Myakka River State Park
Unit Management Plan
January 2019 Draft

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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Introduction

Introduction

Myakka River State Park is located within the North Port-Sarasota-Bradenton metropolitan statistical area (MSA or metro area). This MSA includes the entirety of Manatee and Sarasota Counties (see Vicinity Map). The Vicinity Map also reflects significant land and water resources existing near the park.

Acquisition History

Myakka River State Park was initially created in 1934 by the Board of Trustees of the Internal Improvement Trust Fund (Trustees) and the Florida Board of Forestry. The Trustees hold fee simple title to the park and on January 23, 1968, the Trustees leased the property to DRP under a 99-year lease (see Appendix 1). A new lease number (3636) was assigned in 1998 without changing any of the terms and conditions. The property leased from the Trustees to the DRP is 28,936.92 acres. The current lease will expire on January 22, 2067. On March 25, 1997, DRP assumed management of an 8,260.76-acre property owned by the Southwest Florida Water Management District (SWFWMD). In total, the park comprises 37,197.68 acres. A legal description of the park property can be made available upon request.

At Myakka River State Park, public outdoor recreation and conservation is the designated single-use of the property. The Myakka Wild and Scenic Designation and Preservation Act constrains use of the property within the "River Area", as defined by the Act.

Purpose and Significance of the Park

The purpose of Myakka River State Park is to preserve the natural beauty, wildlife, and historical features of the property; to serve as an important link in the chain of protected lands in the southern portion of the state; and to provide outstanding outdoor recreation and natural resource interpretation for the benefit of the people of Florida.

Myakka River State Park is one of the oldest and largest units in the Florida State Park system. The Myakka River winds through the park from north to south, for nearly 12 miles. The Myakka River is designated as a Florida Wild and Scenic River, and is the only river in Florida to receive state recognition for its intersection of ecological, biological, and recreational significance. The river and associated lakes provide opportunities for boating, paddling, and fishing. Wildlife viewing in the park is exceptional, particularly in the wintertime when groups of white pelicans, flamboyant roseate spoonbills and black-bellied whistling ducks are common.

The park protects nearly 15,000 acres of Florida dry prairie, a globally imperiled ecosystem endemic to the state. Dry prairie was a significant element of Florida's historic landscape, but today most of the original extent of dry prairie within Florida has been converted to housing or agriculture uses. The dry prairie provides critical habitat for 17 imperiled plant species and numerous animal species, including Audubon's crested caracara, Florida sandhill crane, and the Florida Burrowing owl.

A significant portion of the park's dry prairie and a segment of the Myakka State Wild and Scenic River are included within the park's 7,500-acre wilderness preserve. Access to the wilderness preserve is limited to just 30 visitors per day. This portion of the park has seen little permanent alteration and offers an outstanding opportunity for solitude and a primitive wilderness experience. Located at the south end of Lower Myakka Lake within the Wilderness Preserve is "Deep Hole", the only large sinkhole known to exist in the park. Alligators are extremely plentiful in the park, but especially at Deep Hole where the sink acts as a fish trap during times of low water. Hungry alligators will congregate here to feed, creating quite a magnificent wildlife spectacle.

The park's cultural landscape is shaped by the early 20th century cattle ranching industry and features associated with Civilian Conservation Corps (CCC) park development during the late 1930s to early 1940s. Much of what is now the park was a part of "Meadow Sweet Pastures" a cattle ranch owned by Mrs. Potter Palmer, an important figure in the development of cattle ranching in southwest Florida. The Palmer family donated the original 1,920 acres of the park to the State of Florida in 1934.

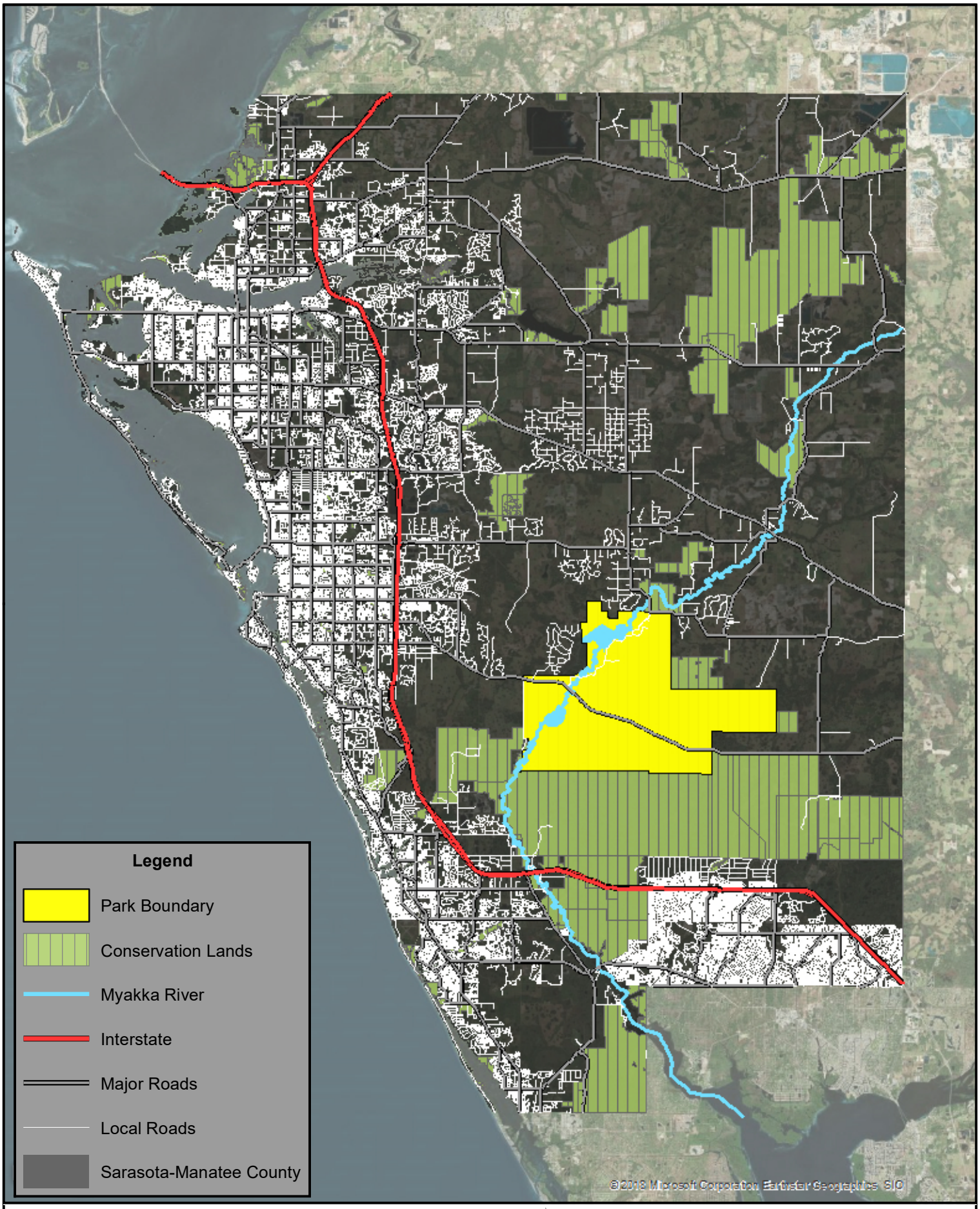
The most noteworthy of the park's historic structures are the various buildings, features, and other improvements constructed by the CCC. The park contains 19 CCC structures and related features. Many of the park's CCC buildings still serve the public, including 5 original cabbage palm log cabins, that provide comfortable lodging and a unique visitor experience. The CCC activities at the park are significant to the history of Florida's African American population, as the park was one the few Florida parks to be developed with black CCC enrollees.

Myakka Wild and Scenic River

According to the Myakka River Wild and Scenic River Designation and Preservation Act (know hereafter as the Act), "The Myakka River in Manatee, Sarasota, and Charlotte Counties possesses outstandingly remarkable ecological, fish and wildlife, and recreational values which are unique in the State of Florida. These values give significance to the river as one which should be permanently preserved and enhanced for the citizens of the State of Florida, both present and future" (Section 258.501, Florida Statutes). As such, in 1985 the Florida Legislature designated 34 miles of the Myakka River (from County Road 780 south to the Sarasota/ Charlotte County line) a Florida Wild and Scenic River. The entire river portion flowing through Myakka River State Park is included in the State Wild and Scenic River designation. The Act also directed the Florida Department of Environmental Protection (FDEP) to adopt rules and a permitting program to regulate activities within the protected River Area.

As defined by the Act, "the River Area means the corridor of land beneath and surrounding the Myakka River from river mile 7.5 to river mile 41.5, together with a corridor including the maximum upland extent of wetlands vegetation" (Section 258.501, Florida Statutes). Interpreted as the river's floodplain, it is within this area that the Myakka River Wild and Scenic River Rule (Chapter 62D-15, F.A.C. [also known as the Rule]) regulates and constrains the use of Myakka River State Park. In addition, the Wild and Scenic River Protection Zone buffers the River Area and extends 220 feet landward from the River Area. The Wild and Scenic River Protection Zone (also known as the Myakka River Protection Zone) is administered within the state park by Sarasota County. The implications of the Rule on land use development and proposals will be discussed in the Land Use Component of this plan.

Established by the Act in 1985, the Myakka River Management Coordinating Council is tasked with providing interagency and intergovernmental coordination in the management of the river. The Council holds three meetings per year to review and make recommendations on all proposals for amendments to the Designation Act, Myakka Wild and Scenic River Management Plan, Myakka River Wild and Scenic River Rule, as well as on other matters which may be



MYAKKA RIVER STATE PARK

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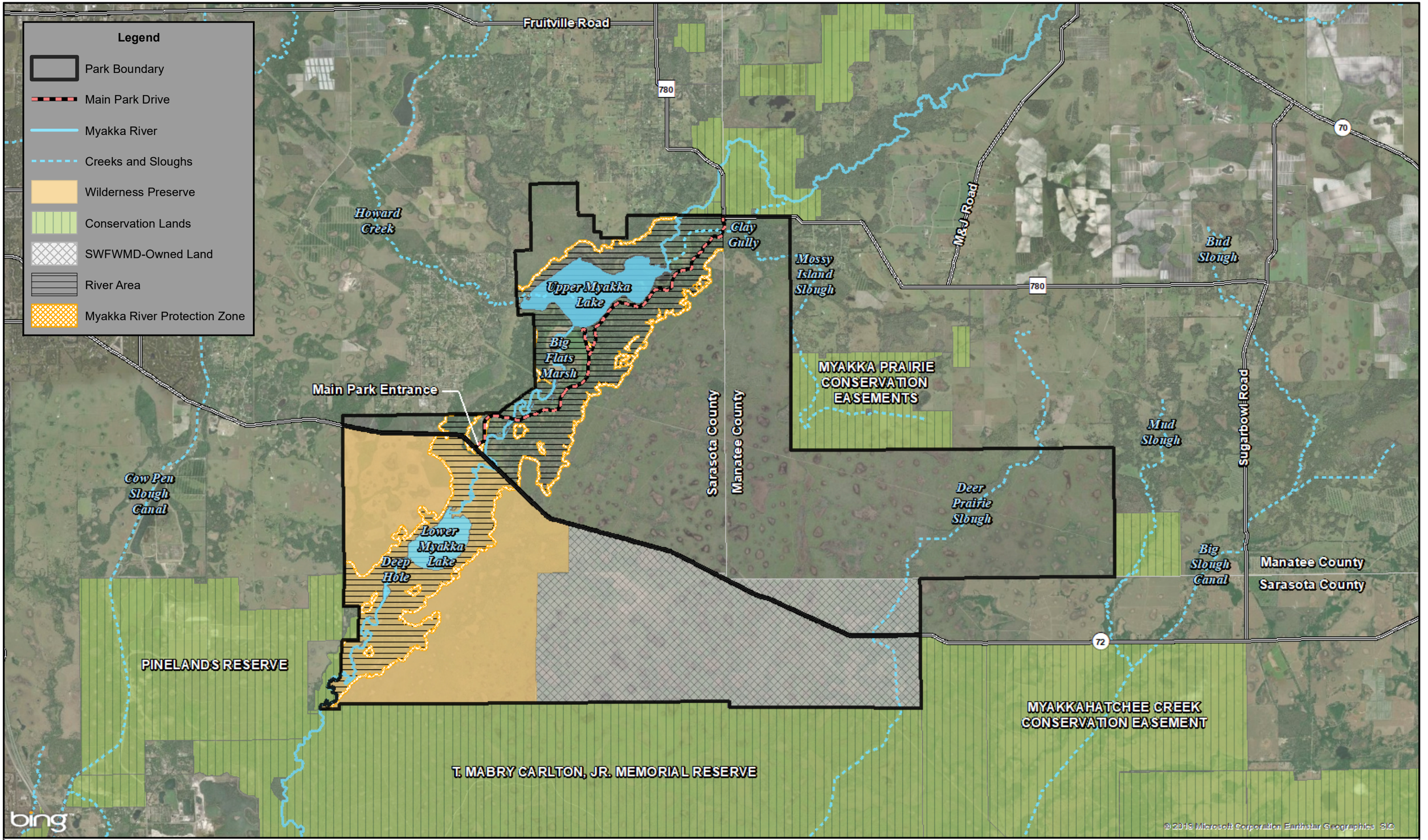
Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

VICINITY MAP



MYAKKA RIVER STATE PARK

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0 1 2 4 Miles

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

REFERENCE MAP

brought before the Council by the FDEP, any local government, or any member of the Council. The Council can then render its advisory opinions to affected entities.

The most recent update of the Myakka Wild and Scenic River Management Plan was facilitated by the Myakka River Management Coordinating Council and developed in 2011 with input from applicable state agencies, Southwest Florida Water Management District, Tampa Bay and Southwest Florida Regional Planning Councils, affected local governments, agricultural, environmental and landowner interest groups, and the public. Additional information about the Myakka River Wild and Scenic River Management Plan, including links to the relevant statute and rule, can be found on the Myakka River Management Coordinating Council website.

This management plan update for Myakka River State Park was developed with the Myakka River Management Coordinating Council as a key stakeholder in an effort to align the objectives outlined in the Myakka River Wild and Scenic River Management Plan.

Purpose and Scope of the Plan

Myakka River State Park is classified as a state park in the DRP's unit classification system. In the management of a state park, a balance is sought between the goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation on the park's natural, aesthetic and educational attributes.

This plan serves as the basic statement of goals and objectives for the management of Myakka River State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes (F.S.), Chapter 18-2, Florida Administrative Code (F.A.C.), and is intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 2004 approved plan.

Resource Management Component

The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management needs and issues are identified, and measurable management objectives are established for each of the park's management goals and resource types. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, imperiled species management, cultural resource management and restoration of natural conditions.

The DRP's philosophy of resource management is natural systems management. Primary emphasis is placed on restoring and maintaining, to the degree possible, the natural processes that shaped the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management for imperiled species is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes and should not imperil other native species or seriously compromise the park values.

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

Because park units are often components of larger ecosystems, their proper management can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local

comprehensive plans and development permit applications for park/ecosystem impacts.

Land Use Component

The Land Use Component is the recreational resource allocation plan for the park. Based on considerations such as access, population, adjacent land uses, park resources, current public uses, and existing development, measurable objectives are set to achieve the desired allocation of the physical space of the park. These objectives identify use areas and propose the types of facilities and programs as well as the volume of public use to be provided.

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

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

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

All development and resource alteration proposed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from requirements of the appropriate local, state or federal agencies.

Secondary Uses Consideration

In accordance with 253.034(5) F.S., the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation.

As required for all state park units larger than 1,000 acres, a timber management analysis (Appendix 8) was conducted for the park's upland flatwoods. However, timber management activities will not be conducted during this ten-year planning cycle. Any thinning activities that take place will be as a part of natural community improvement and restoration efforts.

DRP has determined that uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) would not be consistent with this plan or the management purposes of the park.

In accordance with 253.034(5) F.S. The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

Contract Services

DRP may provide the services and facilities outlined in this plan either with its own funds and staff or through an outsourcing contract. Private contractors may provide assistance with natural resource management and restoration activities or a concessionaire may provide services to park visitors in order to enhance the visitor experience. For example, a concessionaire could be authorized to sell merchandise and food and to rent recreational equipment for use in the park. A concession may also be authorized to provide specialized services, such as interpretive tours, or overnight accommodations when the required capital investment exceeds that which DRP can elect to incur. Decisions regarding outsourcing, contracting with the private sector, the use of concessionaires, etc. are made on a case-by-case basis in accordance with DRP's Operations Manual (OM).

Management Program Overview

Management Authority and Responsibility

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

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

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

Many operating procedures are standardized system-wide and are set by internal direction. These procedures are outlined in the OM that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety and maintenance.

General Park Management Goals

The following park goals express DRP's long-term intent in managing the state park:

- Provide administrative support for all park functions.
- Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.
- Restore and maintain the natural communities/habitats of the park.
- Maintain, improve, or restore imperiled species populations and habitats in the park.
- Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.
- Protect, preserve, and maintain the cultural resources of the park.
- Provide public access, interpretation, and recreational opportunities in the park.
- Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

Management Coordination

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

The Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within the park. In addition, the FWC aids DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites. The Southwest Florida Water Management District (SWFWMD) provides aquatic control of invasive exotics along the river and Upper and Lower Myakka Lakes. Sarasota County assists park staff in monitoring water levels and vegetation on the wilderness preserve and southern boundary of the park. In addition, the County is available to assist on prescribed burns along the southern boundary of the park.

Public Participation

DRP provided an opportunity for public input by conducting a public workshop and an advisory group meeting to present the draft management plan to the public. These meetings were held on March 2 and 3, 2017 respectively. Meeting notices were published in the Florida Administrative Register [2/20/17, VOL 43/34], included on the Department Internet Calendar, posted in clear view at the park, and promoted locally. The purpose of the advisory group meeting is to provide the advisory group members an opportunity to discuss the draft management plan (see Appendix 2).

Other Designations

Myakka River State Park is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a component of the Florida Greenways and Trails System, administered by the Department's Office of Greenways and Trails.

All waters within the park have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302, Florida Administrative Code. The section of the Myakka River within the park is designated as Class I waters (potable water supplies), and all other surface waters in this park are classified by the Department as Class III waters. This park is not within or adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (Section 258.35, Florida Statutes).

Past Accomplishments
Future Objectives

Past Accomplishments

The resource management and land use components of this management plan provide a thorough inventory of the park's natural, cultural and recreational resources. They outline the park's management needs and problems, and recommend both short and long-term objectives and actions to meet those needs. The past accomplishments and future objectives section addresses the administrative goals for the park and reports on DRP progress toward achieving resource management, operational, and capital improvement goals and objectives since approval of the previous management plan for this park.

Since the approval of the last management plan for Myakka River State Park in 2004, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within four general categories: park administration and operations, resource management, recreation and visitors services, and park facilities.

Park Administration and Operations

- During the last ten years, park volunteers contributed over 225,000 hours of volunteer service.
- The park's Citizen Support Organization (CSO), Friends of Myakka, Inc., has provided the park with:
    - funding for education, research, publications and a new website;
    - specialized equipment for park operations/resource management, including computer equipment, firefighting equipment, mowers and other needed equipment; and
    - funding for canopy walkway repairs.
- The CSO has also held numerous nature classes and special events at the park to raise funds for some of the items listed above.

Resource Management

Natural Resources

- Equipment purchased for natural community restoration activities, including tractor/loader/tree cutter.
- Prescribed fire management conducted on 82,000 acres.
- 3,400 acres treated for exotic plants.
- 8,950 exotic animals were removed from the park, including 8,600 feral hogs.
- In terms of hydrologic restoration, six additional culverts were placed under SR72. Also, two low-water crossings and three culverts were repaired. Three new

culverts were added, and three unpaved roads were improved to allow for sheet flow.
- Nine blocked or failing culverts were repaired or replaced or repaired along the park drive. A timber project was conducted for habitat improvement on mesic flatwoods and scrubby flatwoods natural communities. 196 acres of planted pine were removed, and 1,404 acres were thinned.
- Mechanical treatment (roller chopping or tree-cut mowing) conducted on 4,878 acres for habitat improvement to Florida dry prairie.
- Bi-annual butterfly survey has been added to park's monitoring.

Cultural Resources

- A preservation plan was completed in May 2009 for seven CCC structures.
- A Partnerships in Parks project was completed to restore the seven CCC structures which include all five cabins, the log pavilion and the log restroom).
- Added six buildings to the Florida Master Site File.
- Replaced roof on four CCC structures.
- Completed Archaeological Resource Sensitivity Modeling for park.

Recreation and Visitor Services

- Myakka Outpost continued to provide food, souvenirs and rental services for the enjoyment of park visitors.
- Myakka Wildlife Tours continued to provide interpretive airboat tours on the Upper Myakka Lake and tram tours to the Florida Dry Prairie and other ecosystems for park visitors.
- The park offers a Canopy Walkway, which includes a suspension bridge and 74' tower. This is very popular with the visitors.
- A self-guided Native Tree Walk is provided, which allows the visitors to learn about the native trees of the park.
- The Friends of Myakka continued to host Moon Over Myakka concerts during the winter months. These concerts are Myakka's biggest events of the year.
- We provide guided Full Moon Bike Rides once a month. The guides lead the participants along the main drive during evening hours to watch the sunset and view wildlife under the full moon.
- Weekly ranger guided walks and campfire programs are scheduled for park visitors and campers (December-March).
- A weekly, walking tour to Deep Hole is offered during the fall and winter months.
- During the busy months of the year, a bird naturalist is at the birdwalk on certain days of the week. The naturalist has a scope, bird guides, and birding experience handy for the visitors' use.
- A Myakka River Clean Up was organized and led by our interpretive chairperson.
- Weekly Camper Coffees and Ice Cream Socials are organized by volunteers for park visitors and campers (December-March).
- Every two weeks, story time is provided in the Log Pavilion for campers. This is a time when rangers and volunteers tell stories or read poems about Myakka and Florida history.
- The park serves as host to many weddings, private events and family gatherings.
- The park is listed as a site on the Great Florida Birding Trail.
- Myakka Half Marathon fundraiser event for families affected by Alzheimer's (annual, started in 2015)

Park Facilities

- Post-flooding repairs to facilities, roads and infrastructure (2004 and 2014)
- Upgraded electric to 50-amp service in Old Prairie Campground
- Upgrade youth area with water service
- Built event stage for concerts
- Replaced eleven roofs on park buildings
- New residence for park manager
- New 6,400-square-foot concession building
- Removed old concession building
- New campground
- Road repairs/repaving
- Repaired Clay Gully Bridge
- Replaced lift station at Stop Camp
- Upgrades to tour boat landing and services
- Tied in Administration office, south restroom, shop building, and two residences at the shop to main wastewater system and abandoned three failing septic systems
- Added commercial water softener system to main water plant to address drinking water concerns
- Replaced two failing drain fields

Future Objectives

This section also compiles the management goals, objectives, and actions expressed in the separate parts of this management plan for easy review. Estimated costs for the ten-year period of this plan are provided for each action and objective, and the costs are summarized under standard categories of land management activities. The Ten-Year Implementation Schedule and Cost Estimates summarizes the management goals, objectives, and actions that are recommended for implementation over this period. Measures are identified for assessing progress toward completing each objective and action. The timeframes for completing each objective and action are Continuous (C), Short-Term (ST), Long-Term (LT), and Unfunded Need (UFN). Preliminary cost estimates for each action are provided and the estimated total costs to complete each objective are computed. Finally, all costs are consolidated under the following three standard land management categories: administration and support, resource management, and recreation and visitor services.

Many of the actions identified in the plan can be implemented using existing staff and funding. However, a number of continuing activities and new activities with measurable quantity targets and projected completion dates are identified that cannot be completed during the life of this plan unless additional resources for these purposes are provided.

The plan's recommended actions, time frames, and cost estimates will guide the DRP's planning and budgeting activities over the period of this plan. It must be noted that these recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that the DRP can adjust to changes in the availability of funds, improved understanding of the park's natural and cultural resources, and changes in statewide land management issues, priorities, and policies.

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the DRP's annual legislative budget requests. When preparing these annual requests, the DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. The DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target schedules and estimated costs may need to be adjusted during the ten-year management planning cycle.

Administration and Support		Measure	Planning Period	Estimated Manpower and Expense Cost (10-years)
Objective A	Continue day-to-day administrative support at current levels.	Administrative support ongoing	C	$247,000
Objective B	Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.	Administrative support expanded	C	$16,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Hydrological Management Program		Measure	Planning Period	Estimated Manpower and Expense Cost (10-years)
Objective A	Conduct/obtain an assessment of the park's hydrological needs.	Assessment conducted	LT	$663,000
Action 1	Conduct an assessment and feasibility study of the effects of the weir, blocked culverts adjacent to the weir and the private dam on the hydrologic flow, hydroperiod, flora and fauna within the Myakka River system.	Assessment conducted	UFN	$250,000
Action 2	Pending the outcome of the assessment in Action 1, and if it is determined as feasible to do so, remove or modify structures to improve hydrology.	Removal of structures	UFN	$350,000
Action 3	Monitor the water inflow to Myakka River State Park from adjacent sources, including any associated storm water runoff. DRP should continue to support all entities that track water sources for the park.	Data collected	C	$6,000
Action 4	Continue water quality monitoring through the University of Florida's Lakewatch Program.	Data collected	C	$29,000
Action 5	Conduct a more inclusive water quality assessment on a yearly basis.	Data collected	UFN	$12,000
Action 6	Restore hydrologic sheet flow and natural hydroperiod by filling ditches that were created to connect and drain wetlands	# Miles of ditches filled	UFN	$16,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Natural Communities Management Program		Measure	Planning Period	Estimated Manpower and Expense Cost (10-years)
Objective A	Within 10 years have 26,085 acres of the park maintained within optimal fire return interval.	# Acres within fire return interval target	LT	$1,548,000
Action 1	Update annual burn plan on a yearly basis	Plan updated	C	$16,000
Action 2	Manage fire-dependent communities by burning between 10,384–17,314 acres annually.	Average # acres burned annually	C	$618,000
Action 3	Continue and improve monitoring fire effects on successional dry prairie, mesic flatwoods and scrubby flatwoods	# Acres monitored/ data collected	C	$16,000
Action 4	Firebreaks will be maintained	# Miles of firebreaks maintained	C	$898,000
Objective B	Conduct habitat/natural community restoration activities on 2,000 acres of dry prairie, mesic flatwoods and scrubby flatwoods communities over the next 10 years.	# Acres restored or with restoration underway	C	$189,000
Action 1	Develop/update site-specific restoration plan. Each fiscal year, the natural communities are assessed	Plan developed/ updated	C	$16,000
Action 2	Implement restoration plan	# Acres with restoration underway	UFN	$157,000
Action 3	Update and maintain a comprehensive mechanical treatment map.	Map complete	C	$16,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Objective C	Develop a plan for Florida dry prairie restoration of the abandoned pasture south of State Road 72, that identifies priorities, feasibility, and partnership or funding opportunities.	Plan developed	UFN	$1,298,000
Action 1	Develop a restoration plan which outlines the desired outcome; documents the existing conditions; identifies potential restoration projects.	Plan developed	UFN	$16,000
Action 2	Determine the feasibility of the projects; outline a budget for each project and phase; prioritize project schedule; and establish a list of potential partnership and funding opportunities	Budget determined; partnership & funding available	UFN	$82,000
Action 3	After Actions 1 and 2 are met, implement the project(s)	# of Acres pastures restored to historic natural community	UFN	$1,200,000
Objective D	Conduct aquatic habitat restoration activities on 880 acres of river floodplain lake that identifies priorities, feasibility and partnership/funding.	# Acres improved or with improvements underway	UFN	$29,000
Action 1	Identify, develop, and implement comprehensive aquatic habitat management of the Upper Myakka Lake by collaborating with FWC and the SWFWMD.	Comprehensive aquatic management implemented	LT	$27,000
Action 2	Continue to coordinate with FWC Invasive Plant Management Section and SWFMWD Vegetation Management to control the spread of aquatic invasive plants in the Upper Myakka Lake, the Lower Myakka Lake and the Myakka River.	# Acres invasive aquatic plants treated	C	$2,000
Objective E	Develop a desired future conditions map using historical data including pre-settlement land survey plat maps and notes for the area and interpret 1940s aerial photography	Map complete	ST	$10,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Imperiled Species Management Program		Measure	Planning Period	Estimated Manpower and Expense Cost (10-years)
Objective A	Periodically update imperiled species occurrence inventory lists for plants and animals.	List updated	C	$11,000
Objective B	Monitor and document 38 selected imperiled animal species in the park.	# Species monitored	C	$68,000
Action 1	Develop monitoring protocols for 3 selected imperiled animal species, including crested caracara, burrowing owl and sandhill cranes.	# Protocols developed	ST	$18,000
Action 2	Implement monitoring protocols for imperiled animal species including those listed in Action 1 above and the bald eagle, Florida scrub jay, gopher tortoise and butterflies.	# Species monitored	C	$32,000
Action 3	Determine best management practice in relation to reducing the impacts of human disturbance on alligators at Deep Hole and implement.	Reduction of impacts by visitors at Deep Hole	C	$18,000
Objective C	Monitor and document 17 selected imperiled plant species in the park.	# Species monitored	C	$5,000
Action 1	Maintain the herbarium which was established in 1940's; continue to add new species as they are found.	Intact herbarium	C	$3,500
Action 2	Develop monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park.	# Protocols developed	ST	$500
Action 3	Implement monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park.	# Species monitored	C	$1,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Exotic Species Management Program		Measure	Planning Period	Estimated Manpower and Expense Cost (10-years)
Objective A	Annually treat a minimum of 45 infested acres (300 gross acres) of exotic plant species in the park.	# Acres treated	C	$109,000
Action 1	Annually develop/update exotic plant management work plan.	Plan developed/ updated	C	$14,000
Action 2	Implement annual work plan by treating 20-25 zones in park, annually, and continuing maintenance and follow-up treatments, as needed.	Plan implemented	C	$79,000
Action 4	Continue to seek out grants and additional funding for the treatment of FLEPPC category 1 and 2 exotic plants	# of funding dollars received	C	$16,000
Objective B	Implement control measures on 3 exotic animal species in the park.	# Species for which control measures implemented	C	$63,000
Action 1	Authorized staff and contractors will participate in the feral hog removal program as resources permit.	# of hogs removed; # improved habitat acres/ # miles of roads	C	$38,000
Action 2	Continue the island apple snail and egg mass removal program.	# of island apple snails and eggs removed	C	$5,000
Action 3	Research best management practice to reduce the population of exotic fish and exotic amphibian species and implement if feasible.	Best management practice identified and implemented	C	$20,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Cultural Resources Management Program		Measure	Planning Period	Estimated Manpower and Expense Cost (10-years)
Objective A	Assess and evaluate 43 of 43 recorded cultural resources in the park.	Documentation complete	LT	$47,000
Action 1	Complete 17 assessments/ evaluations of archaeological sites.	Assessments complete	LT, ST	$17,000
Action 2	Complete 12 Historic Structures Reports (HSRs) for historic buildings and cultural landscape. Prioritize stabilization, restoration and rehabilitation projects.	Reports and priority lists completed	LT	$30,000
Objective B	Compile reliable documentation for all recorded historic and archaeological sites.	Documentation complete	LT	$42,250
Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.	# Sites recorded or updated	ST	$10,250
Action 2	Conduct Phase I archaeological survey for area within proposed future development and identified by predictive model	Probability Map completed	ST	$30,000
Action 3	Develop and adopt a Scope of Collections Statement.	Document completed	ST	$2,000
Objective C	Bring 17 of 43 recorded cultural resources into good condition.	# Sites in good condition	LT	$120,000
Action 1	Design and implement regular monitoring programs for 17 cultural sites	# Sites monitored	C	$20,000
Action 2	Create and implement a cyclical maintenance program for each cultural resource.	Programs implemented	C	$100,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Recreational Management Program		Measure	Planning Period	Estimated Manpower and Expense Cost (10-years)
Objective A	Improve the visitor experience in the main use areas.	# Facilities/ miles of Road/study completed	UFN	$417,000
Action 1	Support the efforts of the Myakka River Management Coordinating Council to determine an appropriate recreational carrying capacity for segments of the Myakka River located within the park.	Study completed	UFN	$110,000
Action 2	Develop a conceptual master plan for the park.	Document completed	ST	$5,000
Action 3	Continue, improve, and develop new interpretive programs.	# Interpretive programs	C	$302,000
Objective B	Improve recreation and support facilities.	# Facilities	C	$12,244,500
Action 1	Maintain all recreation and support facilities in the park.	# Facilities maintained	C	$4,937,000
Action 2	Relocate park management support facilities.	# Facilities relocated	UFN	$577,500
Action 3	Address facility repair and renovation needs.	# Facilities repaired	UFN	$6,206,000
Action 4	Consider developing additional recreational facilities.	# Facilities developed	UFN	$524,000

C—Continuous; ST—Short Term (within 2 years); LT—Long Term (within 10 years); UFN—Unfunded Need

Summary of Ten-Year Cost Estimates		
Management Categories	**Total Estimated Manpower and Expense Cost (10-years)**	**Percentage**
Administration and Support	$263,000	1%
Resource Management	$4,202,250	25%
Hydrology	$663,000	
Natural Communities	$3,074,000	
Imperiled Species	$84,000	
Exotic Species	$172,000	
Cultural Resources	$209,250	
Recreation and Visitor Services	$12,661,500	74%
Total	**$17,126,750**	**100%**

Resource Management Component

Natural Resources

Topography

The general topography of Myakka River State Park has been highly influenced in the past by marine processes and solution of underlying limestone. During the Pleistocene epoch (11,700-2.6 million years ago) and during previous epochs, marine sands were deposited in the form of dune ridges and basins. Solution of permeable limestone has caused the formation of shallow sinks and solution troughs. These sinks and troughs form what are commonly referred to as depression marshes and sloughs, respectively. Solution processes are also largely responsible for the formation of Upper Myakka and Lower Myakka lakes.

Some alteration of the terrain by past activities has affected the topography of the park. Roads, drainage ditches, borrow pits, agricultural operations and other notable topographic disturbances on the property have all affected the park in some form.

From its origin near Myakka Head, the Myakka River generally flows from northeast to southwest. Elevations in the park are 14-15 feet above mean sea level (MSL) along the river, which gradually rises to elevations of 25 -45 feet (see Topography Map). The rise is more precipitous westward to eastward, with the highest elevations north of the Upper Myakka Lake and in the easternmost section of the park near Deer Prairie Slough. Within this landscape there are major sloughs and the numerous depression marshes, many of which will eventually become sloughs due to solution processes.

Geology

Myakka River State Park lies within two of the state's prominent physiographic regions: The Gulf Coastal Lowlands and the DeSoto Plain, both recently emerged submarine plains (Randazzo and Jones 1997). Most of the park lies in the Gulf Coastal Lowlands and ascends the slight incline to the DeSoto Plain only at its eastern side (Geraghty and Miller, Inc. 1981). Karst topography accounts for the multitude of shallow sinks (depression marshes) and solution troughs (sloughs). Only one major sinkhole is known to exist in the park. This sink is known as "Deep Hole" and is approximately 295 feet wide. In 2012, researchers conducted a dive into the sink and found it to be 131 feet deep (Culter et al. 2013). The Upper and Lower Lakes and the wide marshes between them also lie in basins that are solution features. Fissures in the underlying limestone have created numerous short creeks known as blind gullies. Most are short in length, varying from one hundred

yards to one mile. These gullies are common in flatwoods and dry prairie areas within the park.

Beneath the surface, several distinct geologic formations are present. Layers of clastic sedimentary deposits extend just below the surface to depths of 80 to 120 feet. These clastic layers are composed of sands and clays with interbedded layers of sandy, dolomitic limestone. Collectively, they form the surficial aquifer and the underlying upper confining deposits. Further down, extending to depths of about 250 feet, limestone, dolostone and sands associated with the Hawthorn formation comprise the secondary artesian aquifer (Intermediate Aquifer). Clay lenses, which serve to separate various productive zones within the secondary artesian aquifer, are present in certain areas. Below 250 feet, impermeable layers of limestone, dolostone, sandstones, clays and sands are present, associated with the Tampa formation. These layers form the lower confining deposits that separate the secondary artesian aquifer from the underlying Upper Floridan Aquifer. The Floridan Aquifer occurs just above the Suwannee limestone, at a depth generally greater than 400 feet (Geraghty and Miller, Inc. 1981).

