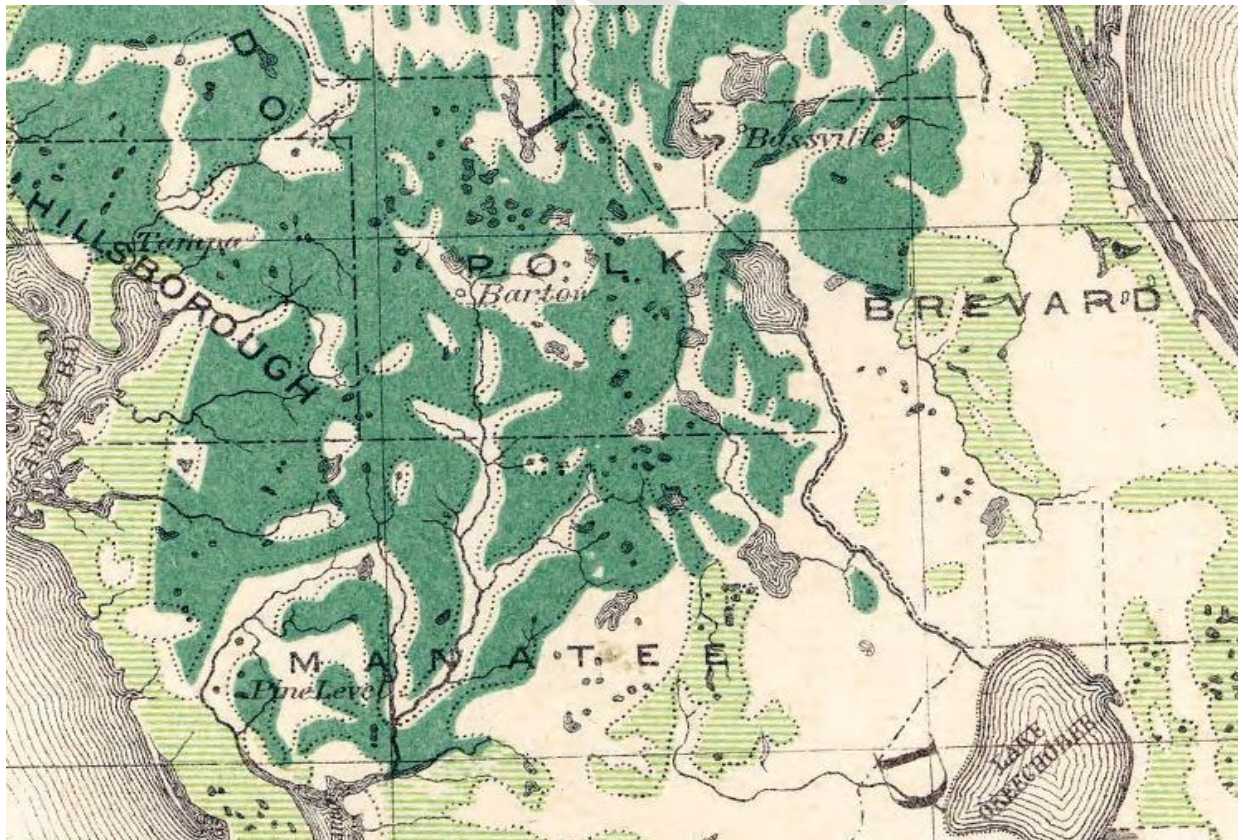


Figure 4. An 1881 timber map with longleaf pine in dark green and slash pine in light green.

Kissimmee River Flood Control and Restoration Projects

The first improved roads didn't reach the area until the 1930s, but it 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 USACE 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). Six water control structures regulated inflow from the Kissimmee Chain of Lakes, the first of which was located at the outflow of Lake Kissimmee into the Kissimmee River. Water control structures and canals were built in the Kissimmee Chain of Lakes region, allowing regulation of water flow within and between the lakes of the upper basin. Most of the floodplain 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.

The establishment of Disney World and other tourist attractions in the early 1970s was a major addition to the area's economy. As a result, there was a surge in residential development throughout the region by the late 1970s. In 1981, the Florida Legislature passed the Save Our Rivers program, which allowed the five water management districts to acquire environmentally sensitive land. The legislation, §373.59, Florida Statutes, created the Water Management Lands Trust Fund and provided the water management districts with the power to acquire lands required to manage, protect, and conserve the state's water resources. Once the lands are acquired, they would be restored to their natural state and managed in an environmentally acceptable manner.

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 USACE. The project was initially 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 planned to reestablish inflows from the Kissimmee Chain of Lakes, providing flow velocities and volumes similar to those 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 USACE working on the Kissimmee River Restoration Project determined that not enough water would be available in the Upper Kissimmee Basin 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 in eastern Polk and southwestern Osceola counties around the Headwaters Lakes: Kissimmee, Cypress, Tiger, and Hatchineha.

The construction of the Kissimmee River Restoration Project was completed in July 2021. This completion sets the stage for gradually implementing a new stage regulation schedule, known as the Headwaters Revitalization Schedule (HRS), for the S-65 water control structure and the Headwaters Lakes. With HRS, the lake's water levels will rise to 1.5ft higher than the current S-65 Interim Schedule, increasing the water storage capacity of Lakes Kissimmee, Hatchineha, Cypress, and Tiger to approximately 100,000 acre-feet. This will help restore hydrological conditions for the lake's littoral zones while achieving the desired durations and seasonal flow variability to the Lower Basin.

Various efforts were made to complete the restoration project, including acquiring 65,603 acres of land in the Lower Basin and 36,612 acres in the Upper Basin. The project also involved backfilling about 22 miles of the C-38 Canal, reconnecting the original river channel across backfilled sections of the canal, restoring sections of the river channel destroyed during C-38 Canal construction, and removing the S-65B and S-65C water control structures and associated tieback levees. The reconstruction of the river floodplain's physical shape was implemented in four construction phases, as illustrated in **Figure 5**.

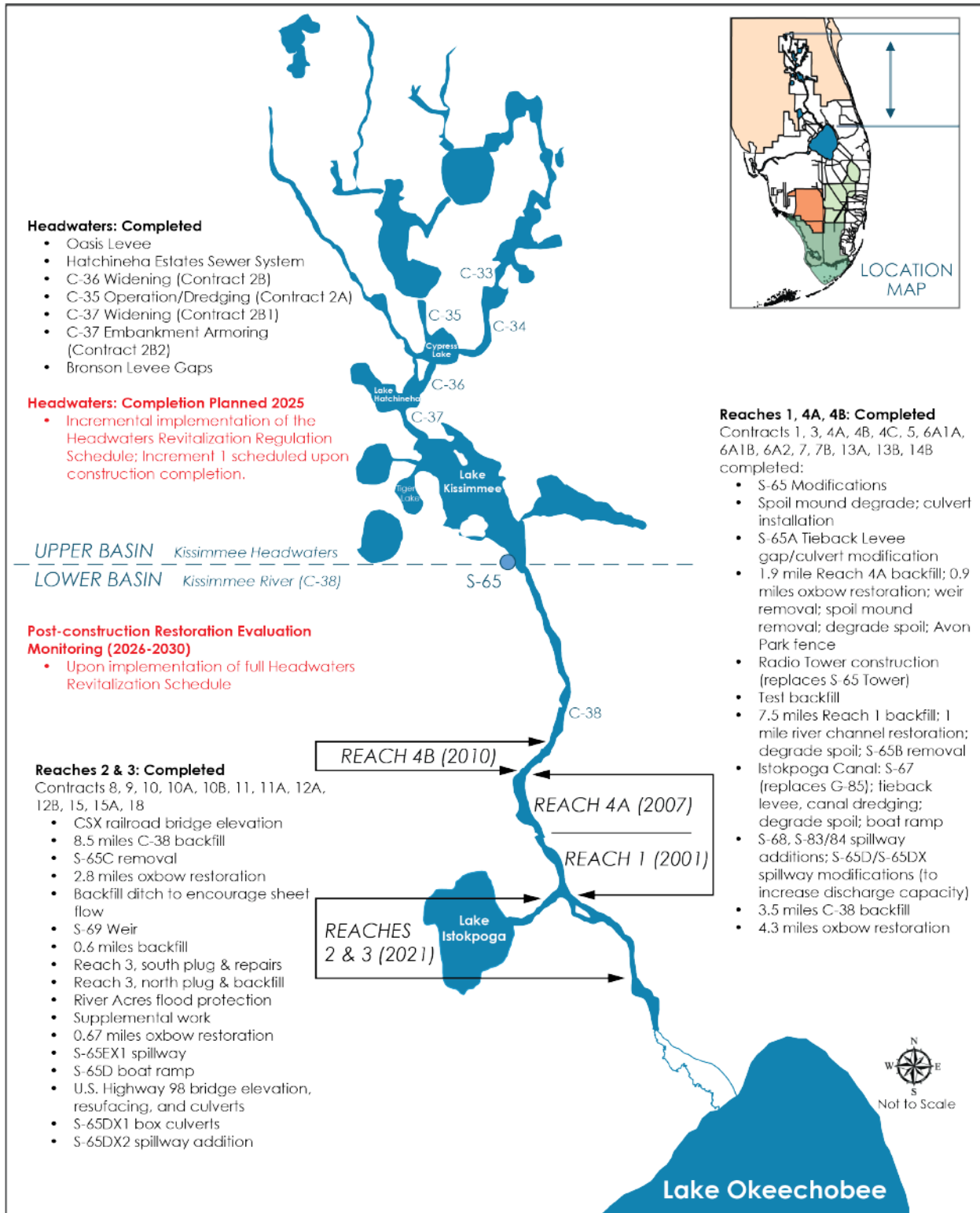


Figure 5. Completed restoration and other projects planned for the Kissimmee River restoration.

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Appendix B.

KCOL MA Natural Communities

The KCOL MA is comprised of 11 distinct natural communities and several altered landcover types based on a combination of vegetation, landscape position, and hydrology (FNAI 2010). These communities are managed through achieving and maintaining optimal fire return intervals for fire-dependent communities, control of invasive plant and animal species, maintenance of natural hydrological functions, maintenance of proper vegetative structure that represents the natural diversity of the community, maintenance of healthy populations of plant and wildlife species (including those that are imperiled or endemic), and maintenance of intact ecotones between natural communities across the landscape.

The natural communities within the KCOL MA have been significantly altered due to historical agricultural activities and other land use activities. After years of management efforts, many areas have undergone hydrological restoration, and the vegetation structure has been improved through manual manipulation and/or substantial natural recruitment.

The natural communities and other landcover types identified on the KCOL are classified as follows:

- Altered Landcovers
- Baygall
- Blackwater Stream
- Cypress/Tupelo
 - Basin Swamp
 - Dome Swamp
 - Floodplain Swamp
- Hydric Hammock
- Marshes
 - Basin Marsh
 - Depression Marsh
 - Floodplain Marsh
- Mesic Flatwoods
- Mesic Hammock
- Scrub
- Scrubby Flatwoods
- Wet Flatwoods
- Wet Prairie

Community Description and Assessment

NATURAL LANDCOVER TYPES

BAYGALL (0.4%)

Baygalls are generally characterized as densely forested wetlands of bay species typically found on wet soils at the edges of floodplains, bases of slopes, and in depressions and stagnant drainages. Baygall can develop from deep swamps dominated by cypress/tupelo when peat accumulation raises the soil level, eventually allowing bay species to become established. As broad-leaved species proliferate, shade-intolerant cypress and swamp tupelo (*Nyssa sylvatica* var. *biflora*) seedlings are inhibited, shifting vegetation and soil conditions to favor broadleaf species that can germinate and grow in low light. Baygall is ranked statewide and globally as apparently secure (G4/S4), though it may be quite rare in parts of its range, especially at the periphery.

In the KCOL MA, the baygall community encompasses 108 acres. The baygalls occur as thick pockets surrounded by flatwoods and cypress/tupelo swamps. The common vegetation in the canopy includes loblolly bay (*Gordonia lasianthus*), red bay (*Persea borbonia*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), and slash pine (*Pinus elliottii* var. *densa*). The subcanopy is densely covered with dahoon holly (*Ilex cassine*), wax myrtle (*Myrica cerifera*), maple (*Acer rubrum*), fetterbush (*Lyonia lucida*), and gallberry (*Ilex glabra*). The groundcover typically contains a variety of ferns, including chain fern (*Woodwardia* sp.) and cinnamon fern (*Osmunda cinnamomea*). Vines are especially abundant in the understory.

Broad-leaved baygall species are fire-intolerant and are best managed by maintaining high-quality adjacent natural uplands and upland-wetland ecotones. In the KCOL MA, prescribed fire is applied to surrounding natural communities when soils are saturated. The fire naturally extinguishes at the edges of the baygall, preventing bay species from spreading to adjacent communities. Baygalls in the KCOL MA have the desired vegetation structure. The objective for managing the vegetation in this community is to target the recurrence of nuisance and invasive species to maintain its condition.