Soils

Thirty-four different soil types occur on this unit (see Soils Map) according to the USDA Soil Conservation Service Soil Survey for Sarasota County (1991) and Manatee County (1983). Soils were surveyed at the county level, so similar soils may be mapped/named differently depending on the county. Detailed soil descriptions are listed in Appendix 4. Soils on this unit associated with the river floodplain include Bradenton fine sand (frequently flooded), Delray and Astor soils (frequently flooded), Felda and Pompano fine sands (frequently flooded), and Floridana and Gator soils (frequently flooded).

Soils associated with dry prairie and mesic flatwoods on this unit include EauGallie fine sand, EauGallie and Myakka fine sands, Ft. Green fine sand, Myakka fine sand, Ona fine sand, Palmetto sand, Pineda fine sand, Pinellas fine sand, and Wabasso fine sand.

Soils on this unit commonly associated with scrubby flatwoods include Cassia fine sand and Pomello fine sand.

Soils typical of basin and depression marshes on this unit include Delray complex, Delray fine sand (depressional), Felda fine sand (depressional), Floridana fine sand, Floridana and Gator soils (depressional), Floridana-Immokalee-Okeelanta association, Holopaw fine sand (depressional), and Manatee loamy fine sand (depressional).

Soils commonly associated with baygall, hammocks and sloughs on this unit include Bradenton fine sand, Canova, Anclote and Okeelanta soils, Delray mucky loam fine sand, Felda fine sand, Felda-Palmetto complex, Gator muck, Parkwood Variant complex, and Pople fine sand.

Plant communities associated with a given soil type may vary, depending upon other environmental factors, such as fire, hydrology and disturbances (either natural or man-made). Plant communities identified by soil types are meant only as a guideline and may not necessarily be present, as described above.

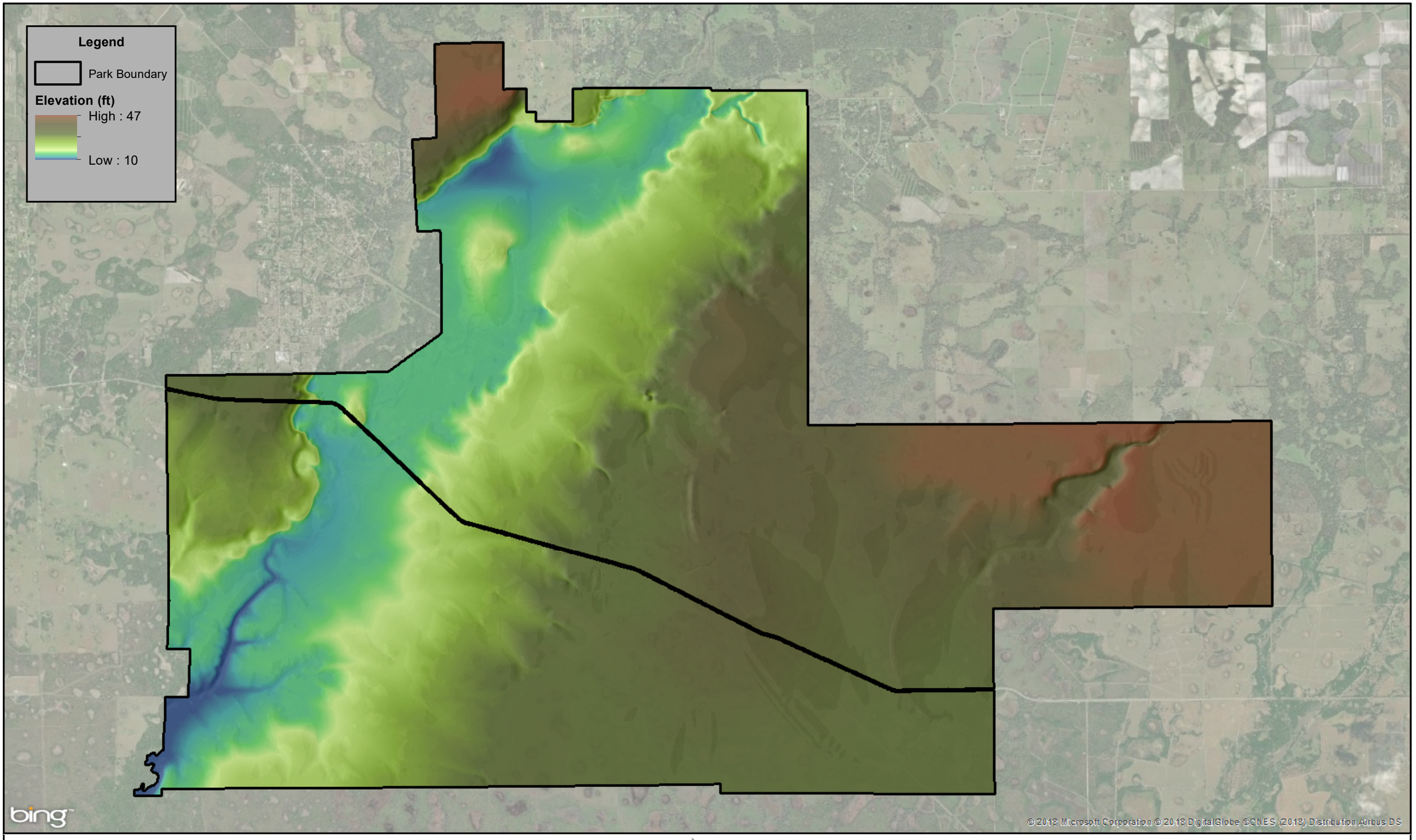
Soil Erosion Issues

Currently, areas of erosion issues at the park are confined to the roads and road shoulders due to periods of heavy rain during the wet season (usually June through September). In 2013, erosion controls along Bee Island Extension were implemented on an experimental basis. A portion of the erosion along the unpaved, park management roads is due to yearly burn preparation, which includes disking. To alleviate this issue, disking is implemented on the shoulder of the park management roads, and the roads are mowed. Feral hog (Sus scrofa) rooting along the roads has intensified the potential of erosion. There is a hog removal program in progress.

Hydrology

Surface water

The park lies within the Myakka River watershed which encompasses approximately 600 square miles. The Myakka River collects water from numerous creeks and sloughs to provide drainage in the watershed. Four major depressions act as natural water detention areas. These include the Flatford Swamp near Myakka City, Tatum Sawgrass Marsh just north of the park, and the Upper Myakka Lake and the Lower Myakka Lake within the park.



MYAKKA RIVER STATE PARK

N

0 0.5 1 2 Miles

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

TOPOGRAPHIC MAP

Sarasota

- S-04 - Bradenton fine sand
- S-05 - Bradenton fine sand, frequently flooded
- S-07 - Cassia fine sand
- S-08 - Delray fine sand, depressional
- S-09 - Delray and Astor soils, frequently flooded
- S-10 - EauGallie and Myakka fine sands
- S-11 - Felda fine sand
- S-12 - Felda fine sand, depressional
- S-13 - Felda and Pompano fine sands, frequently flooded
- S-15 - Floridana and Gator soils, depressional
- S-16 - Floridana and Gator soils, frequently flooded
- S-17 - Gator muck
- S-21 - Ft. Green fine sand
- S-22 - Holopaw fine sand, depressional
- S-25 - Malabar fine sand
- S-26 - Manatee loamy fine sand, depressional
- S-30 - Ona fine sand
- S-31 - Pineda fine sand, 0 to 2 percent slopes
- S-33 - Pomello fine sand
- S-34 - Pompano fine sand, depressional
- S-36 - Pople fine sand
- S-40 - Tavares fine sand
- S-41 - Wabasso fine sand
- S-99 - Water

Sarasota

Manatee

Manatee

- M-04 - Bradenton fine sand
- M-07 - Canova, Anclote, and Okeelanta soils
- M-11 - Cassia fine sand
- M-15 - Delray mucky loamy fine sand
- M-16 - Delray complex
- M-20 - EauGallie fine sand
- M-22 - Felda fine sand
- M-23 - Felda-Palmetto complex
- M-25 - Floridana fine sand
- M-26 - Floridana-Immokalee-... association
- M-30 - Myakka fine sand, 0 to 2 percent slopes
- M-35 - Ona fine sand, orstein substratum
- M-38 - Palmetto sand
- M-39 - Parkwood variant-Chobee, limestone substratum-Parkwood complex
- M-40 - Pinellas fine sand
- M-48 - Wabasso fine sand

MYAKKA RIVER STATE PARK

N

0 0.5 1 2 Miles

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2016

SOIL MAP

Seven sub-basins, or portions of them, have impacts on drainage pattern in the park: Myakka River (including Vanderipe Slough and Big Flats), Clay Gully, Mossy Island Slough, Shiney Town Slough, Deer Prairie Slough, Mud Lake Slough, and Big Slough Canal.

The Myakka River, which is the central natural feature of this park, originates at Myakka Head in east-central Manatee County. Wingate Creek is the first to flow into the Myakka River. Seven additional tributaries (Coker Creek, Boggy Creek, Ogleby Creek, Long Creek, Maple Creek, Young's Creek, and Taylor Creek) meet with the Myakka River shortly after, and this convergence is the basis of the Flatford Swamp. The river channel splits into Clay Gully and the Myakka River. About one-half mile before entering the park, the Myakka River flows through the southeastern part of the Tatum Sawgrass Marsh. The river enters the park in Sarasota County from the north, about 1.3 miles south of County Road 780.

In addition to being an Outstanding Florida Waterway, the 34 miles of the Myakka River within Sarasota County have been designated as a "Wild and Scenic River" by the Florida Legislature. This includes 12 miles of the designated portion of the river that are contained within the park. Additional information on this designation and hydrology of the watershed can be obtained in the Myakka Wild and Scenic River (MWSR) Management Plan (DEP 2011).

The Myakka River is a southern blackwater stream. Three critical aspects of the water resource value of the Myakka River are the water quality, the quantity of discharge, and the timing of the discharge. These three variables are crucial to the continued health of the Myakka River, as well as the health of downstream estuarine areas of Charlotte Harbor.

Low flow data indicate that groundwater contributions to Myakka River streamflow are small (Hutchinson 1984). Discharge from the surficial aquifer is insufficient to provide base flow to the Myakka River during the dry period (SWFWMD 1989). Streamflow and water quality characteristics indicate that there are negligible natural groundwater contributions to the Myakka River between Myakka City and the outlet to Lower Myakka Lake. The lakes and river channel are underlain by relatively impermeable clays (Flippo et al. 1968).

All non-tidal reaches of streams cease natural flows during droughts and many go dry during most years. During the dry season, drainage from agricultural lands may contribute between 10 and 60 percent of stream discharge. Near zero flow has occurred in the Myakka River for periods of up to six months, and during normal water years the river will experience near zero flow for approximately two months. Dry season discharges (average low flows) in the upper Myakka River watershed have increased during the past three decades and most notably at the State Road 70 USGS streamflow gauge during the mid-1980s because of agricultural irrigation (PBS&J et al. 1998). Minimum discharges generally occur in April, May, or early June.

The quality, quantity, and timing of freshwater input are critical to downstream estuarine areas. However, what is relatively unknown is the critical amount of freshwater necessary to maintain the proper functioning of estuarine areas. The SWFWMD is currently developing Minimum Flows and Levels (MFL) for the entire Southwest Florida region to quantify the amount of water that can be used for public supply while causing no significant harm to the ecological functions in lakes, streams, and rivers.

A MFL study for the Myakka River was completed during 2005-2006. MFLs have been adopted for the upper freshwater portion of the Myakka River. During the study, the SWFWMD used flow data from 1940-1969 for their study, due to the evidence that dry season flows began to increase in the 1970s. The SWFWMD used a building block approach for establishing MFLs for the Myakka River to maintain or recreate the hydrological conditions under which communities existed prior to flow disturbance, and meet the ecological needs of the river. Block 1 considers the low flow conditions during the dry season, Block 2 considers the base flow period during the cooler portion of the year when evapotranspiration is often lower, and Block 3 considers the high flow period during the wet season. The proposed MFLs are set to "not significantly harm" the water resources or ecology, which is defined as less than 15 percent decline in habitat availability (SWFWMD 2005).

The average annual rainfall in the Myakka watershed is 59 inches, approximately 60 percent of which occurs from June to September (Loper and Morris 2008). Because

there is a lag time of river discharge following rains, the maximum river discharge generally occurs from July to October. The discharge of the Myakka River, as measured at the U.S. Geological Survey (USGS) gauging station between the lakes, averaged 253 cubic feet per second annually for the period 1937 to 2008. Inflow of freshwater to Charlotte Harbor from the Myakka River averages 630 cubic feet per second annually.

During the wet season, areas around the river may flood. The flood stage is an elevation of 15.86 feet above sea level (ASL), or a water level of 7 feet or greater read on the USGS gauge in Myakka River State Park.

Water Quality

The Myakka River is designated as Class I waters (potable water supplies) from the Manatee County line to Border Road Bridge at river mile 20. The portions within the park are also designated as a Wild and Scenic River and as an Outstanding Florida Water. All other surface waters in the park are designated Class III (recreation; propagation and management of fish and wildlife).

The Myakka River Watershed generally has good water quality and supports productive freshwater and estuarine habitats. However, the river is naturally sluggish, often with no net flow during the dry season. Dissolved oxygen levels are typically low. Part of the upper basin drains phosphate-rich areas, which, combined with agricultural and rangeland runoff, elevate the river's nutrient levels. Upper Myakka Lake is eutrophic with low concentrations of dissolved oxygen.

Water quality within the Myakka River varies seasonally. During the wet season when streamflow is mainly surface runoff, specific conductance is lowest and color is darkest. The brown color of the river water is the result of humic, fulvic, and tannic acids from drainage of floodplain swamps. Nutrient concentrations and coliform concentrations tend to increase with increased surface runoff. Dissolved oxygen concentrations are generally higher during the low-flow period. During high -flow periods, dissolved oxygen concentrations are lower due to the input of oxygen-demanding organics included in runoff. Water quality during the dry season may be measurably affected by limited groundwater contributions to base flow and the runoff of groundwater utilized for agricultural irrigation.

Potential sources of nutrient and pollution loads in the Myakka River watershed are generally nonpoint sources. These sources of high nutrients and pollution may include agricultural and rangeland runoff, phosphate mining in the upper watershed, residential areas and related septic tank drain fields, landfills, golf courses, bio-solids and effluent disposal, and other sources of stormwater runoff. Sarasota County is taking monthly water quality samples from 11 sites throughout the watershed including five sites in the Myakka River.

The Myakka River is on the Florida Department of Environmental Protection's (FDEP) Group 3 Verified Impaired Waters List for Total Maximum Daily Loads (TMDLs). TMDLs may be forthcoming for various segments of the river for the following parameters: Fecal Coliform, Dissolved Oxygen (DO), Iron, (Fe), and Nutrients. In late 2013 FDEP issued a state-wide TMDL for Mercury in fish tissue.

The EPA published a TDML for nutrients for both Owen Creek and Myakka River (WBID 1981B) in March 2013. WBID 1981B is the river section between the Upper Myakka Lake and Lower Myakka Lakes, and a central feature of the park.

The October 2016 FDEP produced a Final List of Assessments in the Group 3 Basins for the Verified List of Impaired Waters. This updated document listed a dozen impairments for waterbodies above or contained within the park in addition to seven in the tidal Myakka River that may have an indirect impact to park resources. Most notable on the updated list are impairments to Howard Creek and Clay Gully which both enter the Upper Myakka Lake. The Upper Myakka Lake (WBID 1981C) is on the list with a nutrient (total Phosphorus) impairment, accompanied by the river section immediately south (WBID 1981B) for nutrient impairments as well. In the 2015 FDEP framework priority document it outlines a schedule that priority impairments be assessed for establishment of TMDLs for Group 3 Impaired Waters starting in 2017. From 1998 to 2005 (SWFWMD 2005; Charlotte Harbor Environmental Center Inc. 2008), the Myakka River near Sarasota showed statistically significant trends of increasing dry season discharge, annual runoff, annual average nitrite + nitrate, annual average ammonia, and specific conductance, while annual total nitrogen, total

organic carbon decreased significantly throughout the watershed. The increases in specific conductance and monthly stream discharge probably resulted from the increased runoff associated with irrigation. Although only a 1 percent increase in agricultural lands has occurred since 1972, a shift from agricultural uses requiring less water (rangeland) to agricultural uses requiring more irrigation (row crops) may have resulted in an increase in runoff and dry season discharge (SWFWMD 2005). The primary source of irrigation water in the watershed is groundwater, which has higher concentrations of chloride, sulfate, and dissolved solids than does surface water. Irrigation water effects are primarily seasonal, with the greatest quantities of water utilized during the dry season (Hammett 1988).

In general, Upper Myakka Lake has been characterized as a highly disturbed ecological system with excessive nutrient concentration. The lake has experienced numerous dissolved oxygen concentrations below the DEP state standards (Chapter 62-302, FAC) primarily during warmer months, and there is a general lack of dissolved oxygen just above the organic sediments of the lake. Total nitrogen in the lake has been found to peak following periods of high inflow from tributaries and following the application of herbicides for the control of aquatic weeds. Lake water quality is influenced primarily from nonpoint source loads contributed by tributary loading (Priede-Sedgewick, Inc. 1983).

Both Upper and Lower Myakka Lakes and the river between the lakes have had an extensive exotic aquatic vegetation problem in the past. With continued efforts made by SWFWMD, the aquatic weed problem has been controlled in both lakes.

The base flow of streams in the Myakka watershed is principally controlled by the permeability and porosity of the surficial deposits, the interrelations among these deposits and older underlying beds, the relative elevations of the water table and the water surface elevation in streams, soil moisture conditions and evapotranspiration rates, man-induced alterations to drainage systems and water use, and the time distribution of precipitation. The streamflow of the Myakka River is highly variable and mostly dependent on surface runoff during the rainy season.

Groundwater

In the Myakka River watershed, the groundwater system is divided into three main aquifers: Surficial Aquifer, Intermediate Aquifer system, and the Floridan Aquifer system. The Upper Floridan Aquifer system is the principal source of groundwater in Florida. However, the use of this water source in the Myakka River Watershed is generally restricted because of poor water quality. Large withdrawals of water are made from the Upper Floridan Aquifer system and used primarily for agricultural irrigation and large public supplies. Recharge rates of the Upper Floridan Aquifer system are low in this region, and no recharge occurs along the Myakka River.

The water of the Intermediate Aquifer system is generally within DEP primary and secondary drinking water standards. Water quality is best in eastern Sarasota County and degrades towards the southwest and with depth. The Intermediate Aquifer is the most highly developed aquifer in this region and supplies most of the water used for domestic supply and home irrigation. For potable usage, the intermediate aquifer water frequently requires extensive treatment to reduce mineralization.

The uppermost aquifer is the Surficial Aquifer, which generally varies from less than 25 to more than 50 feet in thickness in Manatee County. In Sarasota County, many hundreds of wells tap the Surficial Aquifer, and are used to obtain water for domestic supply, lawn irrigation, and watering livestock. In Manatee County, the Surficial Aquifer is generally undeveloped as a water source and is used only in small volumes for domestic supply, lawn irrigation, and watering livestock. The Surficial Aquifer as a water supply source has low yields and may be limited by drought periods. It is, however, readily recharged by rainfall. It also has the greatest potential for contamination from surface sources (FDEP 2011).

The Myakka River is primarily rain-fed. There is minimal evidence that ground water significantly contributes to the flow of the river. Topography of the area is generally flat to gently sloping. Upland areas generally have a high-water table and poor drainage due to organic hardpan soils (SWFWMD 2004). The natural drainages within the Myakka River watershed are primarily sloughs which form a poorly developed drainage system. Most have

small drainage basins, with short channel lengths. Many of the sloughs and swamps have been ditched and channelized to facilitate their drainage efficiency and reduce flooding of upland areas.

Historical Alterations

In the past, several of the park depression marshes were drained by ditching. There has been an active program at the park to fill or plug the ditches to restore the natural hydrology to these wetlands. This work will be continued to restore wetlands and improve sheet flow.

Numerous drainage modifications within the Myakka watershed have been instituted for the conversion of lands to agricultural uses, to control flooding, and for transportation needs. Hydroperiod and the timing of water delivery are fundamental factors that determine natural community structure. Alterations of the natural hydrologic regime have had a negative impact on natural communities within the park and in adjacent conservation lands. Several DEP plans (FDNR 1986; DEP 1999; DEP 2004), the MWSR Management Plan (DEP 2011), as well as the Southwest Florida Water Management District (SWFWMD) Comprehensive Watershed Management Plan (2004) and Charlotte Harbor National Estuary Program Comprehensive Conservation and Management Plan (CHNEP 2013) have all identified specific hydrologic alterations in the Myakka watershed for study and potential restoration.

Starting from the northern part of the watershed, the historic alterations of the natural hydrologic regime that most impact the park include: dry season inputs into Flatford Swamp; the dikes draining Tatum Sawgrass Marsh; the County Road 780 bridge and causeway; the Clay Gully diversion; the dikes at Hidden River; the inputs from Howard Creek; the dike separating Upper Myakka Lake from Vanderipe Slough; the concrete weir where the Myakka River exits the Upper Myakka Lake; the State Road 72 bridge, causeway, and drainage ditches; the railroad grade; ditching and the dike on Deer Prairie Slough; and Down's Dam on the Myakka River near the southern boundary of the park. Changes to land use starting in the late 1970s have led to increased water inflows to Flatford Swamp, and while relatively distant, produce negative impacts downstream into the park.

In a report prepared for the SWFWMD, Tree Mortality Assessment of the Upper Myakka River Watershed (Coastal Environmental 1998), researchers assigned the cause of a large tree mortality event in the Upper Myakka River Basin and Flatford Swamp to hydrological stress. This stress was identified as being from an increase in seasonal highwater levels and longer seasonal hydroperiods. The primary contributor was subsurface seepage generated from agricultural irrigation which caused an excess base flow to the swamp. In 1998, the zone of potentially abnormal mortality and stress (area with dead trees) in the Upper Myakka River Watershed (100-year floodplain from State Road 64 downstream to State Road 72) covered approximately 3,740 acres, or about 25 percent. An Assessment of Tree Conditions in Myakka River State Park (Ford and Brooks 2000) reported that the increased flows in the Upper Myakka Watershed were causing stress and mortality in trees within the park, most notably upstream of the weir at the outflow of the Upper Myakka Lake. Beyond the tree morality issue, the increased input of water during the dry season has drastically reduced the number "no flow" periods and changed the water chemistry through the addition of mineralized groundwater. These changes have had impacts to natural communities well beyond the river banks and slough systems.

Tatum Sawgrass Marsh was modified by 1974 via a series of dikes to divert water away from the marsh to create agricultural lands and control flooding. Tatum Sawgrass is extremely important as a holding basin during periods of heavy rainfall. It has the capacity to store an equivalent of 1.8 inches of rainfall, which is four times that of the Upper and Lower Myakka Lakes combined. The results of the Tatum Sawgrass diking have reduced the storage capacity of the marsh and increased the potential of downstream flooding by diverting water away from the marsh. As a result of the dike system, flood-peak discharges and flood heights having recurrence intervals of up to 25 years are increased, and approximately 1,200 additional acres along the Myakka River may be flooded during two-year flood conditions. In addition, a 19 percent increase in flood-peak discharge at the County Road 780 Bridge may occur, and a 0.8-foot increase in flood height can result (Hammett et al. 1978).

The raised berm (causeway) for the approach road and associated bridge at County Road

780 over the Myakka River constrict flow south of the Tatum Sawgrass area especially during peak flow events. Duever and McCollom (1990) note the large width of river floodplain and potential for flow reduction at these points could lead to adverse impacts to natural communities. They also suggest changes are likely minor and localized. There is a potential for future study to determine what hydrologic effects this structure has and what, if any, modifications could be made to enhance hydrologic functions. Sarasota County replaced the old bridge in 2018.

Clay Gully was originally a slough system that was ditched to increase drainage around 1900 (Suau 2005). A more formal diversion was constructed in 1949 after it was recommended by Robert Angas in his 1945 Engineering Report to Florida Forest and Park Service. The resulting project diverts much of the normal flow of the river through Clay Gully and into Upper Myakka Lake at its northeast corner. Based on measurements made during a UGSG study, 35 percent of the flow goes directly into the lake, bypassing Tatum Sawgrass Marsh (Hammett et al. 1978). This has hastened vegetation changes in the bypassed section of the river, which now stays dry almost half of the year between its juncture with Clay Gully and the point where it enters the Upper Myakka Lake (FDNR 1986).

The dikes at the Hidden River community were originally installed in 1958 to exclude water from the Myakka River to create pasture for cattle. The result of the dikes is increased water input in the Upper Myakka River Watershed via the Myakka River that would have historically flowed into adjacent marsh and bottomlands communities. In 1966, it was platted for a residential community (Suau 2005). The proximity and history of flood issues in the Hidden River community make potential return to the natural hydrologic regime unlikely.

Beginning in the 1950s, land clearing activities in the Howard Creek area for agriculture, and later increases in irrigation have had a net result of increased water input to Upper Myakka Lake. Treated reclaimed wastewater has been used to irrigate several thousand acres of agricultural operations starting in the 1990s (Suau 2005) and continues to the present. Howard Creek discharges into the western tip of Upper Myakka Lake at the western park boundary close to Vanderipe Slough.

A 1,000-foot earthen dike separating Upper Myakka Lake from Vanderipe Slough was constructed by the Civilian Conservation Corps (CCC) and completed around 1940. The structure's purpose was to prevent water from the lake from entering the slough (Historic Property Associates 1989). Due to concerns that excess water from the Upper Myakka Lake was damaging adjacent pasturelands, it was suggested by Robert Angas (1945) that the dike be extended, which was completed in the late 1950s. Resulting impacts from dikes included redirected flow of Howard Creek from Vanderipe Slough into the Upper Myakka Lake.

In 1937-38, the CCC constructed a weir at the main outflow to the Upper Myakka Lake (Historic Property Associates 1989). Flippo and Joyner (1968) reported that in spring 1941 a low concrete weir replaced the previous CCC structure that had been partially washed out. These alternations to the natural hydrology were conducted to retain water in the Upper Myakka Lake to enhance sport fishing and recreational boating. While certain features may have been enhanced, there were also unintended consequences to plant and animal communities.

The Upper Myakka Lake Weir was bypassed by culverts in November 1974. Six 60-inch culverts were installed just southeast of the dam with the primary purpose of controlling invasive exotic plants in the lake by periodic drawdown (Suau 2005). Since 1979, the culverts have generally been kept open, restricting little to no water flow. In the past, the culvert openings were restricted in order to slow the flow through the bypass during the dry season, which was perceived to extend the period of operation of the concession airboats. In May of 2016 there was a wash out associated with bypass culverts leaving a 10-foot opening on the east side. Efforts to work with the SWFWMD and FWC to assist in funding a feasibility study of restoration options is underway which ideally would include the adjacent weir as directed in previous Unit Management Plans.

As with County Road 780, State Road 72 and its associated bridges impede natural hydrologic flow. Beginning in late 2006 and continuing through April 2010, four bridges were replaced or improved, including those over Vanderipe Slough, Myakka River, and Deer Prairie Slough. Some efforts were made to improve hydrologic functions, including

sheet flow, flood conveyance as well as enhanced stormwater treatment and wildlife crossings. There may be opportunities to improve these functions in the future.

While relatively minor, it is worth mentioning that some remnants from an earthen dam at the south end of the Lower Myakka Lake still exist. Water movement at this point may be near pre-alteration conditions, but some bottleneck effect may be present from the remaining earthen structure on either side. No research has been done on the existing condition and effects of the earthen dam on hydrology. Flippo and Joyner (1968) only mention in passing that the lower lake was dry in 1945 before the structure was in place and "dry in 1950, after the earthen dam at its outlet had washed out."

Near the south park boundary, a privately constructed dam was built in 1942, locally known as Downs' Dam. During much of the year, this dam can effectively retain water levels upstream above their natural levels, acting as an obstacle to the movement of fish such as American eel (*Anguilla rostrata*), striped mullet (*Mugil cephalus*), Atlantic tarpon (*Megalops atlanticus*), and common snook (*Centropomus undecimalis*). These species may be found in Lower Myakka Lake following prolonged periods of high water. The degree of the dam's impact is unknown, but may be considered a negative influence on the Myakka River system (FDNR 1986). Since 2012, during high water events, Florida manatees (*Trechichus manatus latirostris*) have been observed regularly in the park north of Downs' Dam in both the Lower and Upper Myakka Lakes and river. In January 2014, as the water receded, a juvenile manatee stranding occurred on the north side of Downs' Dam. This led to a discussion of the potential impact this and other structures have on movement of manatees within the park. The dam has a 5-foot-wide by 4-foot-tall notch that was historically used as a gate capable of retaining approximately 4 feet of water. The owner has agreed to leave the gate open for the time being, and although this does not eliminate the hazard of manatee stranding posed by the dam, it may help.

The railroad grade was constructed from Nocatee (just south of Arcadia) to Sarasota during a 20-year period beginning in 1904. Using heavy equipment, ditches were dug on either side of the railroad to provide fill for the grade. The project was later abandoned, and the railroad company salvaged the structural components during the 1940s. A permanent easement for power transmission lines along the park's western three miles of the abandoned railroad grade was granted in 1949. The elevated grade and associated ditches may hinder sheet flow across the dry prairie. In 1999, a pilot project to lower three miles of the eastern portion of the railroad grade was completed. In 2002, an additional 2.5 miles of the railroad grade were lowered. Soft low-water crossings were established in areas along Railroad Grade that had washouts during high rain events. The projects have proved to be a success, allowing water to move via natural sheet flow from the north to south of Railroad Grade.

The east side of the park drains primarily through Deer Prairie Slough and to a lesser extent through Mud Lake Slough and Big Slough Canal. Deer Prairie Slough enters the Myakka River approximately 11 miles below the park. Channelization of this slough during the last 50 years has altered local surface water flow patterns and resulted in shorter hydroperiods in nearby wetlands. At the north end of this slough where it enters the park, upland ditches also connect to the channelized slough. At the southern border of the park, a dike with culverts was constructed in the 1970s to compensate for the effects of channelization in the slough. In 2001-2002 Sarasota County through a cooperative effort with SWFWMD completed a restoration project south of the park that backfilled approximately 8.4 miles of ditching in Deer Prairie Slough to approximate historic pre-ditching hydrology and improved habitat value.

Additional information on hydrologic alterations and their potential impacts including those that take place below the park boundary can be found in the MWSR Management Plan (2011). As indicated previously, many agency and watershed management comprehensive plans identify the need to study these human alterations, and to look at potential restoration to a more natural hydrological regime, as a priority. The SWFWMD evaluated potential projects to restore a more natural hydrologic regime as a part of the Myakka River Watershed Initiatives (MRWI): Restoration Best Management Practices Evaluation Report (2013). The study covers several specific manmade alterations that impact the park, including Flatford Swamp, the Clay Gully diversion, and the

Upper Myakka Lake Weir. Using previous District models, the study examined different alternatives to create more natural hydrologic conditions. The District has no plans to pursue any of these projects at this time, except for continued study of Flatford Swamp restoration options. The March 2013 Flatford Swamp Hydrologic Restoration Feasibility Study explores alternatives for the transfer of excess water from Flatford Swamp to help restore Flatford Swamp and the Myakka River. A pilot project is being considered to pump excess water from Flatford Swamp into the Floridan Aquifer. Results of test pumping will determine the long-term feasibility of the proposal. DRP will continue to work with SWFWMD and other agencies on the potential restoration of altered natural hydrologic systems.

Hydrological Management Program

Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.

The natural hydrology of most state parks has been impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations, and variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

Objective A: Conduct/obtain an assessment of the park's hydrological restoration needs

Action 1	Conduct an assessment and feasibility study of the effects of the weir, failing culverts adjacent to the weir and the private dam on the hydrologic flow, flora and fauna within the Myakka River system
Action 2	Pending the outcome of the assessment in Action 1, and if it is determined as feasible to do so, remove or modify structures to improve hydrology
Action 3	Monitor the water inflow to Myakka River State Park from adjacent sources, including any associated storm water runoff. DRP should continue to support all entities that monitor water resources for the park
Action 4	Continue water quality monitoring through the University of Florida's Lakewatch Program
Action 5	Conduct a more inclusive detailed water quality assessment on a yearly basis
Action 6	Restore hydrologic sheet flow and natural hydroperiod by filling ditches that were created to connect and drain wetlands

During periods of high water level, manatees have been sighted in the Lower and Upper Myakka Lakes. During periods of low water level, the weir and dam have proven to be an obstacle to manatees traversing the river. In January 2014, a stranding of a juvenile manatee occurred. It is important to understand the influence of the two man-made structures to improve natural hydrologic processes and restore ecosystem health.

The concession has requested, during periods of low water level, to close the culverts adjacent to the Upper Myakka Lake weir. The alteration of water flow during this period may have an effect on the flora and fauna both downstream and upstream. The conclusion of the assessment may influence management practices. A feasibility study for the removal or modification of the weir, bypass culverts, and dam should be conducted with funding pursued through partnerships with SWFWMD, FWC, Charlotte Harbor National Estuary Program and others.

Over the last decade there has been several landscape alterations and land use changes, which may affect the quality and quantity of water within the park. Understanding these effects will enable better management decisions. SWFWMD, USGS, Manatee and Sarasota Counties have programs that monitor land use changes and water resources. Staff should continue to review water quality and quantity reports as they

relate to the park's water resources and natural systems.

The park participates in the LAKEWATCH program and water samples are collected on a monthly basis. Lakewatch analyzes the water samples on a monthly to bi-monthly basis dependent on funding. Total phosphorus (TP), total nitrogen (TN), chlorophyll, water clarity and depth are analyzed. From the data collected, the Upper Myakka Lake is considered eutrophic with a high level of biological productivity (Lakewatch).

As mentioned in Action 5, LAKEWATCH analysis includes TP, TN and chloride. A more thorough analysis to include but not limited to dissolved oxygen, pH, total alkalinity and chloride, should be conducted to give a more detailed report on water parameters and an assessment of river/lake health. Management decisions would benefit from more detailed understanding of the water resources in the park.

Manmade ditches that drain wetlands or alter the natural sheet flow of water, should be mapped and where feasible should be plugged or filled-in to improve hydroperiods in wetlands and across the landscape.

Natural Communities

This section of the management plan describes and assesses each of the natural communities found in the state park. It also describes the desired future condition (DFC) of each natural community and identifies the actions that will be required to bring the community to its desired future condition. Specific management objectives and actions for natural community management, exotic species management, imperiled species management [and population restoration] are discussed in the Resource Management Program section of this component.

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

When a natural community within a park reaches the desired future condition, it is considered to be in a maintenance condition. Required actions for sustaining a community's maintenance condition may include:

- maintaining optimal fire return intervals for fire dependent communities,
- ongoing control of non-native plant and animal species;
- maintaining natural hydrological functions (including historic water flows and water quality);
- preserving a community's biodiversity and vegetative structure;
- protecting viable populations of plant and animal species (including those that are imperiled or endemic);
- preserving intact ecotones that link natural communities across the landscape.