BLACKWATER STREAM (0.4%)

Blackwater Streams are characterized as perennial or intermittent seasonal watercourses originating deep in sandy lowlands. These lowlands contain wetlands with organic soils that act as reservoirs, collecting rainfall and gradually releasing it into the stream. Emergent and floating aquatic vegetation may be found along the slow-moving and shallow parts of the stream. Blackwater Streams are ranked as apparently secure globally and vulnerable statewide (G4/S3) due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

In the KCOL MA, the Blackwater streams encompass approximately 110 acres. The KCOL MA contains sections of several blackwater streams, including Catfish Creek, Dead River, Lake

Marion Creek, Reedy Creek, and Tiger Creek. Catfish Creek, Dead River, and Lake Marion Creek drain into Lake Hatchineha. Reedy Creek drains into Cypress Lake, and Tiger Creek flows from Tiger Lake to Lake Kissimmee. Some creek segments on the property were cut off from the main creeks by the Kissimmee River Restoration projects and no longer receive flow. These isolated segments are now classified as part of the surrounding communities since they no longer receive water from the primary creeks and are not accounted for in the blackwater stream acreages. The blackwater streams in the KCOL MA typically do not need direct management. The Kissimmee River restoration and implementation of the HRS are anticipated to result in more natural water level fluctuations in the Kissimmee River basin. The objective for managing blackwater streams in the KCOL MA is to assess the effect of water level fluctuation on the surrounding communities.

SCRUB (0.5%)

Scrubs are characterized as a community of evergreen shrubs, with or without a canopy of pines. The signature scrub species are Florida rosemary (*Ceratiola ericoides*), sand pine (*Pinus clausa*), and a variety of shrubby oaks. Scrub is ranked the second most endangered level statewide and globally (G2/S2).

In the KCOL MA, the scrub community encompasses 148 acres. Scrub occurs in the highest elevations in the KCOL MA. The canopy is open with rare occurrences of sand pines. Common vegetation in this community includes sand live oak (*Quercus geminate*), myrtle oak (*Quercus myrtifolia*), scrub oak (*Quercus inopina*), bluejack oak (*Quercus incana*), turkey oak (*Quercus laevis*), Florida rosemary, big-flower pawpaw (*Asimina obovate*), scrub-hyssop (*Sophronanthe hispida*), and scrub rock-rose (*Crocanthemum nashii*). Saw palmetto (*Serenoa repens*), rusty staggerbush (*Lyonia Ferruginea*), and wiregrass (*Aristida stricta*) are occasionally present in the transitional areas but are not commonly distributed throughout the scrub matrix.

The scrub community within the KCOL MA provides habitats for the Florida scrub-jay (*Aphelocoma coerulescens*). Scrub communities rely on fire for maintenance, but they are not easily ignited due to the lack of continuous groundcover vegetation. Fuel buildup takes a long time, as the vegetation grows slowly. However, under dry conditions, woody scrub species can burn quickly and intensely. Without fire, the scrub community would accumulate organic matter and convert to a xeric hammock. The desired vegetation structure for scrub in the KCOL MA is an open canopy with a patchy understory of low shrubs, bare soil, and few grasses. The desired vegetation structure is well-established in this community. The objectives for managing scrub vegetation in the KCOL MA include periodically assessing the area for nuisance and invasive species to maintain maintenance conditions, using prescribed fire to maintain the existing vegetation structure, and using mechanical vegetation treatments to re-structure the vegetation where low-intensity fire doesn't achieve the desired results.

WET FLATWOODS (0.6%)

Wet flatwoods are characterized as pine forests with a sparse midstory and a dense groundcover of hydrophytic grasses, herbs, and low shrubs. The density of shrubs and herbaceous vegetation can vary significantly in wet flatwoods, with shrubs dominating where fire has been suppressed for a long period or where winter burns predominate. Wet flatwoods are ranked as apparently secure in its range globally and statewide (G4/S4).

In the KCOL MA, the wet flatwoods community encompasses approximately 165 acres. The wet flatwoods community in the KCOL MA is characterized by a canopy of Florida slash pine and cabbage palm (*Sabal palmetto*). Occasional hardwood trees include water oak (*Quercus nigra*), laurel oak (*Quercus laurifolia*), and red bay (*Persea borbonia*). The understory vegetation includes wax myrtle, gallberry, and various other grasses. The native groundcover species, which were previously displaced by pasture grass (i.e., bahia grass (*Paspalum notatum*)), have been allowed to naturally re-establish in this community. Some of the naturally recruited species in this area include bluestem (*Andropogon sp.*), sawgrass (*Cladium jamaicense*), beakrush (*Rhynchospora sp.*), maidencane (*Hymenachne hemitomon*), bantam-buttons (*Syngonanthus flavidulus*), meadowbeauty (*Rhexia sp.*), blue-eyed grass (*Sisyrinchium sp.*), and yellow-eyed grass (*Xyris caroliniana*).

Prescribed fire considerations in the wet flatwoods community are similar to those for mesic flatwoods. Without frequent fire, this community would continue to experience a buildup of shrubby undergrowth. The desired vegetation structure is a relatively open canopy forest of pine trees, sparse cabbage palms and shrub midstory, and dense groundcover. The objectives for managing wet flatwoods vegetation in the KCOL MA include treating nuisance and invasive species to achieve and maintain maintenance conditions and using prescribed fire to decrease shrub coverage.

SCRUBBY FLATWOODS (~1%)

Scrubby flatwoods are characterized as an open canopy forest of widely scattered pine trees and a low shrubby understory interspersed with areas of barren white sand. This community occurs on sites slightly higher in elevation than mesic flatwoods, but lower than scrub. Scrubby flatwoods differ from mesic flatwoods by the presence of shrubby oaks such as myrtle oak, Sand live oak, Chapman's oak (*Quercus chapmanii*), and scrub oak, and from scrub communities in its lack of a continuous cover of shrubby oaks. Scrubby flatwoods are ranked (G2/S2?). The G2/S2? ranking indicates that this community is the second most endangered level both globally and statewide, but additional research is required for a definitive statewide classification for this community.

In the KCOL MA, the scrubby flatwoods community encompasses 226 acres. The scrubby flatwoods community in the KCOL MA contains typical species common to both scrub and mesic flatwoods. The canopy is dominated by slash pine, but sand pine or longleaf pine (*Pinus palustris*) occurs intermixed with slash pine in some areas. The understory consists mainly of saw palmetto, scrub oak, fetterbush, goldenrod (solidago sp.), and wiregrass.

Scrubby flatwoods provide habitat for the gopher tortoise (*Gopherus polyphemus*) and the Florida scrub jay (*Aphelocoma coerulescens*). Scrubby flatwoods are fire-dependent communities.

The sparse groundcover and relatively incombustible oak litter contribute to a slow buildup of fuel in the flatwoods. The desired vegetation structure for this community is a sparse canopy of pine species and a low shrub understory. The objectives for managing scrubby flatwoods vegetation in the KCOL MA include treating nuisance and invasive species to achieve and maintain the vegetation structure and using prescribed fire to maintain a low shrub layer.

MESIC FLATWOODS (~1%)

Mesic Flatwoods are characterized as an open canopy forest of widely spaced pine trees with a dense understory of herbs and shrubs. They are found on poorly drained but rarely inundated soils. FNAI ranks mesic flatwoods as apparently secure in its range globally and statewide (G4/S4).

In the KCOL MA, the mesic flatwoods community encompasses 258 acres. The mesic flatwoods in the KCOL MA are dominated by slash pine. Occasionally, patches of longleaf pines and scattered live oaks (*Quercus virginiana*) are present in the canopy. The midstory is generally absent due to frequent prescribed fires. The dense shrub layer is dominated by saw palmetto, gallberry, and fetterbush. Other common species include coastalplain staggerbush (*Lyonia fruticosa*), runner oak (*Quercus elliotii*), shiny blueberry, queen's delight (*Stillingia sylvatica*), dwarf huckleberry (*Gaylussacia dumosa*), and dwarf live oak (*Quercus minima*). The groundcover consists of a mix of herbs and grasses dominated by threeawn (*Aristida sp.*), goldenrod, broomsedge (*Andropogon sp.*), and gopher apple (*Licania michauxii*).

The desired vegetation structure for this community is a canopy of pine species and an understory of low shrubs, grasses, and forbs. The objectives for managing mesic flatwoods vegetation in the KCOL MA include treating nuisance and invasive species to achieve and maintain the vegetation structure, using prescribed fire to maintain a low shrub layer, and growing season burns to promote healthy grass coverage.

HYDRIC HAMMOCK (~2%)

Hydric hammocks are characterized by well-developed hardwood and cabbage palm forests with a variable understory often dominated by palms and ferns. Typical plants include cabbage palm, red maple, swamp bay, sweetbay, water oak, wax myrtle, saw palmetto, dahoon holly, royal fern, and vines such as poison ivy (*Toxicodendron radicans*), pepper vine (*Ampleopsis arborea*), and virginia creeper (*Parthenocissus quinque*). Hydric hammocks are ranked globally and statewide as apparently secure (G4/S4), though it may be quite rare in parts of its range, especially at the periphery.

In the KCOL MA, the hydric hammock community encompasses 428 acres. This hydric hammock community is a closed canopy hardwood system. Common vegetation includes sweetgum (*Liquidambar styraciflua*), cabbage palm, sweetbay, red maple, American elm (*Ulmus Americana*), and various oaks. Bald cypress (*Taxodium distichum*), water hickory (*Carya aquatica*), and black gum (*Nyssa sylvatica* var. *biflora*) are sparsely scattered in the canopy. The understory is generally open, with sparse vegetation, including wax myrtle, twinberry (*Mitchella*

repens), and occasional patches of ferns.

Hydric hammock communities are not fire-dependent. Due to the limited herbaceous groundcover and moist soil throughout most of the year, hydric hammocks rarely burn. Typically, fires spread into this community from the surrounding fire-maintained communities during the dry season and burn the available fuels. Hydric hammocks in the KCOL MA have the desired vegetation structure. However, in some areas, the hydroperiods in these hydric hammocks are higher than they were historically. The historical hydroperiods are not expected to be restored due to the water level manipulations in the Kissimmee Chain of Lakes. The objectives for managing the vegetation in this community include treating nuisance and invasive species to maintain its condition and assessing the area periodically to evaluate the effects of lake water level changes on the vegetation structure.

MESIC HAMMOCK (9%)

Hardwood hammocks are hardwood-dominated communities. The hardwood hammock communities within the KCOL MA are classified as mesic hammocks. Mesic hammocks are characterized by a dense, evergreen hardwood canopy dominated by live oak and cabbage palm, along with a shrubby understory. The mature canopy trees host a variety of epiphytes, including listed species. Unlike hydric hammocks, mesic hammocks lack wetland trees such as sweetbay and swamp tupelo. Mesic hammocks are ranked as vulnerable globally and statewide (G3/S3?) due to either a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors, although additional research is required for a definitive statewide classification for this community.

In the KCOL MA, the mesic hammock community encompasses 2,480 acres. In the KCOL MA, the mesic hammocks community is dominated by live oaks and cabbage palms, as is typical of this community. Abundant epiphytes are also found in this community. Other common canopy vegetation includes sweetgum, hackberry (*Celtis laevigata*), and scattered slash pine. The common shrubby understory typically consists of a mix of saw palmetto, American beautyberry (*Callicarpa americana*) gallberry, hog plum (*Ximenia americana*), common persimmon, and various types of berry (*Vaccinium sp.*).

Mesic hammocks can withstand occasional ground fires, but the presence of live oaks limits fuel buildup in the understory. Typically, these hammocks burn with the surrounding fire-maintained communities. The fires usually stop once they reach an area with insufficient fuel. Mesic hammocks in the KCOL MA have a well-developed canopy, but parts of this community are still used for low-intensity cattle grazing. Cattle grazing and trampling of shrub and groundcover vegetation have reduced many species typical of mesic hammock understories. In the areas where grazing occurs, the typical shrub and groundcover vegetation has been replaced by more opportunistic species such as broomweed (*Sida sp.*), tropical soda apple (*Solanum viarum*), and caesarweed (*Urena lobata*). The main objective for managing the mesic hammock vegetation in the KCOL MA is to treat nuisance and invasive species to achieve and maintain maintenance conditions.

CYPRESS/TUPELO (11%)

Cypress/tupelo wetlands are frequently flooded wetlands dominated by cypress or Tupelo (black gum) species. In the KCOL MA, the cypress/tupelo community covers 3,157 acres and includes a mix of floodplain, dome, and basin swamps.

Floodplain Swamp

Floodplain swamps are closed-canopy forests that grow near streams, rivers, depressions, and oxbows within floodplains. Floodplain swamps are ranked globally and statewide as apparently secure (G4/S4), though it may be quite rare in parts of its range, especially at the periphery.

In the KCOL MA, floodplain swamps are associated with creek channels and lake floodplains. The canopy is dominated by bald cypress and swamp black gum. Other canopy species include water hickory, red maple, and laurel oak (*Quercus laurifolia*). The midstory typically includes swamp bay, Carolina ash (*Fraxinus caroliniana*), and cabbage palm (*Sabal palmetto*). Shrub and groundcover vegetation coverage is generally sparse. Common species include wax myrtle, buttonbush (*Cephalanthus occidentalis*), false nettle (*Boehmeria cylindrica*), pickerelweed (*Pontederia cordata*), lizard's tail (*Saururus cernuus*), alligator flag (*Thalia geniculata*), beakrush, and various ferns.

Basin Swamp

Basin swamps are generally characterized as irregularly shaped basin wetlands that can withstand an extended hydroperiod. Basin swamps are ranked as apparently secure globally and vulnerable statewide (G4/S3) due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

In the KCOL MA, basin swamps have a mix of vegetation, including bald cypress, black gum, red maple, sweetbay, sweetgum, Green Ash (*Fraxinus pennsylvanica*), and scattered slash pine (*Pinus elliottii* var. *densa*), forming open to dense canopy. The cover of shrub and groundcover vegetation also varies and includes buttonbush, wax myrtle, dahoon holly, common persimmon (*Diospyros virginiana*), maidencane, toothed midsorus fern (*Blechnum serrulatum*), lizard's tail, and various ferns.

Dome Swamp

Dome swamps are isolated, forested, depression wetlands within a fire-maintained community. They typically have a domed shape and are smaller in size compared to basin swamps. Shrubs are typically sparse to moderate but are absent in areas with a high fire frequency. Dome Swamps are ranked statewide and globally as apparently secure (G4/S4), though it may be quite rare in parts of its range, especially at the periphery.

In the KCOL MA, dome swamps can be found scattered throughout the management area. The dominant trees in the canopy are bald cypress and pond cypress (*Taxodium ascendens*). Other canopy vegetation includes black gum, swamp bay, and sweet bay. Occasionally, slash pine and dahoon holly are found in dome swamp, mainly in transitional areas along the edges. The common shrub vegetation includes St. John's wort (*Hypericum sp.*), buttonbush, fetterbush, and wax myrtle.

The groundcover includes a mixture of ferns, soft rush (*Juncus effusus solutus*), maidencane, dotted smartweed (*Polygonum sp.*), cattail (*Typha sp.*), ten-angled pipewort (*Eriocaulon decangulare*), tickseed (*Bidens sp.*), bladderwort (*Utricularia sp.*), floating heart (*Nymphoides aquatica*), and alligator flag.

Periodic fire is needed to maintain the cypress components and reduce the spread of hardwood in basin swamps. Fire is also essential for maintaining the structure and species composition of dome swamps. Without periodic fires, cypress can become less dominant due to peat accumulation and hardwood intrusion, often leading to the transition from swamp to bottomland forest or baygall. In long-unburned cypress/tupelo areas, introducing fire can lead to high tree mortality. In the KCOL MA, most prescribed fire is applied to surrounding natural communities when soils within the swamps are saturated. Fires typically spread to the edges of the swamps and are extinguished before reaching the interior. Fire frequency in the cypress/tupelo varies, with the edges burning every 3 -5 years, while the interior, where longer hydroperiods typically maintain high moisture levels, does not burn. Previous land use, including hydrology alterations within the KCOL MA and the KCOL floodplain, altered the hydrology of the cypress/tupelo communities. Additionally, fire exclusion and nuisance and invasive species altered the vegetation structure, increasing the hardwood composition. The cypress/tupelo communities in the KCOL MA have the desired vegetation structure. The objectives for managing vegetation include preventing hardwood invasion in the dome swamps through prescribed fire, treating nuisance and invasive species to achieve maintenance conditions, and maintaining the existing vegetation structure.

WET PRAIRIE (24%)

Wet prairies are characterized by an herbaceous community with many showy flowering herbs intermixed with short shrubs. They are some of the most diverse communities in the United States. Wet prairies are found on continuously saturated soils between lower-lying depression marshes, shrub bogs, or dome swamps and slightly higher wet, mesic flatwoods, or dry prairie. FNAI ranks wet prairies as the second most endangered level both statewide and globally (G2/S2).

The wet prairie community in the KCOL MA encompasses 6,876 acres. Before the District acquired the property, many areas in the wet prairie community were modified for pasture use. The drainage was altered, and pasture grasses such as bahia and crabgrass (*Digitaria sp.*), were planted, which changed the types of plants growing in much of these wetlands. Since the acquisition, the hydrology has improved and the native vegetation has been allowed to naturally recruit in the wet prairie community. Some of the wet prairie communities are currently used for cattle grazing.

The wet prairie community in the KCOL MA includes dense woody shrubs and low groundcover. Wax myrtle and saltbush (*Baccharis halimifolia*) are the dominant shrub vegetation. Pasture grasses are still prominent in the groundcover, especially in areas where grazing is still ongoing. Common vegetation includes, Carolina willow (*Salix caroliniana*), saltbush, wax myrtle, elderberry, red maple, laurel oak, St. John's-wort (*Hypericum sp.*), blue maidencane (*Amphocarpum muhlenbergianum*), maidencane, sugarcane plumegrass (*Saccharum giganteum*), bog white (violet *Viola lanceolata*), bladderworts, primrose-leaf violet (*Viola primulifolia*), bearded prangletop (*Diplachne fusca* var. *fascicularis*), pink sundew (*Drosera capillaris*), sedges,

nutrush (*Scleria sp.*), threeawn (*Aristida sp.*), goldenrod, pipewort (*Eriocaulon sp.*), bogbutton (*Lachnocaulon sp.*), milkwort (*Polygala sp.*), butterwort (*Pinguicula sp.*), bluestem (*Andropogon sp.*), Beakrush, bristlegass (*Setaria sp.*), yellow-eyed grass (*Xyris sp.*), cordgrass (*Spartina bakeri.*), bahia grass, and crab grass. Slash pine, cypress, and black gum are occasionally present in the matrix. Scattered oaks, cabbage palm, and gallberry are present in transitional areas.

Wet prairies, like other grassland communities, rely on fire to maintain their ecosystem. When fire is suppressed, wet prairies can become overgrown with dense shrubs. In the KCOL MA wet prairie system, shrub pockets have developed due to past fire suppression and hydrologic alterations. Some shrub pockets are important because they provide nesting habitat for many bird species. The objective of managing wet prairie vegetation in the KCOL MA is to promote diverse herbs and low shrubs intermixed with the dense shrub pockets to maintain the mosaic and diversity in the vegetation structure. Management of the wet prairie system includes applying prescribed fire, treating invasive plant species, and managing grazing in the appropriate areas.

MARSHES (50%)

Marshes are wetland communities with a long hydroperiod dominated by grasses, sedges, broadleaf emergent, floating aquatics, or shrubs.

Marshes are the most common natural community types within the KCOL MA and cover 14,214 acres. The marsh communities within KCOL MA are classified as basin, floodplain, and depressional marsh. These marshes are mostly open and dominated by maidencane and sawgrass. However, in marshes where the vegetation has been previously disturbed, fire has been excluded historically, or hydrology has been altered, dense thickets of shrubs such as Carolina willow, buttonbush, and wax myrtle have replaced the herbaceous species.

Basin Marsh

Basin marshes include herbaceous and shrubby wetlands and are typically found in relatively large and irregularly shaped basins. Basin marshes share a similar species composition as depression marshes but are larger and deeper. Basin marshes are ranked as apparently secure globally and vulnerable statewide (G4/S3) due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

In the KCOL MA, this community grades into wet prairie and flatwoods communities. Common vegetation includes maidencane and other *Panicum sp.*, pickerelweed, arrowhead (*Sagittaria sp.*), sawgrass, St. John's wort (*Hypericum sp.*), pennywort (*Hydrocotyle sp.*), soft rush (*Juncus sp.*), dotted smartweed, blue maidencane, American lotus, cattail, softstem bulrush (*Scirpus tabernaemontani*), spikerush (*Eleocharis sp.*), sand cordgrass, primrose willow (*Ludwigia peruviana*), Carolina willow, and wax myrtle. Other species include cutgrass (*Leersia sp.*), common reed (*Phragmites australis*), elderberry (*Sambucus canadensis*), false nettle, Spanish needle (*Bidens bipinnata*), dog fennel (*Eupatorium compositifolium*), buttonbush, and saltbush.

Depression Marsh

Depression marshes are characterized as shallow depressions in the sand substrate with herbaceous vegetation, often in concentric bands. They frequently form an outer rim around swamp communities, are seasonally inundated, and often burn with the surrounding landscape. Depression marshes are ranked as apparently secure in their range globally and statewide (G4/S4).

In the KCOL MA, depression marshes are scattered throughout the management area. The common vegetation includes St. John's wort (*Hypericum sp.*), yellow-eyed grass, chain fern (*Woodwardia sp.*), primrose willow, maidencane, pickerelweed, and bladderwort. Other species include umbrella sedge (*Fuirena sp.*), beakrush, pipewort (*Eriocaulon decangulare*), cordgrass, buttonbush, and wax myrtle.

Floodplain Marsh

Floodplain Marshes are herbaceous and shrubby wetlands found in river floodplains. They are associated with and often grade into wet prairies or riverine communities. These marshes are typically flooded with flowing water almost all year. Floodplain marshes are ranked as vulnerable globally and statewide (G3/S3) due to either a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

In the KCOL MA, floodplain Marshes are found along floodplain swamps. Species composition includes wetland shrubs and herbaceous species. The common vegetation includes sawgrass, floating marsh pennywort, smartweed (*Polygonum sp.*), pickerelweed, arrowhead, yellow pondlily (*Nuphar advena*), bladderwort, water-lettuce (*Pistia stratiotes*), Para grass (*Urochloa mutica*), primrose willow, and cordgrass. Shrub vegetation such as water hemlock, groundsel tree (*Baccharis halimifolia*), common buttonbush, wax myrtle, and Carolina willow dominate isolated islands and previously farmed areas.

Marshes that are dominated by herbaceous plants typically experience some fire every three to five years, while shrubby marshes burn every three to ten years. Exclusion of fire or reduced hydroperiods allow invasions of wax myrtles, saltbush, and exotic woody species, while periodic fires increase habitat diversity and foraging opportunities for many species of waterbirds. Without periodic fire, peat would accumulate in the marsh, raising the ground level, reducing the water storage capacity, and shifting the community to a hardwood swamp. The marsh communities in the KCOL MA have mostly reached the expected hydrological condition or are expected to reach the anticipated hydroperiod with the anticipated HRS project. The desired condition is a vast herbaceous system with diverse grasses, sedges, broadleaf emergents, and floating aquatics intermixed with some shrubs. Marshes contain zones of vegetation based on the water depth and/or the amount of peat accumulation. The typical zonation pattern in the vegetation structure of basin and floodplain marshes is likely to change due to the impact of lake water level manipulations on the hydrologic gradient for these ecosystems. The objectives for managing the vegetation include treating nuisance and invasive species to achieve and maintain maintenance conditions and maintaining the open herbaceous vegetation structure through prescribed fire applications or, where necessary, mechanical treatments.

OTHER LANDCOVER TYPES

OPEN WATER (0.2%)

The open water areas within the KCOL MA consist of small waterbodies, including small scattered lacustrine swamp and marsh lakes, segments of canals and ditches that have been plugged or are used for conveyance, and small artificial (cattle) ponds. Depending on the depth and slope, these waterbodies usually have an open water zone with occasional floating and submerged aquatic plants. Typically, the open water areas in the KCOL MA do not require direct management.

ALTERED LANDCOVERS (2%)

The altered landcover types within the KCOL MA include various areas where the natural vegetation has been significantly changed, covering 497 acres. This includes old agricultural fields that have not yet undergone hydrological restoration, berms and ditches that will remain on the landscape, and various other small, disturbed areas. These areas are often dominated by weedy native and invasive vegetation, such as bahia grass, Bermuda grass (*Cynodon dactylon*) crabgrass, dog fennel (*Eupatorium compositifolium*), flatsedges (*Cyperus sp.*), carpetgrass (*Axonopus sp.*), and rustweed (*Polypremum procumbens*). Altered areas may be grazed, periodically mowed or burned, and treated for invasive vegetation in conjunction with the adjacent natural communities. Because of the previous land use on the property, linear altered features such as plugged ditches and associated berms are scattered within other natural communities. Although these remnant features may still be noticeable in aerial photos, they are now considered part of the restored natural communities and are not accounted for in the altered landcover acreages.