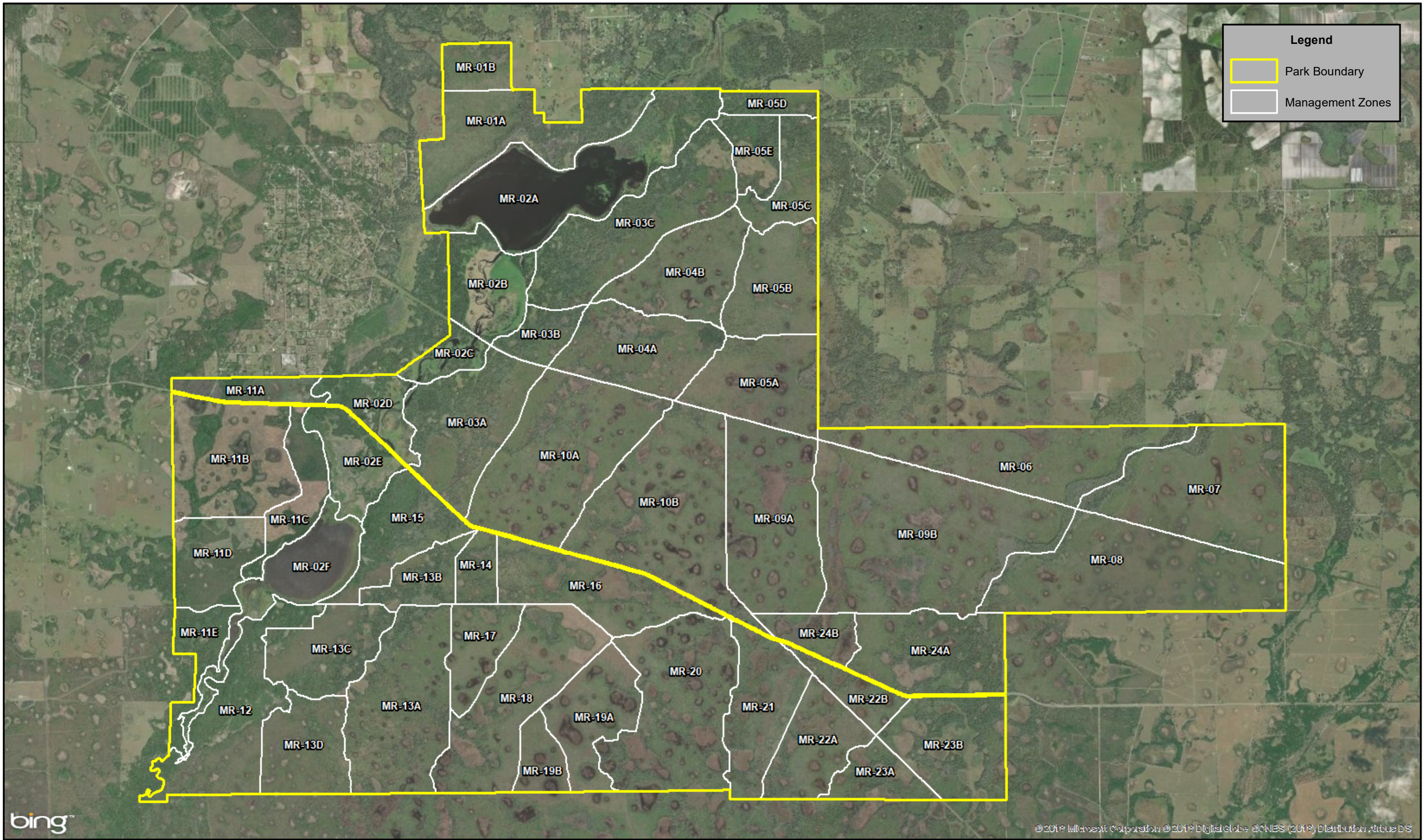
The entire park is divided into management zones that delineate areas on the ground that are used to reference management activities (see Management Zones Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and natural fire breaks. Table 1 reflects the management zones with the acres of each zone.

The park contains 13 distinct natural communities, as well as 8 altered landcover types (see Natural Communities Map). A list of known plants and animals occurring in the park is contained in Appendix 5.

Table 1. Myakka River State Park Management Zones			
Management Zone	**Acreage**	**Managed with Prescribed Fire**	**Contains Known Cultural Resources**
MR-01A	984.19	Y	N
MR-01B	243.35	Y	N
MR-02A	1,449.83	Y	Y
MR-02B	561.32	Y	Y
MR-02C	210.30	Y	N
MR-02D	352.02	Y	Y
MR-02E	452.52	Y	Y
MR-02F	674.75	Y	Y
MR-03A	936.97	Y	N
MR-03B	242.72	Y	Y
MR-03C	1,170.65	Y	N
MR-04A	803.57	Y	N
MR-04B	746.01	Y	N
MR-05A	764.08	Y	Y
MR-05B	698.00	Y	N
MR-05C	396.83	Y	N
MR-05D	173.77	Y	Y
MR-05E	296.45	Y	Y
MR-06	1,224.56	Y	Y
MR-07	1,382.42	Y	Y
MR-08	1,581.48	Y	N
MR-09A	1,257.58	Y	N
MR-09B	2,256.42	Y	N
MR-10A	1,468.59	Y	N
MR-10B	1,623.47	Y	N
MR-11A	251.31	Y	N
MR-11B	1,007.42	Y	N
MR-11C	386.15	Y	Y
MR-11D	522.65	Y	Y
MR-11E	294.58	Y	Y
MR-12	975.83	Y	N
MR-13A	1,202.81	Y	N
MR-13B	323.58	Y	N
MR-13C	621.00	Y	N
MR-13D	586.73	Y	N
MR-14	205.71	Y	Y
MR-15	583.30	Y	N
MR-16	818.88	Y	Y
MR-17	392.97	Y	N
MR-18	1,119.81	Y	N
MR-19A	626.15	Y	N
MR-19B	234.47	Y	N
MR-20	1,362.88	Y	N
MR-21	688.21	Y	N
MR-22A	561.94	Y	N
MR-22B	254.89	Y	N
MR-23A	311.50	Y	N
MR-23B	786.87	Y	N
MR-24A	865.66	Y	N
MR-24B	260.55	Y	N

Table 2. Natural Communities and Altered Landcovers		
Natural Communities	**Acreage**	**Percentage**
Dry Prairie	14,732.65	39.61%
Depression Marsh	6,788.86	18.25%
Hydric Hammock	6,323.91	17.00%
Mesic Flatwoods	3,766.16	10.12%
River Floodplain Lake	1,218.09	3.27%
Floodplain Marsh	1,181.81	3.18%
Basin Swamp	994.75	2.67%
Mesic Hammock	673.43	1.81%
Baygall	293.4	0.79%
Scrubby Flatwoods	182.44	0.49%
Blackwater Stream	142.57	0.38%
Dome Swamp	8.91	0.02%
Sinkhole	1.98	0.01%
Altered Landcover Types	**Acreage**	**Percentage**
Abandoned Pasture	565.73	1.52%
Utility Corridor	96.57	0.26%
Developed	81.26	0.22%
Successional Hardwood Forest	58.35	0.16%
Abandoned Field	48.96	0.13%
Artificial Pond	27	0.07%
Canal/Ditch	7.7	0.02%
Spoil Area	3.14	0.01%
Total Acreage	**37,197.68**	**100%**

Combined Landcover Types	**Acreage**	**Percentage**
Upland	19,356.66	52.04%
Wetland	16,809.73	45.19%
Lacustrine	1,218.09	3.27%
Riverine	142.57	0.38%
Altered	888.71	2.39%



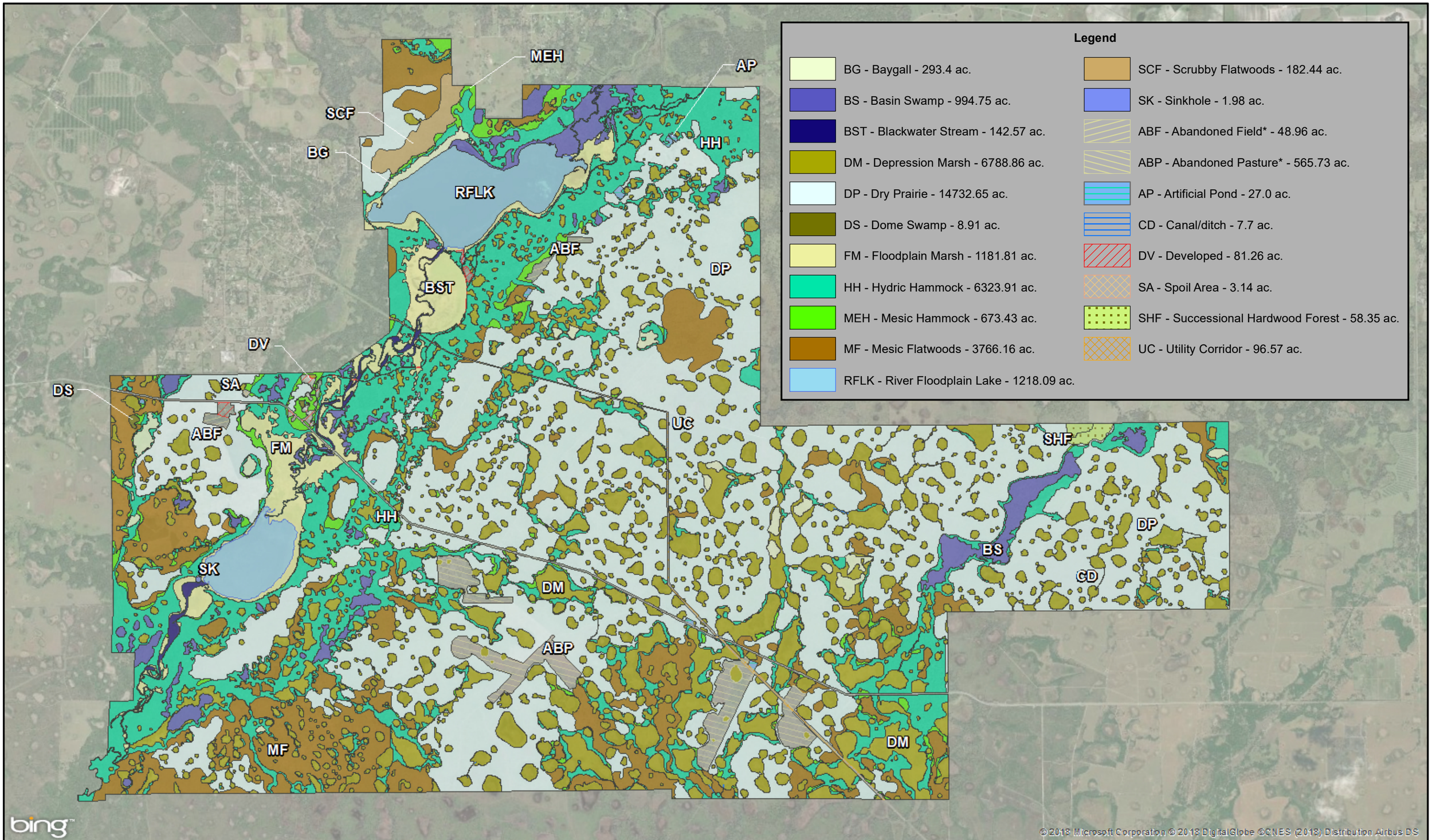
MYAKKA RIVER STATE PARK

N

0 0.5 1 2 Miles

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

MANAGEMENT ZONES MAP



MYAKKA RIVER STATE PARK

N

0 0.5 1 2 Miles

Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

NATURAL COMMUNITIES MAP

Dry Prairie

Desired future condition: Florida dry prairie will be nearly treeless shrub-grassland with species rich, herbaceous ground cover. The dry prairie will contain high plant diversity with the bulk of species present being herbaceous and low-growing. The species per square meter will range from 16 to 40 species. Shrub height will range between one and four feet, the majority of shrubs growing less than two feet tall. Shrub height greater than three feet may occur naturally along wetland edges, hammock borders or in small patches of less than 1/2 acre, very widely spaced over the landscape. Woody species cover will range from 10 to 50 percent. There will be few, if any, large trunks of saw palmetto (*Serenoa repens*) along the ground. South Florida slash pine (*Pinus elliottii var. densa*) may also be present but in extremely low densities. This corresponds with historical prairie descriptions such as those by Roland Harper (1927) and with research conducted by Steve Orzell and Edwin Bridges (1999). The desired future condition is to increase the cover of herbaceous plants while reducing the cover of shrubs, allowing for a fire return interval of one to two years (or less than 30 months). Coverage of invasive exotic plant species will be less than one percent. Based on the FNAI recommended range for dry prairie the desired future conditions, are as follows:

- Pine basal area: 0 sq. feet per acre
- Average maximum shrub height: <2 feet
- Average maximum palmetto height: <1.5 feet
- Herbaceous/grass cover: >35 percent

Description and assessment: The most extensive community type at the park is considered a globally imperiled habitat (FNAI 2010). It is characterized by low, flat topography and relatively poorly drained, acidic, sandy soil sometimes underlain by an organic horizon (Myers and Ewel 1990). The current composition of flora in the Florida dry prairie at the park is dominated by saw palmetto and shrubs such as gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), and low-lying blueberries (*Vaccinium spp*.) intermixed with various grasses (*Andropogon, Aristida and Eragrostis spp.*) and many forbs including slender flat-top goldenrod (*Euthamia caroliniana*), purple false foxglove (*Agalinis purpurea*), a variety of goldenrod species (*Solidago spp*.) and several chaffhead species (*Carphephorus spp*.).

Fire was actively excluded or suppressed in the park between 1936 and 1976, degrading the Florida dry prairie in varying degrees. As a result, oaks and South Florida slash pine have become established in the Florida dry prairie, and overall tree and shrub density has increased (Huffman and Blanchard 1991). Some dormant season (winter) burns were introduced to the park in 1974 in Big Flats Marsh and into the dry prairie/mesic flatwoods communities in 1976, and growing season (April-August) burns were initiated in 1980. Shrub height has decreased considerably since the reintroduction of fire, but shrub density is thicker than desired. The fuel conditions in most of the dry prairie will support fire after 18-20 months, however as grass and herbaceous groundcover increases, a fire return interval of one to two years (or less than 30 months) is desired.

Fire exclusion, altered hydrology, planting offsite North Florida slash pines (*Pinus elliottii var. elliottii*), and introduction of invasive exotic plants and animals have degraded the Florida dry prairie at the park. The bedding activities associated with the pine plantations and ditching to drain wetlands in the 1920s and 1930s changed the flow of water and the duration of inundation. Pine plantations introduced offsite trees to an area where few to no trees should exist. The pine plantations have been harvested over the years, but a small remnant of North Florida slash pine that were too young to harvest were in zone 1B. These trees were removed, and additional recruitment is monitored.

Mechanical treatment has reduced competition of light and encouraged the growth of native grasses and forbs. However, the increased occurrence of invasive exotic plants and animals including cogon grass (*Imperata cylindrica*), feral hogs, and red imported fire ants (*Solenopsis invicta*) have negatively impacted the dry prairie.

The alterations to plant composition through the historic suppression of fire, development of pine plantations, and numerous drainage projects caused a loss of prairie animal species such as the crested caracara (*Caracara cheriway*) and the Florida burrowing owl (*Athene cunicularia floridana*) at the park. These two species are only found east of the Mississippi River in Florida. Both species can

be found in healthy dry prairie habitat and during the 1930s and 1940s were common at the park. Although they have not made a complete recovery, in recent years both the crested caracara and the Florida burrowing owl have been observed in the park. Other listed species, including the eastern indigo snake (*Drymarchon couperi*) and gopher tortoise (*Gopherus polyphemus*), find favorable habitat in this community. The indigo snake has not been observed recently in the park.

Although there is great variation in the condition of the Florida dry prairie (from poor to good), the overall condition is considered fair.

FNAI identifies Myakka as an exemplary site for dry prairie (FNAI 2010), and has a reference site located at the park (FNAI 2009).

General management measures: Prescribed fire will continue between January and July, with the brunt of it conducted from April through July. The current fire return interval is typically between 20 to 36 months with emphasis on the lightning season, but as fuel conditions improve will be shifted towards more frequent fires.

Mechanical treatment, including roller chopping and brush-cut mowing, will continue to reduce the coverage and density of shrubs, hardwood trees and saw palmetto to optimal conditions. In addition, where feasible, improving the hydrology of the dry prairie will continue. Sheet flow will be restored by removing manmade ditches that alter the dry prairie's natural drainage and hydroperiods. Remaining offsite North Florida slash pines will be monitored for additional recruitment and removed.

An aggressive survey and treatment (management) program for invasive exotic plants will continue. Damage caused by feral hogs will be lessened by reducing their population through contract trapping and other methods.

Mesic Flatwoods

Desired future condition: Florida mesic flatwoods have the third highest plant diversity in South Florida with 457 native plant species recorded (USFWS 1999). The canopy coverage of mature mesic flatwoods ranges from 10 to 80 percent (Wade and Hofstetter 1980). In an average Southwest Florida mesic flatwoods, mature pine trees typically attain 30-41 centimeters (12-16 inches) diameter at breast height (DBH), with 23-26 meters (75-85 feet) in height (Beever and Dryden 1998). Based on the FNAI recommended range for mesic flatwoods the desired future conditions, are as follows:

- Pine basal area: 10-50 sq. feet per acre
- Average maximum shrub height: <2 feet
- Average maximum palmetto height: <3 feet
- Herbaceous/grass cover: >25 percent

Since the mesic flatwoods at the park is generally embedded within dry prairie, fire will be frequent with an optimal fire return interval consistent with that of the adjacent dry prairie of one to two years. Coverage of invasive exotic plant species will remain less than one percent.

Description and assessment: The condition of mesic flatwoods within the park ranges from poor to good, with most acreage in fair condition. The park's mesic flatwoods are similar in plant composition to dry prairie, but with a greater density of pines. Vegetation includes scattered South Florida slash pine and/or longleaf pine (*Pinus palustris*) with an understory of saw palmetto, gallberry, fetterbush, wax myrtle (*Morella cerifera*), winged sumac (*Rhus copallina*), wiregrass (*Aristida spp*.), and a variety of other grasses and herbaceous species. Mesic flatwoods generally occur in areas between 15 and 30 feet in elevation at the park. Myakka River State Park has two types of mesic flatwoods; one having South Florida slash as the dominant pine, and the other having longleaf pine as the dominant pine. Most of the South Florida slash mesic flatwoods are found south of State Road 72, within the designated wilderness preserve. The longleaf mesic flatwoods occur at Bee Island (35-40 feet ASL), at a small site on the north end of Deer Prairie Slough, and north of the Upper Myakka Lake.

During the summer, seasonal rains create extremely wet conditions. It is common to have several inches of water standing, or even flowing, during the late summer. In the longleaf pine site, standing water is less frequent. Historic hydrologic ditching has occurred in many of the areas containing

mesic flatwoods, thus altering the sheet flow of water and the duration of inundation of water. This has increased the occurrence of invading hardwood trees into the mesic flatwoods.

As with the Florida dry prairie, fire was actively excluded or suppressed at the park between 1936 and 1976, degrading the mesic flatwoods in varying degrees. In the absence of fire, hardwood tree and shrub density increased, and grasses and forbs decreased. Without fire, pine seedlings which require bare mineral soil for germination, were unable to develop. Mature longleaf pine trees are also dying in the park due to lightning strikes, a frequent occurrence. Between 1995 and 2002, Bee Island lost approximately a dozen longleaf pine trees to lightning strikes per year (Perry, personal observation 1997). Due to the previous 40 years of fire exclusion at the park, the reintroduction of frequent fires has reduced the saw palmetto height but not the density. This higher density increases the fire intensity and may reduce pine seed survival. Those seeds that do survive to become saplings usually succumb to hog rubbing. To compensate, in 2003 nearly 4,000 longleaf seedlings were hand planted in zones 1A, 4B and 5B. The success of these plantings has not been determined, but in 2018, small longleaf pine trees were observed in zone 4B.

In addition to changes in hydrology and fire frequency, the invasion of exotic plants and animals has stressed the mesic flatwoods. FLEPPC category I plants including cogon grass, and Caesarweed (*Urena lobata*) have invaded the mesic flatwoods. Feral hogs have rooted the vegetation, reduced pine recruitment, and altered the route of fire and water.

FNAI identifies Myakka as an exemplary site for mesic flatwoods (FNAI 2010), and has a reference site located at the park (FNAI 2009).

General management measures: Continue the prescribed fire program for the mesic flatwoods with an emphasis on growing season fires, with fire return intervals consistent with the dry prairie of one to two years (or less than 30 months). Continue mechanical, or other methods to reduce the coverage and density of shrubs, hardwood trees and saw palmetto, to optimal conditions. Where feasible continue improving the hydrology of the mesic flatwoods by removing barriers to sheet flow, and by filling ditches that change the natural drainage and hydroperiods. Continue an aggressive survey and treatment (management) program for invasive exotic plants. Reduce the damage by feral hogs and improve longleaf pine recruitment by decreasing the hog population through contract trapping and other methods with an emphasis on the Bee Island area.

Mesic Hammock - Prairie Mesic Hammocks

Desired future condition: Prairie mesic hammocks are isolated stands of live oaks (*Quercus virginiana*), cabbage palms (*Sabal palmetto*) and saw palmettos within a matrix of pyrogenic vegetation. Prairie hammocks form along the fringe of freshwater wetlands and prairies. Prairie hammocks are often found in ecotones between wetlands and upland communities. Historically, such hammocks form on the lee (north) side of wetlands that are protected from fire carried by the dominant southerly winds.

The preferred desired future condition of prairie mesic hammock in the park is a canopy of oaks and cabbage palms, with a mix of smaller trees with little understory. The herb layer will be sparse or patchy and consists of various graminoids. Prairie mesic hammock will be open with small components of understory ringing the edge, and little ground cover except for leaf litter. Vines, although common, will not be thick. Abundant epiphytes will be found on live oaks and cabbage palms, as these are a characteristic feature of mesic hammocks. Invasive exotic plants will be less than three percent. Feral hog damage will be eliminated due to the reduction in the hog population through contract trapping and other methods.

Description and assessment: Typically, prairie hammocks consist of live oak, laurel oak (*Quercus laurifolia*), cabbage palm and are often ringed with saw palmetto. A number of epiphytic plants are also common, including Spanish moss (*Tillandsia usneoides*), giant airplant (*Tillandsia utriculata*), golden polypody (*Phlebodium aureum*), shoestring fern (*Vittaria lineata*), resurrection fern (*Pleopeltis polypodioides*) and Florida butterfly orchid (*Encyclia tampensis*).

Populations of once abundant epiphytes, the giant airplant and cardinal airplant (*Tillandsia fasciculata*), have been reduced in the park's hammocks by Mexican bromeliad weevils

(*Metamasius callizona*), which kills the larger species of airplants resulting in the airplants being listed as imperiled species.

Prairie mesic hammock in the park is characterized by a closed canopy of hardwood species, primarily live oak and cabbage palm, and by a fairly open shrub layer and a sparse, species-poor herb layer. Herb diversity is frequently higher for epiphytes than for groundcover species. Conditions within the hammocks include dense leaf litter, high moisture levels in the litter layer, and higher humidity that make the community fire-resistant. Prairie mesic hammocks burn infrequently because of fire entering from adjacent fire-maintained communities. Infrequent, low-intensity fire is not detrimental to mesic hammocks; however, catastrophic fires, burning through in times of drought, may completely destroy some hammocks, which may then be invaded by weedy and exotic species (Alexander and Crook 1973).

Prairie mesic hammock at the park is typically found along the wetland to upland ecotone between the prairie hydric hammock of the Myakka River floodplain and other wetland communities and the mesic flatwoods or dry prairie. Isolated mesic hammocks can also be found in the fire shadow of depression marshes.

Due to 40 years of fire exclusion, most of these hammocks have expanded into the surrounding floodplain marsh, basin marsh or dry prairie and cover much more acreage than in 1948 (Huffman and Blanchard 1991). In the prolonged absence of fire in these and neighboring communities, a version of mesic hammock will expand into the adjacent community (pseudo mesic hammock), potentially reducing the fire frequency. Pseudo mesic hammocks that develop as the result of fire suppression and invasion into pyric communities usually contain species associated with the invaded community, such as saw palmetto or slash pine. The unnatural expansion due to lack of fire creates a dense hammock often with a thick understory that does not readily burn. Vines are common and often abundant, occasionally creating a solid groundcover in disturbed hammocks. There are several areas of pseudo mesic hammocks found adjacent to true prairie mesic hammock in the park.

As with many of South Florida's natural communities, the natural species diversity and composition in prairie mesic hammocks is threatened by the encroachment of exotic plant species. Exotic species compete with native plant species, including rare and endangered species, for light and nutrients and may completely overwhelm and eliminate entire vegetative strata within a plant community. Old World climbing fern has become established in a few prairie mesic hammocks. This exotic plant creates ladder fuel which allows fire to travel into the canopy. Invasive Caesarweed is also commonly found in hammock, especially in areas where hogs have rooted and disturbed the soil. Feral hogs are common in prairie mesic hammocks, where they feed on acorns in the fall and winter or on roots and seedlings in other seasons. Feral hogs pose a threat to native wildlife such as Osceola wild turkey (*Meleagris gallopavo osceola*), white-tailed deer (*Odocoileus virginianus*), and Florida black bear (*Ursus americanus floridanus*) by intensely competing for mast, particularly during a year of mast failure. Their consumption of acorns, roots, and seedlings interferes with natural regeneration of trees and shrubs. Rooting by hogs severely disturbs soil structure and creates conditions that encourage exotic plant invasion. The rooting disturbance also alters the pattern of fire and hydrologic flow. Although there is considerable damage by hogs in this community, hammocks in the park are in good to excellent condition.

General management measures: Continue to mechanically treat the pseudo prairie mesic hammocks containing a dense understory with mowing, where fire alone has not reduced the hardwoods. It is preferred to mechanically treat at least two weeks prior to prescribed burning to allow for drying of the vegetation which will encourage the fire to penetrate deeper than it typically would. The unnatural expansion may be discouraged by removal of the hardwoods. To prevent new pseudo mesic hammock from developing, allow fire to penetrate the ecotone of the system. Continue an aggressive survey and treatment (management) program for invasive exotic plants. Decrease the damage caused by feral hogs by reducing their population through contract trapping and by other methods.

Scrubby Flatwoods

Desired future condition: Typical plants include longleaf pine, South Florida slash pine,

myrtle oak (*Quercus myrtifolia*), saw palmetto, staggerbush (*Lyonia fruticosa*) and wiregrass. Scrubby flatwoods are inhabited by many of the same rare animal species found in scrub. These include Florida scrub-jay (*Aphelocoma coerulescens*), eastern indigo snake, gopher tortoise, and associated tortoise commensal species such as the gopher frog (*Lithobates capito*).

Natural fires rarely burn all of this community at once, and create a mosaic of scrub habitat types with differing fire return intervals. Therefore, there is no single way a natural scrub or scrubby flatwoods should always appear. The desired condition is to keep the scrubby flatwoods suitable as early successional scrub-jay habitat with oaks and shrubs averaging less than 5.5 feet tall, and having less than two trees greater than 15 feet tall per acre. (FWC 2010).

Description and assessment: Scrubby flatwoods occur along a line of ridges running from northeast to southwest, just northwest of Upper Myakka Lake and small area north of Deer Prairie Slough and the Oak Grove primitive camping area. The site north of Upper Myakka Lake is an open-canopy forests having widely scattered pine trees, a sparse scrubby understory with small scrub oak pockets dispersed throughout, fairly contiguous and even distribution of saw palmetto, and few small bare sand openings. Principal canopy species are longleaf pine and South Florida slash pine. The shrub layer consists of one or more of the four scrub oaks: sand live oak (*Quercus geminata*), turkey oak (*Quercus laevis*), myrtle oak, and Chapman's oak (*Q. chapmanii*), with typical shrubs of mesic flatwoods including saw palmetto, gallberry, coastalplain staggerbush, fetterbush, and deerberry (*Vaccinium stamineum*). Grasses include wiregrass, broomsedge bluestem, and little bluestem (*Schizachyrium scoparium*); dwarf shrubs include dwarf live oak, dwarf huckleberry (*Gaylussacia dumosa*), gopher apple (*Licania michauxii*), and shiny blueberry (Vaccinium myrsinites). A variety of forbs, many typical of drier types of mesic flatwoods, are present, including coastalplain honeycomb-head (*Balduina angustifolia*), narrowleaf silkgrass (*Pityopsis graminifolia*), and Chapman's goldenrod (*Solidago odora var. chapmanii*). The small 5-10 acre area of scrubby flatwoods near the Oak Grove Campsite has a more continuous coverage of scrub oaks and shrubs, a lower percentage of saw palmetto, a few bluejack oak (*Quercus incana*) and scrub hickory (*Carya floridana*) in addition to the more prevalent myrtle and sand live oaks. There are also a few bare sand patches scattered in the area.

Much of the planted North Florida slash pine north of the Upper Myakka Lake was removed in 2011 and the southwest corner of zone 1B, with most of these being mowed with a tree cutter in 2016. Some mature slash pine were left in the northwest corner of zone 1A pending a correct subspecies determination. In 2003, longleaf pine seedlings were planted in the scrubby flatwoods in zone 1A.

Florida scrub-jays have historically resided north of Upper Myakka Lake. They were last observed in zone 1A in December 2005. The acreage of scrubby flatwoods at the park is not enough to sustain a population of scrub-jays long term, but could support a few families. Exotic plants such as cogongrass have invaded small areas of the scrubby flatwoods. The park's scrubby flatwoods are rated as being in fair to good condition.

General management measures: Monitor for recruitment of North Florida Slash Pine. Since the scrubby flatwoods is embedded within the dry prairie the scrubby flatwoods will be treated with prescribed fire at the same interval as the adjacent dry prairie. This should allow it to burn in a mosaic fashion, allowing for a variation of number of years between fires. The majority of the scrubby flatwoods will carry fire at an interval of 4 to 8 years. The exotic plants will continue to be monitored and treated as needed.

Basin Swamp

Desired future condition: The flow of water in the basin swamps will be unimpeded. The natural boundary of the basin swamps will return to pre-fire exclusion configurations. Fire will be allowed to burn from the adjacent pyric natural communities to the edge of the basin swamp. Coverage of invasive exotic plant species will be less than three percent. The invasion of Old World climbing fern along the interior of the basins will be halted and if possible eliminated. There will be little to no damage or disturbance by feral hogs.

Description and assessment: The park contains several basin swamps. Examples are Deer Prairie Slough, the largest, located in the eastern section of the park and Vanderipe

Slough, located west of the park entrance. The Deer Prairie Slough basin includes some very large swamp tupelo (*Nyssa biflora*), red maple (*Acer rubrum*), swamp bay (*Persea palustris*), cabbage palm, and other trees with an affinity for frequently flooded areas. The outer edge of the Deer Prairie Slough basin developed as a result of fire suppression in the marsh community, expanding beyond its natural boundaries. Therefore, with the continued burning effort, the outer edge will be pushed back to its historic boundaries. Basin swamps burn infrequently, perhaps once every 25 years, at which time the accumulated organic matter is reduced and the system can begin again if the natural hydrological pattern is maintained (Duever 1986). The Deer Prairie Slough basin swamp has not had fire infiltrate since the opening of the park, with the exception of the southwest corner of the basin swamp in zone 8 which was impacted by fire in 2012.

Today, Deer Prairie Slough drains an area of approximately 33 square miles beginning north of Myakka River State Park through the Carlton Reserve, with a confluence with the Myakka River north of Warm Mineral Springs. Historically, it was a smaller system that joined other seasonal ponds only during periods of high water. South of the park, it was channelized during the 1950s for cattle grazing that significantly altered hydrological regimes and plant communities associated with it (Perry 1997). The slough was successfully restored south of the park by backfilling the channel in 2001-02.

Old World climbing fern and West Indian marshgrass (*Hymenachne amplexicaulis*) are established along portions of the Deer Prairie Slough basin swamp. Hogs forage in this community when there is no standing water in it. An invasive exotic insect, the Mexican bromeliad weevil (*Metamasius callizona*), has become established on native bromeliads, killing many of them in the tree canopy.

Basin swamp areas provide roosting and breeding sites for many wading birds at the park. Ibis, egret, and heron roosts may be found along the southern shore of the Lower Myakka Lake and the northeast shore of Upper Myakka Lake. A large rookery area in Deer Prairie Slough, inactive for many years in the 1970s, is again being used by herons and egrets, although in lesser numbers. Basin swamps in the park are presently in good to excellent condition.

General management measures: Exotic plants including Old World climbing fern and West Indian marshgrass along the interior of the slough and cogongrass on the edge of the basin swamp are monitored and treated yearly when possible. The water flow is somewhat constricted by Railroad Grade and the road that separates zones 9B and 24A. Impediments from the park roads will be addressed with best management practices which may include, but are not limited to installation of additional culverts. Fire will continue to be utilized to control the expansion of basin swamp associated vegetation beyond its natural boundaries.

Baygall

Desired future condition: A baygall is a forested, peat-filled seepage depression at the base of sandy slopes, edges of floodplains, and in stagnant drainages. Deep peat soils and seepage from uplands or adjacent wetlands work to maintain a constantly saturated but rarely flooded environment. Constant damp conditions limit decomposition of organic material, which in turn keeps available nutrient levels low (FNAI 2010). They are dominated by sweetbay (*Magnolia virginiana*), swamp bay, and loblolly bay (*Gordonia lasianthus*) with an understory of shrubs, ferns, and sphagnum moss. The dominant baygall species are fire-intolerant, and a mature canopy indicates the lack of destructive fire for many years.

Although, the saturated soils and humid conditions within baygalls typically inhibit fire, droughts may create conditions that allow them to burn catastrophically (FNAI 2010).

Baygalls will have intact soils and peat layers, with little to no damage or disturbance by feral hogs. There will be no hydrologic alterations that reduce soil and peat saturation. The coverage of invasive exotic plants will be less than three percent.

Description and assessment: There are a few small areas of baygall in the park. The largest baygall is located on the northwest slope of the basin in which Upper Myakka Lake lies. The baygalls of Myakka River State Park possess an open to dense tree canopy containing loblolly bay, sweetbay, red maple, and/or swamp bay. The understory is comprised of fetterbush, dahoon holly (*Ilex cassine*), wax myrtle, and/or Virginia willow (*Itea virginica*). Vines, especially laurel

greenbrier (*Smilax laurifolia*), coral greenbrier (*S. walteri*), and muscadine (*Vitis rotundifolia*), may be abundant and contribute to the often-impenetrable nature of the understory. Herbs are absent or few, and typically consist of ferns such as cinnamon fern (*Osmunda cinnamomea*), netted chain fern (*Woodwardia areolata*), and Virginia chain fern (*W. virginica*). Sphagnum mosses (*Sphagnum spp*.) are common.

Rooting by feral hogs has caused damage to the substrate, which may impede successful tree recruitment. Because of the hog damage to this community, it is only in fair condition.

General management measures: As with other wetlands, baygall communities are best managed with a landscape level focus on maintaining high quality adjacent natural uplands and upland-wetland ecotones. When possible, fires from adjacent communities should be allowed to extinguish naturally at the edges of the baygall to prevent encroachment of bay species into other communities and to maintain open, grassy wetland/upland ecotones (FNAI 2010). The maintenance of natural hydrology is critical to wetland communities, therefore if there are future impediments, they will be addressed with best management practices. Invasive exotic plants will continue to be monitored and treated. Feral hogs will be removed from the system whenever possible.

Depression Marsh

Desired future condition: Depression marshes typically occur in landscapes occupied by fire-maintained matrix communities such as mesic flatwoods, dry prairie, or sandhill. The concentric zones or bands of vegetation are related to length of the hydroperiod and depth of flooding. Depression marshes usually derive most, if not all, of their water from runoff from the immediately surrounding uplands. They have a normal hydroperiod of 50 to 200 days. Periodic fires, typically at the frequency of adjacent upland pyric natural communities, maintain these seasonally wet depressions by inhibiting invasion by trees and shrubs (FNAI 2010). Without fire, tree invasion and peat accumulation would convert a depression marsh into a forested wetland.

Description and assessment: The depression marshes in the park may be inundated seasonally or year-round by precipitation. They are typically shallow, generally round, or elliptical depressions and may be vegetated with concentric bands of hydrophytic herbaceous plants. Depending upon the depth and slope of the depression, an open water zone with or without floating plants may occur at the center. Within the park, the character and plant communities of the thousands of marshes, both large and small, are directly governed by the depth and extent of the solution features they occupy and the porosity of the soil. Vegetation associated with the park's herbaceous wetlands includes pickerelweed (*Pontederia cordata*), maidencane (*Panicum hemitomon*), sandweed (*Hypericum fasciculatum*), sawgrass (*Cladium jamaicense*), various sagittaria (*Sagittaria spp.*), spatterdock (*Nuphar advena*), Tracy's beaksedge (*Rhynchospora tracyi*), and rosy camphorweed (*Pluchea baccharis*). Several species of frogs and salamanders breed regularly in depression marshes, and these constitute an important part of the food supply of wading birds and snakes, including the rare eastern indigo snake. Other rare species using this habitat include the Florida sandhill crane (*Grus canadensis pratensis*) and round-tailed muskrat (*Neofiber alleni*). Wading birds, in addition to feeding in depression marshes, use clumps of willows or other trees in the center for roosting or nesting (FNAI 2010).

For the most part, the depression marshes in the park are in fair to excellent condition with a very small portion in poor condition. The depression marshes assessed as poor have had fire excluded in the past, allowing woody species to invade. In addition to the woody invasion, invasive exotic plants including torpedograss (*Panicum repens*), Peruvian primrose willow (*Ludwigia peruviana*), and West Indian marshgrass have been established. Invasive plant incursion has been made easier due to ground disturbance by feral hogs.

In the 1900s, several depression marshes fell victim to ditching, which was meant to drain the wetlands for additional cattle grazing or mosquito control. Within the last 10 years, many of the ditches have been filled or blocked, allowing for a more natural hydroperiod of the wetlands and hydrologic sheet flow over the landscape during the rainy season. A number of ditches still require filling or plugging to repair the natural hydroperiod of the marshes.

Several depression marshes (approximately three acres total) within the park were planted with bald cypress (*Taxodium distichum*) by the CCC. Four of these sites are expected to be restored to depression marshes with repeated treatment by fire. Depression marshes will be monitored to ensure there is no additional expansion of cypress. The sixth site is unlikely to expand due to its location within the prairie hammock north of Ranch House Road and will be maintained as a dome swamp.