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Appendix C. Species List

Table 1. List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Acer rubrum</i>	Red maple	
<i>Achyranthes aspera v. aspera</i>	Devil's horsewhip	Non-native
<i>Acrostichum danaeifolium</i>	Giant leather fern	
<i>Agalinis linifolia</i>	Flax-leaf false foxglove	
<i>Aletris lutea</i>	Yellow colicroot	
<i>Alternanthera flavescens</i>	Yellow joyweed	
<i>Alternanthera philoxeroides</i>	Alligatorweed	Non-native
<i>Amaranthus australis</i>	Southern amaranth	
<i>Amaranthus blitum</i>	Purple amaranth	Non-native
<i>Amaranthus floridanus</i>	Florida amaranth	Endemic
<i>Amaranthus hybridus</i>	Slim amaranth; Pigweed	
<i>Amaranthus spinosus</i>	Spiny pigweed	
<i>Ambrosia artemisiifolia</i>	Common ragweed	
<i>Amphicarpum muehlenbergianum</i>	Blue maidencane	
<i>Andropogon brachystachyus</i>	Shortspike bluestem	
<i>Andropogon floridanus</i>	Florida bluestem	
<i>Andropogon glomeratus</i>	Bushy broom grass	
<i>Andropogon gyrans</i>	Elliott's bluestem	
<i>Andropogon ternarius</i>	Silver bluestem	
<i>Andropogon virginicus</i>	Broomsedge bluestem	
<i>Andropogon virginicus v. glaucus</i>	Chalky bluestem	
<i>Apios americana</i>	Groundnut	
<i>Araujia odorata</i>	Latexplant	Non-native
<i>Aristida gyrans</i>	Corkscrew threeawn	
<i>Aristida purpurascens v. virgata</i>	Arrowfeather	
<i>Aristida spiciformis</i>	Bottlebrush threeawn grass	
<i>Aristida stricta</i>	Wiregrass	
<i>Asclepias connivens</i>	Largeflower milkweed; Fragrant milkweed	
<i>Asclepias curassavica</i>	Scarlet milkweed	
<i>Asclepias feayi</i>	Florida milkweed	
<i>Asclepias incarnata</i>	Swamp milkweed	
<i>Asclepias pedicellata</i>	Savanna milkweed	
<i>Asclepias perennis</i>	Swamp milkweed	
<i>Asemeia violacea</i>	Showy milkwort	

Table 1 (Continued). List of plants on the KCOL MA and status. ^a

Scientific Name	Common Name	Listing Status
<i>Asimina obovata</i>	Big-flower pawpaw	
<i>Asimina reticulata</i>	Netted pawpaw	
<i>Axonopus furcatus</i>	Big carpet grass	
<i>Azolla filiculoides</i>	Mosquito fern	
<i>Baccharis glomeruliflora</i>	Silverling	
<i>Baccharis halimifolia</i>	Groundsel tree	
<i>Bacopa caroliniana</i>	Lemon bacopa	
<i>Bacopa monnieri</i>	Smooth water-hyssops	
<i>Balduina angustifolia</i>	Coastal-plain honeycomb head	
<i>Bejaria racemosa</i>	Tarflower	
<i>Bidens bipinnata</i>	Spanish needles	
<i>Bidens laevis</i>	Bur marigold	
<i>Bidens mitis</i>	Smallfruit beggarticks	
<i>Bidens sp</i>	Beggartick	
<i>Bigelovia nudata</i>	Rayless goldenrod	
<i>Boehmeria cylindrica</i>	False nettle	
<i>Buchnera americana</i>	Common blue hearts	
<i>Bulbostylis ciliatifolia</i>	Capillary hairsedge	
<i>Bulbostylis sp.</i>	Hairsedge	
<i>Bulbostylis warei</i>	Ware's hairsedge	
<i>Callicarpa americana</i>	American beautyberry	
<i>Calystegia sepium</i>	Hedge false bindweed	
<i>Camphora officinarum</i>	Camphor tree	Non-native
<i>Campyloneurum phyllitidis</i>	Long strap fern	
<i>Canna flaccida</i>	Bandana-of-the-everglades	
<i>Carex alata</i>	Broadwing sedge	
<i>Carex albolutescens</i>	Caric sedge; Greenwhite sedge	
<i>Carex gigantea</i>	Giant sedge	
<i>Carex lupuliformis</i>	False hop sedge	
<i>Carex verrucosa</i>	Warty sedge	
<i>Carphephorus corymbosus</i>	Coastalplain chaffhead	
<i>Carphephorus odoratissimus</i>	Vanillaleaf	
<i>Carphephorus paniculatus</i>	Hairy chaffhead	
<i>Catharanthus roseus</i>	Madagascar periwinkle	Non-native
<i>Celtis laevigata</i>	Hackberry	
<i>Cenchrus echinatus</i>	Southern sandspur	
<i>Cenchrus spinifex</i>	Coastal sandbur	
<i>Centella asiatica</i>	Coinwort	
<i>Cephalanthus occidentalis</i>	Common buttonbush	

Table 1 (Continued). List of plants on the KCOL MA and status. ^a

Scientific Name	Common Name	Listing Status
<i>Ceratiola ericoides</i>	Florida rosemary	
<i>Chamaecrista fasciculata</i>	Partridge pea	
<i>Chamaecrista nictitans v. nictitans</i>	Sensitive pea	
<i>Chapmannia floridana</i>	Florida alicia	Endemic
<i>Chrysopsis scabrella</i>	Coastalplain goldenaster	
<i>Cirsium horridulum</i>	Horrible thistle	
<i>Cirsium nuttallii</i>	Nuttall's thistle	
<i>Citrus x aurantium</i>	Sour orange	Non-native
<i>Cladium jamaicense</i>	Sawgrass	
<i>Clematis crispa</i>	Swamp leather flower	
<i>Coleataenia anceps</i>	Beaked panicum	
<i>Coleataenia longifolia</i>	Ciliate redtop panicum	
<i>Coleataenia rigidula</i>	Redtop panicum	
<i>Coleataenia tenera</i>	Bluejoint panicum	
<i>Colocasia esculenta</i>	Wild taro	Non-native
<i>Commelina diffusa</i>	Common dayflower	Non-native
<i>Commelina erecta</i>	Whitemouth dayflower	
<i>Conoclinium coelestinum</i>	Blue mistflower	
<i>Conoclinium coelestinum</i>	Blue mistflower	
<i>Coreopsis floridana</i>	Common tickseed	
<i>Coreopsis gladiata</i>	Coastalplain tickseed	
<i>Coreopsis leavenworthii</i>	Leavenworth's tickseed	
<i>Cornus foemina</i>	Swamp dogwood	
<i>Crocantemum corymbosum</i>	Pinebarren frostweed	
<i>Crocantemum nashii</i>	Florida scrub frostweed	
<i>Crotalaria pallida v. obovata</i>	Smooth rattlebox	
<i>Crotalaria rotundifolia</i>	Rabbitbells	
<i>Croton argyranthemus</i>	Silver croton	
<i>Croton glandulosus</i>	Vente conmigo	
<i>Crotonopsis linearis</i>	Rushfoil	
<i>Cuphea carthagenensis</i>	Columbia waxweed	Non-native
<i>Cuscuta gronovii</i>	Scaldweed	
<i>Cuscuta obtusiflora</i>	Peruvian dodder	
<i>Cynodon dactylon</i>	Bermuda grass	Non-native
<i>Cyperus articulatus</i>	Jointed flatsedge	
<i>Cyperus brevifolius</i>	Shortleaf spikesedge	Non-native
<i>Cyperus brevifolius</i>	Shortleaf spikesedge	Non-native
<i>Cyperus compressus</i>	Poorland flatsedge	
<i>Cyperus croceus</i>	Baldwin's flatsedge	

Table 1 (Continued). List of plants on the KCOL MA and status. ^a

Scientific Name	Common Name	Listing Status
<i>Cyperus croceus</i>	Baldwin's flatsedge	
<i>Cyperus cuspidatus</i>	Coastalplain flatsedge	
<i>Cyperus difformis</i>	Variable flatsedge	Non-native
<i>Cyperus distinctus</i>	Swamp flatsedge	
<i>Cyperus erythrorhizos</i>	Redroot flatsedge	
<i>Cyperus esculentus</i>	Yellow nutsedge	
<i>Cyperus flavescens</i>	Yellow flatsedge	
<i>Cyperus haspan</i>	Haspan flatsedge	
<i>Cyperus lanceolatus</i>	Epiphytic flatsedge	Non-native
<i>Cyperus lecontei</i>	Leconte's flatsedge	
<i>Cyperus ligularis</i>	Swamp flatsedge	
<i>Cyperus neotropicalis</i>	Common ditchgrass; American halfchaff sedge	
<i>Cyperus odoratus</i>	Fragrant flatsedge	
<i>Cyperus ovatus</i>	Pinebarren flatsedge	
<i>Cyperus polystachyos</i>	Manyspike flatsedge	
<i>Cyperus rotundus</i>	Nutgrass	Non-native
<i>Cyperus sesquiflorus</i>	Fragrant spikesedge	
<i>Cyperus sesquiflorus</i>	Fragrant spikesedge	
<i>Cyperus surinamensis</i>	Tropical flatsedge	
<i>Cyperus virens</i>	Green flatsedge	
<i>Dactyloctenium aegyptium</i>	Durban crowfoot grass	Non-native
<i>Decodon verticillatus</i>	Swamp loosestrife	
<i>Desmodium incanum</i>	Creeping beggarweed	Non-native
<i>Dichanthelium aciculare</i>	Narrow-leaf panic grass; Needleleaf witchgrass	
<i>Dichanthelium commutatum</i>	Variable witchgrass	
<i>Dichanthelium commutatum</i>	Variable panicum	
<i>Dichanthelium dichotomum</i>	Cypress witchgrass	
<i>Dichanthelium ensifolium</i>	Cypress witchgrass	
<i>Dichanthelium ensifolium v. unciphyllum</i>	Panic grass	
<i>Dichanthelium erectifolium</i>	Erectleaf witchgrass	
<i>Dichanthelium laxiflorum</i>	Open-flower witchgrass	
<i>Dichanthelium laxiflorum</i>	Openflower witchgrass	
<i>Dichanthelium leucothrix</i>	Rough witchgrass	
<i>Dichanthelium sp.</i>	Witchgrass sp.	
<i>Dichanthelium strigosum</i>	Roughhair witchgrass	
<i>Dichanthelium strigosum</i>	Roughhair witchgrass	
<i>Dichondra carolinensis</i>	Carolina ponysfoot	
<i>Digitaria bicornis</i>	Asian crabgrass	Non-native

Table 1 (Continued). List of plants on the KCOL MA and status. ^a

Scientific Name	Common Name	Listing Status
<i>Digitaria ciliaris</i>	Southern crabgrass	
<i>Digitaria ciliaris</i>	Southern crabgrass	
<i>Digitaria eriantha</i>	Pangolagrass	Non-native
<i>Digitaria longiflora</i>	Indian crabgrass	Non-native
<i>Diodia virginiana</i>	Virginia buttonweed	
<i>Dioscorea bulbifera</i>	Air potato	Non-native
<i>Diospyros virginiana</i>	Common persimmon	
<i>Diplachne fusca v. fascicularis</i>	Bearded sprangletop grass	
<i>Drosera brevifolia</i>	Dwarf sundew	
<i>Drosera capillaris</i>	Pink sundew	
<i>Drymaria cordata</i>	Drymary	Non-native
<i>Dulichium arundinaceum</i>	Threeway sedge	
<i>Dysphania ambrosioides</i>	Mexican tea	
<i>Echinochloa crus-galli</i>	Barnyard grass	
<i>Echinochloa muricata</i>	Rough barnyardgrass	
<i>Echinochloa parvulus</i>	Dwarf burhead	
<i>Echinochoa walteri</i>	Coast cockspur-grass	
<i>Eclipta prostrata</i>	False daisy	
<i>Eichhornia crassipes</i>	Water hyacinth	Non-native
<i>Eleocharis baldwinii</i>	Baldwin's spikerush	
<i>Eleocharis cellulosa</i>	Gulf coast spikerush	
<i>Eleocharis geniculata</i>	Canada spikerush	
<i>Eleocharis interstincta</i>	Knotted spikerush	
<i>Eleocharis microcarpa</i>	Small-fruit spikerush	
<i>Eleocharis vivipara</i>	Viviparous spikerush	
<i>Elephantopus elatus</i>	Tall elephants foot	
<i>Eleusine indica</i>	Indian goosegrass	Non-native
<i>Emilia fosbergii</i>	Florida tasselflower	
<i>Emilia sonchifolia</i>	Lilac tasselflower	Non-native
<i>Encyclia tampensis</i>	Butterfly orchid	
<i>Eragrostis atrovirens</i>	Thailia lovegrass	
<i>Eragrostis elliottii</i>	Elliott's lovegrass	
<i>Eragrostis refracta</i>	Coastal lovegrass	
<i>Eragrostis spectabilis</i>	Purple lovegrass	
<i>Erechtites hieraciifolius</i>	Fireweed	
<i>Erigeron canadensis</i>	Canadian horseweed	
<i>Erigeron quercifolius</i>	Oakleaf fleabane	
<i>Erigeron strigosus</i>	Prairie fleabane	
<i>Erigeron vernus</i>	Early whitetop fleabane	
<i>Eriocaulon compressum</i>	Flattened pipewort	
<i>Eriocaulon decangulare</i>	Tenangle pipewort	