General management measures: Fires in surrounding communities are allowed to burn into depression marshes and extinguish naturally or burn through them. To maintain desired conditions of depression marshes, they should occasionally be burned under drought conditions, which will require exemption to drought burning restrictions. Invasive exotic plants are monitored and treated. New methods of treatment of deeper interior infested sites are being explored. Any remaining ditches that drain the wetlands and alter the hydroperiod are to be filled or blocked where feasible.

Dome Swamp

Desired future condition: The characteristic dome shape is created by smaller trees that grow in the shallower waters of the outer edge, while taller trees grow in the deeper water in the interior of the swamp (FNAI 2010). The dome swamp will have an open understory devoid of all exotic grasses and a re-establishment of bald cypress trees (*Taxodium distichum*) in the interior as well as around the perimeter.

Description and assessment: Six depression marshes (approximately three acres total) within the park were planted with off-site bald cypress by the CCC. Three of the sites have formed domes. The most significant dome is south of State Road 72 along a historic pioneer trail. Its natural occurrence is questionable, although it was present prior to 1940 and the trees appear to be randomly distributed. Prior to 2008, the cypress dome interior had not burned in more than 30 years. In 2008, a prescribed fire burned through the dome, which was not holding water. The fire scorch reached up to 15 feet on several bald cypress. The duff continued to burn for more than a week. The fire along with an extended period of drought had a negative effect on the dome, killing many trees in the interior. West Indian marshgrass became established and is currently found throughout the dome. Fortunately, the Jameson's waterlily (*Nymphaea jamesoniana*), listed as state endangered, was not impacted by the fire. This dome is in poor condition. Depression marshes will be monitored, and cypress removed, as needed, to prevent additional cypress domes from forming.

General management measures: Treat West Indian marshgrass and all other invasive exotics. Allow fires to burn the perimeter when adequate soil moisture or water is in the interior of the dome to prevent a duff or muck fire.

Floodplain Marsh

Desired future condition: Floodplain marsh is a wetland community occurring in river floodplains and is dominated by herbaceous vegetation and/or shrubs. Sand cordgrass (*Spartina bakeri*), barnyard grass (*Echinochloa spp*.), maidencane, smartweed (*Polygonum spp*.), and tickseed (*Coreopsis spp.*) are common dominants, but various other herbs may be found distributed along a hydrologic gradient. Broadleaf emergents and floating plants, particularly bulltongue arrowhead (*Sagittaria lancifolia*), bladderworts (*Utricularia spp*.), and pickerelweed occupy the deepest, most frequently flooded sites, and mixed herbaceous stands are found in the somewhat higher portions of the marsh. While the progression from high to low marsh occurs generally from the upland edge to the river edge, these vegetation patches may also be scattered throughout the marsh, which provides a diversity of habitats beneficial to wildlife. Floodplain marsh will contain less than five percent invasive exotic plants.

Description and assessment: Floodplain marsh occurs between the Upper and Lower Myakka Lakes and along the Myakka River. It is an herbaceous wetland on the river floodplain. Much of this community is dominated with two exotic grasses: Paragrass (*Urochloa mutica*) and West Indian marshgrass. West Indian marshgrass was observed in Tatum Sawgrass in the 1970s and became dominant in the park's floodplain marsh after 1987. Paragrass was established much earlier. In 1903, the Ocala Banner reported that a 4000-acre tract in the Myakka Valley was to be planted with paragrass for cattle grazing. Park staff treat this community with prescribed fire to reverse the trend towards succession to hydric

hammock and to control the exotic marsh grasses. Over the last few years, the eggs from the exotic island apple snail (*Pomacea maculata*), have been observed on vegetation in the floodplain marsh. The overall condition of the floodplain marsh is fair.

Starting in 2013 in partnership with FWC, the exotic grasses in approximately half of Big Flats Marsh were aerially treated with herbicides and then burned. Re-sprouting exotic grasses in the treatment area were then retreated with herbicides. The results of this approach were promising with native wetland species dominating post-treatment.

General management measures: The floodplain marsh is treated with fire when conditions warrant. Fire maintains a grassy and herbaceous species composition and excludes hardwood trees and shrubs. Newly established invasive exotics such as sicklepod (*Senna obtusifolia*) are treated. Because both paragrass and West Indian marshgrass have been well established for a long period of time, research is being conducted with the FWC's Invasive Plant Management Section and SWFWMD to determine best management practices. Monitor and remove when possible the invasive, exotic island apple snail and eggs.

Hydric Hammock - Prairie Hydric Hammock

Desired future condition: Prairie hydric hammocks are stands of live oaks (*Quercus virginiana*), laurel oaks (*Quercus laurifolia*), American elm (*Ulmus americana*), and cabbage palms. Prairie hydric hammocks form along the fringe of freshwater wetlands and in the river floodplain. Prairie hammocks are often found in ecotones between wetlands and upland communities. Historically, such hammocks form on the lee (north) side of wetlands that are protected from fire carried by the dominant southerly winds.

The desired condition of prairie hydric hammock in the park is a canopy dominated by oaks and cabbage palms, with a mix of other tree species with little understory. The herb layer will be sparse or patchy and consists of various graminoids. Under the canopy, hydric hammocks will be open with small components of shade and flood tolerant understory vegetation, and little ground cover except for leaf litter. Vines, although common, will not be thick. Abundant epiphytes will be found on live oaks and cabbage palms, as these are a characteristic feature of hammocks. Invasive exotic plants will be less than one percent. Feral hog damage will be eliminated due to the reduction in the hog population through contract trapping and other methods.

Description and assessment: Typically, prairie hydric hammocks consist of live oak, laurel oak, cabbage palm located along the Myakka River corridor on frequently flooded wetland soils. A number of epiphytic plants are also common, including Spanish moss, giant airplant, golden polypody, shoestring fern, resurrection fern and Florida butterfly orchid.

The prairie hydric hammock transitions to prairie mesic hammock at higher elevation on upland soils. Due to virtually 40 years of fire exclusion, hammocks have expanded into the surrounding floodplain marsh, basin marsh or dry prairie. See the discussion about pseudo mesic hammocks that develop as the result of fire suppression in the prairie mesic hammock description.

Old World climbing fern has become established in a few prairie hydric hammocks. Feral hogs are common in prairie hydric hammocks, where they compete for acorns with other wildlife. Rooting by hogs severely disturbs soil structure and creates conditions that encourage exotic plant invasion, and alters hydrologic flow. Although there is considerable damage by hogs in this community, hammocks in the park are in good to excellent condition.

General management measures: Allow fire to penetrate the ecotone of the system. If there is evidence of alteration of the natural hydrologic flow creating a change in saturation or hydroperiod, it should be addressed. Continue an aggressive survey and treatment program for invasive exotic plants. Decrease the damage caused by feral hogs by reducing their population.

River Floodplain Lake

Desired future condition: Although the occurrence of vegetation in the lakes fluctuate over time, it is preferred that there be a portion of the lakes that contain aquatic plants for the benefit of the native fish and birds. When present, typical plants might include white waterlily (*Nymphaea odorata*), yellow waterlily, spadderdock, frog's bit (*Limnobium spongia*), bladderwort (*Utricularia spp*.),

maidencane and softstem bulrush (*Schoenoplectus tabernaemontani*). Native submerged aquatic plants should also be present, including small pondweed (*Potamogeton pusilla*) and coontail (*Ceratophyllum demersum*). Exotic fish and exotic snail populations will be low, and healthy populations of largemouth bass and other native fish and snail species will be present.

Description and assessment: Two shallow depression lakes, the Upper Myakka Lake and Lower Myakka Lake are found within the park. Both lakes have wide-open water. The primary water source is rainfall with additional input from runoff and seepage from surrounding uplands. The water depth varies from approximately 2 feet to 6 feet, depending on rainfall.

The vegetation within the lakes has fluctuated greatly over the last 70 years. During the period between 2001 and 2010, little native aquatic vegetation occurred. In the spring of 2010, yellow waterlily (*Nymphaea mexicana*) was present and continues to persist along with a few other aquatic plants. In the past, both lakes have been inundated with invasive exotic plants such as hydrilla (*Hydrilla verticillata*) and water hyacinth (*Eichhornia crassipes*), but with the efforts made by SWFWMD, the aquatic exotics are being controlled. Although there were a number of years when vegetation in the Upper Myakka Lake was sparse, currently found are smartweed (*Polygonum setaceum*), softstem bulrush and yellow waterlily. Paragrass and West Indian marshgrass line the edge of lake. Invasive exotic fish including blue tilapia (*Oreochromis aureus*), brown hoplo (*Hoplosternum littorale*), sailfin suckermouth catfish (*Pterygoplichthys spp*.) and walking catfish (*Clarias batrachus*) are well established in the lakes. In 2012, an exotic snail, the island apple snail was found in the Upper Myakka Lake. It is now residing in both the Upper and Lower Myakka Lakes. Common reed (*Phragmites australis*), although considered native, has grown into large bands around 3 sides of the Upper Myakka Lake. Agricultural activities, spray irrigation fields and an effluent treatment system along Howard Creek are possible contributors to the poor water quality of the lakes (Lowrey et al. 1989). These lakes serve as two of the many detention areas within the Myakka River watershed that are nutrient-enriched and exhibit seasonally low dissolved oxygen levels. The condition of the lakes is fair to good. *General management measures:* SWFWMD continues to treat the invasive exotic plants found in the lakes. Research is being conducted by the FWC's Invasive Plant Management Section and park staff to determine the best management practice for the reduction of paragrass and West Indian marshgrass along the edge of the lakes. The population trends of the exotic fish are being periodically monitored. Water quality samples are taken on a monthly basis as part of the University of Florida's Lakewatch Program. During warm months, the lakes are surveyed for island apple snail eggs. Once found, they are removed. Staff will continue to research and implement best management practices for the reduction of exotic aquatic wildlife.

Sinkhole Lake

Desired future condition: The sinkhole lake is a deep, funnel-shaped depressions in a limestone base. The desired future condition of the sinkhole is to maintain its integrity against erosion.

Description and assessment: Sinkhole lakes are considered endangered in Florida (FNAI 2010). The sinkhole lake at the park is known as Deep Hole. Deep Hole is engulfed by Lower Myakka Lake during the rainy season but can be a stand-alone feature when water levels in the Lower Myakka Lake are low. There is no vegetation in Deep Hole. Research conducted by Sarasota County in 2012 analyzed water quality parameters and examined its physical properties. It was determined that Deep Hole contained only fresh water, with little to no evidence of spring flow. The water quality was stratified, with poor water quality below 30 to 40 feet. The water at depth is anoxic, cold, turbid and rich in ammonia and sulfur. Water near the surface is dark and rich in iron. The water overall was rich in phosphorus. The temperature of the water is uniformly 58 degrees below 40 feet and the depth is estimated at 131 feet (Culter et al. 2013). Sinkhole lakes are often threatened by erosion, pollution and other threats to the aquifers with which they are connected.

General management measures: There is little active management needed except to limit pedestrian and boat traffic that disturbs wildlife. Deep Hole is an important dry season refuge for American alligators (*Alligator mississippiensis*) and other species, so human disturbance should be limited.

Blackwater Stream

Desired future condition: The desired condition for the Myakka River is a fairly open blackwater stream, devoid of exotic vegetation and exotic fish and wildlife. The river will contain both emergent and floating aquatic vegetation along shallower and slower moving sections, but their presence is often reduced because of typically steep banks and considerable seasonal fluctuations in water level. Typical plants will include goldenclub (*Orontium aquaticum*), smartweed (*Polygonum spp*.), sedges (*Cyperus spp*.), maidencane, and water paspalum (*Paspalum repens*). Typical animals include longnose gar (*Lepisosteus osseus*), gizzard shad (*Dorosoma cepedianum*), lake chubsucker (*Erimyzon sucetta*), channel catfish (*Ictalurus punctatus*), golden topminnow (*Fundulus chrysotus*), blue-spotted sunfish (*Enneaccanthus gloriosus*), Everglades pygmy sunfish (*Elassoma evergladei*), redear sunfish (*Lepomis microlophus*), black crappie (*Pomoxis nigromaculatus*), largemouth bass, American alligator, common snapping turtle (*Chelydra serpintina*), peninsula cooter (*Pseudemys peninsularis*), common musk turtle/stinkpot (*Sternotherus odoratus*), Florida water snake (*Nerodia fasciata pictiventris*), and North American river otter (*Lontra canadensis*).

There will be less than five percent cover of invasive, exotic plants. The invasive aquatic fauna will be reduced to a level that will not affect the natural community. The damage by feral hogs will be significantly reduced by impacting the population through contract trapping and other methods.

Description and assessment: Twelve miles of the Myakka River and less than one mile of Clay Gully, flow within the park. At river mile 43, just north of the park, the river channel splits into Clay Gully and the Myakka River. Both watercourses run into Upper Myakka Lake at approximately river mile 39. There is a concrete weir that blocks a portion of the river from the Upper Myakka Lake. Culverts to one side of the weir, when open, allow water to flow through. These culverts have deteriorated and are no-longer functioning, and in 2016 significant erosion occurred east of the culverts, separating a popular observation deck from shore. Funding for a feasibility study is being pursued to determine options for restoration.

Downriver from the Upper Myakka Lake, a large marsh known as Big Flats is present. Below State Road 72, the river enters the park's wilderness preserve at approximately river mile 36. At this point, the hammock closes in on the river channel for a short stretch before again opening into marshes at the northern end of Lower Myakka Lake. Downriver from the lower lake, the hammock again closes in on the river channel. The river is a state-designated wild and scenic river within Sarasota County.

The blackwater stream banks are lined with paragrass and West Indian marsh grass. Other aquatic exotics including water hyacinth and water lettuce (*Pistia stratiotes*) which on occasion block the flow of the blackwater stream. Invasive exotic fish including blue tilapia, brown hoplo and walking catfish are well established in the river. The island apple snail can also be found in the river. Florida manatees are now observed annually in the park during high water events in the river. The assessment of the blackwater stream is poor to fair due to the exotic invasion.

General management measures: SWFWMD continues to treat the invasive exotic plants found in the river. The population trends of the exotic fish are being periodically monitored. Staff will research and implement best management practices for the reduction of exotic aquatic wildlife. Research should be completed on the ecological effects of the concrete weir and feasibility of removal. If research and the proposed feasibility study shows removal is warranted, the weir should be removed.

Altered Landcover Types

Developed

Desired future condition: Development will not detract from, nor overshadow the splendor of surrounding natural and cultural resources, and minimize impact to the viewshed of the Myakka Prairie and the Myakka Wild and Scenic River. Development will be integrated in such a way as to enhance visitor experiences and provide essential infrastructure. Cover from invasive exotic plants should be less than six percent.

Description and assessment: Parking lots, buildings, maintained lawns, campgrounds, playgrounds, paved roads, recreational, and residential areas are the developed areas.

General management measures: Maintain structures as needed. Treat exotic plants and remove feral hogs.

Canal/Ditch

Desired future condition: Canals and ditches that cause an alteration in the sheet flow of water and in hydroperiod of the marshes will be filled or plugged.

Description and assessment: Drainage ditches were used to connect wetlands to move water off the land for cattle grazing and mosquito control. Several ditches in the Florida dry prairie that were connecting depression marshes have been filled or blocked to restore natural sheet flow across the prairie. There still exists a small number of ditches that need to be plugged.

General management measures: When appropriate, ditches and canals are filled by pushing the adjacent berm materials back into the previously excavated channels.

Artificial Pond

Desired future condition: The park's one artificial pond is functioning as a natural pond, fulfilling ecological functions while supporting native aquatic vegetation and providing habitat for aquatic wildlife. Therefore, there is no need to remove or alter it except to remove invasive exotic plants.

Description and assessment: The artificial pond is a 4-acre rectangle. It is not connected to any other wetlands, and contains many of the same plant species that a natural depression marsh in the park would have, including pickerelweed, maidencane and sandweed. It is also home to the same aquatic wildlife also found in natural wetlands.

General management measures: Staff will continue to treat invasive exotic plants when present.

Pasture/Field – Abandoned

Desired future condition: Restoration of the abandoned pasture and field back to the original natural community, whether Florida dry prairie or mesic flatwoods, is the long-term goal. A restoration strategy must be developed for this extensive project.

Description and assessment: There are more than 560 acres of abandoned pasture scattered throughout the park, most of which are located south of State Road 72. A majority of the abandoned pastures can be found on the portion of the park formerly known as the "Myakka Prairie". The pastures are largely comprised of bahiagrass, dogfennel, and wax myrtle. Invasive exotic plants have been found in the pastures, including cogongrass, tropical soda apple (*Solanum viarum*), and twoleaf nightshade (*Solanum diphyllum*). The pastures have been abandoned for more than two decades, and as a result, native early successional shrub and tree species including wax myrtle, silverling (*Baccharis glomeruliflora*), groundsel tree (*Baccharis halimifolia*), and other native species have recruited into these areas.

General management measures: The pasture is burned on the fire return interval of the surrounding natural communities in adjacent management zones, usually every 2 to 4 years. On occasion, the pastures are mowed to improve fire movement. Invasive exotic plants are monitored and treated as needed. A phased restoration strategy will be developed to convert pasture back to the biologically diverse natural community formerly found there.

Spoil Area

Desired future condition: All FLEPPC Category I and II exotic plants are removed. Native plants found in the adjacent unspoiled area are established. The ground is leveled to the surrounding grade.

Description and assessment: The area was an old sandpit located near Vanderipe Slough approximately three acres in size. The ground has been disturbed, creating mounds approximately four to six feet tall. There are a wide variety of FLEPPC Category I and II exotic invasive plants that reside in the area, including Old World climbing fern, cogongrass, Guineagrass (*Urochloa maxima*) and air potato (*Dioscorea bulbifera*) and very little native ground cover.

General management measures: Continue to treat invasive exotic plants to prevent expansion into the adjacent natural communities.

Successional Hardwood Forest

Desired future condition: Closed-canopied forest dominated live oak, often with remnant pines. These forests are either invaded natural habitat (i.e., mesic flatwoods or scrubby flatwoods) due to lengthy fire-suppression or old fields that have succeeded to forest. The subcanopy and shrub layers of these forests are often dense and dominated by smaller individuals of the canopy species. Successional hardwood forests can contain remnant species of the former natural community

Description and assessment: This 20-acre site was once an old homestead or animal paddock in MR-06 west of Deer Prairie Slough. The area was mostly clear of vegetation in the 1940s, with a windrow of trees around sections of the perimeter. These abandoned corrals have subsequently been invaded by live oak and allowed to mature. The understory has various pasture grasses like Bahia grass with a few saw palmettos in the midstory. The canopy has epiphytes similar to those seen in the park's hydric and mesic prairie hammocks. The successional hardwood forest resembles the park's mesic hammock with more openings in the canopy allowing more light to groundcover vegetation, and there are fewer cabbage palms.

General management measures: In general, this area will be monitored and treated for exotic plant and animal species and allowed to burn with the surrounding dry prairie, mesic or scrubby flatwoods. Restoration of these forests, if decided upon later, includes mechanical tree removal and reintroduction of fire. Where characteristic herbaceous species (e.g., wiregrass) have been lost, reintroduction via seed or plants may be necessary to restore natural species composition and community function.

Utility Corridor

Desired future condition: The footprint will be limited. The invasive exotic plants growing in and along the corridor will be reduced to less than five percent. Feral hog populations will be significantly reduced, eliminating hog-related damage.

Description and assessment: There are 3 utility corridors in the natural areas of the park. The smaller utility corridor runs into Big Flats marsh. The other two, run along Powerline Road and South Powerline Road. The Powerline and South Powerline corridors are used as access roads. There are several invasive exotics growing in and along the roads, including torpedo grass, rose natalgrass and heartland sida. Several low water crossings have been installed along the powerline to improve sheet flow from north to south. Feral hogs cause damage by uprooting the substrate of the dirt roads along the utility corridors.

General management measures: Staff will monitor and treat invasive exotics, and will limit the footprint of utility corridors.

Natural Communities Management Program

Goal: Restore and maintain the natural communities/habitats of the park.

The DRP practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as smaller scale natural community improvements. Following are the natural community management objectives and actions recommended for the state park.

Prescribed Fire Management

Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystems. Prescribed burning increases the abundance and health of many wildlife species. A large number of Florida's imperiled plant and animal species are dependent on periodic fire for their continued existence. Fire -dependent natural communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels.

All prescribed burns in the Florida state park system are conducted with authorization from the FDACS, Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the FFS.

The park contains several natural communities that rely on fire to maintain its plant composition and structure. Within these communities exist flora and fauna that could not persist without fire. The fire dependent

communities include Florida dry prairie, mesic flatwoods and scrubby flatwoods. Florida dry prairie and mesic flatwoods cover the greatest area of the park.

Florida dry prairie is the largest fire-dependent community in the park. The natural fire frequency in Florida dry prairie is approximately 1 to 2 years. The higher frequency of fire, followed by the long hydroperiod are probably the primary factors that limit pine recruitment (FNAI 2010). When fire regimes are altered or fires are suppressed, saw palmetto can proliferate, leading to significant changes in the ecosystem, particularly the herbaceous vegetation (Willcox and Guiliano 2010). An increase of pine, hardwoods, and palmetto, with a decrease in grasses and herbaceous plants, was the result of fire suppression for more than 40 years in the park. Fire-dependent species such as the state-listed many-flowered grasspink and the pine lily were not able to survive the thick overstory that ensued. Both plants require open ground and nutrient reloading that occurs after a fire. Another result of fire exclusion was the elimination of the state and federally endangered Florida grasshopper sparrow from the park. The Florida grasshopper sparrow is a ground-inhabiting sparrow endemic to the Florida dry prairie, requiring open grassy areas to nest and to forage (Pranty and Tucker 2006). Alterations to the habitat due to changes to fire seasonality and frequency, and alterations of hydrology are the primary causes of its decline. It is unlikely that Florida grasshopper sparrows will return to the park due to their extremely low population and the immense distance from where they are currently found. However, the park has two other bird species that have more promising futures. During the period of fire exclusion, the crested caracara (federally threatened) and the Florida burrowing owl (state threatened) were not observed residing in the park. Thanks in part to the reintroduction of fire, both the crested caracara and the burrowing owl have returned to the park's dry prairies. Because of decades of fire suppression in Myakka's dry prairie, and the current density of woody shrubs and saw palmetto the minimum successful fire return intervals achieved are 18 months to two years. However fuel loads, weather conditions, season of most recent burn, and other factors may affect prescribed fire goals; a longer FRI may sometimes occur for an individual management zone containing dry prairie. As fuel conditions improve through mechanical treatment and frequent fire during dry growing-season conditions, the optimum fire return interval would be less than 30 months.

Mesic flatwoods are the park's second largest upland fire-dependent natural community. Mesic flatwoods require frequent fire; all of its constituent plant species recover rapidly from fire and several species require fire to reproduce. South Florida slash and longleaf pines have thick bark to protect them from fire, and their seeds need the mineral-rich soil and open sunlight that fire provides to germinate. Both pine species undergo a grass stage for several years after germination that is resistant to fire. Wiregrass, along with a number of other characteristic herbs such as whitetop aster (*Oclemena reticulata*) and many-flowered grasspink, requires fire to flower (FNAI 2010). Without fire in mesic flatwoods, increases in saw palmetto height, cover, and density have become a concern, potentially resulting in the loss of many grass and forb species and causing declines in the species-rich herbaceous ground layer (Wade et al. 1980; Huffman and Blanchard 1991; Robbins and Myers 1992; Olson and Platt 1995 as cited by Willcox and Guiliano 2010). Such changes threaten the integrity of pine flatwoods and their suitability for many wildlife species of conservation concern. These include a variety of mammals, birds, amphibians, and reptiles such as Sherman's fox squirrel (*Sciurus niger shermanii*), Florida black bear, and gopher tortoise.

Fire was reintroduced in the park in the late 1970s. The restoration of long unburned dry prairie favors growing-season burns to reduce woody species. Three growing-season burns (two in May and one in June) in the space of six years were successful at killing mature live oaks that had invaded dry prairie at Myakka River State Park during 46 years of fire exclusion (Huffman and Blanchard 1991). Studies examining shrub communities indicate regrowth is lower after growing-season burns than dormant-season burns as a result of reduced shrub resprouting (Lewis and Harshbarger 1976; Fitzgerald 1990; Huffman and Blanchard 1991; Olson and Platt, 1995; Drewa et al. 2002 as cited by Willcox and Guiliano 2010). However, reducing dense palmetto cover and increasing herbaceous cover in long fire-excluded prairie is more challenging (FNAI 2010). The height of the palmetto is reduced with fire, but the density

will have to be addressed by mechanical treatment, which will be discussed in the Natural Community Restoration section.

Prescribed fire is not conducted in the fall, during the season of grass seed production. Fires occurring during fall when the grass seeds are held on the stem usually destroy most of them (USGS/NPWRC 2013). With the goal of increasing the native grass component to the dry prairie and mesic flatwoods in mind, burns are conducted during winter, spring and early summer. Most of the park's burns are conducted in spring. The reintroduction of fire has been successful in reducing height of palmetto/shrubs and has reduced the number of hardwoods encroaching into dry prairie and mesic flatwoods. The invasion of pine into the prairie has also been reduced. There are now known pairs of crested caracara residing in the park, and in 2013, a pair of burrowing owls were observed near a burrow within the park. These sightings are an indication that the burn program has been successful and must continue to improve the park's fire-dependent communities.

Objective A: Within 10 years, have 26,085 acres of the park maintained within the optimum fire return interval.

Action 1	Update burn plan on a yearly basis.
Action 2	Manage fire-dependent communities by burning between 10,384–17,314 acres annually.
Action 3	Continue and improve monitoring fire effects on successional dry prairie, mesic flatwoods and scrubby flatwoods.
Action 4	Firebreaks will be maintained.

Based on the Park Service Fire Management Standards, burn plans are developed to provide strong guidance to the park, but modifications may occur throughout the year for a variety of reasons. Determining whether a zone should be burned or not in the next annual cycle is a matter of considering fire return intervals for each community type, present fuel load, resource management objectives, and strategic location. It is very important to consider how each zone fits into the overall scheme of accomplishing a number of burns at each park. Each year, the burn plan will include a selection of zones that meet different weather parameters to increase the chance of being able to burn under a variety of conditions. To the greatest extent possible, zones are planned in a sequence so that each burn makes the next burn easier by reducing the amount of holding required to burn each zone (i.e. plan to burn into recently burned zones). The overall mosaic of burned zones in the park is considered, avoiding extreme large expanses of burned areas. This may be alleviated by the timing of the burn. The annual plan considers season of burn with an emphasis placed on growing-season burning as the ideal objective. The frequency of burning is determined by the natural communities found in the zone and its natural fire frequency. The annual park fire plan includes zones to be burned, burnable acreage, preferred season of burn, and identification of backlogged acreage.

With the omission of the natural process of fire, fire-dependent communities change over time. There is an increase of hardwoods and palmettos in both the Florida dry prairie and mesic flatwoods communities. With the increase in canopy cover, native grasses and herbaceous plants can't compete for sunlight and eventually disappear. Ground nesters such as the Florida grasshopper sparrow can no longer survive. This occurred at Myakka River State Park, but since the mid-1970s, the park has been reintroducing fire back to its fire-dependent communities. Over the last 14 years (July 2003 – June 2017), the park has burned an average of 7,513 acres per year. This number is lower than the yearly minimum goal because of drought conditions during this timeframe. Prior to this plan update the minimum target acreage to burn was 7,700, which was exceeded during eight of the 13 years listed above.

There are multiple benefits to introduction of fire as a management tool:

- Restoration or preservation of fire-adapted natural communities.
- Restoration or preservation of habitat for rare plant and animal species.
- Creation of a vegetation mosaic by varying intensity, frequency, and season of burn within each maintained natural community.
- Promotion of diversity within natural communities.
- Stimulation of flowering in herbs, forbs, and other vascular plants.
- Reduction of potentially hazardous fuels.
- Maintenance of natural transition zones between vegetation types.

- Reduction of wildfires and resulting smoke management problems through management of fuel loads.

The Day of Burn Report is submitted after each burn, noting fire behavior, fire effects on wetlands, wildlife observed during the fire and issues that may have occurred during the fire. A copy of the report stays in the park and another is sent to the district. Reports are reviewed prior to the next burn. A six month and/or one year post-fire evaluation would be a useful tool as well and should be incorporated into the program.

Firebreaks will be maintained at an effective width to minimize spot fires during prescribed burns. Minimum width of firebreaks should generally be at least 2 times as wide as the height of adjacent receptive fuels. Firebreaks are disked to mineral to stop the movement of flames.

Depression marshes dividing management zones or along fence lines may be used when conditions warrant as a firebreak, but there can be complications when the soils on the edge of the marshes are too saturated to traverse or when the marshes are too dry to contain the fire. Therefore, there is a need to establish wetland go-arounds used as firebreaks.

Table 3 contains a list of all fire-dependent natural communities found within the park, their associated acreage and optimal fire return interval, and the annual average target acreage to be burned.

Prescribed fire is planned for each burn zone on the appropriate interval. The park's burn plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

To track fire management activities, the DRP maintains a statewide burn records in the Natural Resource Tracking System (NRTS) database. The database allows staff to track various aspects of each park's fire management program including individual burn zone histories and fire return intervals, staff training and experience, backlog,

Table 3. Prescribed Fire Management

Natural Community	Acres	Optimal Fire Return Interval
Florida Dry Prairie	14,733	<30 months
Mesic Flatwoods	3,766	<30 months
Scrubby Flatwoods	182	4-8 years
Depression Marsh	6,789	<30 months
Pasture/Field - Abandoned	615	<30 months
Annual Target Acreage	**10,384 — 17,314**	

mechanical treatment, etc. The database is also used for annual burn planning and determining goals for the year which are usually set within the target acreage range of 10,384-17,314 acres. The database allows DRP to document fire management goals and objectives on an annual basis. As prescribed burns occur, the database is updated and reports are produced that track progress towards meeting annual burn objectives.

Natural Community Restoration

In some cases, the reintroduction and maintenance of natural processes is not enough to reach the desired future conditions for natural communities in the park, and active restoration programs are required. Restoration of altered natural communities to healthy, fully functioning natural landscapes often requires substantial efforts that may include mechanical treatment of vegetation or soils and reintroduction or augmentation of native plants and animals. For the purposes of this management plan, restoration is defined as the process of assisting the recovery and natural functioning of degraded natural communities to desired future conditions, including the reestablishment of biodiversity, ecological processes, vegetation structure, and physical characters.

Examples that would qualify as natural community restoration, requiring annual restoration plans, include large mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping, and other

large-scale vegetative modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the reintroduction of fire as a natural process, spot treatments of exotic plants, and small-scale vegetation management.

The following are the natural community/ habitat restoration and maintenance actions recommended to create the desired future conditions in the Florida dry prairie, mesic flatwoods and scrubby flatwoods communities.

Objective B: Conduct upland habitat/ natural community restoration activities on 2,000 acres of Florida dry prairie, mesic flatwoods and scrubby flatwoods communities over the next 10 years.

Action 1	Develop/update site-specific restoration plan. Each fiscal year, the natural communities are assessed.
Action 2	Implement restoration plan.
Action 3	Update and maintain a comprehensive mechanical treatment map.

When an area is designated as a potential restoration site, it is assessed more closely through vegetation transects. This practice will continue. Once an area is designated as a restoration area, the best method of mechanical treatment available to reach the objective is determined and implemented.

Most of the restoration/enhancement activity for this objective is roller-chopping dry prairie and mesic flatwoods to reduce the density of saw palmetto. In fiscal 2016-17 nearly 2,300 acres were roller-chopped, but additional chopping acreage is needed to move additional prairie and flatwoods towards optimum conditions.

Myakka River's prairies were species rich prior to several decades of fire exclusion. Healthy dry prairie typically has diverse plant occurrence with the bulk of species present being herbaceous. From 16 to 30 species per square meter should be present with highs of 40-45 not being atypical. The mechanical treatment of roller-chopping, in conjunction with a frequent fire return interval can, through time, greatly aid in regaining the low aspect and diversity of healthy Florida dry prairie.

The goal of roller-chopping is to restore the aspect and woody/herbaceous ratio to within the range of non-fire excluded prairie and flatwoods. Shrub height in dry prairie gradates between one and four feet in height, with the tallest boarding wetlands and hammocks. Percent cover of woody species range from ten to ninety, with the majority of large expanses of area from twenty to fifty percent. This range corresponds with historical prairie descriptions such as described by Roland Harper (Harper 1927).

An additional objective is to obtain a natural mosaic of burned and unburned area, the treatment of roller-chopping should achieve a mosaic of chopped and unchopped area. A general guideline is to leave unchopped islands totaling from one to four acres within a 10-acre treatment area.

Roller-chopping alone cannot effectively restore dry prairie (Watts 2002). The treatment does not increase species diversity in highly degraded prairie/flatwoods, but increases soil surface sunlight to allow herbaceous species to colonize when combined with other strategies. These strategies include chopping sites adjoining those with adequate seed source; selecting chop sites upwind of the prevailing SE/SW winds; scheduling treatment to benefit from peak seeding periods; and collecting/planting seeds harvest from the same region. Using these strategy a roller-chopping/restoration plan should be updated annually.

Park staff should continue to map areas that have been mechanically treated and maintain a comprehensive mechanical treatment map as a reference, emphasizing the history of areas roller-chopped.

Objective C: Develop a plan for Florida dry prairie restoration of the abandoned pasture south of State Road 72 that identifies priorities, feasibility, and partnership/funding opportunities.

Action 1	Develop a restoration plan which outlines the desired outcome, documents the existing conditions, and identifies potential restoration projects.

Action 2 Determine the feasibility of the projects, outline a budget for each project and phase, prioritize project schedules, and establish a list of partnership and funding opportunities.

Action 3 After Actions 1 and 2 are met, implement the project(s).

Restore 566 acres of abandoned pastures back to historic natural communities to regain the natural ecological function of the project areas, benefitting wildlife while enhancing the visitors' experience of the "real" Florida.

Objective D: Conduct aquatic habitat restoration activities on 880 acres of river floodplain lake.

Action 1 Identify, develop, and implement comprehensive aquatic habitat management of the Upper Myakka Lake by collaborating with FWC's Habitat and Species Conservation section, FWC's Invasive Plant Management section and SWFWMD's Vegetation Management section.

Action 2 Continue to coordinate with FWC's Invasive Plant Management section and SWFMWD's Vegetation Management section to control the spread of aquatic invasive plants in the Upper Myakka Lake, Lower Myakka Lake, and the Myakka River.

Management includes removal/treatment of invasive and nuisance plants and replacing with native plants historically established in the park. Work is underway with FWC AHRES program to treat the invasive common reed, para grass, and West Indian marsh grass and plant natives including soft-stem bulrush and jointed spike-rush.

Objective E: Develop a desired future conditions map using historical data including pre-settlement land survey plat maps and notes for the area and interpret 1940s aerial photography.

A desired future conditions map should be developed using historical aerial photography and land survey maps. This map could be used as a baseline to guide natural community enhancement and restoration activities in the park. Decades of fire exclusion allowed pines and hardwoods to become established in dry prairie and other fire dependent natural communities. This work could also be used to guide restoration of the abandoned pasture listed in Objective C.

Imperiled Species

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, or of special concern.

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

There are 55 designated imperiled species (17 plant and 38 animal) recorded at Myakka River State Park (see Table 4 and Appendix 5). While there are no measures specifically designed to protect these species, many current practices serve this end. Park policies prohibiting the removal of plants and animals benefit all species, designated or not. An additional practice is limiting access to the park's wilderness preserve area benefiting reclusive creatures such as the bald eagle. Restoration and best management practices for Florida's ecosystems will maintain the health of habitats that sustain these species.

The bald eagle was removed from the imperiled species list in 2007, but maintains protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), which

was enacted in 1940. The act was amended several times since then, but it continues to prohibit anyone without a permit issued by the Secretary of the Interior from "taking" bald eagles, including their parts, nests, or eggs (USFWS). FWC approved a management plan and new eagle rule in 2008, which is being sunset and replaced with a species action plan. Bald eagle nesting success at Myakka River State Park has been monitored by staff and volunteers. Over the last five years, there has been an average of six active nests within the park. The average number of eaglets fledged per year within the park is seven.