Table 1 (Continued). List of plants on the KCOL MA and status. ^a

Scientific Name	Common Name	Listing Status
<i>Eriocaulon ravenelii</i>	Ravenel's pipewort	
<i>Eryngium baldwinii</i>	Baldwin's eryngo	
<i>Eupatorium capillifolium</i>	Dog fennel	
<i>Eupatorium leptophyllum</i>	Falsefennel	
<i>Eupatorium mohrii</i>	Mohr's thoroughwort	
<i>Eupatorium rotundifolium</i>	Roundleaf thoroughwort	
<i>Eupatorium serotinum</i>	Lateflowering thoroughwort	
<i>Euphorbia cordifolia</i>	Heartleaf sandmat	
<i>Euphorbia polyphylla</i>	Lesser florida spurge	endemic
<i>Euploca polyphylla</i>	Pineland heliotrope	
<i>Euthamia caroliniana</i>	Slender flattop goldenrod	
<i>Ficus aurea</i>	Strangler fig	
<i>Fimbristylis autumnalis</i>	Slender fringerush	
<i>Fimbristylis cymosa</i>	Hurricane grass	
<i>Fimbristylis dichotoma</i>	Forked fringerush	
<i>Fimbristylis littoralis</i>	Grasslike fringerush	
<i>Fimbristylis puberula</i>	Hairy fringerush	
<i>Fimbristylis schoenoides</i>	Ditch fringerush	
<i>Fraxinus pennsylvanica</i>	Green ash	
<i>Fuirena breviseta</i>	Saltmarsh umbrellasedge	
<i>Fuirena pumila</i>	Dwarf umbrellasedge	
<i>Fuirena scirpoidea</i>	Rush fuirena, southern umbrellasedge	
<i>Funastrum clausum</i>	White twinvine	
<i>Galactia elliotii</i>	Elliott's milkpea	
<i>Galium tinctorium</i>	Stiff marsh bedstraw	
<i>Gamochaeta antillana</i>	Caribbean purple everlasting	
<i>Gaylussacia dumosa</i>	Dwarf huckleberry	
<i>Gaylussacia frondosa v. tomentosa</i>	Blue huckleberry	
<i>Gelsemium sempervirens</i>	Yellow jessamine	
<i>Geobalanus oblongifolius</i>	Gopher apple	
<i>Geranium carolinianum</i>	Carolina cranesbill	
<i>Gnaphalium obtusifolium</i>	Sweet everlasting	
<i>Gnaphalium pennsylvanicum</i>	Pennsylvania everlasting	Non-native
<i>Gordonia lasianthus</i>	Loblolly bay	
<i>Grona triflora</i>	Threeflower ticktrefoil	Non-native
<i>Gymnopogon chapmanianus</i>	Chapman's skeleton grass	
<i>Habenaria repens</i>	Waterspider false reinorchid	
<i>Hedyotis uniflora</i>	Clustered mille graine	
<i>Helanthis tenellum</i>	Dwarf burhead	

Table 1 (Continued). List of plants on the KCOL MA and status. ^a

Scientific Name	Common Name	Listing Status
<i>Heterotheca subaxillaris</i>	Camphorweed	
<i>Hexasepalum teres</i>	Poor joe	
<i>Hibiscus coccineus</i>	Scarlet rosemallow	
<i>Hibiscus grandiflorus</i>	Swamp rosemallow	
<i>Hieracium gronovii</i>	Hawkweed, queen-devil	
<i>Hieracium megacephalon</i>	Coastalplain hawkweed	
<i>Hydrilla verticillata</i>	Hydrila	Non-native
<i>Hydrocotyle bonariensis</i>	Largeleaf marshpennywort	
<i>Hydrocotyle ranunculoides</i>	Floating marshpennywort	
<i>Hydrocotyle umbellata</i>	Manyflower marshpennywort	
<i>Hydrocotyle verticillata</i>	Whorled marshpennywort	
<i>Hymenachne amplexicaulis</i>	West Indian marshgrass	Non-native
<i>Hymenachne hemitomon</i>	Maidencane	
<i>Hypericum brachyphyllum</i>	Coastalplain st.john's-wort	
<i>Hypericum cistifolium</i>	Roundpod st.john's-wort	
<i>Hypericum fasciculatum</i>	Sandweed; Peelbark st.john's-wort	
<i>Hypericum hypericoides</i>	St. Andrew's cross	
<i>Hypericum mutilum</i>	Dwarf st.john's-wort	
<i>Hypericum myrtifolium</i>	Myrtleleaf st.john's-wort	
<i>Hypericum reductum</i>	Atlantic st.john's-wort	
<i>Hypericum tetrapetalum</i>	Fourpetal st.john's-wort	
<i>Hypericum virginicum</i>	Virginia marsh st.john's- wort	
<i>Hypoxis juncea</i>	Common stargrass; Fringed yellow stargrass	
<i>Hyptis alata</i>	Musky mint	
<i>Hyptis brevipes</i>	Lesser roundweed	Non-native
<i>Ilex cassine</i>	Dahoon holly	
<i>Ilex glabra</i>	Gallberry	
<i>Imperata cylindrica</i>	Cogongrass	Non-native
<i>Indigofera hirsuta</i>	Hairy indigo	Non-native
<i>Indigofera pilosa</i>	Soft hairy indigo	Non-native
<i>Ipomoea aquatica</i>	Water spinach	Non-native
<i>Iris savannarum</i>	Prairie iris	
<i>Itea virginica</i>	Virginia willow	
<i>Iva microcephala</i>	Piedmont marshelder; Pineland elder	
<i>Juncus dichotomus</i>	Forked rush	
<i>Juncus effusus</i>	Soft rush	
<i>Juncus elliotii</i>	Bog rush	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Juncus marginatus</i>	Shore rush	
<i>Juncus megacephalus</i>	Bighead rush	
<i>Juncus polycephalus</i>	Manyhead rush	
<i>Juncus scirpoides</i>	Needlepod rush	
<i>Juniperus virginiana</i>	Red cedar	
<i>Justicia angusta</i>	Narrow-leaf waterwillow; Pineland waterwillow	
<i>Justicia ovata</i>	Looseflower waterwillow	
<i>Kellochloa verrucosa</i>	Warty panicum	
<i>Kosteletzkya pentacarpos</i>	Virginia saltmarsh mallow	
<i>Kummerowia striata</i>	Japanese clover	Non-native
<i>Lachnanthes caroliana</i>	Carolina redroot	
<i>Lachnocaulon anceps</i>	Whitehead bogbutton	
<i>Lachnocaulon beyrichianum</i>	Southern bogbutton	
<i>Lachnocaulon minus</i>	Small's bog button	
<i>Lantana strigocamara</i>	Shrub lantana; Shrub verbena	Non-native
<i>Lechea torreyi</i>	Piedmont pinweed	
<i>Leersia hexandra</i>	Southern cutgrass	
<i>Leersia sp.</i>	Cutgrass	
<i>Lemna valdiviana</i>	Valdivia duckweed	
<i>Lepidium virginicum</i>	Virginia pepperweed	
<i>Liatris gracilis</i>	Slender gayfeather	
<i>Liatris tenuifolia</i>	Shortleaf gayfeather	
<i>Limnobium spongia</i>	Frog's-bit	
<i>Linaria canadensis</i>	Canadian toadflax	
<i>Linaria floridana</i>	Florida toadflax; Apalachicola toadflax	
<i>Lindernia dubia</i>	Yellowseed false-pimpernel	
<i>Lindernia grandiflora</i>	Savannah false pimpernel	
<i>Liquidambar styraciflua</i>	Sweetgum	
<i>Lobelia feayana</i>	Bay lobelia	
<i>Ludwigia arcuata</i>	False loosestrife; Piedmont primrose willow	
<i>Ludwigia maritima</i>	Seaside primrose willow	
<i>Ludwigia microcarpa</i>	Smallfruit primrose willow	
<i>Ludwigia octovalvis</i>	Mexican primrose willow	
<i>Ludwigia palustris</i>	Water purslane; marsh seedbox	
<i>Ludwigia peruviana</i>	Peruvian primrose willow	Non-native
<i>Ludwigia repens</i>	Creeping primrose willow	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Ludwigia suffruticosa</i>	Shrubby primrose willow	
<i>Luziola fluitans</i>	Southern watergrass	
<i>Luziola fluitans</i>	Southern watergrass	
<i>Lycopus rubellus</i>	Taperleaf waterhorehound	
<i>Lygodesmia aphylla</i>	Rosebush; Rose-rush	
<i>Lygodium japonicum</i>	Japanese climbing fern	Non-native
<i>Lyonia ferruginea</i>	Rusty staggerbush	
<i>Lyonia fruticosa</i>	Coastalplain staggerbush	
<i>Lyonia ligustrina v. foliosiflora</i>	Maleberry	
<i>Lyonia lucida</i>	Fetterbush	
<i>Macroptilium lathyroides</i>	Wild bushbean	Non-native
<i>Magnolia virginiana</i>	Sweet bay	
<i>Mecardonia acuminata</i>	Axilflower	
<i>Melia azedarach</i>	Chinaberry	Non-native
<i>Melinis repens</i>	Rose natalgrass	Non-native
<i>Melothria pendula</i>	Creeping cucumber	
<i>Micranthemum glomeratum</i>	Manatee mudflower	endemic
<i>Micranthemum umbros</i>	Shade mudflower	
<i>Mikania cordifolia</i>	Hempweed; Florida keys hempvine	
<i>Mikania scandens</i>	Climbing hempweed	
<i>Mitchella repens</i>	Twinberry	
<i>Mitreola sessilifolia</i>	Swamp hornpod	
<i>Momordica charantia</i>	Wild balsam-apple	Non-native
<i>Morus rubra</i>	Red mulberry	
<i>Murdannia nudiflora</i>	Dove weed; Nakedstem dewflower	Non-native
<i>Myrica cerifera</i>	Wax myrtle	
<i>Myriophyllum aquaticum</i>	Parrot feather watermilfoil	Non-native
<i>Nekemias arborea</i>	Pepper vine	
<i>Nephrolepis exaltata</i>	Sword fern; wild boston fern	
<i>Nerium oleander</i>	Oleander	Non-native
<i>Nuphar advena</i>	Spatterdock	
<i>Nymphaea mexicana</i>	Yellow waterlily	
<i>Nymphaea odorata</i>	American white waterlily	
<i>Nymphoides aquatica</i>	Big floatingheart	
<i>Nyssa biflora</i>	Swamp black gum; Swamp tupelo	
<i>Nyssa sylvatica</i>	Black gum	
<i>Oclemena reticulata</i>	Pine barren aster	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Ophioglossum palmatum</i>	Hand fern	ES
<i>Oplismenus setarius</i>	Woodsgrass	
<i>Opuntia austrina</i>	Devil's-tongue	endemic
<i>Opuntia drummondii</i>	Cockspur pricklypear	
<i>Orthochilus ecristatus</i>	Giant orchid	
<i>Orthosia scoparia</i>	Leafless swallowwort	
<i>Osmunda regalis</i>	Royal fern	
<i>Osmundastrum cinnamomeum</i>	Cinnamon fern	
<i>Oxalis corniculata</i>	Common yellow woodsorrel; Creeping woodsorrel	
<i>Packera glabella</i>	Butterweed	
<i>Palafoxia feayi</i>	Feay's palafox	endemic
<i>Panicum dichotomiflorum</i>	Fall panicum	
<i>Panicum repens</i>	Torpedo grass	Non-native
<i>Parietaria floridana</i>	Florida pellitory	
<i>Parthenocissus quinquefolia</i>	Virginia creeper	
<i>Paspalum acuminatum</i>	Brook crowngass	
<i>Paspalum caespitosum</i>	Blue paspalum; Blue crowngass	
<i>Paspalum conjugatum</i>	Sour paspalum	
<i>Paspalum dilatatum</i>	Dallisgrass	
<i>Paspalum dissectum</i>	Mudbank crowngass	
<i>Paspalum distichum</i>	Knotgrass	
<i>Paspalum floridanum</i>	Florida paspalum	
<i>Paspalum laeve</i>	Field paspalum	
<i>Paspalum notatum</i>	Bahia grass	
<i>Paspalum plicatulum</i>	Brownseed paspalum	
<i>Paspalum repens</i>	Water paspalum	
<i>Paspalum setaceum</i>	Thin paspalum	
<i>Paspalum urvillei</i>	Vaseygrass	Non-native
<i>Persea borbonia</i>	Red bay	
<i>Persea palustris</i>	Swamp bay	
<i>Persicaria glabra</i>	Denseflower knotweed	
<i>Persicaria hirsuta</i>	Hairy smartweed	
<i>Persicaria hydropiperoides</i>	Swamp smartweed	
<i>Persicaria punctata</i>	Dotted smartweed	
<i>Persicaria setacea</i>	Bog smartweed	
<i>Petiveria alliacea</i>	Guinea hen weed	
<i>Phanopyrum gymnocarpon</i>	Savannah panicum	
<i>Phanopyrum gymnocarpon</i>	Savannah panicum	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Phlebodium aureum</i>	Golden polypody	
<i>Phlebodium aureum</i>	Golden polypody	
<i>Phoebanthus grandiflorus</i>	Florida false sunflower	endemic
<i>Phoradendron leucarpum</i>	Oak mistletoe	
<i>Phyla nodiflora</i>	Turkey tangle fogfruit; Capeweed	
<i>Phyla nodiflora</i>	Frogfruit	
<i>Phyllanthus tenellus</i>	Mascarene island leafflower	Non-native
<i>Phyllanthus urinaria</i>	Chamber bitter	Non-native
<i>Phytolacca americana</i>	Pokeberry	
<i>Piloblephis rigida</i>	Wild pennyroyal	
<i>Pinguicula lutea</i>	Yellow butterwort	ST
<i>Pinguicula pumila</i>	Small butterwort	
<i>Pinus clausa</i>	Sand pine	
<i>Pinus elliotii</i>	Slash pine	
<i>Pinus palustris</i>	Longleaf pine	
<i>Pinus serotina</i>	Pond pine	
<i>Piriqueta cistoides</i>	Pitted stripeseed	
<i>Pistia stratiotes</i>	Water lettuce	Non-native
<i>Pityopsis graminifolia</i>	Golden aster; Narrowleaf silkgrass	
<i>Plantago major</i>	Common plantain	Non-native
<i>Plantago virginica</i>	Southern plantain	
<i>Pleopeltis michauxiana</i>	Resurrection fern	
<i>Pluchea baccharis</i>	Rosy camphorweed	
<i>Pluchea camphorata</i>	Camphorweed	
<i>Pluchea foetida</i>	Marsh fleabane; Stinking camphorweed	
<i>Pluchea longifolia</i>	Tall white fleabane; Longleaf camphorweed	endemic
<i>Pluchea odorata</i>	Sweetscent	
<i>Polygala cymosa</i>	Tall pinebarren milkwort	
<i>Polygala incarnata</i>	Procession flower	
<i>Polygala lutea</i>	Orange milkwort	
<i>Polygala nana</i>	Candyroot	
<i>Polygala rugelii</i>	Yellow milkwort	endemic
<i>Polygala setacea</i>	Coastal-plain milkwort	
<i>Polygonella polygama v. polygama</i>	Jointweed; october flower	
<i>Polygonum pennsylvanicum</i>	Pennsylvania smartweed	
<i>Polypremum procumbens</i>	Rustweed	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Pontederia cordata</i>	Pickerelweed	
<i>Portulaca pilosa</i>	Pink purslane	
<i>Praxelis clematidea</i>	Praxelis	Non-native
<i>Proserpinaca palustris</i>	Marsh mermaidweed	
<i>Proserpinaca pectinata</i>	Combleaf mermaidweed	
<i>Psidium guajava</i>	Guava	Non-native
<i>Psilotum nudum</i>	Whisk fern	
<i>Pteridium aquilinum v. pseudocaudatum</i>	Tailed bracken fern	
<i>Pterocaulon pycnostachyum</i>	Blackroot	
<i>Ptilimnium capillaceum</i>	Mock bishopsweed	
<i>Pyrrhopappus carolinianus</i>	Carolina false dandelion; Carolina desertchicory	
<i>Quercus chapmanii</i>	Chapman's oak	
<i>Quercus geminata</i>	Sand live oak	
<i>Quercus incana</i>	Bluejack; Gray oak	
<i>Quercus inopina</i>	Scrub oak	endemic
<i>Quercus laevis</i>	Turkey oak	
<i>Quercus laurifolia</i>	Laurel oak	
<i>Quercus lyrata</i>	Overcup oak	
<i>Quercus minima</i>	Dwarf live oak	
<i>Quercus myrtifolia</i>	Myrtle oak	
<i>Quercus nigra</i>	Water oak	
<i>Quercus pumila</i>	Running oak	
<i>Quercus virginiana</i>	Live oak	
<i>Rhexia cubensis</i>	Meadowbeauty	
<i>Rhexia mariana</i>	Pale meadowbeauty	
<i>Rhexia nashii</i>	Maid marian	
<i>Rhexia nuttallii</i>	Nuttall's meadowbeauty	
<i>Rhexia petiolata</i>	Fringed meadowbeauty	
<i>Rhus copallinum</i>	Winged sumac	
<i>Rhynchospora caduca</i>	Falling beakrush; Anglestem beaksedge	
<i>Rhynchospora cephalantha</i>	Bunched beaksedge	
<i>Rhynchospora chalarocephala</i>	Loosehead beaksedge	
<i>Rhynchospora ciliaris</i>	Fringed beaksedge	
<i>Rhynchospora colorata</i>	Starrush whitetop	
<i>Rhynchospora colorata</i>	White-top sedge	
<i>Rhynchospora corniculata</i>	Shortbristle horned beaksedge	
<i>Rhynchospora decurrens</i>	Swampforest beaksedge	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Rhynchospora fascicularis</i>	Fascicled beaksedge	
<i>Rhynchospora fernaldii</i>	Fernald's beaksedge	
<i>Rhynchospora globularis</i>	Globe beaksedge	
<i>Rhynchospora intermedia</i>	Pinebarren beaksedge	
<i>Rhynchospora inundata</i>	Narrowfruit horned beaksedge	
<i>Rhynchospora latifolia</i>	Giant whitetop	
<i>Rhynchospora latifolia</i>	Giant whitetop sedge	
<i>Rhynchospora megalocarpa</i>	Sandyfield beaksedge	
<i>Rhynchospora microcarpa</i>	Southern beakrush	
<i>Rhynchospora microcephala</i>	Small headed beakrush; Bunched beaksedge	
<i>Rhynchospora miliacea</i>	Millet beaksedge	
<i>Rhynchospora mixta</i>	Mingles beakrush	
<i>Rhynchospora nitens</i>	Baldrush	
<i>Rhynchospora odorata</i>	Fragrant beaksedge	
<i>Rhynchospora pleiantha</i>	Coastal beaksedge	
<i>Rhynchospora plumosa</i>	Plumed beaksedge	
<i>Rhynchospora pusilla</i>	Fairy beaksedge	
<i>Rhynchospora sp.</i>	Beakrush; Beaksedge	
<i>Rhynchospora tracyi</i>	Tracy's beaksedge	
<i>Rhynchospora wrightiana</i>	Wright's beakrush	
<i>Richardia brasiliensis</i>	Tropical mexican clover	Non-native
<i>Richardia scabra</i>	Rough mexican clover	Non-native
<i>Rorippa teres</i>	Southern marsh yellowcress	
<i>Rubus cuneifolius</i>	Sand blackberry	
<i>Rubus pensilvanicus</i>	Sawtooth blackberry	
<i>Rubus trivialis</i>	Southern dewberry	
<i>Rumex hastatulus</i>	Hastate-leaved dock	
<i>Sabal minor</i>	Dwarf palmetto	
<i>Sabal palmetto</i>	Sabal palm	
<i>Sabatia brevifolia</i>	Shortleaf rosegentian	
<i>Sabatia grandiflora</i>	Largeflower rosegentian	
<i>Saccharum giganteum</i>	Sugarcane plumegrass	
<i>Saccharum giganteum</i>	Sugarcane plumegrass	
<i>Saccharum officinarum</i>	Sugarcane	Non-native
<i>Sacciolepis indica</i>	India cupscale grass	Non-native
<i>Sacciolepis striata</i>	American cupscale	
<i>Sagittaria graminea</i>	Grassy arrowhead	
<i>Sagittaria isoetiformis</i>	Quillwort arrowhead	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Sagittaria kurziana</i>	Springtape	
<i>Sagittaria lancifolia</i>	Bulltongue arrowhead; Common arrowhead	
<i>Sagittaria subulata</i>	Water arrowhead; awl-leaf arrowhead	
<i>Salix caroliniana</i>	Carolina willow; Coastalplain willow	
<i>Salvia lyrata</i>	Lyreleaf sage	
<i>Salvinia minima</i>	Water spangles	Non-native
<i>Sambucus nigra</i>	Elderberry	
<i>Saururus cernuus</i>	Lizard's tail	
<i>Schinus terebinthifolia</i>	Brazilian pepper	
<i>Schizachyrium stoloniferum</i>	Creeping little bluestem	
<i>Schoenoplectus tabernaemontani</i>	Softstem bulrush	
<i>Scirpus californicus</i>	Giant bulrush	
<i>Scirpus cubensis</i>	Cuban bulrush	Non-native
<i>Scleria ciliata</i>	Fringed nutrush	
<i>Scleria lacustris</i>	Wright's nutrush	Non-native
<i>Scleria microcarpa</i>	Tropical nutrush	Non-native
<i>Scleria reticularis</i>	Netted nutrush	
<i>Scleria triglomerata</i>	Tall nutgrass	
<i>Scleria verticillata</i>	Low nutrush	
<i>Scoparia dulcis</i>	Licoriceweed	
<i>Senna ligustrina</i>	Privet wild sensitive plant	
<i>Senna obtusifolia</i>	Sicklepod	
<i>Senna obtusifolia</i>	Sicklepod	
<i>Senna occidentalis</i>	Septicweed	Non-native
<i>Senna occidentalis</i>	Coffee senna; Septicweed	Non-native
<i>Senna pendula</i>	Climbing cassia	Non-native
<i>Serenoa repens</i>	Saw palmetto	
<i>Sericocarpus tortifolius</i>	Whitetop aster	
<i>Sesbania herbacea</i>	Danglepod	
<i>Sesbania punicea</i>	Rattlebox; Bladderpod	Non-native
<i>Sesbania vesicaria</i>	Bagpod	
<i>Setaria parviflora</i>	Knotroot foxtail; Yellow bristlegrass	
<i>Seymeria pectinata</i>	Piedmont blacksenna	
<i>Sida cordifolia</i>	Llima	Non-native
<i>Sida rhombifolia</i>	Indian hemp	
<i>Sida santaremensis</i>	Moth fanpetals	Non-native