A focus of Myakka River State Park is the restoration and maintenance of the park's nearly 15,000 acres of Florida dry prairie. The Florida Natural Areas Inventory designates Florida dry prairie as imperiled, ranking it as G2 and S2. Restoration tools include mechanical treatment, application of prescribed fire, and hydrologic restoration. As a result of the restoration efforts, burrowing owls (*Athene cunicularia floridana*) returned and were observed in the east panhandle of the park in 2013, 2014, and south of SR-72 in 2015. The Florida burrowing owl is classified as a threatened species by the FWC. Historically, the burrowing owl occupied sandhills and prairies with sparse ground cover in central and south Florida. Recently, these populations have decreased because of disappearing habitat (FWC 2013). Burrowing owls live as single breeding pairs or in loose colonies consisting of two or more families. Unlike most owls, burrowing owls are active during both day and night. During the day, they are usually seen standing erect at the mouth of the burrow or on a nearby post. Burrowing owls use burrows year-round, both for roosting during the winter and for raising young during the breeding season (February - July). Florida's burrowing owls typically dig their own burrows but will use gopher tortoise or armadillo burrows. Burrows are typically one foot below the surface, extend 4 to 8 feet in length and are lined with materials such as grass clippings, feathers, paper, and manure (Stevenson and Anderson 1999). The reoccurrence of the burrowing owls is an indicator that the park's Florida dry prairie is returning to pre-fire exclusion conditions.

Another listed species benefitting from the restoration of the Florida dry prairie is the crested caracara, a federally threatened species. Audubon's crested caracara is a large species of raptor. Florida's caracaras remain year-round on home ranges that consist of the nesting territory and feeding habitat. They exhibit mate fidelity as well (Morrison 2001). Crested caracara observations in and around the park have greatly increased over the last 10 years, and in 2014 and 2015, nesting activity was confirmed in the southeastern portion of the park.

A confirmation of the importance of Florida dry prairie restoration is the decline of the Florida grasshopper sparrow (*Ammodramus savannarum floridanus*). It is listed as a federally endangered subspecies. In July 1937, a student wildlife technician surveyed a portion of Myakka River State Park and noted two Florida grasshopper sparrows. In 1941, another wildlife technician recorded Florida grasshopper sparrows to be common at Myakka River State Park. It is not known what month in 1941 the Florida grasshopper sparrows were observed, which is relevant because there is another subspecies of grasshopper sparrow that winters in Florida but is not a year-round resident. The natural habitat for the non-migratory subspecies prefers frequently burned dry prairie (Bridges & Reese 1999, as cited by Delaney et al. 2007). The park service policy for more than 40 years until the mid-1970s was to exclude fire whether natural or human-induced, creating a habitat unsuitable for Florida grasshopper sparrows. Despite restoration efforts, the Florida grasshopper sparrow has not been recorded in the park since the 1940s. Optimum dry prairie habitat for this species contains large (>50 acres), treeless, grasslands that are maintained with frequent fire. Suitable prairie is dominated by saw palmetto and dwarf oaks 30 to 70 cm in height. Grasses like bluestem (*Andropogon spp.*), wiregrass, and St. John's wort (*Hypericum spp.*) also can be found in good sparrow habitat (Delany et al. 1985; USFWS 1999). Tree densities of >1 tree per acre are not tolerated. As ground-dwelling birds, they require bare ground (at least 20 percent) for ease of movement and foraging. Cover (i.e., bunchgrasses and low shrubs), however, is important for providing nesting habitat. The conversion of large prairies to sod farms and pastures has been the main factor in the decline of this subspecies. On the remaining natural lands, fire exclusion and alterations to natural drainages also pose threats.

Florida scrub-jays were last observed at the park in 2005. They were located in the

scrubby flatwoods north of the Upper Myakka Lake. The goal is to maintain the scrubby flatwoods close to optimal conditions through prescribed fire and mechanical treatment to increase the likelihood of Florida scrub-jays returning to Myakka River State Park if there is a population in the area. There are approximately 182 total acres of scrubby flatwoods in the park, which could support several family groups as part of a larger population. However, there is not enough habitat in the park to support a long-term viable population of scrub-jays. Florida scrub-jay territories in scrubby flatwoods north of Upper Myakka Lake were surveyed for nesting activity several times in the early 1990s (Thaxton 1990, 1991). Three to four families were found to have established territories that overlapped at least some of the scrubby flatwoods in the park. In 1990, one of the six nesting attempts among four families was successful. The nests tended to be located on old fence lines or on immediately adjacent private property. In 2002, the adjacent property owner removed vegetation along the fence line and around several of the wetlands. The scrub-jays were no longer observed in the park until 2004. They survived the hurricanes of the summer of 2005, but were last seen in December of that year.

The Upper Myakka Lake was the summer home to a group of manatees (*Trichechus manatus*) from 2012-2018. Summer rains increased the water level in the river and lakes significantly, making the manatee's travel possible over or around the dam (located at the park's southern boundary) and the weir (located at the south end of the Upper Myakka Lake) possible. All sightings are reported to the FWC's Marine Mammal Pathobiology Lab. There is concern that once summer rains stop and water levels drop, manatees would not be able to traverse the dam and weir. This concern came to fruition in January 2014, when a stranding did occur. A coordinated effort by FWC Manatee Rescue staff, park staff and park neighbors to rescue the manatee was successful. If summer rains continue to increase water levels, enabling manatees to enter the park, future manatee strandings will continue to be a concern; therefore, the benefits of the weir and dam should be reassessed.

In addition to listed animals, the park also contains 17 designated plants. Several of them were negatively affected by the suppression of fire from 1939 until the mid-1970s. Nine of the 17 designated plants were historically found in Florida dry prairie. The pine lily (*Lilium catesbaei*) and the grass pink orchid (*Calopogon multiflorus*) are two of the designated plants found in dry prairie that without fire, could not survive. During the past decade, there has been an increase of sightings for both plants due to mechanical treatment and the reintroduction of fire.

The giant airplant and cardinal airplant in the park have suffered due to an invasive exotic insect, the Mexican bromeliad weevil. The weevil is now established at the park, and the adult and larvae feed on the larger native airplant species, killing many of them. Myakka River State Park has worked in partnership with the University of Florida as a research site on the *Metamasius callizona* project. Juvenile plants have been observed in the canopy along the Main and North Drive. It would be beneficial to maintain a closer record of the occurrence and health of these species to determine whether further management action is warranted.

Table 4 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others, and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Appendix 6.

Table 4. Imperiled Species Inventory						
Common and Scientific Name	**Imperiled Species Status**				**Management Actions**	**Monitoring**
	FWC	**USFWS**	**FDACS**	**FNAI**		
PLANTS						
Grass pink *Calopogon multiflorus*			LT	G2G3, S2S3	1,2,4,7	T1
Tampa mock vervain *Glandularia tampensis*			LE	G2, S2	1,2,4,7	T1
Angularfruit milkvine *Gonolobus suberosus*			LT		2	T1
Threadroot orchid *Dendrophylax porrectus*			LT		4	T1
Catesby's lily; Pine lily *Lilium catesbaei*			LT		1,2,4,7	T1
Southern twayblade *Listera australis*			LT		1,2,4,7	T1
Lowland loosestrife *Lythrum flagellare*			LE	G2, S2	4	T1
Jameson's waterlily *Nymphaea jamesoniana*			LE	G5, S2S3	4	T1
Blueflower Butterwort *Pinguicula caerulea*			LT		1,4	T1
Yellow Butterwort *Pinguicula lutea*			LT		1,4	T1
Giant orchid *Pteroglossaspis ecristata*			LT	G2G3, S2	1,2,4,7	T1
Leafless beaked orchid *Sacoila lanceolata*			LT		2	T1
Long lip ladiestresses *Spiranthes longilabris*			LT		1,2,4,7	T1
Northern Needleleaf *Tillandsia balbisiana*			LT		2	T1
Cardinal airplant *Tillandsia fasciculata*			LE			T1
Giant airplant *Tillandsia utriculata*			LE			T1
Redmargin rain-lily *Zephyranthes simpsonii*			LT	G2G3, S2S3	1,2,4,7	T1
BUTTERFLIES						
Arogos skipper *Atrytone arogos*				G3, T1T2, S1	1	T3
Eastern meskes skipper *Hesperia meskei straton*				G3G4, T3, S2S3	1	T3
REPTILES						
American alligator *Alligator mississippiensis*	FT(S/A)	LT(S/A)		G5, S4	2,4,10	T3
Eastern indigo snake *Drymarchon couperi*	FT	LT		G3, S3	1,2,4,7	T1
Gopher tortoise *Gopherus polyphemus*	LT	C		G3,S3	1,2,4,7	T1

BIRDS						
Florida grasshopper sparrow *Ammodramus savannarum floridanus*	FE	LE		G5T1Q, S1	1,2,4,7	T1, T2
Florida scrub-jay *Aphelocoma coerulescens*	FT	LT		G2, S2	1,2,4,7	T1, T2
Great white heron *Ardea herodias occidentalis*				G5T2, S2	1,2,4,7	T1, T2
Florida burrowing owl *Athene cunicularia floridana*	LT			G4T3, S3	1,2,4,7	T1, T2
Short-tailed hawk *Buteo brachyurus*				G4G5, S1	1,2,4,7	T1, T2
Crested caracara *Caracara cheriway*	LT	LT		G5, S2	1,2,4,7	T1, T2
Little blue heron *Egretta caerulea*	LT			G5, S4	2,4	T1, T2
Reddish egret *Egretta rufescens*	LT			G4, S2	2,4	T1, T2
Tricolored heron *Egretta tricolor*	LT			G5, S4	2,4	T1, T2
Swallow-tailed kite *Elanoides forficatus*				G5, S2	1,2,4,7	T1, T2
White-tailed kite *Elanus leucurus*				G5, S1	1,2,4,7	T1, T2
Merlin *Falco columbarius*				G5, S2	1,2,4,7	T1, T2
Peregrine falcon *Falco peregrinus*				G4, S2	1,2,4,7	T1, T2
Southeastern American kestrel *Falco sparverius paulus*	LT			G5T4, S3	1,2,4,7	T1, T2
Magnificent frigatebird *Fregata magnificens*				G5, S1	2,4	T1, T2
Florida sandhill crane *Grus canadensis pratensis*	LT			G5T2T3, S2S3	1,2,4,7	T1, T2
American oystercatcher *Haematopus palliatus*	LT			G5, S2	2,4	T1, T2
Worm-eating warbler *Helmitheros vermivorum*				G5, S1	1,2,4,7	T1, T2
Caspian tern *Hydroprogne caspia*				G5, S2	2,4	T1, T2
Wood stork *Mycteria americana*	FT	LT		G4, S2	2,4	T1, T2
Red-cockaded woodpecker *Picoides borealis*	FE	LE		G3, S2	1,2,4,7	T1, T2
Roseate spoonbill *Platalea ajaja*	LT			G5, S2	2,4	T1, T2
American avocet *Recurvirostra americana*				G5, S2	2,4	T1, T2
Snail kite *Rostrhamus sociabilis*	FE	LE		G4G5T2, S2	1,2,4,7	T1, T2
Black skimmer *Rynchops niger*	LT			G5, S3	2,4	T1, T2
American redstart *Setophaga ruticilla*				G5, S2	1,2,4,7	T1, T2
White-breasted nuthatch *Sitta carolinensis*				G5, S2	1,2,4,7	T1, T2

BIRDS (Cont.)						
Least tern *Sternula antillarum*	LT			G4, S3	2,4	T1, T2
Sandwich tern *Thalasseus sandvicensis*				G5, S2	2,4	T1, T2
MAMMALS						
Florida panther *Puma concolor coryi*	FE	LE		G5,T1, S1	1,2,4,7	T1, T2
Sherman's fox squirrel *Sciurus niger shermani*	LS			G5T3, S3	1,2,4,7	T1
Florida manatee *Trichechis manatus latirostris*	FT	LT		G2, T1, S2	2, 4	T1
Florida black bear *Ursus americanus floridanus*				G5T2, S2	1,2,4,7	T1

Management Actions

1. Prescribed Fire
2. Exotic Plant Removal
3. Population Translocation/Augmentation/Restocking
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from visitor impacts/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education
14. Other

Monitoring Level

Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.

Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.

Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.

Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.

Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.

Imperiled Species Management Program

Goal: Maintain, improve or restore imperiled species populations and habitats in the park.

The DRP strives to maintain and restore viable populations of imperiled plant and animal species primarily by implementing effective management of natural systems. Single species management is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes, and should not imperil other native species or seriously compromise park values.

In the preparation of this management plan, DRP staff consulted with staff of the FWC's Imperiled Species Management or that agency's Regional Biologist and other appropriate federal, state and local agencies for assistance in developing imperiled animal species management objectives and actions. Likewise, for imperiled plant species, DRP staff consulted with FDACS. Data collected by the USFWS, FWC, FDACS and FNAI as part of their ongoing research and monitoring programs will be reviewed by park staff periodically to inform management of decisions that may have an impact on imperiled species at the park.

Ongoing inventory and monitoring of imperiled species in the state park system is necessary to meet the DRP's mission. Long-term monitoring is also essential to ensure the effectiveness of resource management programs. Monitoring efforts must be prioritized so that the data collected provides information that can be used to improve or confirm the effectiveness of management

actions on conservation priorities. Monitoring intensity must at least be at a level that provides the minimum data needed to make informed decisions to meet conservation goals. Not all imperiled species require intensive monitoring efforts on a regular interval. Priority must be given to those species that can provide valuable data to guide adaptive management practices. Those species selected for specific management action and those that will provide management guidance through regular monitoring are addressed in the objectives below.

Objective A: Periodically update imperiled species occurrence inventory lists for plants and animals.

Action 1 Update the inventory as needed during the planning period.

The baseline imperiled species occurrence inventory lists are complete for the 2017 Management Plan revision. The inventory lists will be updated as needed during the next 10 years.

Objective B: Monitor and document 38 selected imperiled animal species in the park.

Action 1 Develop monitoring protocols for three selected imperiled animal species: crested caracara, burrowing owl and sandhill crane.

Action 2 Implement monitoring protocols for imperiled animal species including those listed in Action 1 above and the bald eagle, Florida scrub-jay, gopher tortoise and butterflies.

Action 3 Determine best management practices in relation to reducing the impacts of human disturbance on alligators at Deep Hole.

All imperiled wildlife species are monitored at the Tier 1 level, which includes non-targeted observation and documentation through casual/passive observation during routine park activities implemented daily by staff members. In addition, avian species have been monitored at a level of tier 2. Volunteer bird interpreters record the presence of bird species (many include the number of individuals observed) at the Bird Walk on Upper Myakka Lake, during the months of November through May. Moreover, Myakka River State Park has participated with the Christmas Bird Count since 1959, recording the species and numbers observed on the third Monday in December.

Alligators in the Upper Myakka Lake are monitored at a tier 2 level through the FWC's Alligator Management Program. The Upper Myakka Lake and the section of Myakka River between the weir and the Main Park Drive Bridge are surveyed. The number present and size of the alligators are recorded. This survey should continue in order to identify population and demographic trends. Human disturbance to alligators at Deep Hole should be monitored during the dry season, and steps taken to limit boat and pedestrian access to the sink hole.

The Florida panther is the target of periodic surveys led by FWC's Florida Panther Project and FWC's Landowner Assistance Program. A remote-sensing trail camera has been set to record all the wildlife crossing a trail in expectation of capturing a Florida panther image. FWC shares all data collected with the park biological staff. The park will continue to work with FWC to continue survey efforts.

The Florida manatee has been observed in the Upper and Lower Myakka Lakes and the Myakka River during the summer months when water levels are high. Due to the possibility of stranding when the water level recedes, the DRP collaborates with the FWC Manatee Section to ensure the safety of the manatees.

The swallow-tailed kite, crested caracara and the burrowing owl nest in the park. Monitoring of the birds' nesting success can indicate whether the park's management practices are effective.

Since 1986, bald eagle nesting has been monitored each year from October through May by staff and volunteers. Over the last five years, there has been an average of six active nests with a total average of seven eaglets fledged. Monitoring of nest success will continue.

Florida scrub-jays have periodically resided in the northern section of the park's scrubby flatwoods. Monitoring efforts were implemented in the late 1990s until 2002, when the last bird disappeared. Monthly monitoring was resumed in August 2004 after

a pair was discovered and continued to September 2007, at which time it was confirmed the pair was no longer present. Due to improvement of the scrubby flatwoods, the area should be monitored on a bi-annual basis to determine presence/absence of the scrub-jays. If scrub-jays are discovered, monthly monitoring should recommence.

Gopher tortoises are often observed in Florida dry prairie, mesic flatwoods and scrubby flatwoods. Periodic Global Positioning System (GPS)-based censuses, using established FWC protocols for gopher tortoise population surveys will be conducted to track population trends and burrow distribution. This will ensure the necessary population viability data is collected. The plan will determine if resource management actions to improve gopher tortoise and other listed species habitat result in changes to the tortoise population.

Since 2010, butterflies have been surveyed in the spring and fall by volunteer butterfly hobbyists affiliated with the North American Butterfly Association (NABA). The data are maintained by the park and are posted on the NABA website for public viewing. The surveys document species presence and numbers observed. Surveys will continue if butterfly experts are available.

Objective C: Monitor and document 17 selected imperiled plant species in the park.

Action 1	Maintain the herbarium which was established in 1986s; continue to add new species as they are found.
Action 2	Develop monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park.
Action 3	Implement monitoring protocols for the cardinal airplant and the giant airplant along the main paved roads in the park.

The herbarium collection provides a representation of the park's flora. This collection is important for research purposes, as well as for interpretation of the park's rich biodiversity. The herbarium is particularly valuable as a comprehensive record of plant species that occur or have occurred in the park. The herbarium includes specimens that were collected in the 1940s.

The giant airplant and cardinal airplant in the park have suffered due to an invasive exotic insect, the Mexican bromeliad weevil, which has become established in the park. The adult and larvae feed on these airplants, killing many of them. Myakka River State Park has worked in partnership with the University of Florida as a research site on the *Metamasius callizona* project. Juvenile plants have been observed in the canopy along the Main and North Drive. It would be beneficial to maintain a closer record of the occurrence and health of these species to determine whether further management action is warranted.

Exotic and Nuisance Species

Exotic species are plants or animals not native to Florida. Invasive exotic species are able to outcompete, displace or destroy native species and their habitats, often because they have been released from the natural controls of their native range, such as diseases, predatory insects, etc. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade. Exotic animal species include non-native wildlife species, free-ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to exotic animals, the DRP actively removes exotic animals from state parks, with priority being given to those species causing the greatest ecological damage.

<u>Plants</u>

A little more than one hundred exotic plant species have been identified in the park (see Appendix 4). Most of the exotic plant species are not on the FLEPPC list, but 31 percent of those exotic plants are identified as FLEPPC category I or category II. Using the FLEPPC designation, all known invasive exotic plants found in the park have been placed into one of three management classifications. These classifications and the suggested management response recommended for each category are listed below. Additions and deletions to the above categories are expected as exotics appear and disappear within the park.

Category I.: Invasive and threatening exotic species which are so invasive as to threaten displacement of native plants in natural areas and if left uncontrolled, would become the predominant cover in the area. Park representative species in this category include

paragrass, air potato, Old World climbing fern, and cogongrass. The eradication of category I plants often requires several treatments and some category I invasive exotic plants may not be eliminated but only controlled.

Cogongrass has proved to be quite difficult to eliminate. Cogongrass is a perennial grass native to Southeast Asia and considered one of the world's worst weeds. Over the last 10 years, infested sites have gone from 50 to more than 800, albeit many of them small. The best time to treat cogongrass is in the fall and spring. During the fall, treating cogongrass is first priority for the park. During the spring, treating cogongrass is the second priority with conducting prescribed fire as the first priority. It is often problematic to find the manpower to treat in the spring because the same people trained to treat exotics are also the same people trained to conduct prescribed burns. There is not enough staff to designate separate exotic and burn teams. Prescribed fire currently takes precedence, but if the park is unable to treat cogongrass for two or more years, the health of the ecosystem is at risk. Cogongrass, if unimpeded, will occupy a site to the detriment of almost all other species. It will displace entire plant and animal communities, including endangered species. Cogongrass has allelopathic effects whereby plants in the proximity will display reduced stem height, leaf length, nitrogen concentration, and root/shoot length, as well as lower survival rates (Sajise and Lales 1975; Brook 1989; Bryson and Carter 1993; Casini et al. 1998 as cited by Alabama Cogongrass Control Center – Final Report 2012). Cogongrass has little wildlife value because of its high silica content and serrated leaf margins, which may harm animals who attempt to feed on it. Small, ground-dwelling animals are displaced by cogongrass due to its minimal forage value and dense foliage (Alabama Cogongrass Control Center – Final Report 2012). It is important that more resources are provided to fight this invasion.

Category II.: Invasive but not as threatening. This category includes Guinea grass (Urochloa maxima), balsampear (Momordica charantia), and two-leaf nightshade.

To manage category I and II, a system to record frequency, location coordinates, extent and treatment method has been developed which identifies individual locations and provides documentation for treatment methods and follow-up. The management goal is to treat a minimum of 50 percent once a year. Treatment follows current best management practices.

Non-invasive species that are confined to disturbed areas include yellow nut-grass (Cyperus esculentus), pangola grass (Digitaria decumbens), and bush mint (Hyptis mutabilis). No treatment is given to these exotics. In addition, SWFWMD herbicides the Upper and Lower Myakka Lakes and the river channel to control water hyacinth, water lettuce, hydrilla and other invasive aquatics which can prohibit navigation of these waterways.

Animals

Like exotic plants, some exotic animals are more deleterious than others are. Exotic animals having the greatest impact on natural communities receive the highest priority for removal. Generally, these are animals that have a high reproductive potential and few natural controls, such as feral hogs and fire ants. Also included in this group are animals whose abundance is directly related to human populations, such as domestic cats and dogs. Although house pets do not typically propagate in the wild, their free-ranging activities on park lands can affect native species which normally would not have to contend with these additional pressures.

Feral hogs occur throughout the park and cause significant ecological damage unless their numbers are kept low. They begin to breed at one year and can produce two litters of 1–13 (usually 5–7) piglets per year (IFAS, publication WEC277). They are predators of ground-nesting birds and snakes, and can dig up large areas looking for tubers and roots. The rooted areas alter fire behavior and hydrologic flow. The upturned soil also provides a planting bed for exotic plant species. Since September 1986, over 26,000 hogs have been removed from the park. It is preferred to utilize the services of hog contractors, but park staff have augmented the hog removal program. The policy of hog removal will be continued to limit the negative ecological effects of the hogs.

Aquatic exotic animals have become more prevalent in the Upper and Lower Myakka Lakes and the Myakka River. Blue tilapia (Oreochromis aureus), a fish native to North Africa and the Middle East, is widespread and abundant in Florida. Tilapia are well-

established throughout the Myakka River system. Tilapia feed primarily on plankton and small organisms living in or on bottom detritus (FWC 2014), however, Courtenay and Robins (1973), as cited by Nico et al. (2015), reported that certain streams where this species is abundant have lost most vegetation and nearly all native fishes. Male tilapia alter the sandy bottom of the lakes and river by digging large circular nests with their mouths. Several studies found blue tilapia to be a competitor with native species for spawning areas, food, and space (Nico et al. 2015; Buntz and Manooch 1969; Noble and Germany 1986; Muoneke 1988; Zale and Gregory 1990). Extreme cold temperatures for extended periods of time have detrimental effects on tilapia populations, but unfortunately within a couple of years, populations are able to rebound. Other exotic fish are found in the waters of the park including walking catfish (Clarias batrachus), brown hoplo (Hoplosternum littorale), vermiculated sailfin catfish (Pterygoplichthys disjuctivus), and jewel fish (Hemichromis letourneuxi). In addition to recreational fishing, other methods of removal should be explored. Monitoring will continue for the occurrence of new exotic fish species.

A new exotic resident of Myakka River State Park is the island apple snail (Pomacea insularum). The island apple snail is the most common introduced species of snail. It was probably released in South Florida in the early 1980s by persons with the tropical pet industry, and rapidly expanded throughout the state (Bernatis 2006). The park's first observation was in 2012. Mating and egg laying occurs when water temperatures rise above 74o F. When this occurs members of the park staff collect and remove the egg clutches, which may contain over 1,000 pink eggs. Snails are also removed.

Other exotic species that impact native wildlife populations are the red imported fire ant (Solenopsis invicta) and Cuban treefrogs (Osteopilus septentrionalis). Once populations are established, there are currently no methods to eradicate them. Cold winters with freezing temperatures can reduce Cuban treefrog populations for a short time, but populations quickly rebound. To reduce the spread of Cuban treefrogs from the developed areas to more remote sections of the park, park and contractor vehicles should be inspected and Cuban treefrogs removed. Several biological controls have been released to reduce fire ant colonies, including the parasitic phorid "decapitating" fly (Pseudacteon spp.). Park staff should investigate the feasibility of releasing biological controls to reduce or stress colonies of fire ants, allowing for native ant populations to rebound. As additional exotic fauna moves onto the park, they will be assessed and best management practices will be utilized to remove them when warranted.

Nuisance Species

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual, native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include raccoons and alligators that are in public areas. Nuisance animals are dealt with on a case-by-case basis in accordance with the DRP's Nuisance and Exotic Animal Removal Standard. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

Fire exclusion and alterations to hydroperiods have caused the spread of hardwood species in the park. Laurel oak, water locust, pop ash and buttonbush are more common in marshes than in the past. In most cases, returning these marshes to their original condition will require some mechanical removal. Fire only eliminates young encroaching hardwoods; mature trees must be physically removed. Laurel and live oaks have also invaded mesic flatwoods and dry prairies. These, too, will require mechanical removal because of their size and number in areas where fire alone has not reduced the oak density.

Hardwoods have become established on road shoulders wherever fill material was used to elevate roadways. This detracts from scenic vistas on the park drive and in the mesic flatwoods and dry prairie. Priority will be given to removing these hardwoods to reestablish the scenic vistas along elevated grades.

A plant that is thought to be native but has the characteristics of an exotic, the common reed has become problematic in the Upper Myakka Lake. According to the University of Florida's Institute of Food and Agricultural Sciences (IFAS), its status as a native species

in the US has been recently questioned. For several years, the plant was found on the north side of the Upper Myakka Lake, but in recent years, it has expanded to the west and south side. The large, tall clumps of common reed have been multiplying, creating dense lines of tall vegetation that have not historically been present. SWFWMD is working in cooperation with FWC's Invasive Plant Management Section and FWC's Habitat and Species Conservation Section to eliminate this plant on the west and south side of Upper Myakka Lake. After reed removal, softstem bulrush and jointed spikerush (*Eleocharis equisetoides*), both historically occurring native species, were planted as part of the aquatic habitat restoration project. Test planting areas have been successful and addition planting are planned.

Table 5 contains a list of the Florida Exotic Pest Plant Council (FLEPPC) Category I and II invasive exotic plant species found within the park. The table also identifies relative distribution for each species and the management zones in which they are known to occur.

Exotic Species Management Program

Goal: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.

The DRP actively removes invasive exotic species from state parks, with priority being given to those causing the most ecological damage. Removal techniques may include mechanical treatment, herbicides, or biocontrol agents.

Objective A: Park staff will annually treat a minimum of 45 infested acres (300 gross acres) of invasive exotic plant species in the park.

Action 1	Annually develop/update the park's exotic plant management work plan.
Action 2	Implement an annual work plan, utilizing both staff and additional resources, to treat infestations within the park, and continuing maintenance and follow-up treatments as needed.
Action 3	Continue to seek grants and additional funding for the treatment of FLEPPC category 1 and 2 exotic plants.

The park is broken into 50 management zones. Each year an annual work plan is developed for the treatment of invasive exotic plants with emphasis on cogongrass management.

Park staff, Florida Conservation Corps (Americorps) and volunteers receive written instructions with the zone number, GPS coordinates, and last known size of the infestation. Staff and volunteers traverse the area searching for the exotic plant and when found, use the best management method and herbicide to treat the infested area.

In order to track invasive exotic plant management activities, the DRP maintains statewide exotic treatment records in the NRTS database. The database allows DRP to update exotic plant surveys and distribution within each management zone of the park; set annual exotic plant treatment goals; and update treatment records.

Objective B: Implement control measures for three exotic animal species in the park.

Action 1	Authorized staff and contractors will participate in the feral hog removal program as resources permit.
Action 2	Continue the island apple snail and egg mass removal program.
Action 3	Research best management practice to reduce the population of exotic fish and exotic amphibian species and implement if feasible.

Work with FWC's Division of Freshwater Fisheries Management (DFFM), Fish and Wildlife Research Institute, and others, to determine the best management practices to reduce the number of exotic fish species in the Myakka River and Lakes and seek methods to control Cuban treefrogs.

Feral hogs are a significant problem at Myakka River State Park. Feral hog control activities will focus on areas where hogs are causing the most damage, including any threatened cultural resources.

Island apple snail egg removal will occur during warmer months when water temperatures are above 74 degrees Fahrenheit, when egg laying occurs.

Table 5. Inventory of FLEPPC Category I and II Exotic Plant Species			
Common and Scientific Name	**FLEPPC**		**Management Zone(s)**
	Category	**Distribution**	
Rosary pea *Abrus precatorius*	I	2	MR-02A, MR-02D, MR-02E, MR-05D, MR-11B
Alligator-weed *Alternanthera philoxeroides*	II	1	MR-02A, MR-02B, MR-02C, MR-02D
Durban crowfootgrass *Dactyloctenium aegyptium*	II	1	MR-04A, MR-05A
		2	MR-03A
Woman's tongue *Albizia lebbeck*	I	1	MR-02D, MR-11A
Camphor tree *Cinnamomum camphora*	I	1	MR-11B, MR-11D
Wild taro *Colocasia esculenta*	I	1	MR-02D
Air-potato *Dioscorea bulbifera*	I	2	MR-02D, MR-02E, MR-11A
		3	MR-02D
Water-hyacinth *Eichhornia crassipes*	I	1	MR-02D
		3	MR-02A, MR-02B, MR-02C, MR-02D MR-02E, MR-02F, MR-03B, MR-23
Laurel fig *Ficus microcarpa*	I	1	MR-2A
West Indian marsh grass *Hymenachne amplexicaulis*	I	1	MR-02D
		2	MR-02D, MR-03B, MR-04A, MR-05E MR-13B
		3	MR-02A, MR-02B, MR-02C, MR-02D MR-03B, MR-03C, MR-04A, MR-04B MR-05A, MR-05C, MR-05D, MR-06, MR-08, MR-10A, MR-10B, MR-11A, MR-11B, MR-11C, MR-11D, MR-12, MR-14, MR-15, MR-17
		6	MR-04A, MR-04B

Cogon grass *Imperata cylindrica*	I	1	MR-02C, MR-02D, MR-03A, MR-03B MR-03C, MR-04B, MR-05A, MR-05C MR-05E, MR-09A, MR-10A, MR-10B, MR-11A, MR-11B, MR-11C, MR-11D MR-12, MR-13B, MR-13C, MR-13D, MR-14, MR-15, MR-16, MR-18, MR-19B, MR-21, MR-22B, MR-23B,MR-24B
		2	MR-01A, MR-01B, MR-02A, MR-02B, MR-02D, MR-02E, MR-03A, MR-03B MR-03C, MR-04A, MR-04B, MR-05A MR-05B, MR-05C, MR-05D, MR-05E MR-06, MR-07, MR-08, MR-09A, MR-09B, MR-10A, MR-10B, MR-11A, MR-11B, MR-11C, MR-11D, MR-11E MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-14, MR-15, MR-16, MR-17, MR-18, MR-19A, MR-19B, MR-20, MR-21, MR-22A, MR-22B, MR-24A
		3	MR-02A, MR-03A, MR-03C, MR-04A MR-04B, MR-05C, MR-05D, MR-05E MR-06, MR-07, MR-08, MR-09B, MR-10A, MR-10B, MR-11C, MR-11D MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-15, MR-16, MR-20, MR-21, MR-24A
		4	MR-02A, MR-03A, MR-05E, MR-10B, MR-13B, MR-15, MR-18, MR-21, MR-24A
Peruvian primrosewillow *Ludwigia peruviana*	I	1	MR-05E, MR-12, MR-13B, MR-13C
		2	MR-02B, MR-02D, MR-02E, MR-03A, MR-03B, MR-03C, MR-04A, MR-07, MR-08, MR-10B, MR-11A, MR-12, MR-13A, MR-20
		3	MR-02D, MR-05A, MR-06, MR-10B
		4	MR-04A, MR-10A, MR-21
		6	MR-04A, MR-05A, MR-06, MR-07, MR-08, MR-09A, MR-9B, MR-10A, MR-10B, MR-11B, MR-11D, MR-11E, MR-15, MR-14, MR-16, MR-22B, MR-23B, MR-24A, MR-24B
Japanese climbing fern *Lygodium japonicum*	I	2	MR-01A, MR-03A

Old world climbing fern *Lygodium microphyllum*	I	1	MR-03A, MR-07, MR-10A, MR-10B, MR-11B, MR-12, MR-13B, MR-13C, MR-13D, MR-15, MR-16, MR-21, MR-23B, MR-24B
		2	MR-01A, MR-02D, MR-03A, MR-03B, MR-03C, MR-04A, MR-04B, MR-05A, MR-05E, MR-06, MR-07, MR-08, MR-09B, MR-10B, MR-11C, MR-11D, MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-15, MR-16, MR-20, MR-23B
		3	MR-03A, MR-03C, MR-07, MR-08, MR-9B, MR-10A, MR-10B, MR-12, MR-15
		4	MR-03A
Phasey bean; wild bush bean *Macroptilium lathyroides*	II	2	MR-02D, MR-02C, MR-10B, MR-07, MR-11A, MR-24
Melaleuca *Melaleuca quinquenervia*	I	1	MR-10A, MR-11B, MR-13A, MR-13B, MR-15
		2	MR-01B, MR-11C, MR-20, MR-21
Natal grass *Melinis repens*	I	1	MR-04A
		2	MR-05A
Balsam apple *Momordica charantia*	II	1	MR-2D, MR-04A, MR-05A
Sword fern *Nephrolepis cordifolia*	I	1	MR-02D, MR-03C
Torpedo grass *Panicum repens*	I	2	MR-03A, MR-07, MR-09A, MR-10A, MR-10B, MR-11C, MR-13B, MR-13C
		3	MR-03A, MR-03C, MR-04B, MR-10B, MR-12, MR-13A, MR-13B, MR13-C, MR-13D, MR-14, MR-15, MR-16, MR-17, MR-18
		4	MR-02E, MR-03A, MR-09B
		6	MR-04A, MR-04B, MR-05A, MR-05B, MR-05C, MR-06, MR-07, MR-08, MR-09B, MR-11B, MR-11C, MR-11D, MR-21, MR-22
Water-lettuce *Pistia stratiotes*	I	2	MR-02A, MR-02B, MR-02D, MR-02F, MR-07, MR-08, MR-21
Green shrimp plant *Ruellia blechum*	II	2	MR-02D, MR-02E
Mexican petunia *Ruellia simplex*	I	1	MR-02D, MR-02B
Water sprangle *Salvinia minima*	I	2	MR-02A, MR-2B, MR-2C, MR-2D, MR-2E, MR-2F, MR-11E, MR07, MR-08, MR-24A
Chinese tallow tree *Sapium sebiferum*	I	2	MR02A, MR-11B, MR-11D

Brazilian pepper *Schinus terebinthifolius*	I	1	MR-03C, MR-10A, MR-10B, MR-13A MR-13B, MR-21
		2	MR-02D, MR-03C, MR-11B, MR-11C, MR-11D, MR-12, MR-20
		4	MR-21
Rattlebox *Sesbania punicea*	II	2	MR-02D, MR-03B, MR-03A, MR-04A, MR-05A, MR-06, MR-07, MR-08, MR-09A, MR-09B, MR-10A, MR-10B
Two-leaf nightshade *Solanum diphyllum*	II	2	MR-02A, MR-02B, MR-02D
Tropical soda apple *Solanum viarum*	I	1	MR-02D, MR-11B, MR-12
Wedelia *Sphagneticola trilobata*	II	2	MR-02B, MR-02C, MR-02D, MR-05E
		3	MR-05D
Arrowhead vine *Syngonium podophyllum*	I	3	MR-02D
Caesar's weed *Urena lobata*	I	2	MR-02A, MR-02B, MR-02C, MR-02D, MR-02E, MR-03A, MR-03B, MR-03C, MR-04A, MR-04B, MR-05E, MR-06, MR-07, MR-09A, MR-10A, MR-10B, MR-11A, MR-12, MR-13A, MR-13B, MR-13C, MR-13D, MR-15, MR-16, MR-18, MR-20, MR-21
		3	MR-02D, MR-03A, MR-03C, MR-04A, MR-05A, MR-05C, MR-05D, MR-05E, MR-08, MR-10B, MR-11B, MR-11C
		6	MR-01A, MR-02A, MR-04B
Para grass *Urochloa mutica*	I	2	MR-02D, MR-04A, MR-05E, MR-10A, MR-15
		3	MR-02A, MR-02B, MR-02D
		4	MR-03C, MR-02C, MR-02E, MR-02F
		5	MR-02A, MR-02B
Guinea grass *Urochloa maxima*	II	2	MR-02D, 11A

Distribution Categories

0 No current infestation: All known sites have been treated and no plants are currently evident.

1 Single plant or clump: One individual plant or one small clump of a single species.

2 Scattered plants or clumps: Multiple individual plants or small clumps of a single species scattered within the gross area infested.

3 Scattered dense patches: Dense patches of a single species scattered within the gross area infested.

4 Dominant cover: Multiple plants or clumps of a single species that occupy a majority of the gross area infested.

5 Dense monoculture: Generally, a dense stand of a single dominant species that not only occupies more than a majority of the gross area infested, but also covers/excludes other plants.

6 Linearly scattered: Plants or clumps of a single species generally scattered along a linear feature, such as a road, trail, property line, ditch, ridge, slough, etc. within the gross area infested.

Cultural Resources

This section addresses the cultural resources present in the park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Appendix 7 contains the FDOS's Division of Historical Resources (DHR) management procedures for archaeological and historical sites and properties on state-owned or controlled properties; the criteria used for evaluating eligibility for listing in the National Register of Historic Places, and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

Condition Assessment

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

Level of Significance

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. A cultural resource's significance derives from its historical, architectural, ethnographic or archaeological context. Evaluation of cultural resources will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

There are no criteria for determining the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high-quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

The following is a summary of the FMSF inventory. In addition, this inventory contains the evaluation of significance.

Prehistoric/Historic Archaeological Sites

Desired future condition: All significant archaeological sites within the park that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: According to FMSF, Myakka River State Park contains 17 recorded archaeological sites. Of these sites, five are prehistoric sites, twelve are historic sites related to the late nineteenth and early twentieth century, with two of the twelve historic sites dating to the New Deal development of the park by the Civilian Conservation Corps (CCC) in the late 1930s and 1940s.

The portions of the park in Manatee County and the former Ringling-MacArthur Reserve (now part of the park "Myakka Prairie" and Carlton Reserve) have been subjected to surface inspection and limited subsurface testing in areas with high site-potential. In 1985, Piper Archaeological Research surveyed almost 3,000 acres of the 33,000-acre Ringling-MacArthur Reserve that were identified as possessing a high site potential based on environmental variables, in order to produce data on cultural sensitivity for Sarasota County. The portion of the park located east of Lower Myakka Lake and south of State Road 72 was included in this survey which resulted in the recordation of three sites now within park boundaries (Piper Archaeological Research, Inc. 1987). In 1991, Piper Archaeology/Janus Research surveyed portions of Manatee County with a high site potential in order to assist the county with development planning, resulting in the recordation of one site now in the western reaches of the park (Piper Archaeology/Janus Research 1992). A 2013 archaeological sensitivity survey model utilizing advanced GIS technology that incorporated LiDAR mapping, georeferenced historic maps, environmental data, and field investigation was conducted by Dr. Lori Collins at Alliance for Integrated Spatial Technologies, University of South Florida. Over 78 percent of the park was determined to contain medium to high sensitivity for location of archaeological sites (Collins 2013).

The park has never been comprehensively surveyed for cultural resources, and no surveys have been conducted in the western half of the park. As a result, very little is known about the prehistoric occupation of the area and more could be learned about the various historic activities in the area, including cattle ranching, oil drilling, turpentining, and homesteading.

The settlement model for the interior coastal plain developed and refined by Robert Austin based on the results of the Ringling-MacArthur Reserve survey provides useful information for understanding prehistoric activity in the area and predicting site location (Piper Archaeological Research, Inc. 1987). Like the Ringling-MacArthur Reserve, Myakka River State Park is bisected by the Myakka River and lies within the Gulf Coastal Lowlands and the DeSoto Plain physiographic regions. Prehistoric sites appear to be short-term resource extraction or campsites located primarily on upland slopes adjacent to freshwater sources (wetland depressions, streams, or rivers), and secondarily in oak hammocks adjacent to freshwater swamps. Few, if any, large or permanent habitation sites have been identified. Areas located on the 20-foot contour line appear to have the highest potential for containing sites, while areas with low elevation, poor drainage, poor soil, and no permanent potable water appear to have the lowest potential. While the Myakka River and its lakes are the largest local source of fresh water, erosion and redeposition activity caused by periodic flooding have altered the landscape and likely destroyed many lower elevation sites. According to Austin, this region was occupied most intensively during the middle Archaic period, 5,000–3,000 B.C., and less frequently and intensively in the post-Archaic period.

Prehistoric Archaeological Sites

Myakka River State Park contains five recorded prehistoric sites which provide very limited insight into the prehistory of aboriginal peoples in the area. Two of these sites are represented by only a single artifact, two sites were documented in 1951 based on informant data alone, and two sites were recorded as limited lithic scatters. All of the sites are located in or immediately adjacent to high site probability areas; two sites (8So21, 8So22) are near the southwestern shore of Lower Myakka Lake, one site (8MA810) is near the northern end of Deer Prairie Slough, and two sites (8So431, 8So6727) are adjacent to an upland slope. No cultural affiliation or temporal period has been assigned to any of these sites.

Deep Hole Site (8So21): Surface scatter, including ceramic sherds; flooded annually. Documented by Ripley Bullen in 1951. An associated collection of artifacts is accessioned with the State.

No Name (8So22): Residence mound or kitchen midden; top layer excavated many years ago. Documented by Ripley Bullen in 1951. An associated collection of artifacts is accessioned with the State.

Cow Trail Site (8So431): Single coral thinning flake; recovered from the surface of an old cow trail in 1985 during the Ringling-MacArthur Reserve survey. Subsurface testing revealed no additional artifacts.

Oak Grove Campsite (8Ma810): Single lithic flake; recovered from a screen shovel test from 75 cm below ground surface in 1991 during the Manatee County archaeological survey. Three additional shovel tests revealed no additional artifacts.

Geo Tracker (8So6727): This site was discovered during a survey for archaeological resources prior to the construction of Palmetto Ridge Campground in 2009. It is described as a low-density prehistoric lithic scatter. Of the nine test holes that were dug, two tested positive for cultural materials (prehistoric lithic debitage) at a depth of 50-90 cm below the surface.

Historic Archaeological Sites

Myakka River State Park contains recorded and unrecorded remnants of the early 20th century cattle ranching industry and features associated with CCC park development and occupation during the late 1930s to early 1940s.

Mrs. Potter Palmer, a "progressive" agri-businesswoman, purchased much of what is now the park in 1910, and owned or controlled approximately 90,000 acres in Sarasota and Manatee Counties at the time of her death in 1918. The extensive dry prairie and wetlands in the region had been used for free-range cattle grazing since the 1840s. Mrs. Palmer, however, fenced and cross-fenced her property, installed dipping vats to eradicate ticks, erected silos and attempted to raise rice and corn for silage, and built a number of operational structures at her showcase ranch "Meadow Sweet Pastures" (Monroe 1977, Austin 1987). Beef cattle were brought in to improve the scrub-cow lineage, wetlands were connected by ditching to hasten drainage and increase grazing opportunities, earth roads were built, and exotic grasses were introduced to enhance the carrying capacity of the land for cattle. Shortly after the Palmer ranch was established, the Atlantic Coastline Railroad constructed and operated tracks from Nocatee (a small community southwest of Arcadia) to Sarasota, and a depot named Honore after Mrs. Palmer's brother, Adrian Honore, was constructed for loading cattle. Mrs. Palmer's death, followed by the great stock market crash a decade later, led to the decline of the cattle ranching industry and railroad operations in the area. The Palmer family donated 1,920 acres to the State, and the state purchased 17,070 acres from the estate of Adrian Honore in September of 1934. Remnants of Mrs. Palmer's ranch include recorded structural remains and their associated archaeological deposits, recorded trash piles, and unrecorded cultural landscape features such as roads and a 12-mile railroad grade that passed the Honore depot. The various structural remains are located in portions of the park not typically frequented by visitors. Many of the old roads are presently used as hiking trails or service roads for park maintenance. Half of the railroad grade has been used as a power line right-of-way since 1949. Five and one-half miles of the grade have been lowered to restore the hydrology.

Old Palmer Ranch Site (8So395): Remnants of the ranch headquarters, including footprints and structural elements of the main structure and associated outbuildings, three silo bases, old fencing, wells and debris piles. Documented in 1977 by L. Ross Morrell, SHPO, during relocation of the park camping area. Remnants observed in 2014 include concrete foundation stones and a welcome stone. Upon site visit and Archaeological Site Condition Assessment conducted in 2014, there is evidence of glass and ceramic remains being moved by visitors from the site onto the foundation.

Lincer Site (8So430): Two-acre above ground refuse pile, 1920–1950, adjacent to dirt road, upland slope, and intermittent stream; contains heavy duty, generic food-related artifacts such as glass bottles, jars and ceramic dishware, and structural remains such as clay bricks. Austin hypothesized that the site was associated with a cattle camp, either the result of debris accumulation over time or a single deposition of demolished structure and associated debris. Further research is needed to confirm site's association with the cattle ranching industry. Site remains relatively undisturbed from visitors. There is some hog and armadillo rooting present in the area.

Lincer Site #2 (8So611): Small, scattered refuse pile exposed by earth moving activity, 1930-1960, located on a low rise next to a stream; contains glass bottles and ceramics, similar in type, date range, and spatial proximity to Lincer. Further research is needed to confirm site's association with the cattle ranching industry. Site integrity has been disturbed by past land clearing activity.

Mossy Silo Bases (8Ma1466): Remains of grain silos similar to 8So6142, 8So6144, and 8So6146.

Cattle Dip Vat #2 (8Ma1467): Concrete cattle dip vat poured approximately four feet below grade with concrete drying area and remnant fencing.

Alligator Point Silo Bases (8So6142): These are the remains of two wooden grain silos dating to Mrs. Palmer's ranch. All that is left are concrete bases consisting of concrete pads one foot thick with cylindrical depressions in which the silos would have been constructed. A seasonally-flowing well is located 30 feet from this feature.

Ranch House Silo Bases (8So6144): These are the remains of wooden grain silos dating to Mrs. Palmer's ranch. There are two separate bases at this location: one single and one double concrete base. Both bases consist of concrete pad two feet thick with cylindrical depressions in which the silos would have been constructed.

Youth Area Silo Bases (8So6146): These are the remains of wooden grain silos dating to Mrs. Palmer's ranch. There are two separate bases at this location: one single and one double concrete base. Both bases consist of a concrete pad one foot thick with cylindrical depressions in which the silo would have been constructed.

Two archaeological sites are associated with camping activities which occurred in the park prior to Civilian Conservation Corps (CCC) development of the park.

Campground Well (8So6141): A small well sits by a sabal palm to the east of the boat basin at the Upper Myakka Lake. This is the location of tree houses that were constructed in large oak trees before the park was open. The well was then used to supply water to the campground that was constructed in the area in the late 1930s-1940s.

Harris Camp (So6607): This site is the location of a camp that was frequented by the Harris, Crowley, Wilson and Lowe families from 1889 until the mid-1940s. Harris Camp Monument (So3105) marks this location, located south of Lower Myakka Lake along the Myakka River.

CCC-Era Archaeological Sites

The most prominent of the park's cultural resources are the various structures, features, and other improvements constructed by the CCC between 1935 and 1942. Two recorded archaeological sites are associated with the CCC's occupation of the park.

CCC Boat Graveyard/Dump Site (8So2282): Large refuse pile, 1935–1945, scattered over 0.2 miles along two dirt roads; contains structural/construction debris, machinery and vehicle parts, ceramic dishware, glass bottles, and nine cypress rowboats. Retired park manager, Robert Dye, documented the site in 1993 via narrative text, video, and photography, and salvaged brass screws and oarlocks, and galvanized steel strapping and bow eyes. Site integrity is deteriorating as above ground remains rot and oxidize from exposure to the elements. None of the wooden boats remain visible as they were reported in 1993.

CCC Water Tower #1 (8So6145): Four cement foundation blocks are all that remain of what was once a water tower used to supply water for the CCC Camp in the early 1930s.

Condition assessment: All the archaeological sites in the park appear to be in a stable state and in fair condition. All sites are in remote locations not frequented by park visitors and are not obvious even to professional archaeologists. Site preservation is facilitated by the distance of most sites from public-use areas, park staff's sensitive natural resource management in cultural resources areas and regular site inspections.

Many of the sites were recorded as single or isolated artifact finds which were collected and archived. Revisits to these sites have not yielded additional finds, or could not be specifically located due to the nature of the site itself. Feral hogs are well known for their ground disturbing nature and are found throughout the park. They have the potential to unearth previously undiscovered artifacts at these sites. Two of the sites (8So21 and 8Ma810) have the potential for degradation due to erosion as they are seasonally flooded sites. The rate of degradation would be minimal since they occur within a lake edge (8So21) and within a slough (8Ma810), both of which have gradual rates of water exchange during high and low water level events.

DHR compliance and review of proposed development projects and archaeological resource monitoring of ground-disturbing activity help to protect both recorded and unrecorded cultural resources. The most at-risk archaeological component at the park appears to be above ground metal and organic artifacts which are deteriorating from exposure to the elements at an unknown rate. In 1993, the Park Manager recognized the need for further investigation of the CCC Dump/Boat Graveyard (8So2282) before many of the artifacts deteriorated completely. Unfortunately, none of the wooden boats noted in the 1993 assessment are still visible.

Level of significance: The CCC Boat Graveyard/Dump Site (8So2282) was considered as potentially eligible for the National Register of Historic Places by the surveyor when first surveyed in 1989 as individually significant and as a contributor to a potential CCC archaeological and historic district. However, the site has lost a great deal of integrity due to environmental factors and should be reevaluated. Surveyors of the Oak Grove Campsite (8Ma810) and Geo Tracker (8So6727) sites evaluated the sites as ineligible for the National Register due to extremely limited amounts of recovered material for evaluation and their lack of potential for yielding information to add to the archaeological record. None of the archaeological sites in the park have been formally evaluated by the State Historic Preservation Officer (SHPO) for eligibility for listing in the National Register.

General management measures: Preservation is the preferred treatment for all of the archaeological sites in the park. It is recommended that each site is visited at a minimum biannually to monitor conditions. Sites should also be documented with photographic evidence, and a site update form describing existing conditions and any changes since the last update should be submitted to the Division of Historic Resources. A new Archaeological Site Condition Assessment Program was launched in early 2014 and new assessment updates were completed for sites 8So395 (Old Palmer Ranch Site), 8So06607 (Harris Camp), and 8So6142 (Alligator Point Silo Bases) and added to our Master Site Files in February 2014. This program is designed for checking sites to see degradation levels, discerning which factors may threaten the site, and determining what treatment actions to take.

Historic Structures

Desired future condition: All significant historic structures and landscapes that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: The most noteworthy of the park's historic structures are the various buildings, features, and other improvements constructed by the Civilian Conservation Corps (CCC) between 1935 and 1942. In 1989, Historic Property Associates, Inc. inventoried, evaluated the significance of, and made National Register of Historic Places nomination and preservation recommendations for structures in Florida's nine New Deal parks, resulting in the recordation of 19 CCC-era structures in Myakka River State Park. In total, the park contains 26 recorded historic structures primarily clustered just north of State Road 72 between Upper and Lower Myakka Lakes. In addition to constructing numerous park facilities, the CCC cleared extensive firebreaks, built many miles of all-weather roads, installed weirs below Upper and Lower Myakka Lakes, and planted hundreds of thousands of North Florida slash pines in the dry prairies. While many of the park's CCC buildings still serve the public, most of the other "enhancements" have been, or are being removed or remedied; while they were well intended, they were not ecologically prudent actions. In addition to providing employment and job training for men during the Great Depression, CCC activities were also intended to improve or restore the degraded landscape, and to develop public recreation facilities according to professionally-drawn plans. The majority of the park's extant CCC buildings are rustic structures that were constructed out of natural materials, including limestone, cabbage palm logs, and timber extracted from the surrounding area.

<u>CCC-Era Historic Structures</u>

Latrine (8So2264): One-story, rectangular building with a wooden post-and-girt construction, cypress plank siding, gable roof with cypress shakes, and articulated limestone foundation. Past maintenance repairs and improvements that have altered the structure's historical integrity include installation of skylights and tile flooring in 1981.

Picnic Pavilion (8So2265): One-story shelter with a wooden post-and-girt construction, square hewn logs, crosses gable roof with cypress plank sidings, tripartite corner posts, and carved extended purlins. Its physical integrity is threatened by moisture damage, which is causing rot at the base of its square support beams despite installation of flashing. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of rotted wood with mortar. Rot areas were patched with mortar to slow degradation, but wood rot continues nonetheless. Nearly all of the support beams show rot and half have severe rot and need to be replaced. The original roof material would have been wooden shake shingles, and in the past have been replaced with asphalt shingles. Additionally, the structure had been painted from its original natural finish.

Log Picnic Pavilion (8So2266): One-story building with a wooden post-and-girt construction, cross gable roof with cypress shakes and decorative king post trusses and knee bracing in the gable end, palm log exterior walls chinked with asphalt and sawdust composite mortar, carved rafter ends, limestone chimney, and articulated limestone foundation. Its physical integrity is threatened by moisture damage, which is causing limestone to spall and wooden elements such as shingles to deteriorate. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of cypress shakes with sawn shingles in 1980 and 1993, repointing of chimney brick, and installation of an ADA ramp circa 1999.

Shed (8So2267): One and one half-story wood frame building with board-and-batten exterior wall fabric and a gable roof with 3-V crimp surfacing.

Ranger's Residence (8So2268): One-story wood frame vernacular residential building with a gable roof, end porch with knee wall and screen, wood weather board drop siding, brick chimney, and 3/1 double hung sash windows; pre-dates the CCC structures and was relocated to the park. The original structure consisted of a large room with a bedroom in the back; a kitchen, bedroom, and bathroom are later additions. Roof sheathing would have been originally shake shingles and has been replaced with asphalt.

Horse Barn/Interpretive Center (8So2269): Large one and one half-story building with wooden post-and-girt construction, gable roof with cypress shakes, cypress plank exterior wall fabric, cupola, casement windows, and articulated limestone foundation. Its physical integrity is threatened by insects and water damage, which is causing mildew and wood rot. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of the majority of cypress siding in 1980, replacement of purlins, rotation and replacement of beams and rafters, replacement of cypress roof shakes with fiberglass tab shingles, and addition of reversible restrooms with separate plumbing in 2002.

Caretaker's Cottage (8So2270): One-story building with wooden post-and-girt construction, cross gable roof with cypress plank siding in gable ends, palm log exterior wall secured with heavy gauge wiring and chinked with asphalt and sawdust mortar, decorative shutters, limestone chimney, and limestone foundation piers. Its physical integrity is threatened by long periods of dampness in the lower walls, which is causing pocket rot. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of log siding via stapling, addition of metal flashing, and replacement of original shakes with regular shim shingles.

Maintenance Shed/Park Shop (8So2271): One -story building with wooden post-and-girt construction, cross gable roof, articulated limestone foundation, and plywood siding. The building has undergone substantial modifications, and consequently retains little historical integrity.

Concrete Dam (8So2273): Dam with limestone walls and cylindrical concrete spillway, approximately 200 feet long, located on the southern edge of Upper Myakka Lake. This structure is degrading and potentially hazardous, with the concrete finish crumbling in many areas, with some exposed holes.

Latrine (8So2274): One-story building with wooden post-and-girt construction, gable roof with cypress shakes, palm log exterior wall secured with heavy gauge wire and chinked with asphalt and sawdust mortar, two stoops, louvered windows, copper and lead flashing, and an articulated limestone foundation. Its

physical integrity is threatened by termites. Past maintenance repairs and improvements that have altered the structure's historical integrity include replacement of oak corner beams with cypress beams and brackets.

Cabin 1 (8So2275): One-story, L-shaped building with wooden post-and-girt construction, cross gable roof with decorative king post trusses and knee braces in gable end, palm log exterior wall secured to with heavy gauge wire and chinked with asphalt and sawdust mortar, entrance porch, carved rafter ends, limestone chimney, and limestone foundation piers. Its physical integrity was threatened by periodic flooding, and was elevated in 2015. Past maintenance repairs and improvements that have altered the structure's historical integrity include floor replacement with plywood, and in-fill of the porch to provide ADA accessibility. The original structure originally would have been rectangular with an addition added in the 1940s.

Cabins 2–5 (8So2276–8So2279): Similar to Cabin 1, minus ADA alterations.

Earthen Dam/Levee (8So2280): Earthen levee, approximately 1000 feet long and 25 feet high, designed to stop downstream drainage of Upper Myakka River.

Fire Tower (8So2281): Elevated building with a hip roof, steel skeletal frame, and concrete piers. The building is not presently under park management and is under the property of the Florida Forest Service (FFS). This structure was auctioned off by FFS to a private bidder and was removed from the property in December of 2013.

Harris Camp Monument (8So3105): Stone monument erected in 1945 in the location of the Harris Camp (So6607) site to commemorate the Harris, Crowley, Wilson and Lowe families' use of the site as a camp since October 1889. Allen Crowley was the first park manager at Myakka River State Park, and the Wilson and Lowe families were early settlers in the area of Sarasota, then in Manatee County. Condition during the 2014 site assessment, there was evidence of visitor use in the area but no damage or degradation to the monument except normal wear from the elements.

Myakka Shop Building (8So6992): One-story wood frame vernacular rectangular building with a gable roof. Built in 1935 with wood siding, concrete floor, and asphalt shingles on roof. Shop building has not been moved, altered, or added onto. Overhang from building to cover another concrete slab serves as a maintenance bay. Plaque on outside of building states: "Built by the men of the Civilian Conservation Corp 1934-1941."

Other Historic Structures

Cattle Dip Vat #1 (8So2272): One of two concrete cattle dip vats, poured below grade with an associated rough-cut, heart pine draining platform; constructed circa 1917. The vat was recorded as part of the New Deal survey, but is believed to be associated with Mrs. Potter Palmer's ranch. The Florida Department of Environmental Protection analyzed the vat for contaminants, detecting arsenic in the surrounding soil but not the water.

Myakka Original Ranger Station (8So6986): One-story wood frame, concrete block vernacular rectangular building with a gable roof. Wood siding, concrete block, and asphalt shingles on roof. This structure was originally built in 1959 to serve as main Ranger Station. It was converted to administrative offices in 2002. The original door used to take day use admission was removed and decorative stone was added to match the new Ranger Station. Double pane sliding windows replaced in 2013 from single pane sliding. New windows fitted to old openings. Ornamental limestone on bottom 1/3 of structure added in 2002.

Old Prairie Campground Bathhouse (8So6989): One-story concrete block vernacular rectangular building with a gable roof. Concrete building with asphalt shingles. Built in 1961 to serve as a bathhouse for the campground. Supply room altered into unisex restroom in 2011.

Big Flats Campground Bathhouse (8So6991): One-story concrete block, masonry veneer-artificial, and stone vernacular rectangular building with a gable roof. Concrete building with asphalt shingles. Built in 1958 to serve as a bathhouse for the campground. Heavy campground use and poor design have caused the walls to crack and settle. Concrete blocks were stacked on top of each other instead of staggered, which would have given it more support. Rectangular screen windows with wood frames and concrete louvers.

Myakka River State Park North Residence (8So6988): One-story concrete block vernacular building with a gable roof. T-shaped exterior with wood siding and stone with asphalt shingles on the roof. 2 bedroom 1 bath house with braced wood frame and poured concrete footing. Built in 1962 as a private residence to house the north gate park ranger who collected tolls at the north entrance of the park. It has since housed rangers and assistant park managers. An addition of car port and porch were added later and other alterations are unknown. Single hung sash, metal, paired, 2/2, rectangular windows.

Myakka River State Park North Gatehouse (8So6990): One-story masonry veneer-artificial vernacular rectangular building with gable roof. Built in 1962 to serve as a gatehouse to collect admission fees to the park. Currently, there is limited use of building as it is only open weekends and state holidays and has very limited public access. Used strictly for collecting admission fees to the park. Concrete slab, braced wood frame, and poured concrete footing. Building has not been moved or added on to. Alterations are not known. Single hung sash, metal, paired, 2/2, rectangular windows.

CCC Memorial Historic Monument (8So7028): This structure is a memorial to the CCC men who created the infrastructure for Myakka in the 1930s and 40s. It consists of a large plaque on a large stone formation.

At least 10 park buildings were constructed during the late 1950s to the mid-1960s and are now considered as historic structures. These buildings should be documented and recorded in the Florida Master Site File. They include the Lake Restroom (BL056018), the Hill Area Ranger Residence (BL056020), the Manager's Residence (BL056021), the Group Area Restroom/Shower (BL056017), the Park Manager's Shed (BL056039), the Grease House (BL056029), the Myakka Residence (BL056044), the Horse Trail Privy (BL056027), and the Equipment Shelter (BL056028).

Condition assessment: The park's CCC structures are generally in good condition, because of vigilant monitoring, maintenance, and retention of historical appearance by park staff. These buildings, the majority of which continue to serve public and park maintenance needs in the original function intended, show the predictable deterioration caused by environmental factors and daily use. Excessive environmental moisture in the form of heavy rainfall and periodic flooding is the largest threat to the structures, causing wood to rot, fungus to bloom, and limestone to spall. Remedial preservation efforts demand frequent repair and periodic replacement of structural elements, application of mildewcides, and consideration of other effective, low risk alternatives to reducing structures' vulnerability to water damage. Pests that nest and feed on structural lumber, such as termites and wasps, also threaten buildings' cosmetic appearance and structural integrity.

A report entitled Preservation Plan for 7 CCC Structures at Myakka River State Park was developed by Stevenson Architects Inc. in 2009. The plan documented and assessed existing conditions for the Log Picnic Pavilion (8So2266), the Latrine/Log Restroom (8So2274) and the five CCC cabins (8So2275 –8So2279), provided preservation recommendations, and created conceptual designs, prioritizations of work and project budgets. Archival drawings, existing conditions drawings and conceptual design drawings were also created as part of the plan.

Many of the unrecorded historic structures from the 1950s to the mid-1960s are standard park buildings that were not constructed to match or complement the CCC buildings and have been modified from their original construction to keep up with increasing visitor use, changing building codes, updating to meet ADA compliance and general maintenance repairs and renovations. They are in fair to good condition. However, a few of these structures continue to degrade, are near or past the end of their typical life expectancy and are in poor condition.

Level of significance: All of the CCC structures were considered as potentially eligible for the National Register of Historic Places by the surveyor when first surveyed in 1989, both individually and as contributors to a potential CCC archaeological and historic district. The large concentration of palm log buildings at the park is unique. However, some structures have experienced a loss of material integrity as noted in the Description section above, and may no longer be considered as individually significant, although they still retain a great deal of their historic appearance and

contribute to larger historic district. None of the historic structures in the park have been individually evaluated by the State Historic Preservation Officer (SHPO) for eligibility for listing in the National Register; however, the SHPO's office generally considers that all of the CCC structures in the park are eligible for the National Register as elements of a potential CCC historic district. A National Register district nomination was begun in 2017 by the Division of Historical Resources but is not yet completed.

General management measures: All of the recorded CCC structures in the park are managed using preservation or a combination of rehabilitation and preservation as the preferred treatments. All of these buildings are currently being used for their original purposes, although a few have had modifications for safety and ADA purposes. All of the historic CCC structures have been tented and fumigated with Vikane, Sentricon termite monitoring and baiting systems are employed, and physical barriers such as screens have been installed. Park maintenance repairs and improvements, such as new building additions or substitution of new construction material, can adversely impact structures' historical fabric and character. Care must be taken to select appropriate material, methods, and design that meet Secretary of Interior historic preservation standards, to consult with preservation consultants at the Bureau of Natural and Cultural Resources and elsewhere as needed, and to secure Florida Division of Historic Resources' Compliance and Review approval if warranted. Any historical structure requires routine maintenance in order to preserve its integrity. Historic structures at Myakka River State Park require at times an immense amount of maintenance due to the particularly wet environment.

Ongoing documentation of the preservation treatments applied to each historic structure is one of the park's largest cultural resource management needs. While preservation work ideally increases the longevity, and maintains the integrity of a building, it can also alter the building's historical configuration and composition through the introduction of new treatment applications, structural materials, and building additions. Furthermore, despite highest hopes, some preservation work proves unsuccessful, or is later superseded by more effective or appropriate alternate treatments. Documenting each repair or restoration project is critical to understand and differentiate between the structure's historical and modern composition at any point in time, to learn about the best approaches and products from past efforts and mistakes, and to make sound and informed decisions about future preservation needs.

To mitigate the recurrent flooding threat the five CCC cabins (8So2275 – 8So2279) were elevated by 24 inches above the current height in 2015, as recommended in the 2009 preservation plan. Flood damaged materials were also repaired or replaced. Elevation of the cabins will prevent exposure to flood waters during most flooding events.

Three park buildings constructed in the late 1950s are under consideration for removal. The cost to repair these buildings is likely to exceed the cost of replacement, and they are standard park buildings with no historic or design association or significance. The old concession building (BL056019) was in a serious state of disrepair and was demolished in June 2017, a replacement concession building was constructed in 2009. Two restroom structures, the Lake Restroom (BL056018) and the Big Flats Restroom (BL056026) are in the process of being evaluated for reuse or replacement. If replacement is determined to be the most feasible option for the buildings, Bureau of Natural and Cultural Resources staff will consult with DHR Compliance staff as to documentation of the buildings prior to their removal.

Collections

Desired future condition: All historic, natural history and archaeological objects within the park that represent Florida's cultural periods, significant historic events or persons, or natural history specimens are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

Description: Collections kept within Myakka are limited. There is an existing herbarium collection composed of most plant species found in the park. The visitor center contains numerous natural resource artifacts in the form of taxidermy specimens of represented species in the park.

Condition assessment: The collections are maintained currently in the park visitor center. This includes the herbarium and most

taxidermy and is maintained with a central heating and ventilation system. No additional humidity control devices are in place. There are a few taxidermy specimens housed in the ranger station which are maintained with a central heating and ventilation system. All taxidermy specimens are aging and some are badly deteriorating. Their useful life is not expected to extend beyond the life of this plan. Pest control consists of quarterly inspections by contract with Terminex, limited to general pest treatment around the perimeter of the structure in which they are housed.

Level of significance: The collection represents the types of plant and wildlife to be found in the park. Its significance lies in its ability to interpret the park's natural resources.

General management measures: A collections management program was virtually nonexistent until 2013. It was then that a statewide collections management program was initiated for the DRP and the park's collections were inventoried and recorded. It is intended that this information will be stored and available for reference through the Past Perfect software database. There are currently no staff trained in taxidermy care and maintenance. The specimens are housed in enclosed displays in the visitor center and the specimens housed in the ranger station are exposed. It is recommended that these specimens be evaluated for condition, and those which have passed their useful life be de-accessioned, with these displays consolidated and replaced with modern interpretive displays to include the cultural history of the park such as the CCC and cattle ranching. A Scope of Collections is needed to assist the park in formulating its collections strategy and determining the types of objects needed to advance interpretive programming.

Table 6 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the Florida Master Site File. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

Cultural Resource Management Program

Cultural resources are individually unique, and collectively, very challenging for the public land manager whose goal is to preserve and protect them in perpetuity. The DRP will implement the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in Myakka River State Park.

Goal: Protect, preserve and maintain the cultural resources of the park.

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places must be submitted to the FDOS's Division of Historical Resources (DHR) for review and comment prior to undertaking the proposed project. Recommendations may include, but are not limited to concurrence with the project as submitted, pre-testing of the project site by a certified archaeologist, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to the DHR for consultation, and the DRP must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource. Florida law further requires that DRP consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. This comparison must be accomplished with the assistance of the DHR.

Objective A: Assess and evaluate 43 of 43 recorded cultural resources in the park.

Action 1	Complete 17 assessments/ evaluations of archaeological sites.
Action 2	Complete 12 Historic Structures Reports (HSR's) for historic buildings and cultural landscape. Prioritize stabilization, restoration and rehabilitation projects.

Assessments of the 17 known archaeological sites in Table 6 will be conducted every two years. Such assessments should include an examination of each site with a discussion of any threats to the site's condition such as natural erosion; vehicular damage; horse, bicycle or pedestrian damage; looting; construction including damage from firebreak construction; animal damage; plant or root damage, other factors that might cause deterioration of the site, and whether or not the site could be relocated. This evaluation should attempt to compare the current condition with previous evaluations using photo points, high resolution scanning, or similar techniques in order to prioritize the need for preservation and stabilization projects.

Historic Structures Reports are recommended for the remaining 12 recorded CCC/New Deal structures that were not included within the Preservation Plan for 7 CCC Structures at Myakka River State Park (Stevenson 2009). Such reports are necessary to prioritize repair, rehabilitation, and preservation projects and to determine whether more detailed documentation and preservation plans need to be developed for certain structures.

Objective B: Compile reliable documentation for all recorded historic and archaeological resources.

Action 1	Ensure all known sites are recorded or updated in the Florida Master Site File.
Action 2	Conduct Phase I archaeological survey for two priority areas identified by the predictive model.
Action 3	Develop and adopt a Scope of Collections Statement.

The park needs to record the 1950s to mid-1960s buildings which are now considered historic. They are the Lake Restroom (BL056018), the Hill Area Ranger Residence (BL056020), the Manager's Residence (BL056021), the Group Area Restroom/ Shower (BL056017), the Park Manager's Shed (BL056039), the Grease House (BL056029), the Myakka Residence (BL056044), the Horse Trail Privy (BL056027), and the Equipment Shelter (BL056028).

A predictive model (archaeological sensitivity model) has been completed for the park. A Phase I archaeological survey will be conducted in at least two priority areas identified by the predictive model and located within areas of proposed future development. A Scope of Collections Statement will be developed and adopted in accordance with Chapter 12 of the DRP Operations Manual and in coordination with BNCR staff.

Objective C: Bring 17 of 43 recorded cultural resources into good condition.

Action 1	Design and implement regular monitoring programs for 17 cultural sites.
Action 2	Create and implement a cyclical maintenance program for each cultural resource.

Monitoring programs of the 17 known archaeological sites in Table 6 will be designed and implemented based on the results of the archaeological evaluations/assessments conducted in accordance with Objective A. Such evaluations will help guide the frequency that each site is monitored and identify which sites can be brought to "good" condition.

A cyclical maintenance program shall be designed and implemented for each cultural resource. Archaeological site maintenance shall be guided by the results of the assessment and evaluation of the sites. Historic structure maintenance shall be determined in conjunction with regular park building maintenance schedules and guided by the Secretary of the Interior's Standards for Historic Preservation.

Most of the recorded historic structures in the park are in good condition. Implementation of the preservation recommendations in the Preservation Plan for 7 CCC Structures at Myakka River State Park (Stevenson 2009) for the Log Picnic Pavilion (8So2266), the Latrine/ Log Restroom (8So2274) and the five CCC cabins (8So2275 – 8So2279) was completed in 2016.