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Sida ulmifolia</i>	Broomweed; Common wireweed	
<i>Sideroxylon reclinatum</i>	Florida bully	
<i>Sisyrinchium angustifolium</i>	Narrowleaf blue-eyed grass	
<i>Sisyrinchium rosulatum</i>	Annual blue-eyed grass	
<i>Smilax auriculata</i>	Earleaf greenbrier	
<i>Smilax bona-nox</i>	Saw greenbrier	
<i>Smilax laurifolia</i>	Bamboo-vine	
<i>Smilax pumila</i>	Sarsaparilla vine	
<i>Smilax smallii</i>	Lance-leaf greenbrier	
<i>Smilax tamnoides</i>	Bristly greenbrier	
<i>Smilax walteri</i>	Coral breenbrier	
<i>Solanum americanum</i>	Common nightshade; American black nightshade	
<i>Solanum capsicoides</i>	Soda apple	
<i>Solanum carolinense</i>	Carolina horse-nettle	
<i>Solanum jamaicense</i>	Jamaican nightshade	Non-native
<i>Solanum torvum</i>	Turkeyberry	Non-native
<i>Solanum viarum</i>	Tropical soda apple	Non-native
<i>Solidago fistulosa</i>	Marsh goldenrod; Pinebarren goldenrod	
<i>Solidago latissimifolia</i>	Elliott's goldenrod	
<i>Solidago odora v. chapmanii</i>	Chapman's goldenrod	
<i>Solidago sempervirens</i>	Seaside goldenrod	
<i>Solidago tortifolia</i>	Twisted-leaf goldenrod	
<i>Sonchus asper</i>	Spiny sow thistle	Non-native
<i>Sonchus oleraceus</i>	Common sow thistle	Non-native
<i>Sophronanthe hispida</i>	Rough hedgehyssop	
<i>Sophronanthe pilosa</i>	Shaggy hedgehyssop	
<i>Sorghastrum secundum</i>	Lopsided indiagrass	
<i>Sparganium americanum</i>	American burreed	
<i>Spartina bakeri</i>	Sand cord grass	
<i>Spermacoce remota</i>	Woodland false buttonweed	
<i>Spermacoce verticillata</i>	Spermacoce verticillata	Non-native
<i>Sphagnum sp.</i>	Sphagnum moss	
<i>Spiranthes longilabris</i>	Giantspiral ladiestresses	ST
<i>Spiranthes vernalis</i>	Spring ladiestresses	
<i>Sporobolus indicus</i>	Smutgrass	Non-native
<i>Stachys floridana</i>	Hedgenettle	
<i>Stillingia sylvatica</i>	Queen's delight	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Stipulicida setacea</i>	Wireweed; Pineland scalypink	
<i>Symphotrichum carolinianum</i>	Climbing aster	
<i>Symphotrichum subulatum</i>	Annual saltmarsh aster	
<i>Syngonanthus flavidulus</i>	Bantam-button; Yellow hatpins	
<i>Taxodium ascendens</i>	Pond cypress	
<i>Taxodium distichum</i>	Bald cypress	
<i>Telmatoblechnum serrulatum</i>	Swamp fern	
<i>Tephrosia hispidula</i>	Spreading hoary-pea	
<i>Teucrium canadense</i>	Wood sage	
<i>Thalia geniculata</i>	Alligator flag	
<i>Thelypteris hispidula</i>	Hairy maiden fern	
<i>Thelypteris interrupta</i>	Hottentot fern; Willdenow's fern	
<i>Thelypteris kunthii</i>	Southern shield fern	
<i>Tillandsia balbisiana</i>	Bulbous wild pine; Northern needleleaf	ST
<i>Tillandsia bartramii</i>	Wild pine; bartram's airplant	
<i>Tillandsia fasciculata</i>	Cardinal airplant; Stiff-leaved wild pine	ES
<i>Tillandsia recurvata</i>	Ball moss	
<i>Tillandsia setacea</i>	Southern needleleaf	
<i>Tillandsia simulata</i>	Florida airplant	endemic
<i>Tillandsia usneoides</i>	Spanish moss	
<i>Tillandsia utriculata</i>	Giant wild pine	ES
<i>Toxicodendron radicans</i>	Poison ivy	
<i>Triadica sebifera</i>	Chinese tallow	Non-native
<i>Trifolium repens</i>	White clover	Non-native
<i>Typha domingensis</i>	Southern cattail	
<i>Typha latifolia</i>	Common cattail	
<i>Typha sp.</i>	Cattail	
<i>Ulmus americana</i>	American elm	
<i>Urena lobata</i>	Cesarweed	Non-native
<i>Urochloa maxima</i>	Guineagrass	Non-native
<i>Urochloa mutica</i>	Paragrass	Non-native
<i>Urtica chamaedryoides</i>	Heartleaf nettle	
<i>Utricularia cornuta</i>	Horned bladderwort	
<i>Utricularia floridana</i>	Florida yellow bladderwort	
<i>Utricularia foliosa</i>	Flat-stem bladderwort; Leafy bladderwort	
<i>Utricularia gibba</i>	Humped bladderwort	