Table 6. Cultural Sites Listed in the Florida Master Site File

Florida Master Site File Number and Site Name	Culture/Period	Description	Significance	Condition	Treatment
8Ma810 Oak Grove Campsite	Prehistoric/Unspecified	Archaeological Site	NS	F	P
8Ma1466 Mossy Silo Bases	Historic/American, 1821-1899	Archaeological Site	NE	F	P
8Ma1467 Cattle Dip Vat #2	Historic/American, 1821-1899	Archaeological Site	NE	F	P
8So21 Deep Hole	Prehistoric/Unspecified	Archaeological Site	NE	F	P
8So22 No Name	Prehistoric/Unspecified	Archaeological Site	NE	F	P
8So395 Old Palmer Ranch Site	Historic/American 1821-1899	Archaeological Site	NE	F	P
8So430 Lincer Site	Historic/Twentieth century American, 1900-present	Archaeological Site	NE	F	P
8So431 Cow Trail Site	Prehistoric/Unspecified	Archaeological Site	NE	F	P
8So611 Lincer #2	Unspecified	Archaeological Site	NE	F	P
8So2264 Latrine (South Restroom)	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2265 South Picnic Pavilion	Historic/New Deal—CCC	Historic Structure	NR	F	P
8So2266 Log Picnic Pavilion	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2267 Shed	Historic/New Deal—CCC	Historic Structure	NR	F	P
8So2268 Ranger's Residence	Historic/New Deal—CCC	Historic Structure	NR	G	P

8So2269 Interpretive Center	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2270 Caretaker's Cottage	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2271 Maintenance Shed	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2272 Cattle Dip Vat #1	Historic/WWI and Aftermath	Historic Structure	NR	F	P
8So2273 Concrete Weir and Dam	Historic/New Deal—CCC	Historic Structure	NR	F	P
8So2274 Latrine (Log Restroom)	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2275 Cabin 1	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2276 Cabin 2	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2277 Cabin 3	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2278 Cabin 4	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2279 Cabin 5	Historic/New Deal—CCC	Historic Structure	NR	G	P
8So2280 Earthen Dam/Levee	Historic/New Deal—CCC	Historic Structure	NR	F	P
8So2281 Fire Tower	Historic/New Deal—CCC	Historic Structure	N/A	N/A	R
8So2282 Boat Graveyard	Historic/New Deal—CCC	Archaeological Site	NR	F	P
8So3105 Harris Camp Monument	Historic/New Deal—CCC	Historic Structure	NE	G	P
8So6141 Campground Well	Historic-Unspecified	Archaeological Site	NE	F	P
8So6142 Alligator Point Silo Bases	Historic/American, 1821-1899	Archaeological Site	NE	F	P
8So6144 Ranch House Silo Bases	Historic/American 1821-1899	Archaeological Site	NE	F	P

8So6145 CCC Water Tower #1	Historic/New Deal—CCC	Archaeological Site	NE	F	P
8So6146 Youth Area Silo Bases	Historic/American, 1821-1899	Archaeological Site	NE	F	P
8So6607 Harris Camp	Historic/American, 1821-1899	Archaeological Site	NE	F	P
8So6727 Geo Tracker	Prehistoric/Unspecified	Archaeological Site	NS	G	P
8So6992 Myakka Shop Building	Historic/New Deal—CCC	Historic Structure	NS	F	P
8So6986 Myakka Original Ranger Station	Historic/American 1950s-1960s	Historic Structure	NS	F	P
8So6989 Old Prairie Campground Bathhouse	Historic/American 1950s-1960s	Historic Structure	NS	F	P
8So6991 Big Flats Campground Bathhouse	Historic/American 1950s-1960s	Historic Structure	NS	F	P
8So6988 Myakka River State Park North Residence	Historic/American 1950s-1960s	Historic Structure	NS	F	P
8So6990 Myakka River State Park North Gatehouse	Historic/American 1950s-1960s	Historic Structure	NS	F	P
8So7028 CCC Historic Monument	Historic Modern Post-1950s	Historic Structure	NS	F	P

Significance

NRL	National Register listed
NR	National Register eligible
NE	not evaluated
NS	not significant

Condition

G	Good
F	Fair
P	Poor
NA	Not accessible
NE	Not evaluated

Recommended Treatment

RS	Restoration
RH	Rehabilitation
ST	Stabilization
P	Preservation
R	Removal
N/A	Not applicable

Special Management Considerations

Timber Management Analysis

Statutory Requirements

Chapters 253.036 Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres, including:

- An analysis of the multiple-use potential of the parcel. Such analysis shall include the potential of the parcel to generate revenues to enhance the management of the parcel.
- An assessment of the feasibility of managing timber resources for conservation and revenue generation purposes through a stewardship ethic that embraces sustainable forest management practices in land management plans.

During the development of this plan, an analysis was made regarding the potential for and feasibility of timber management activities in the park. It was determined that the primary management objectives of the unit could be met without conducting commercial timber management activities for this management plan cycle. Timber management will be re-evaluated during the next revision of the management plan.

Land Management Condition and Objectives

The primary management goals for MRSP (37,197 acres total) is the restoration and maintenance of the dry prairie (14,732 acres). Dry prairie is endemic to Florida and is ranked imperiled by the state of Florida and globally. The high-quality, contiguous prairie habitat at MRSP is some of the last remaining of this globally endangered natural community.

The prairie is inhabited by robust populations of imperiled plants and animals that are rare throughout the rest of their natural range.

The maintenance and restoration of the dry prairie habitat requires the frequent application of prescribed fire and the restoration of natural hydrological processes. There is no canopy of trees associated with the prairie and the site is dominated by native grasses and low growing shrubs. MRSP's only potential need for timber removal would be to reduce the encroaching hardwoods from the embedded and adjacent hammocks, and scrubby and mesic flatwoods.

The approximate 3,948 acres of scrubby and mesic flatwood habitat at MRSP is not contiguous but rather occurs in 108 somewhat small (average 35 acres per area), isolated patches scattered among the dry prairie and depression marshes (totaling 21,520 acres) of the park. The scrubby flatwoods of MRSP contains a sparsely stocked overstory compared to the FNAI desired condition, and more closely resembles scrub. The majority of scrubby flatwoods is in a band northwest of the Upper Myakka Lake. To preserve the highly biodiverse transition zones between habitat types, mineral soil fire breaks are not placed at habitat edges. No effort is made to prevent these areas from burning with the same frequency as the surrounding dry prairie, every 1-2 years. There are documented accounts of Florida scrub-jays breeding in the MRSP scrubby flatwoods; the long-term goal is to burn these areas to maintain the successional stage required by scrub-dependent species.

The remainder of MRSP consists of wetland habitat types characterized by extended hydroperiods and a canopy, if one is present, dominated by hardwoods and palms. The only active management in these habitats is to let fire burn into the area as far as possible, dependent on soil moisture, to reduce the encroachment of woody vegetation into the surrounding prairie. The Timber Management Analysis found in Addendum 8 provides additional details.

Dark Skies

Due to the park's location in a largely rural area, the night sky remains dark and relatively free from artificial light pollution. Night sky observation programs have been popular at the park for many years. Dark skies benefit the park's visitors, and help protect the park's flora and fauna. Research has shown that artificial light pollution can disrupt the growth cycle of plants and alter the foraging, migrating, and breeding behavior of wildlife, not just in urban centers but in rural areas as well (Chepesiuk 2009). Maintaining dark skies in and around the park has ecological, aesthetic, and recreational benefits.

Arthropod Control Plan

All DRP lands are designated as "environmentally sensitive and biologically highly productive" in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, the DRP works with the local mosquito control district to achieve consensus. Larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation.

Currently, there is an Arthropod Control Plans for this park with Sarasota County Mosquito Management Services, that allows for ground spraying the visitor use areas if requested, but no other treatment. There is no Arthropod Control Plan with Manatee County Mosquito Control District because they do not intend to treat mosquitos within the park boundary. Updated maps have been made available to both agencies.

Wilderness Preserve

A 7,500-acre tract in the southwest corner of the park has been designated as a Wilderness Preserve. Wilderness preserve designations are typically reserved for large, undeveloped areas within parks that have retained their principal character and influence without permanent alteration. They are protected and managed in a manner to preserve this natural appeal and value. The number of visitors allowed into a wilderness area is limited to maintain the wilderness quality. The characteristics of a wilderness preserve are as follows:

- Generally appears to have been affected primarily by the forces of nature, with human impacts substantially unnoticeable;
- Offers outstanding opportunities for solitude, or a primi-tive and unconfined type of recreation;
- Is expansive and sufficient in size to make preservation and use in an unimpaired condition practical;
- May also contain ecological, archaeological, or other features of scientific, educational, scenic, or historic value.

Uses are limited, passive in nature, and related to the aesthetic, educational and scientific enjoyment of the features and conditions maintained. Other uses may be permitted if fully compatible. Activities that are generally recognized as being compatible within the Preserve are trail use, canoeing/ kayaking, nature study and natural scenery appreciation. Facilities are limited to those considered essential for management and appropriate forms of public use. Vehicles are prohibited on the wilderness preserve except for during emergencies and for resource management.

Only 30 visitors per day are allowed access to the preserve. Permits are required for boaters, paddlers and hikers. Permits are issued on a first come first serve basis at the ranger station. Permits are in high demand and all available permits will frequently be issued by as early as 9 am on busy days.

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation and recreation lands titled in the name of the Board of Trustees are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The DRP considered recommendations (see Appendix 9) of the land management review team and updated this plan accordingly.

Myakka River State Park was subject to a land management review on June 6, 2014. The review team made the following determinations:

- The land is being managed for the purpose for which it was acquired.
- The actual management practices, including public access, complied with the management plan for this site

Land Use Component

Demographics

North Port-Sarasota-Bradenton Metropolitan Area

Myakka River State Park is within the North Port-Sarasota-Bradenton metropolitan statistical area (MSA or metro area), which includes Sarasota and Manatee County. MSAs (also newly termed as a Core Based Statistical Area) are defined by the Federal Office of Budget and Management as geographic entities with at least one urban core, plus adjacent areas that have a high degree of social and economic integration with the core through commuting ties (OMB 2010). Sarasota, Bradenton, and North Port are considered to be the urban cores, with the unincorporated areas of Sarasota and Manatee County as the adjacent areas. The current population of the North Port-Sarasota-Bradenton MSA is 776,042 (*UF—BEBR 2017).

The demographic characteristics of Sarasota and Manatee County differ only slightly. As shown in the Table 7, Sarasota County is more populous and is more urbanized, with 36.5% of its population living in incorporated municipalities compared to 21% in Manatee County. Both counties can be characterized as racially homogenous; 92% of Sarasota County residents self-identify as white, while Manatee County is slightly lower at 86%. Manatee County has more diversity with 9% identifying as African-American and 16% as Hispanic compared to 4% and 9%, respectively, in Sarasota County (US Census 2017). Per capita income in Sarasota County is $59,013 and $44,158 in Manatee County, with the statewide average at $45,953 (BEA 2017).

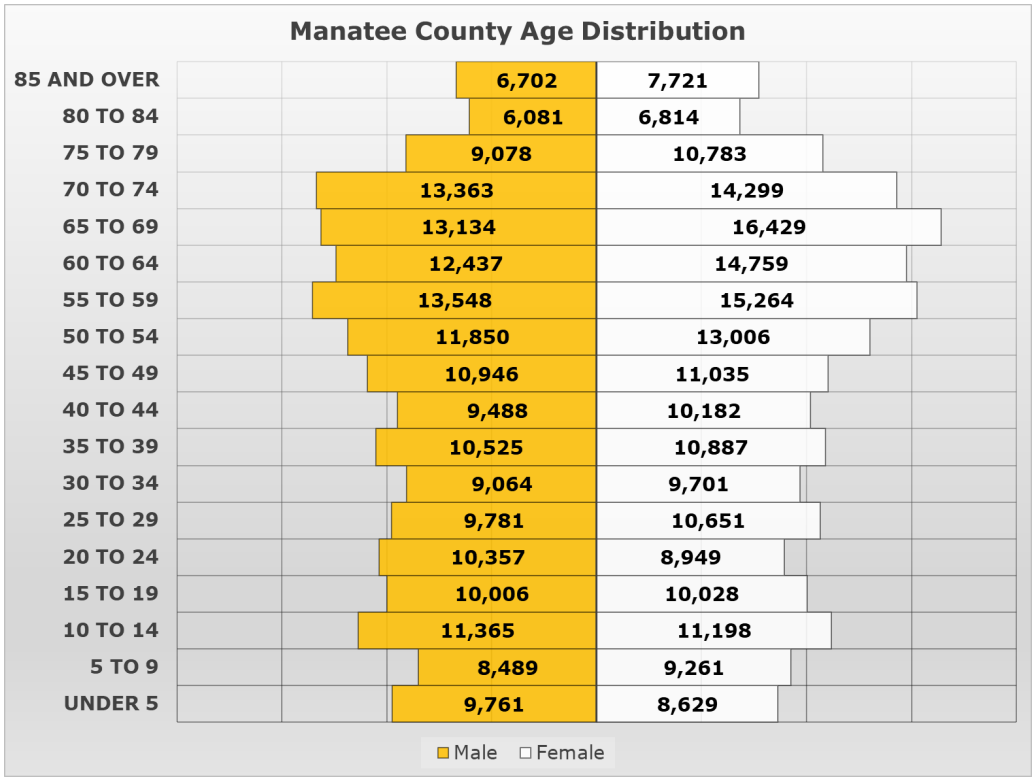
Table 7 . North Port-Sarasota-Bradenton Metro Area Current Populations*

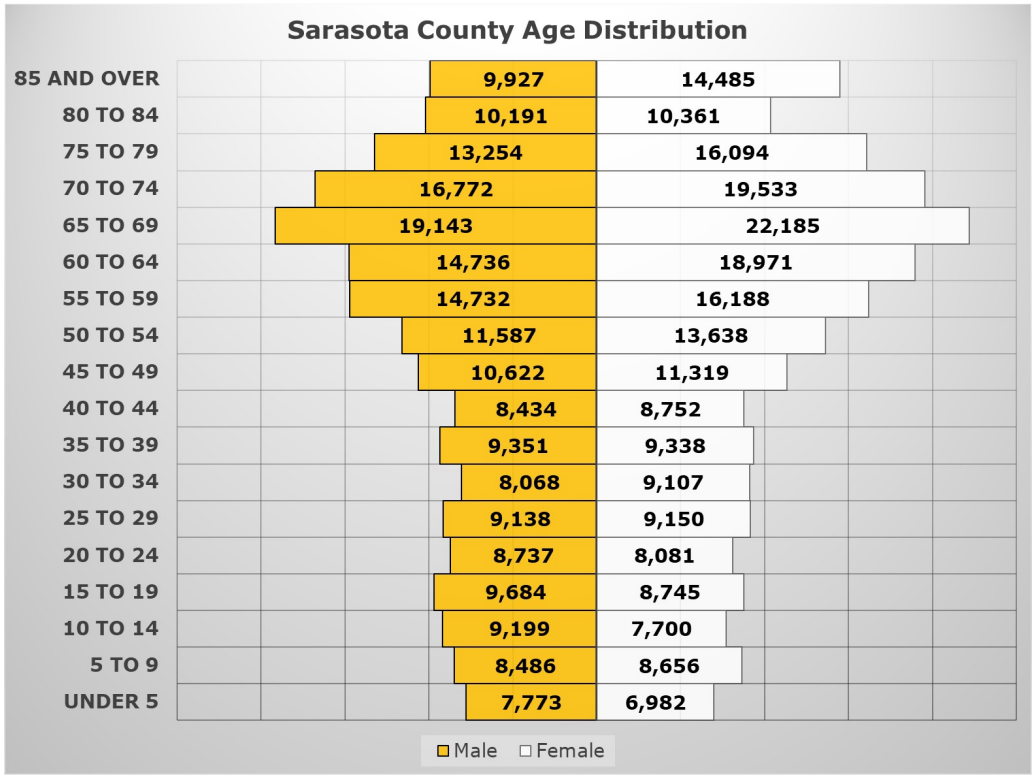
Counties	Sarasota County	Manatee County
Incorporated	148,666	76,918
Unincorporated	258,594	291,864
Total	407,260	368,782
Urban Cores		
North Port	Sarasota	Bradenton
67,196	54,641	54,652

The following population pyramids show the age distribution in the two counties (US Census 2017). As can be seen, Sarasota and Manatee County both have large older populations, but Manatee County has a relatively large young population that could potentially fuel population growth moving forward.

Regional Population Growth

Over the past twenty years, the North Port-Sarasota-Bradenton MSA has grown almost 40%, increasing from approximately 535,000 to over 776,000 (UF—BEBR 2017). While both Sarasota and Manatee County have grown steadily, more of the growth over the past





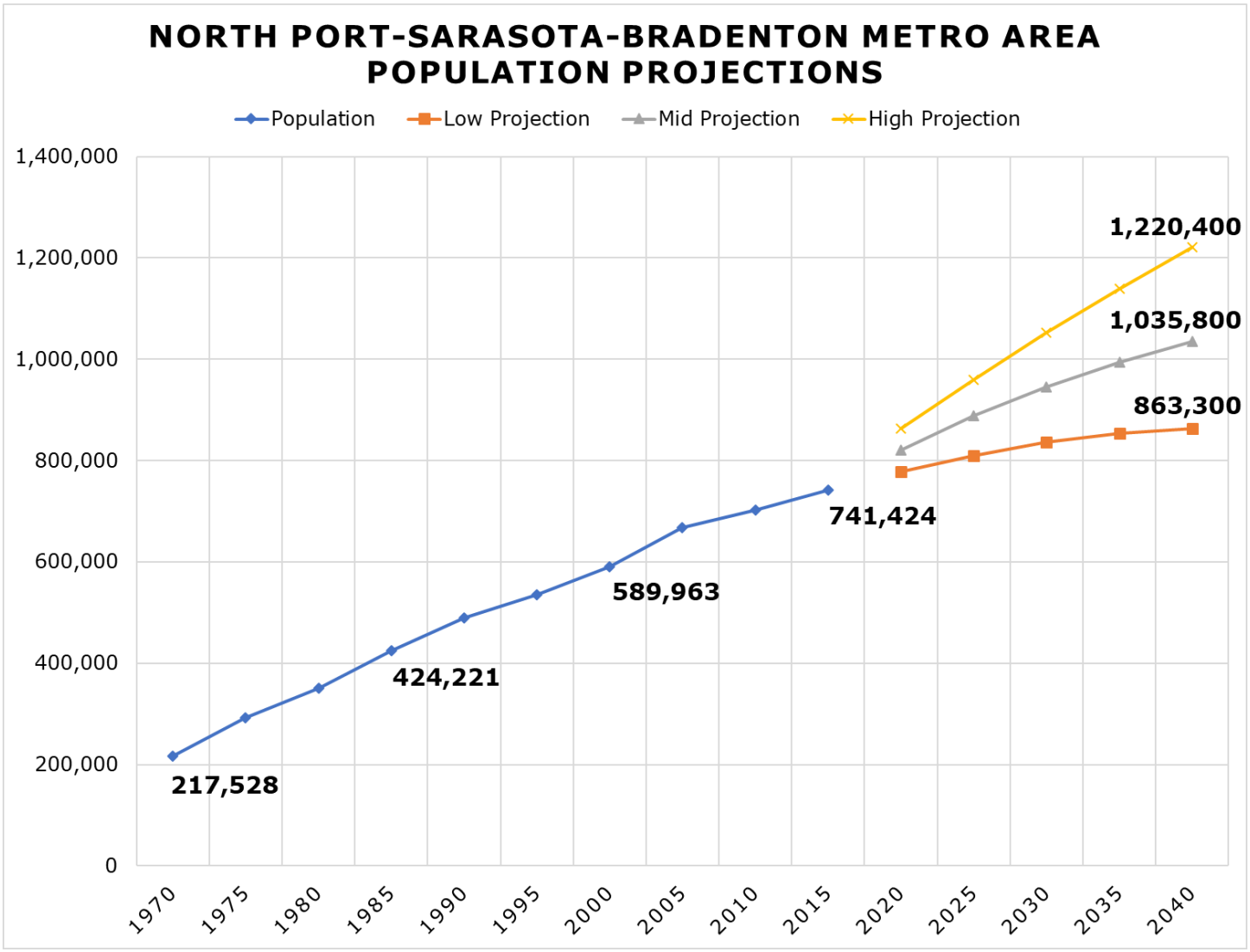
twenty years can be attributed to Manatee County. From 1995-2015, Manatee County grew by 48% while Sarasota County grew by 31%. Over the next twenty years, population growth is projected to continue to increase for both counties; but, the growth of Manatee County is projected to continue accelerating at a faster rate. By 2040, Manatee County could be the more populous of the two counties. The following chart shows population projections for the North Port-Sarasota-Bradenton MSA. According to University of Florida demographers, if both counties achieve their mid-level projections, this MSA will top one million residents by 2040 (UF—BEBR 2017).

Land Use and Zoning

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

Existing Use of Adjacent Lands

Adjacent land uses surrounding the park are generally conservation lands, agriculture use, and rural residential uses. To the southwest and south are additional conservation areas such as the Pineland Reserve, T. Mabry Carlton, Jr. Memorial Reserve and the Carlton Ranch. To the east of the park is mainly agricultural use and some areas of low-density residential. Where Manatee County adjoins the park to the east, there is a buffer of conservation land, low-density residential, and agricultural uses. To the north and north east of the park are areas in agricultural use, low-density rural residential uses, and the Triangle Ranch Conservation Easement.



Planned Use of Adjacent Lands

Each comprehensive plan for Sarasota and Manatee County has been approved to help guide development in the respective counties. In general, both counties are seeking to limit urban sprawl, encourage infill development and increased density in the urban cores, improve quality of life, and promote environmental conservation. Each county has established an urban growth boundary to discourage urban sprawl and delineate the area in which the counties would prefer to encourage continued urban development and increased density. The areas immediately adjacent to and surrounding Myakka River State Park are largely designated as rural (low -density residential), agricultural, or conservation lands and provide a significant buffer between the park and the highly urbanized areas in the region.

Through their 2050 Resource Management Area System, Sarasota County has devised an additional set of policies to go along with their future land use designations that creates an incentive-based system for managing growth in the county. This system sets up six Resource Management Areas (RMA), including: urban/suburban, economic development, village/open space, greenway, rural heritage/estate, and agricultural reserve. The RMA to be noted for the park is village/ open space. Large areas to the west and northwest of the park are designated as village/open space, and these areas could potentially be developed with residential densities that are greater than the traditional low-density allowances in the rural designation. The DRP will need to continue to monitor for Hamlet Planned Developments or Village Planned Developments that could be implemented in the area to the west and northwest of the park.

Future Land Use Designation of the Park

The DRP works with local governments to establish designations that provide both consistency between comprehensive plans and zoning codes and permit typical state park uses and facilities necessary for the provision of resource-based recreation.

The Sarasota County Comprehensive Plan indicates that the future land use designation of the portion of the park in Sarasota County is Public Conservation/Preservation. This category is defined as areas of high ecological value that are managed to preserve habitat and maintained primarily for environmental protection. These areas may also be dedicated for public open space and recreation. The Manatee County Comprehensive Plan shows the future land use designation as Conservation. This category is intended for major publicly or privately-held lands which are reserved for the primary purpose of the preservation of natural resources.

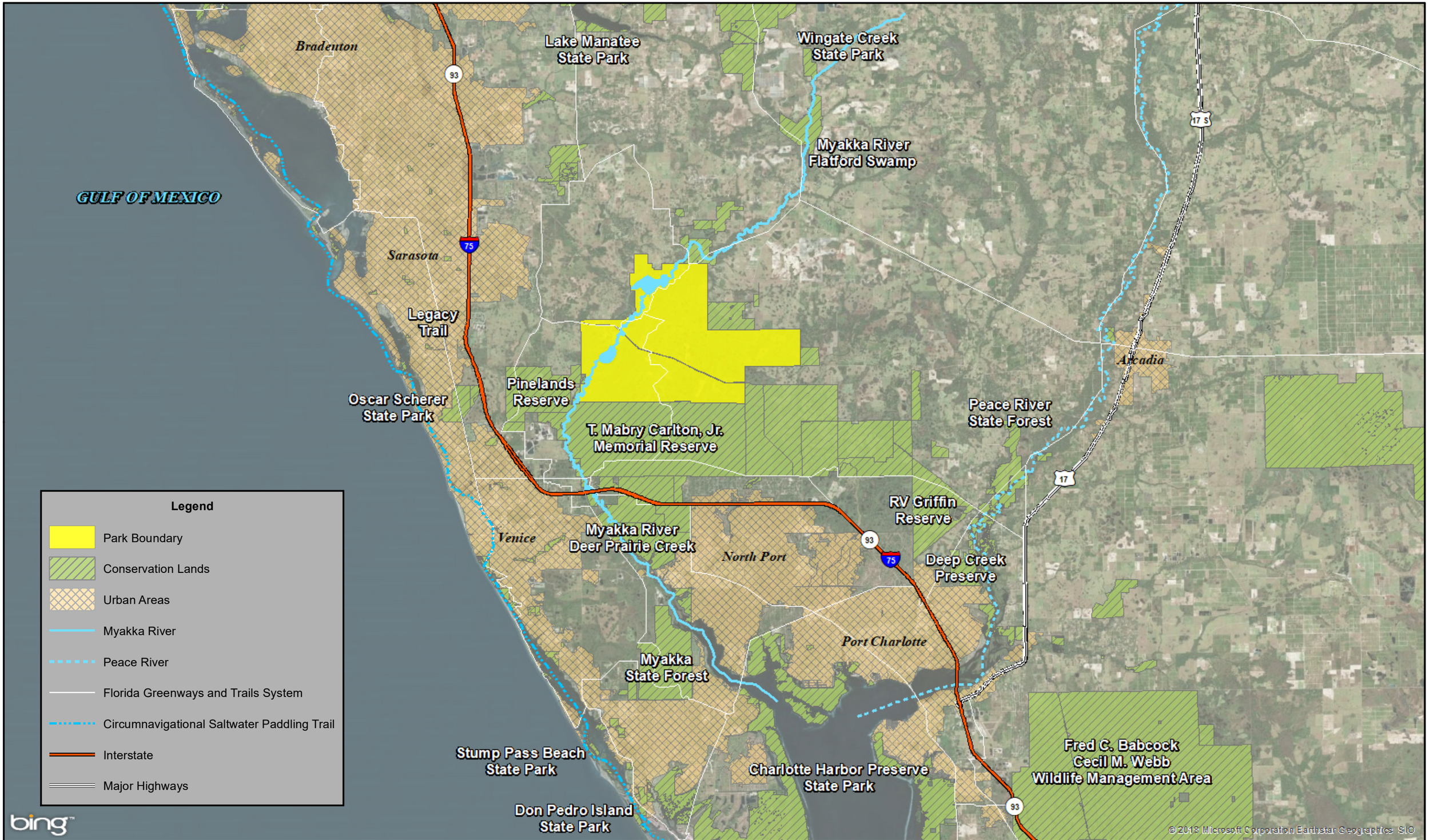
Regional Conservation, Recreation, and Trails

Table 8 and its corresponding map shows the resource-based recreational opportunities in the region surrounding Myakka River State Park. Significant conservation areas are directly adjacent to the northern, eastern, and southern boundaries of the park. However, most of these areas are conservation easements with no public access and are not included in the table below. Local parks in the urban cores are also not included.

Florida Greenways and Trails System

The Florida Greenways and Trails System (FGTS) is made up of existing, planned and conceptual non-motorized trails and ecological greenways that form a connected, integrated statewide network (see Conservation and Recreation Lands Map). The FGTS serves as a green infrastructure plan for Florida, tying together the greenways and trails plans and planning activities of communities, agencies and non-profit organizations throughout Florida. Trails include paddling, hiking, biking, multi-use and equestrian trails. The Office of Greenways and Trails maintains a priority trails map and gap analysis for the FGTS to focus attention and resources on closing key gaps in the system.

In some cases, existing or planned priority trails run through or are adjacent to state parks, or they may be in close proximity and can be connected by a spur trail. State parks can often serve as trailheads, points-of-interest, and offer amenities such as camping, showers and laundry, providing valuable services for trail users while increasing state park visitation.



MYAKKA RIVER STATE PARK

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Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

CONSERVATION AND RECREATION LANDS MAP

Table 8. Regional Resource-Based Recreational Opportunities

Name	Biking	Hiking	Picnicking	Swimming/ Beach Access	Boating/ Paddling	Fishing	Wildlife Viewing	Camping	Hunting	Equestrian
Florida Fish and Wildlife Conservation Commission										
Fred C. Babcock Cecil M. Webb Wildlife Management Area	x	x			x	x	x	x	x	x
Southwest Florida Water Management District										
Deep Creek Preserve		x	x		x	x	x	x		x
Myakka River Deer Prairie Creek	x	x	x		x	x	x			x
Myakka River Flatford Swamp		x				x	x			
RV Griffin Reserve	x	x	x				x			x
Florida Forest Service										
Myakka State Forest	x	x	x			x	x	x	x	x
Peace River State Forest	Currently no public access									
Florida Park Service										
Charlotte Harbor Preserve State Park	x				x	x	x			
Don Pedro Island State Park		x	x	x			x			
Lake Manatee State Park	x	x	x	x	x	x	x	x		x
Oscar Scherer State Park	x	x	x	x	x	x	x	x		
Stump Pass Beach State Park		x	x	x	x	x	x			
Wingate Creek State Park		x					x			
Sarasota County										
Big Slough Preserve	x	x	x				x			x
Carlton Reserve	x	x	x		x		x	x		x
Legacy Trail	x	x	x				x			
Myakkahatchee Creek Environmental Park	x	x	x				x	x		x
Pinelands Reserve			x				x			
Walton Ranch	x	x	x				x			x

The Legacy Trail is an existing portion of the Southwest Gulf Coast Regional Connector, which is a priority trail corridor as identified by the FGTS. This trail is approximately 8 miles west of Myakka River State Park and bisects Oscar Scherer State Park. Currently, the Legacy Trail is approximately 10 miles and travels north-south from Culverhouse Nature Park in Sarasota to the Venetian Waterway Park in Venice. In 2018, Sarasota County residents approved a referendum to extend the trail to create connectivity north to downtown Sarasota and east to North Port. The eastern extension could have implications for trail activity around Myakka River State Park. Potential trail connections to Carlton Reserve would connect with the vast trail network within the reserve, which links with trails in the southern portion of the state park. These potential trail connections through the network of conservation lands adjacent to Myakka River State Park have been identified as opportunity corridors by the FGTS.

Statewide Comprehensive Outdoor Recreation Plan

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) analyzes both resource-based and user-based recreation opportunities throughout the state, with the state divided up into eight planning regions. Myakka River State Park falls within the Southwest region, which spans from Bradenton to Naples and inland to Lake Okeechobee. According to the SCORP update (2019 Draft), the Southwest region is below the statewide median in freshwater fishing and freshwater boat ramp amenities. However, the Southwest region also has the lowest resident participation rate in freshwater boat ramp usage, suggesting a lack of demand.

Past and Current Uses of the Park

Past Uses

The Myakka Valley was used as open range for cattle ranch operations as early as 1843. Many changes took place during the early 1900s. Ms. Potter Palmer established Meadow Sweet Pastures, a large cattle ranching operation, and the Atlantic Coastline Railroad laid tracks for a line from Nocatee to Sarasota through land now within the park. After acquisition of park property by the state, the CCC began construction of park facilities, and were active at Myakka from 1934-1941.

The Department of Juvenile Justice subleased a five-acre tract on the northeast corner of the wilderness area from 1977 to 2003 to operate a wilderness youth camp as part of the Short-Term Offenders Program (STOP). This facility is no longer in operation.

Other Uses

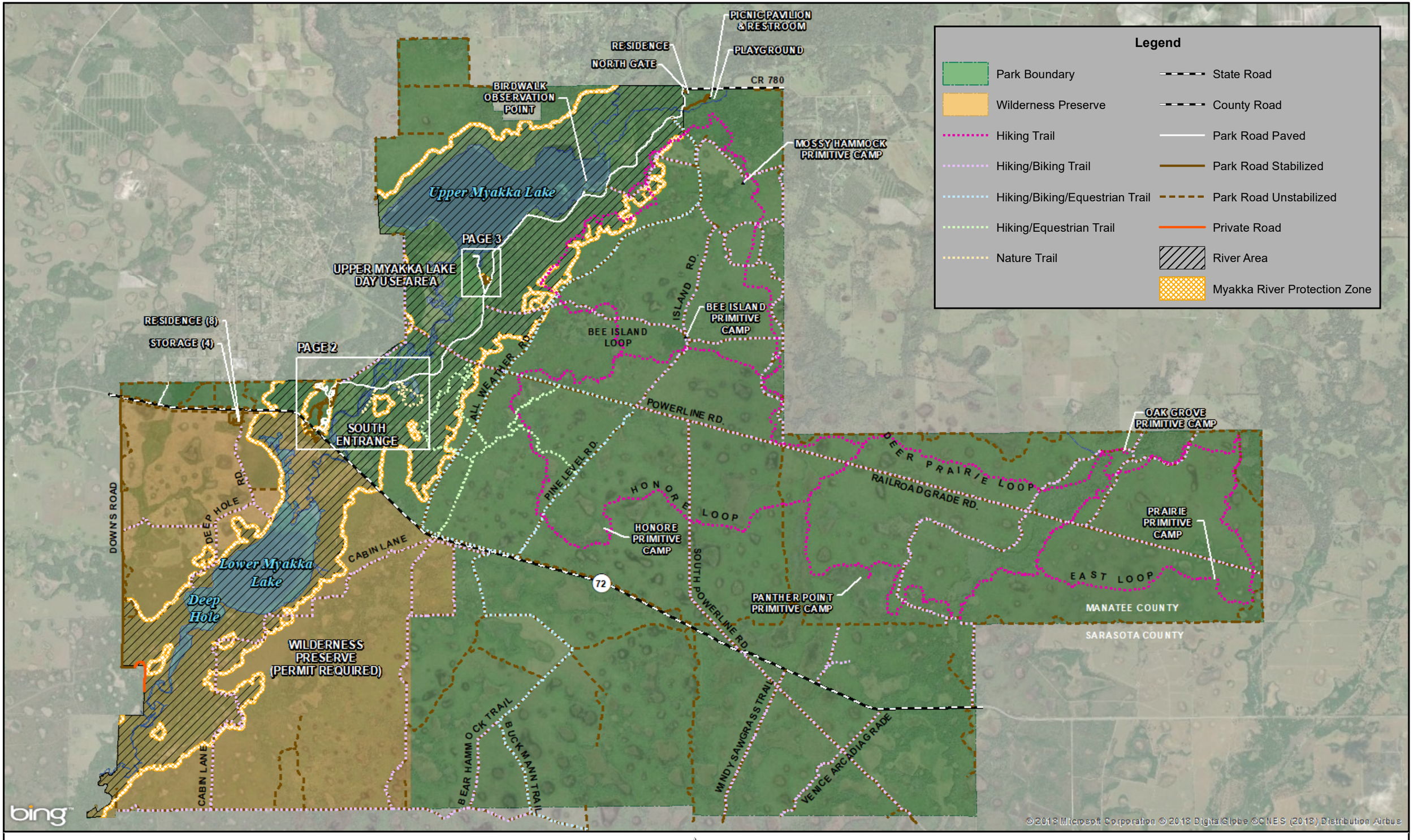
Sarasota County maintains several water monitoring wells in the park on the south side of State Road 72. The Florida Power and Light Company holds an easement through the property allowing them to construct, operate, and maintain overhead and underground electric utilities on a portion of the park.

Current Uses

Myakka River State Park provides a wide range of outdoor activities including hiking, nature study, photography, fishing, boating, wildlife observation, picnicking, canoeing, horseback riding, bicycling, camping (both full facility and primitive), and overnight cabins. Interpretive opportunities are enhanced by a visitor center and guided boat and tram tours conducted by one of the park's concessionaires. The park's canopy walkway, is an elevated boardwalk that provides visitors with close-up views of the forest canopy and panoramic views of the entire park. Use of the Myakka River Wilderness Preserve requires a backcountry permit and recreational use is limited to 30 visitors per day.

The primary entrance is located off State Road 72 in the west-central portion of the park (see Existing Facilities Map). A paved park drive extends nearly seven miles between entrances and provides access to picnic areas, campgrounds, cabins and the boat basin. The State Road 72 entrance area includes the park administrative offices, the main ranger station, and visitor center. A portion of the visitor center provides office space for park staff. Four picnic areas provide picnicking opportunities throughout the park. Opportunities for extended stays are available at three full facility campgrounds and the CCC -era palm log cabins. Six hike-in primitive camping areas and an equestrian camping area enhance backcountry access. A primitive group camp near the STOP Camp and on the edge of the wilderness preserve serves youth or other organized groups.