Table 1 (Continued). List of plants on the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Utricularia subulata</i>	Zigzag bladderwort	
<i>Vaccinium corymbosum</i>	Highbush blueberry	
<i>Vaccinium darrowii</i>	Glaucous blueberry; Darrow's blueberry	
<i>Vaccinium myrsinites</i>	Shiny blueberry	
<i>Vaccinium stamineum</i>	Deerberry	
<i>Verbena scabra</i>	Harsh vervain	
<i>Verbesina virginica</i>	Frostweed	
<i>Vicia acutifolia</i>	Fourleaf vetch	
<i>Viola lanceolata</i>	Long leaf violet; Bog white violet	
<i>Viola primulifolia</i>	Primroseleaf violet	
<i>Vitis cinerea v. floridana</i>	Florida grape	
<i>Vitis rotundifolia</i>	Muscadine	
<i>Vitis shuttleworthii</i>	Calusa grape	endemic
<i>Vitis vulpina</i>	Frost grape	
<i>Vittaria lineata</i>	Shoestring fern	
<i>Woodwardia areolata</i>	Netted chain fern	
<i>Woodwardia virginica</i>	Virginia chain fern	
<i>Ximenia americana</i>	Hog plum	
<i>Xyris ambigua</i>	Coastalplain yellow-eyed grass	
<i>Xyris brevifolia</i>	Shortleaf yellow-eyed grass	
<i>Xyris caroliniana</i>	Carolina yellow-eyed grass	
<i>Xyris difformis</i>	Bog yellow-eyed grass	
<i>Xyris elliotii</i>	Elliott's yellow-eyed grass	
<i>Xyris fimbriata</i>	Fringed yelloweyed grass	
<i>Xyris flabelliformis</i>	Savannah yellow-eyed grass	
<i>Xyris jupicai</i>	Richard's yellow-eyed grass	
<i>Xyris platylepis</i>	Tall yellow-eyed grass	
<i>Xyris smalliana</i>	Small's yellow-eyed grass	
<i>Zanthoxylum clava-herculis</i>	Hercules-club	

- a. Key to abbreviations: Species listed by the State of Florida as Federally-designated Endangered (FE), Federally-designated Threatened (FT), State-designated Threatened (ST), State-designated Endangered (SE).

Table 2. List of birds utilizing the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Accipiter cooperii</i>	Cooper's hawk	
<i>Accipiter striatus</i>	Sharp shinned hawk	
<i>Actitis macularia</i>	Spotted sandpiper	
<i>Agelaius phoeniceus</i>	Red-winged blackbird	
<i>Aix sponsa</i>	Wood duck	
<i>Anas fulvigula</i>	Mottled duck	
<i>Anas rubripes</i>	American Black duck	
<i>Anhinga anhinga</i>	Anhinga	
<i>Antigone canadensis pratensis</i>	Florida sandhill crane	ST
<i>Antrostomus carolinensis</i>	Chuck will's widow	
<i>Aphelocoma coerulescens</i>	Florida scrub-jay	FT
<i>Aramus guarauna</i>	Limpkin	
<i>Ardea alba</i>	Great egret	
<i>Ardea herodias</i>	Great blue heron	
<i>Aythya affinis</i>	Lesser scaup	
<i>Aythya collaris</i>	Ring necked duck	
<i>Baeolophus bicolor</i>	Tufted Titmouse	
<i>Botaurus lentiginosus</i>	American bittern	
<i>Bubo virginianus</i>	Great horned owl	
<i>Bubulcus ibis</i>	Cattle egret	
<i>Buteo jamaicensis</i>	Red-tailed hawk	
<i>Buteo lineatus</i>	Red-shouldered hawk	
<i>Buteo platypterus</i>	Braod winged hawk	
<i>Butorides virescens</i>	Green heron	
<i>Caracara cheriway</i>	Crested Caracara	FT
<i>Cardinalis cardinalis</i>	Northern Cardinal	
<i>Cathartes aura</i>	Turkey Vulture	
<i>Charadrius vociferus</i>	Killdeer	
<i>Chordeiles monor</i>	Common nighthawk	
<i>Circus hudsonius</i>	Northern Harrier	
<i>Coccyzus americanus</i>	Yellow billed cuckoo	
<i>Colaptes auratus</i>	Northern flicker	
<i>Colinus virginianus</i>	Northern bobwhite	
<i>Columbina passerina</i>	Common ground dove	
<i>Contopus virens</i>	Eastern wood pewee	
<i>Coragyps atratus</i>	Black vulture	
<i>Corvus brachyrhynchos</i>	American crow	
<i>Corvus ossifragus</i>	Fish crow	
<i>Cyanocitta cristata</i>	Blue jay	
<i>Dryobates pubescens</i>	Downy woodpecker	

Table 2 (Continued). List of birds utilizing the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Dryobates villosus</i>	Hairy woodpecker	
<i>Dryocopus pileatus</i>	Pileated woodpecker	
<i>Dumetella carolinensis</i>	Gray catbird	
<i>Egretta caerulea</i>	Little blue heron	ST
<i>Egretta rufescens</i>	Reddish egret	ST
<i>Egretta thula</i>	Snowy Egret	
<i>Egretta tricolor</i>	Tricolored Heron	ST
<i>Elanoides forficatus</i>	Swallow-tailed kite	
<i>Eudocimus albus</i>	White Ibis	
<i>Falco sparverius</i>	American kestrel	
<i>Falco sparverius paulus</i>	Southeastern American Kestrel	ST
<i>Fulica americana</i>	American coot	
<i>Gallinago delicata</i>	Wilson's Snipe	
<i>Gallinula galeata</i>	Common moorhen	
<i>Geothlypis trichas</i>	Common yellowthroat	
<i>Grus americana</i>	Whooping crane	FXN
<i>Haliaeetus leucocephalus</i>	Bald eagle	
<i>Himantopus mexicanus</i>	Black-necked stilt	
<i>Lanius ludovicianus</i>	Loggerhead shrike	
<i>Larus delawarensis</i>	Ring-billed gull	
<i>Megaceryle alcyon</i>	Belted kingfisher	
<i>Megascops asio</i>	Eastern screech owl	
<i>Melanerpes carolinus</i>	Red-bellied woodpecker	
<i>Melanerpes erythrocephalus</i>	Red headed woodpecker	
<i>Meleagris gallopavo</i>	Wild turkey	
<i>Mimus polyglottos</i>	Northern Mockingbird	
<i>Mniotilta varia</i>	Blank and white warbler	
<i>Mycteria americana</i>	Wood stork	FT
<i>Myiarchus crinitus</i>	Great crested flycatcher	
<i>Pandion haliaetus</i>	Osprey	
<i>Parkesia motacilla</i>	Louisiana waterthrush	
<i>Parkesia noveboracensis</i>	Northern waterthrush	
<i>Phalacrocorax auritus</i>	Double crested cormorant	
<i>Pipilo erythrophthalmus</i>	Eastern Towhee	
<i>Piranga rubra</i>	Summer tanager	
<i>Platalea ajaja</i>	Roseate Spoonbill	ST
<i>Plegadis falcinellus</i>	Glossy ibis	
<i>Podilymbus podiceps</i>	Pied-billed Grebe	
<i>Poliophtila caerulea</i>	Blue gray gnatcatcher	
<i>Porphyrio martinica</i>	Purple gallinule	

Table 2 (Continued). List of birds utilizing the KCOL MA and status.^a

Scientific Name	Common Name	Listing Status
<i>Progne subis</i>	Purple martin	
<i>Quiscalus major</i>	Boat tailed grackle	
<i>Quiscalus quiscula</i>	Common grackle	
<i>Rostrhamus sociabilis plumbeus</i>	Everglades kite	FE
<i>Sayornis phoebe</i>	Eastern phoebe	
<i>Setophaga americana</i>	Northern parula	
<i>Setophaga caerulescens</i>	Black throated blue warbler	
<i>Setophaga discolor</i>	Prairie warbler	
<i>Setophaga dominica</i>	Yellow throated warbler	
<i>Setophaga palmarum</i>	Palm warbler	
<i>Setophaga pinus</i>	Pine warbler	
<i>Setophaga ruticilla</i>	American redstart	
<i>Sialia sialis</i>	Eastern bluebird	
<i>Spatula discors</i>	Blue winged teal	
<i>Sterna forsteri</i>	Forster's tern	
<i>Strix varia</i>	Barred owl	
<i>Sturnella magna</i>	Eastern Meadowlark	
<i>Tachycineta bicolor</i>	Tree Swallow	
<i>Thryothorus ludovicianus</i>	Carolina wren	
<i>Toxostoma rufum</i>	Brown thrasher	
<i>Tringa flavipes</i>	Lesser yellowlegs	
<i>Tringa melanoleuca</i>	Greater yellowlegs	
<i>Turdus migratorius</i>	American robin	
<i>Tyrannus tyrannus</i>	Eastern kingbird	
<i>Tyto alba</i>	Common barn owl	
<i>Vireo flavifrons</i>	Yellow throated vireo	
<i>Vireo griseus</i>	White eyed vireo	
<i>Vireo olivaceus</i>	Red eyed vireo	
<i>Vireo solitarius</i>	blue-headed vireo	
<i>Zenaida macroura</i>	Mourning dove	

Table 3. List of mammals utilizing the KCOL MA and status.

Scientific Name	Common Name	Listing Status
<i>Blarina brevicauda</i>	Short tailed schrew	
<i>Cryptotis parva</i>	Least schrew	
<i>Corynorhinus rafinesquii</i>	Southeastern big-eared bat	
<i>Dasyopus novemcinctus</i>	Nine-banded Armadillo	
<i>Didelphis marsupialis</i>	Opossum	
<i>Felis rufus</i>	Bobcat	
<i>Lontra canadensis</i>	River otter	
<i>Neofiber alleni</i>	Round tailed muskrat	
<i>Odocoileus virginianus</i>	White-tailed deer	
<i>Oryzomys palustris</i>	Marsh rice rat	
<i>Peromyscus gossypinus</i>	Cotton mouse	
<i>Procyon Iotor</i>	Raccoon	
<i>Sciurus carolinensis</i>	Eastern grey squirrel	
<i>Sciurus niger shermani</i>	Sherman's fox squirrel	
<i>Sus scrofa</i>	Feral hog	
<i>Sylvilagus floridanus</i>	Eastern cottontail	
<i>Sylvilagus palustris</i>	Marsh rabbit	

Table 4. List of reptiles utilizing the KCOL MA and status.

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	FT
Elaphe guttata guttata	Corn snake	
Elaphe obsoleta quadrivittata	Yellow rat snake	
Lampropeltis getula	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	ST
Regina alleni	Striped crayfish snake	
Sistrurus miliarius barbouri	Dusky pygmy rattlesnake	
Thamnophis sirtalis sirtalis	Eastern garter snake	
OTHER REPTILES		
Alligator mississippiensis	American Alligator	FT/(S/A)
Anolis carolinensis	Green anole	
Anolis sagrei	Brown anole	Non-native
Apalone ferox	Florida softshell turtle	
Chelydra serpentina	Snapping turtle	
Cnemidophorus sexlineatus	Six lined racerunner	
Deirochelys reticularia chrysea	Florida chicken turtle	
Eumeces inexpectatus	Southeastern five lined skink	
Gopherus polyphemus	Gopher tortoise	ST
Kinosternon subrubrum	Florida mud turtle	
Ophisaurus ventralis	Eastern glass lizard	
Pseudemys floridana peninsularis	Peninsular cooter	
Pseudemys nelsoni	Florida redbelly turtle	
Sceloporus undulatus undulatus	Southern fence swift	
Scincella lateralis	Ground skink	
Sternotherus odoratus	Common stinkpot turtle	
Terrapene carolina carolina	Florida Box turtle	



Florida Fish and Wildlife
Conservation Commission

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South Florida Water
Management District

sfwmd.gov

Kissimmee Chain of Lakes Wildlife Management Area

Regulations Summary and Area Map
July 01, 2024 - June 30, 2025

2024-
2025

Hunting
Season

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 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] if applicable): 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.

Youth and mentor license holders are required to be accompanied by supervisor during any hunt. A youth hunter (less than 16 years of age) must be supervised by a person at least 18 years of age. A mentor license holder must be supervised by a licensed hunter at least 21 years of age. Unless exempt, only those supervisors with proper licenses and permits may hunt.

Licenses and permits may be purchased from county tax collectors, license agents, by telephone at 888-486-8356 or at GoOutdoorsFlorida.com. 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.

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 roasted turkey is prohibited.
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 release of any animal is prohibited, except by permit from FWC or the written authorization from the landowner or primary land manager.
12. **The skull plate with any attached antler, if applicable, shall remain with any harvested deer. The head and beard, if applicable, shall remain with any harvested turkey. See Florida Hunting Regulations handbook for details.**
13. The planting or introduction of any non-native plant is prohibited, without written authorization of the landowner or primary land manager.
14. Wild hog may not be transported alive.
15. A hunting license is not required to hunt wild hog.
16. Littering is prohibited.

17. It is unlawful to set fire to any forest, grass or woodlands.
18. A Law Enforcement Officer may search any camp, vehicle or boat, in accordance with law.
19. 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 access year round. Access is primarily by boat and is facilitated by boat ramps within the area (see map).
2. Use of all-terrain vehicles, swamp buggies or tracked vehicles is prohibited.
3. Parked vehicles may not obstruct a road, levee, maintenance berm, gate or water control structure.
4. Use of airboats is prohibited in those areas posted as closed to airboat use.
5. Persons may enter and exit Gardner Cobb Marsh from Lake Cypress, Lake Hatchineha, Lake Kissimmee and the C-36 canal, per 40E-7.
6. Class 1 electric bicycles may be operated according to rules for traditional, non-motorized bicycles. All other electric bicycles may be operated only on named or numbered roads open to motorized vehicles. For more information visit: <https://myfwc.com/ebike/>.

Hunters and Harvest Reporting:

1. Erecting or maintaining tree stands or elevated shooting platforms 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.
5. Hunters must log each harvested deer or turkey prior to moving it from the point of recovery and report any deer or turkey they harvest within 24 hours of recovery. See Florida Hunting Regulations handbook for deer and turkey harvest reporting instructions.

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 .30 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. Hunting wildlife (other than migratory birds) with air guns is allowed. See Florida Hunting Regulations handbook for details.
7. Hunting deer with air guns is prohibited, except pre-charged pneumatic (PCP) air guns propelling a bolt, arrow, or bullet .30 caliber or larger are allowed.
8. Hunting turkey with air guns is prohibited, except PCP air guns propelling a bolt or arrow are allowed. During general gun season, PCP air guns propelling a bullet .20 caliber or larger may also be used for hunting turkey.
9. Children under the age of 16 hunting with a firearm or air gun must be in the presence of a supervising adult.
10. No person shall discharge a firearm or have a loaded firearm in hand while under the influence of alcohol or drugs.
11. For hunting non-migratory game, only shotguns, rifles, pistols, muzzleloading guns, air guns, bows, crossbows (allowed during archery season by permit only) or falconry may be used.
12. For hunting migratory game, only centerfire and muzzleloading 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.
13. Hunting with full-automatic 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. The taking or pursuing of deer, wild hog, fox or coyote with dogs is prohibited unless each dog is equipped and monitored with devices that allow remote tracking and behavior correction.
2. Hunting deer and furbearers with dogs is prohibited.
3. Wild hog may be hunted with dogs year round. Wild hog may be hunted with dogs at night.
4. Dogs on leashes may be used for trailing wounded game.
5. Dogs are allowed during periods or in areas closed to hunting with dogs but must be kept under physical restraint at all times.

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. Overnight camping or the presence of camping equipment shall be limited to 8 consecutive days.
4. Quiet Hours: Between the hours of 11 p.m. and 7 a.m. loud music, barking dogs or any other activity causing excessive noises is prohibited in camping areas.
5. Pets must be physically restrained and under control in camping areas.

Bag and Possession Limits:

1. Deer - No person shall exceed statewide bag limits.
 - A. Area Limits - See statewide limits below. The take of antlerless deer is prohibited.

- B. Statewide limits - Annual limit 5 deer (only 2 of which may be antlerless), daily limit 2, possession limit 4.
- C. As part of the statewide annual deer limit, youth less than 16 years of age may harvest 1 deer annually not meeting antler point requirements but having at least 1 antler 5 inches or more in length.
- 2. Wild hog - No size or bag limit.
- 3. Turkey - No person shall exceed statewide bag limits.
 - A. Area Limits - Daily limit 1.
 - B. Statewide Limits - All fall seasons combined limit 2, spring season limit 2, daily limit 2, possession limit 2.
- 4. Gray squirrel and rabbit - Daily limit 12 per person, possession limit 24 for each.
- 5. Quail - Daily limit 12, possession limit 24.
- 6. Raccoon, opossum, armadillo, beaver, coyote, skunk and nutria - No bag limits.
- 7. Bobcat and otter - Prohibited.
- 8. Migratory birds - See Florida Hunting Regulations handbook.
- 9. Non-protected birds (African and Eurasian collared-doves, common pigeon, Egyptian goose, house sparrow, and common starling) - No bag limits.

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** - 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), and state waterfowl permit and federal duck stamp (if hunting waterfowl).

Legal to Hunt - Deer with at least 1 antler having 3 or more points (each point 1-inch or more in length) OR a main beam length of 10 inches or more, wild hog, bearded turkey or gobbler, gray squirrel, quail, rabbit, armadillo, migratory birds in season and non-protected birds.

Regulations Unique to Archery Season -

1. Only archery equipment may be used for hunting, except that centerfire and muzzleloading shotguns are allowed for hunting migratory birds and hunting wild hog with a firearm is allowed, but hunting with centerfire rifles in the Northwest Shore, East Shore, West Shore and Drasdo Units is prohibited. Hunting with crossbows is prohibited (except by disabled crossbow permit).
2. Hunting deer is prohibited in the East Shore and West Shore Units.

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 having 3 or more points (each point 1-inch or more in length) OR a main beam length of 10 inches or more, wild hog, bearded turkey or gobbler, gray squirrel, quail, rabbit, armadillo, migratory birds in season and non-protected birds.

Regulations Unique to Crossbow Season -

1. Only bows and crossbows except that centerfire and muzzleloading shotguns are allowed for hunting migratory birds and firearms are allowed for hunting wild hog, provided that hunting with centerfire rifles in the Northwest Shore, East Shore, West Shore and Drasdo Units is prohibited.
2. Hunting deer is prohibited in the East Shore and West Shore Units.

Muzzleloading Gun Season:

November **23** - 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 having 3 or more points (each point 1-inch or more in length) OR a main beam length of 10 inches or more, wild hog, bearded turkey or gobbler, gray squirrel, quail, rabbit, armadillo, migratory birds in season and non-protected birds.

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 and firearms are allowed for hunting wild hog, provided that hunting with centerfire rifles in the Northwest Shore, East Shore, West Shore and Drasdo Units is prohibited.
2. Bows, crossbow and, muzzleloading guns are allowed for hunting.
3. Hunting deer is prohibited in the East Shore and West Shore units.

General Gun Season:

December **7** - 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 having 3 or more points (each point 1-inch or more in length) OR a main beam length of 10 inches or more, wild hog, gray squirrel, quail, rabbit, raccoon, opossum, armadillo, beaver, coyote, skunk, nutria, migratory birds in season and non-protected birds. Bearded turkey or gobbler through **February 2**.

Regulations Unique to General Gun Season -

1. Hunting deer is prohibited in the East Shore and West Shore Units.
2. Hunting with centerfire rifles in the Northwest Shore, East Shore, West Shore and Drasdo units is prohibited.

Small Game Season:

October 12 - 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, migratory birds in season and non-protected birds. Raccoon, opossum, beaver, coyote, skunk and nutria December 7 through February 23. Quail beginning November 9.

Regulations Unique to Small Game Season -

1. Hunting with centerfire rifles in the Northwest Shore, East Shore, West Shore and Drasdo units is prohibited.

Trapping:

December 7 - 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 - 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. Only bows, crossbows, PCP air guns propelling a bolt or arrow and centerfire and muzzleloading shotguns using a #2 or smaller shot size may be used for hunting wild turkey.
3. 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 may participate when in the presence of a youth but may not harvest a wild turkey.

Migratory Bird Season:

Migratory game birds may be hunted during their respective statewide seasons. Crows may be hunted during the first phase of crow season only. [See migratory game bird hunting regulations.](#)

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 season dates, bag limits and regulations.](#) Non-protected birds may also be taken.

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 and muzzleloading shotguns are allowed for hunting during established area seasons when migratory birds are legal to take.
3. Shooting hours for mourning and white-winged dove are ½ hour before sunrise until sunset.
4. Non-hunting assistants with required licenses and permits may actively participate in Veterans and Active Military Waterfowl Hunting Days, provided they may not harvest wildlife.
5. Adults with required licenses and permits may actively participate in Youth Waterfowl Hunting Days, provided they may not harvest wildlife.

Fishing and Frogging:

Allowed year round.

Permit, Stamp and License Requirements - Fishing license (if fishing) or management area permit (if 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. Frogs may only be taken by firearms during daylight hours.

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.

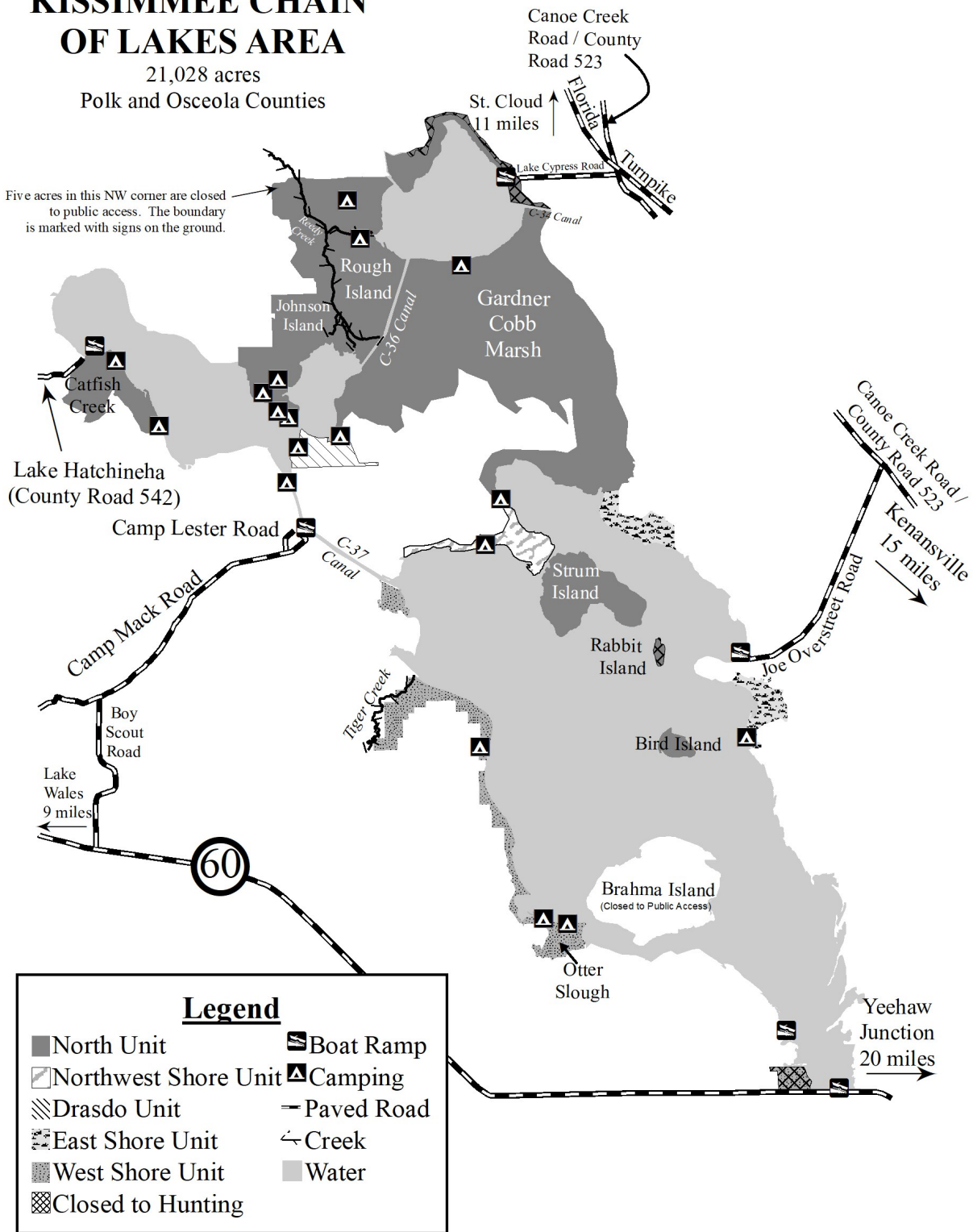
Cooperation Requested:

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.

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KISSIMMEE CHAIN OF LAKES AREA

21,028 acres
Polk and Osceola Counties



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