Water access is provided at Upper Myakka Lake, where a boat ramp and concessionaire



MYAKKA RIVER STATE PARK

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Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

EXISTING FACILITIES MAP

PUMPHOUSE
BATHHOUSES
BATHHOUSE
PICNIC AREA
CANOPY WALKWAY & OBSERVATION TOWERS
STATE PARK MEMORIAL
RESIDENCE
VOLUNTEER CAMPSITES
LOG CABINS
LOG RESTROOM
SHOP
STORAGE
LOG PAVILION
RESIDENCE
EQUIPMENT SHELTER
BOYLSTON NATURE TRAIL
DINING
RADIO TOWER
VISITORS CENTER
RIVER TRAIL
STORAGE
ENTRANCE STATION
LAUNDRY
POLE BARN
OFFICE
DORMITORY
PLAYGROUND
VOLUNTEER CAMPSITES
BBQ PIT
OFFICE APARTMENT
PICNIC PAVILION
RESIDENCE
STORAGE
RESTROOM
YOUTH AREA

Legend

- Park Boundary
- Myakka River
- Wilderness Preserve
- CCC Structures
- Campsites
- Volunteer Campsites
- Hiking/Biking Trail
- Nature Trail
- Walkways
- Park Road Paved
- Park Road Stabilized
- Park Road Unstabilized
- State Road
- Bridge
- River Area
- Myakka River Protection Zone

MYAKKA RIVER STATE PARK

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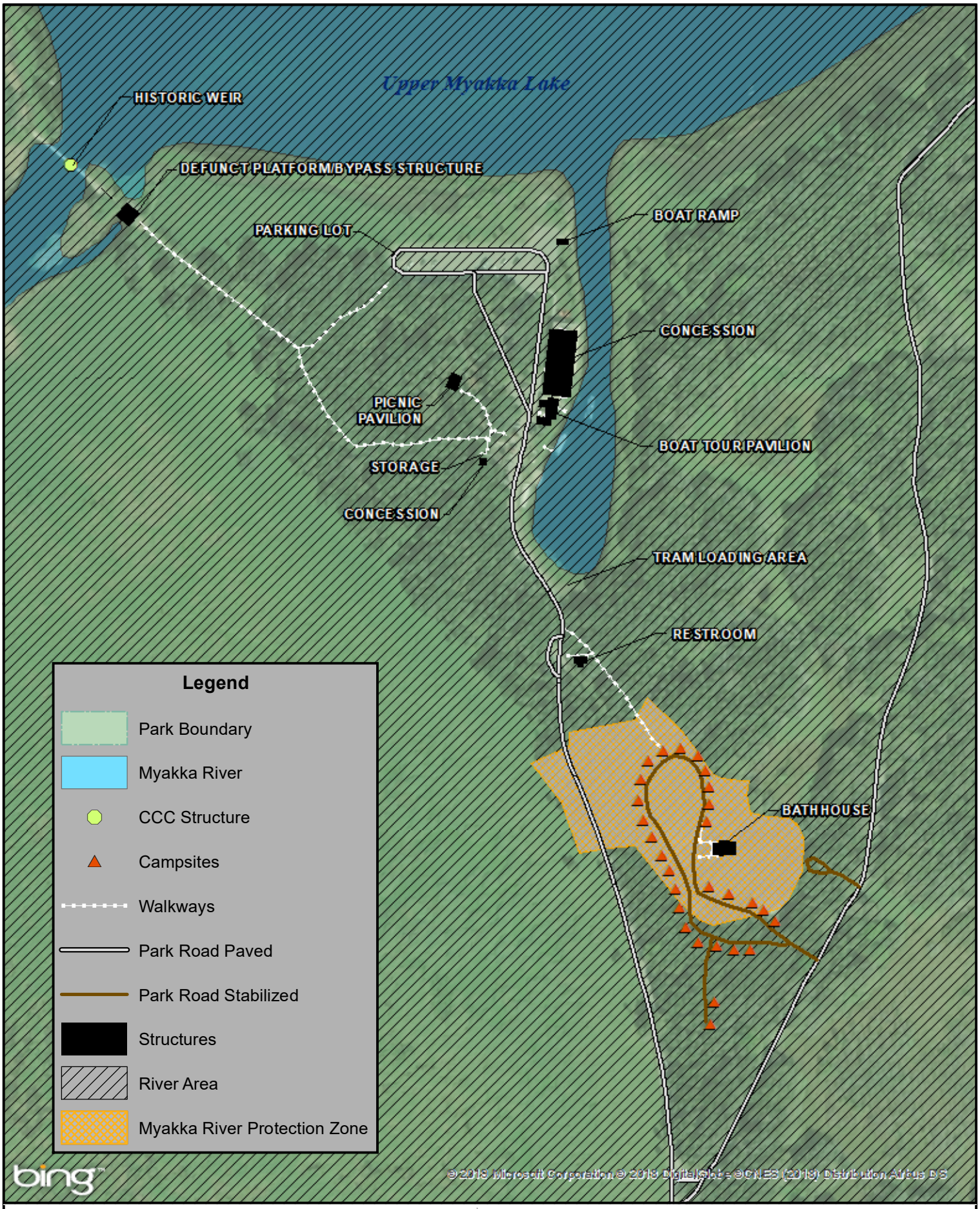
Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

EXISTING FACILITIES MAP
SOUTH ENTRANCE AREA



MYAKKA RIVER
STATE PARK

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Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

EXISTING FACILITIES MAP
UPPER MYAKKA LAKE
DAY USE AREA

facilities are located. Canoes and kayaks are available for rental and boat tours of Upper Myakka Lake are provided by the concessionaire. Paddlers can also launch from the south picnic area and bridge area. The Birdwalk is a boardwalk on Upper Myakka Lake that enhances views of the lake, provides interpretive information, and is a popular birding spot.

A concessionaire-operated tram tour shuttles visitors into the interior of the park using existing unpaved park management roads. Additional opportunities for exploring the park interior are available via the park's extensive network of hiking, biking, and equestrian trails. Trails in the southern portion of the park are linked to the Carlton Trail and the T. Mabry Carlton, Jr. Memorial Reserve. The Myakka Canopy Walkway is unique to the state park system and allows visitors to ascend into the treetops. An 84-foot long suspension bridge is supported by two towers, the tallest of which rises 74 feet above the forest canopy. Access to the Canopy Walkway is provided from the Boylston Nature Trail.

The park shop area is located due north of the visitor center, and contains multiple structures to meet park maintenance, operations, and housing needs. Additional park residences are concentrated off State Road 72 at the entrance to the wilderness preserve. Facilities associated with the defunct STOP Camp are located on the south side of State Road 72. Two sewage treatment plants handle wastewater in the park, and water is supplied by a 45,000 GPD chlorinating plant.

Recreation Facilities

South Entrance Area
Entrance station
Visitor center

South Picnic Area
Large picnic pavilion
BBQ Pit
Scattered tables and grills
Playground equipment
Restroom
Event Stage

Upper Myakka Lake Use Area
Concession buildings
Boat ramp/paddling/tour launch
Restroom
Large picnic pavilion
Scattered tables and grills

Log Pavilion Picnic Area
Stone memorial
Amphitheater
Log Pavilion
Log Restroom
Scattered tables and grills

Clay Gully Picnic Area
Medium picnic pavilion
Restroom
Scattered tables and grills
Playground equipment

Old Prairie Campground
Full facility campsites (22)
Bathhouse
Sewage treatment plant

Big Flats Campground
Full facility campsites (26)
Tent campsites (2)
Bathhouse
Sewage treatment plant

Palmetto Ridge Campground
Full facility campsites (42)
Bathhouse (2)

CCC Log Cabins
Rental cabins (5)

Primitive Group Camp
Campsites (3)
Restroom
Fire circle (3)

Equestrian Camping Area
Fenced paddock
Pit latrine
Water hand pump

Primitive Camping Areas (6)
Tent campsites (18)
Water hand pump (6)
Fire rings (18)

Trails
Birdwalk boardwalk
Nature trails (1.25 miles)
Hiking trails (38 miles)
Shared-use trails (80.5 miles)
- Hiking/Biking (59 miles)
- Hiking/Equestrian (6 miles)
- Hiking/Biking/Equestrian (15.5 miles)

Support Facilities

South Entrance
Administrative offices/storage

South Entrance Shop Area
2-bay shop
4-bay pole barn
6-bay pole barn
Maintenance shed
Storage buildings (4)
Residences (2)
Volunteer laundry
Volunteer campsites (7)
Volunteer office (portable trailer)
Water treatment plant

STOP Camp
Residence (1)
Dormitory/apartment
Restrooms/shower/laundry
Kitchen/dining
Meeting room/training building
Storage buildings (2)
Basketball court
Sewer lift station
Volunteer Campsites (6)

Hill Residence Area
Residences (3)
Employee-owned trailers (4)
Volunteer-owned RV (1)
Storage buildings (4)

Attendance Analysis

Table 9 shows annual attendance at Myakka River State Park over the past ten years. For context, the accompanying chart shows annual attendance over the same time period for other state parks in the region.

Table 9. Myakka River State Park Annual Attendance

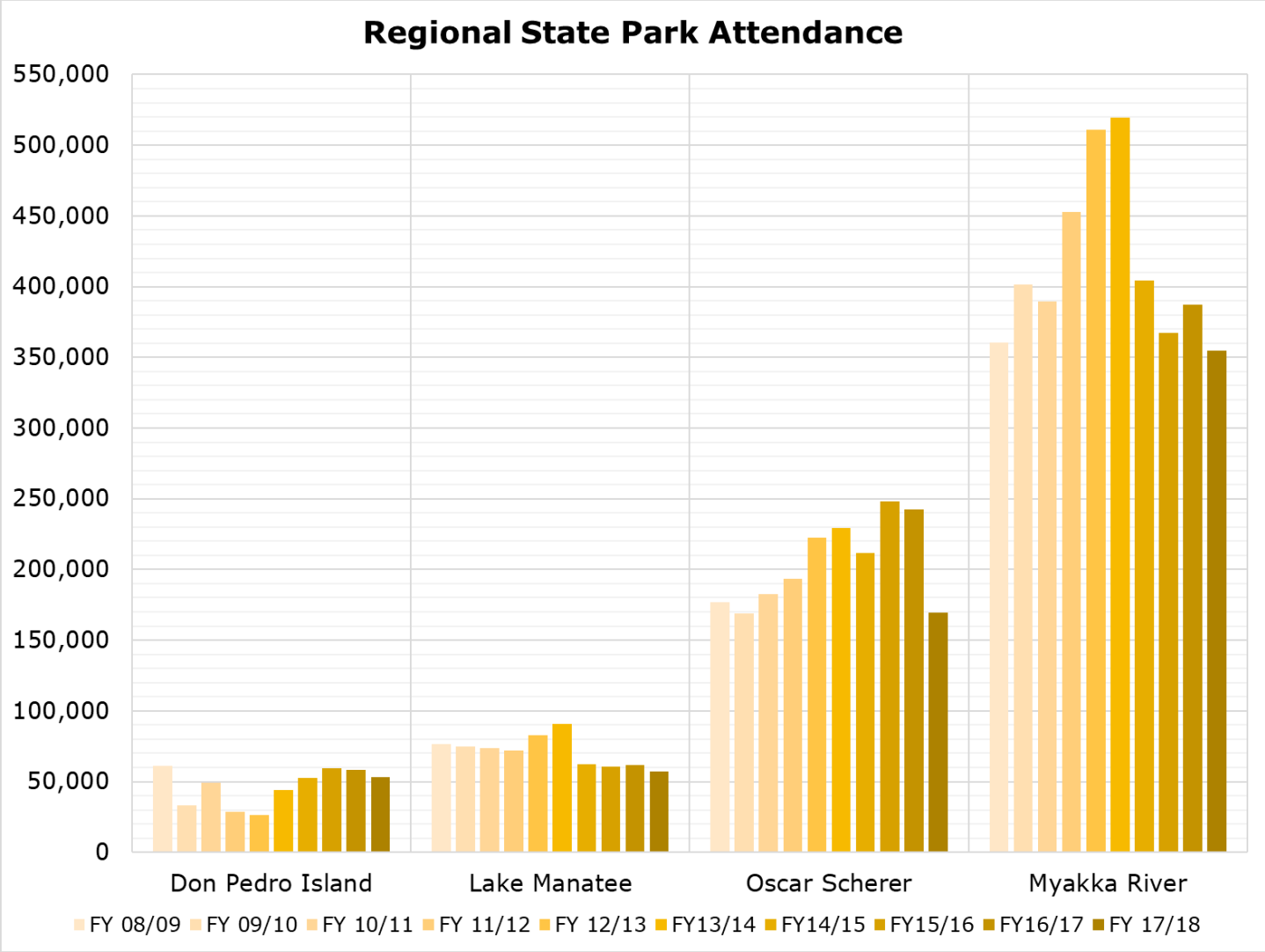
Fiscal Year (FY)	Attendance
FY 08/09	360,321
FY 09/10	401,533
FY 10/11	389,771
FY 11/12	452,690
FY 12/13	510,888
FY 13/14	519,617
FY 14/15	404,341
FY 15/16	367,126
FY 16/17	387,119
FY 17/18	354,911

Attendance at Myakka River State Park, as well as the Florida Park System in general, has ebbed and flowed over the past ten years. Historically, Myakka has been one of the most highly visited parks in its district within the park system, which includes 35 other parks throughout southwest Florida. In the most recent fiscal year, Myakka River State Park ranked 5th in attendance in its district behind Honeymoon Island (1,504,167 visitors), Lovers Key (914,618), Delnor-Wiggins Pass (460,006), and Weeki Wachee Springs (388,512). By DRP estimates, the FY 17/18 visitors to Myakka contributed approximately $30.3 million in direct economic impact, the equivalent of adding 425 jobs to the local economy (FDEP 2018).

Data for the park shows that the busy season is between November and April, with March being by far the busiest month of the year. Average visitor attendance during the month of March over the past ten years is approximately 64,000, compared to a ten-year average of nearly 51,000 visitors in February and 48,000 in April. In the most recent fiscal year, attendance percentage by day of the week was split 50/50 with 50% of visitors coming to the park on the weekend (Friday-Sunday) and 50% coming during the weekdays. In regard to camping opportunities, 18% of visitors took advantage of the park's overnight amenities while 82% came for day-use activities. The average annual campground occupancy for the park in FY 17/18 was 65%, with the campgrounds being nearly full (97%-98% occupancy) between January and March. December (88% occupancy) and April (85%) are also popular months for camping. The park's five historic cabins had an annual average occupancy of 81% in FY 17/18.

Recreational Carrying Capacity

Recreational carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high-quality recreational experience and preserve the natural values of the site. According to DRP guidelines, the carrying capacity of a unit is determined by identifying the recreational uses available to visitors, estimating an ideal amount of space for an enjoyable experience, and applying a range of visitors per unit of measurement. This calculation establishes a "visitors at one time" number for each recreational use.



The one-time number is then multiplied by a daily turnover rate that estimates how often an amenity will be used by different groups of visitors throughout the day. The totals for each recreational use are added together to determine total visitors at one time and total daily visitors. These formulaic calculations have been conducted for the recreational uses at Myakka River State Park, and the results are shown in Table 10.

Recreational uses can be categorized as either day-use or overnight activities. As can be seen in the table, the one time and daily numbers are the same for overnight camping activities because there is no daily turnover rate for these recreational uses. Calculating carrying capacity for these overnight activities is simply determined by the number of available sites at the park multiplied by a maximum number of visitors per site. Day-use activities such as trail usage and picnicking are calculated according to visitors per mile of trail and visitors per picnic table.

Concessionaire-operated recreational uses have been estimated based on a set number of trips per day (8) and approximately 200 visitors at one time. This one time figure accounts for one tour going out while another is coming back in, which would technically count as two trips at one time. Recreational carrying capacity calculations for Myakka River State Park are shown in Appendix 10.

The recreational carrying calculations are made based on idealized conditions and optimal visitor use. Although the formulas are constructed to take into account the connection between visitor experiences and natural resources, the DRP's recreational carrying capacities should not be considered an ecological carrying capacity for a unit's natural resources. In the event that funding becomes available, the DRP will support interagency and stakeholder partnerships to develop a rigorous and scientific recreational carrying capacity study for the Myakka River and Myakka River State Park.

Table 10. Recreational Carrying Capacity Estimates		
Recreational Uses	**Visitors at One Time**	**Visitors Daily**
RV Camping *(8 visitors per site)*	720	720
Primitive Group Camping *(20 visitors per site)*	60	60
Primitive Camping *(8 visitors per site)*	48	48
Primitive Equestrian Camping *(30 visitors)*	30	30
Cabins *(6 visitors per cabin)*	30	30
Nature Trails *(40 visitors per mile)*	50	200
Hiking Trails *(4 visitors per mile)*	152	304
Shared-Use Trails *(10 visitors per mile)*	640	1,280
Picnicking *(4 visitors per table)*	400	800
Canoe/Kayaking *(10 visitors per river mile)*	70	140
Power Boating *(4 visitors per vessel)*	140	140
Boat Tours *(100 visitors per trip, per vessel)*	200	800
Tram Tours *(100 visitors per trip, per tram)*	200	800
Visitor Center *(50 visitors)*	50	200
Wilderness Preserve *(Permit Required)*	30	30
Total	**2,820**	**5,582**

Myakka Wild and Scenic River Designation

The Myakka River Wild and Scenic River Designation and Preservation Act and the Myakka Wild and Scenic River Rule (Chapter 62D-15) can be found in Appendix 11.

The Act, the Rule, and the Plan

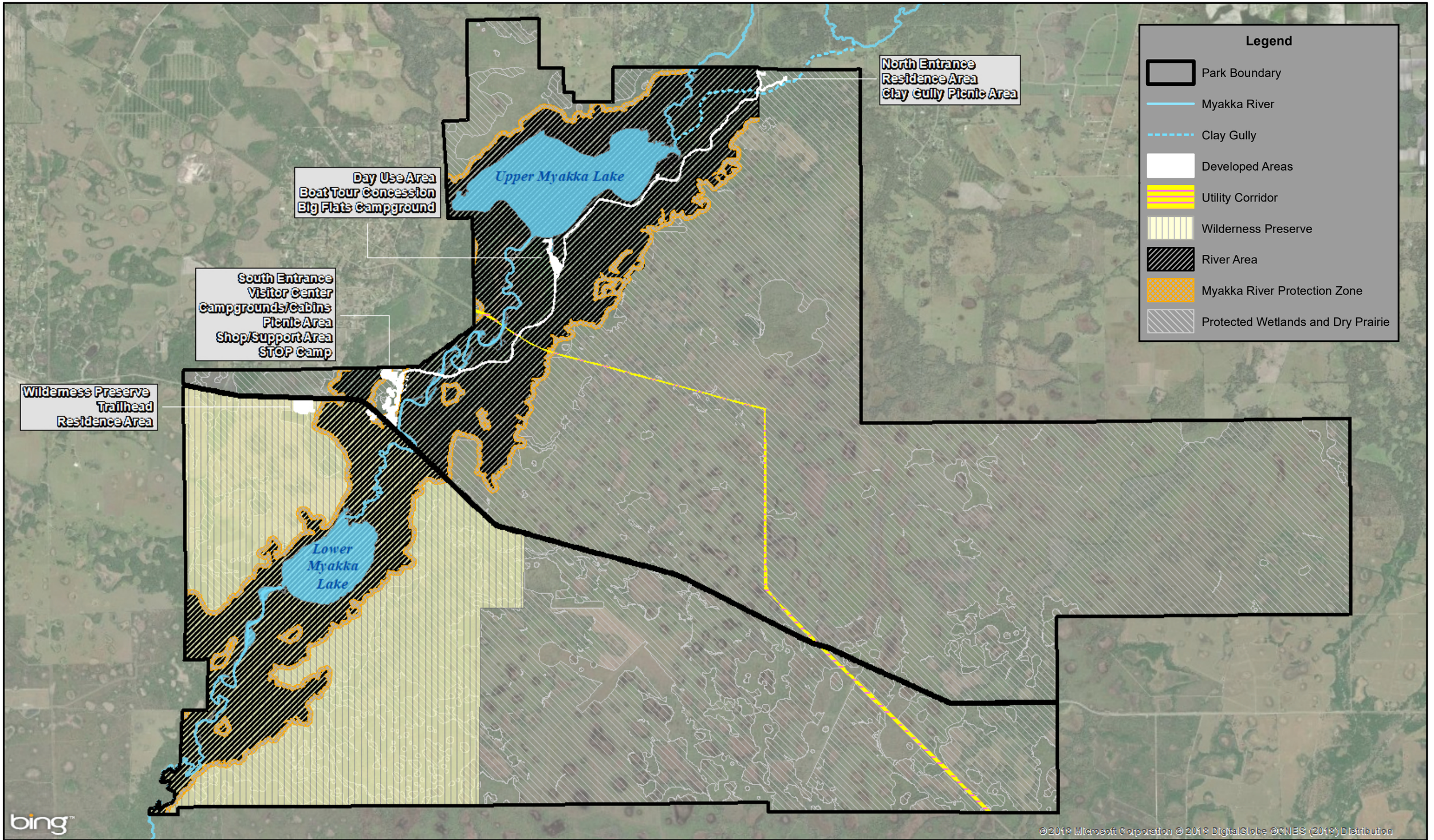
In 1985, the Florida Legislature enacted the Myakka River Wild and Scenic River Designation and Preservation Act. This legislation designated 34 miles of the Myakka River as a state Wild and Scenic River, approximately 12 miles of which is within the boundary of Myakka River State Park. The Act places additional layers of protection in the area defined as the "River Area". The River Area is defined as the corridor of land beneath and surrounding the Myakka River from river mile 7.5 to river mile 41.5, together with a corridor including the maximum upland extent of wetland vegetation (Section 528.501, Florida Statutes). Additionally, the "Wild and Scenic River Protection Zone" defined by the Act creates a buffer that extends 220 feet landward from the River Area. The Act instructed DEP to adopt rules and a permitting program to regulate activities within these protected areas and established the Myakka River Management Coordinating Council to develop a management plan, in conjunction with DEP, for the entirety of the protected portion of the Myakka River.

Myakka Wild and Scenic River Rule
Chapter 62D-15, Florida Administrative Code

As instructed by the Act, DEP established a regulatory program that includes a permit program intended to protect and enhance the resource values of the Myakka River. Chapter 62D-15 in the Florida Administrative Code (FAC) governs prohibition, permits, and exemptions within the River Area. Several activities are designated as prohibited; however, exemptions can be made if proper permits are obtained. For a complete list of prohibited activities and exemptions, please refer to Appendix 11.

The intention of the Rule is to outline which activities, structures, or practices will need to obtain a Myakka River permit and describe the standards that will be used to determine if a permit is issued or denied.

The main factors that are considered are whether the activity is consistent with the Act,



MYAKKA RIVER STATE PARK

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Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

PROTECTED AND DEVELOPED AREAS MAP

Rule, and Myakka River management plan and whether the activity will affect resource values. There are several considerations associated with affecting resource values (see Appendix 11 for a complete list) and the DRP takes all of these considerations into account, but a few examples that guide land use goals and strategies at Myakka River State Park include:

- Increasing impervious surface area or stormwater runoff;
- Reducing wetland buffers or wetland filtrative functions;
- Increasing access to the Myakka River;
- Decreasing recreational opportunities;
- Causing or contributing to the overuse of the river's recreational resources;
- Blocking, obstructing, lessening, or interfering with the river area's viewshed;
- Impacting fish and wildlife habitat;
- Causing or contributing to unsafe conditions for boats or boaters;
- Encouraging unauthorized use of public and private lands.

It should be noted that this permitting program applies to all of the designated Myakka River Area, about two-thirds of which falls outside of the park boundary. For any activity not covered under a preexisting use exemption, the DRP will complete the necessary process to obtain a Myakka River permit. A broad determination of when the DRP will need to complete the process to obtain a permit is discussed below. Activities or structures within the adjacent Myakka River Protection Zone may also require obtaining a permit from Sarasota County.

Myakka Wild and Scenic River Management Plan

The most recent update of the Myakka Wild and Scenic River Management Plan was completed in 2011 by the Myakka River Management Coordinating Council with the DRP as a key stakeholder. This plan outlines the resource values of the Myakka River, describes existing conditions, and establishes specific objectives and actions to protect and enhance the Myakka River. Several action items discussed in the Myakka Wild and Scenic River Management Plan inform the land use objectives in this management plan update for Myakka River State Park. Major themes associated with these action items are enhancing the natural resources in the river area through land acquisition and determining an appropriate level of recreational use, confining new infrastructure to existing development footprints, and improving education on the importance of the Myakka River through new signage and interpretive opportunities. In the land use objectives section below, the DRP will outline how it plans to support the Myakka Wild and Scenic River Management Plan.

Historical Siting of Facilities

Given the park's historic structures built by the CCC and other structures built in the 1960s, a majority of the structures at the park predate the Myakka Wild and Scenic River Act. Although these structures fall within the protected River Area as defined by the Act, the structures are exempt from the permitting process in most cases. Routine maintenance and repair of these structures does not require a Myakka River permit, as long as the structure's footprint is not expanded. However, as stated by the Rule, "In the event that an exempted structure in existence prior to the effective date of this rule is damaged or destroyed by 50 percent or more…the person owning or operating such structure, in order to re-establish the structure, must submit a permit application". The DRP will continue to maintain the park structures within the river area and will abide by the permitting process if a given structure needs to be expanded or replaced. Existing structures within the protected river area are shown on the existing facilities maps above.

Restrictions and Regulations on Future Land Use

With the exception of structures predating the enactment of the Act, all new development within the River Area will be required to complete the permitting process prior to breaking ground. The Protected and Developed Areas Map shows the River Area and the Myakka River Protection Zone, as well as the currently developed areas of the park. Proposed developments applying for a Myakka River permit will be considered for approval or denial based on parameters set out by the Rule. Recreational carrying capacity concerns should also be considered prior to applying for a Myakka River permit. In the following sections, it will be specified which developments proposed by the DRP will be required to complete the Myakka River permitting process.

Conceptual Land Use Plan

The following narrative represents the conceptual land use proposal for Myakka River State Park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape, and social setting. The conceptual land use plan is modified or amended every ten years, as new information becomes available regarding the park's natural and cultural resources or trends in recreational uses, to adapt to changing conditions. Additionally, the acquisition of new parkland may provide opportunities for alternative or expanded land uses. The DRP develops a detailed development plan for the park and a site plan for specific facilities based on this conceptual land use plan, as funding becomes available.

During the development of the conceptual land use plan, the DRP assessed the potential impact of proposed uses or development on the park resources and applied that analysis to determine the future physical plan of the park as well as the scale and character of proposed development. Potential resource impacts are also identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as imperiled species or cultural site locations) are investigated in greater detail. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal.

Creation of impervious surfaces is minimized to the greatest extent feasible in order to limit the need for stormwater management systems, and all facilities are designed and constructed using best management practices to limit and avoid resource impacts. Federal, state, and local permit and regulatory requirements are addressed during facility development. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, park staff monitors conditions to ensure that impacts remain within acceptable levels.

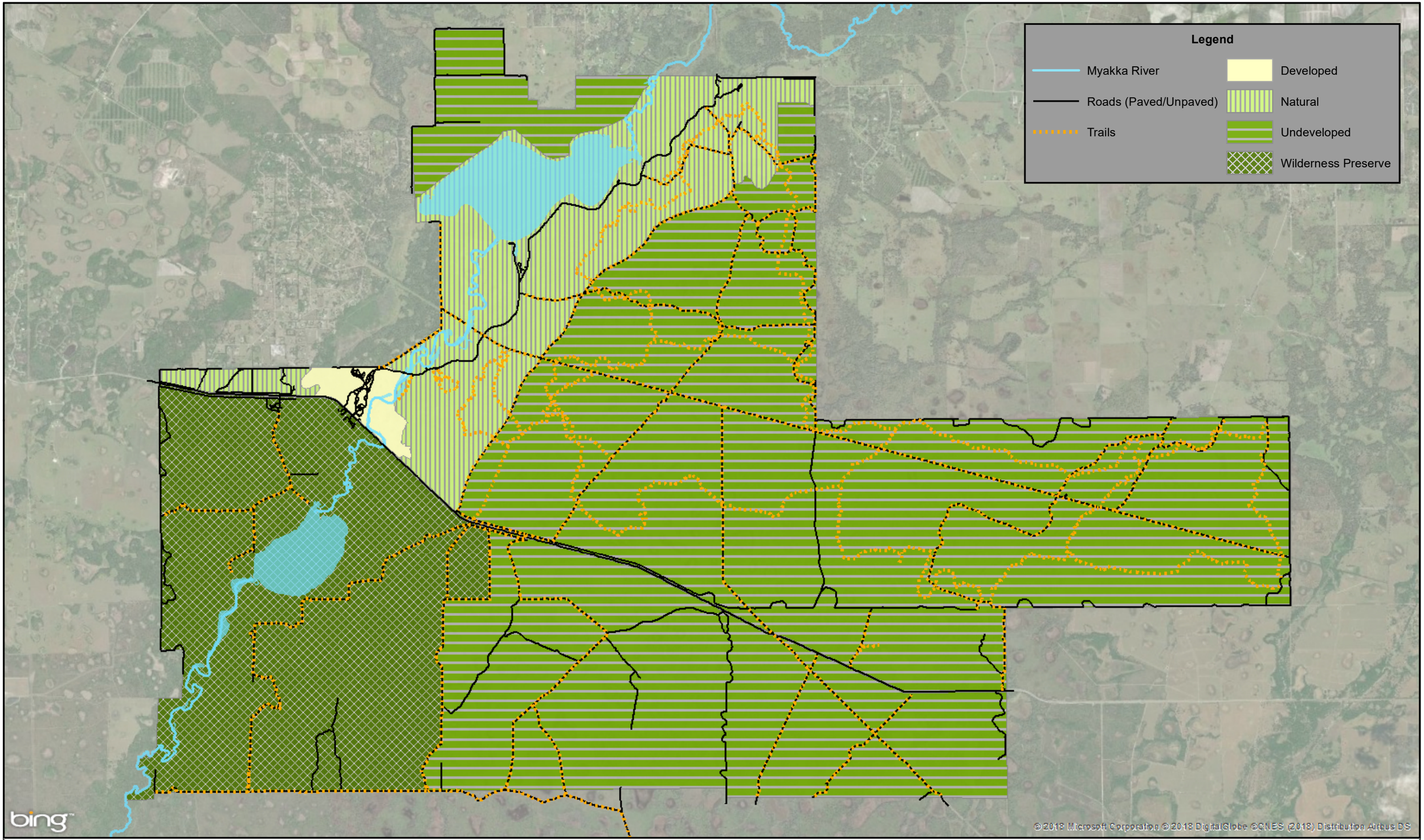
Vision for Future Land Use and Recreation

Given the conceptual nature of this management plan, site-specific plans and designs are not included in this update. As such, future recreational carrying capacity cannot be calculated with an acceptable degree of accuracy. However, the development vision for Myakka River State Park is largely focused on improving the visitor experience within the current facilities footprint, and new infrastructure proposals are not intended to increase the capacity of the park. Visitor mobility within and between use areas will be the central theme that needs to be addressed in this management plan update. Visitor use patterns and recreational activities are well established at the park, and developing new recreational uses will be considered secondary to repairing or upgrading existing facilities.

The following sections help articulate the vision for Myakka River State Park by zoning the park according to ideal visitor experiences, identifying visitor management and land use issues, and outlining objectives to achieve the overall vision of improving the visitor experience by addressing mobility issues.

Visitor Experience Zones

The Visitor Experience Zones (VEZ) are a series of geographic designations that will help guide future land use and resource management decision-making. These designations will shape the types of recreation opportunities offered within an area and help determine the contextual design of recreational facilities in each area. This allows DRP to improve communication with stakeholders by providing facility improvement and development guidelines based on five designations: urban, developed, natural, undeveloped, and wilderness. The VEZ designations established by DRP can help guide management of visitor use patterns, facility design and placement, and recreational carrying capacity, while also working to ensure a diversity of recreational opportunities and experiences. Management zones and natural community ecotones are used to delineate designations (see VEZ map).



MYAKKA RIVER STATE PARK

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Florida Department of Environmental Protection
Division of Recreation and Parks
Date of aerial; 2011

VISITOR EXPERIENCE ZONES MAP

Developed

This is where the majority of conventional state park recreation activities are focused. The developed areas include the large majority of day-use and support areas within parks. Recreation infrastructure (including parking, roads, walking paths, picnic areas, campgrounds) are paved and provide a standard level of visitor comfort associated with conventional day-use and overnight activities in a modified natural setting. Socialization within and outside one's group is typical, and the presence of other visitors is expected. The developed area is typically attractive for day-use by weekend visitors from nearby communities, campground users, and groups within a day's drive. This designation typically incorporates a primarily automobile-oriented site layout with substantial parking and meandering roads. There is an obvious and highly visible management presence with signage, restrooms, and trashcans throughout the visitor areas with groupings of support buildings including staff housing, shop buildings, and equipment storage separated from the main visitor use areas.

Natural

The natural designation is most often associated with a scenic transportation corridor such as a main park drive. It is the area between developed use areas and the more primitive experience associated with the undeveloped designation. The average park user will experience this setting from a vehicle travelling to a use area along a park road. Socialization with others outside one's group is not very important, although the presence of others is expected and tolerated. Most visitor activities are limited to passive day-use recreation opportunities including hiking, biking, paddling, and wildlife viewing. Other than paved park roads, the majority of park facilities under the natural designation, including trailheads and kayak launches, are unpaved in order to minimize impacts to natural resources. Occasional support facilities are found in the natural area. The natural area can enhance the overall visitor experience in a park through the facilitation of a distinct entranceway that communicates to visitors that they are entering a state park separate from adjacent land uses.

Undeveloped

A sense of independence, freedom, tranquility, relaxation, appreciation of nature, testing of outdoor skills, and responsibility for resource stewardship is typical. The opportunity to experience a natural ecosystem with little human imprint, a sense of challenge, adventure, risk, self-reliance, and a feeling of solitude are all important characteristics of the undeveloped designation. This is where longer distance hiking trails and primitive camping opportunities are located. It is an area of limited development with any development utilizing permeable surfaces and prioritizing the minimization of human impact visually and physically to help create as austere and rustic of a visitor experience as is practical. There is little evidence of management presence with a leave-no-trace policy promoted. Park visitors in this area are likely to stay overnight in the park due to the time and effort needed to experience this level of solitude in a natural environment. With the exception of service roads and firebreaks, support facilities are rare to non-existent.

Wilderness

The opportunity to experience natural ecosystems with very little and no apparent human imprint is paramount. A sense of solitude, peacefulness, tranquility, humility, challenge, adventure, risk, and self-reliance is highly important, as is the lack of sight, sound, and smells of other humans. Resource stewardship is central and dominant. The primitive recreation experience provides opportunities for human-powered activities such as canoeing, kayaking, fly-fishing, floating, and backpacking. Visitation often requires considerable trip planning and preparation, travel distance, physical exertion, and duration. Overnight visitors use tents in settings with no conveniences or facilities. Adventure travelers and ecotourists from distant locations are often attracted to the undisturbed wildland setting. There is no obvious evidence of management activities and users should be prepared to recreate without assistance from others during their time in the wilderness area.

Issues Identification

Myakka River State Park is one of the most visited parks in the state, and a majority of the issues associated with the park stem from its popularity. The main entrance to the park, known as the south entrance, is located off State Road 72 less than half a mile west of road crossing over the Myakka River. This entrance has minimal stacking space for cars entering the park, with approximately 535 feet between State Road 72 and the park's ranger station. On busy days, this lack of stacking space causes cars waiting to enter the park to spill out onto the state road.

Another factor contributing to the congestion issue at the south Entrance is the traffic configuration immediately after passing the ranger station. The overnight check-in and visitor center parking areas are congregated in the same general location with limited parking that does not adequately accommodate the number of people using the entrance area. Combined with limited parking spaces that causes vehicles to linger in this area searching for parking, on-the-road directional paintings can be confusing and create a circular traffic pattern that exacerbates congestion.

The three major use areas outside of the south entrance area can experience overcrowding during the busy season for the park. These three areas, which include the bridge on the main park road crossing the Myakka River, the canopy walkway area, and the Upper Myakka Lake area, are the most popular destinations and have parking areas that cannot accommodate the recreational demand. As such, vehicles often park along the shoulder of the road around these use areas. Additionally, given this parking situation, visitors are frequently walking in the main road to get to their preferred destination and can be in direct conflict with vehicles seeking to drive to areas further into the interior of the park. The starkest example of overcrowding can be seen at the Upper Myakka Lake area, as a result of the confluence of the area's popularity with visitors and its haphazard parking situation.

Park management support facilities are located in various areas throughout the property. Most of these support areas are in appropriate locations; however, the shop and residence area directly behind the visitor center is sited in an area of the park that should be reserved for entrance administration and day-use recreation purposes. Although a privacy fence is currently separating the recreation and support areas, support activities and structures can be seen from the visitor center's entrance and detracts from the visitor experience.

The DRP currently develops recreational carrying capacity based on formulas that provide a range of visitors per unit of measurement (see Appendix 10). This is a crude method of calculation that has been systematically applied to all state park units. While simple and easily applied for general estimates, the drawback of this method is that it struggles to take into account regional variations in recreational use, and, in the case of Myakka River State Park, is not tailored for additional layers of resource protection.

Recreational Management Program

The vision for the park and the issues identified above are the basis for the land use objectives below. Thematic land use objectives include improving the visitor experience in the main use areas and improving facilities. Action items associated with the land use objectives are described below.

Objective A: Improve the visitor experience in the main use areas

Given the popularity of Myakka River State Park and projected population increases in the region, improving the visitor experience in the main use areas will require the DRP to implement new visitor use management strategies. These strategies could involve reassessing how visitors travel through the park and could affect access to day-use areas. A master planning process beyond the scope of this management plan update should consider a variety of mobility options and interpretive solutions to address visitor use management. In addition to a conceptual master plan for the park, the DRP should prioritize working with the Myakka River Management Coordinating Council and other relevant stakeholders to develop a recreational carrying capacity study for the Myakka River.

Action 1 Support the efforts of the Myakka River Management Coordinating Council to determine an appropriate recreational carrying capacity for segments of the Myakka River located within the park

The 2011 Myakka Wild and Scenic River Management Plan (MWSRMP) identified the need to determine and monitor the amount and kinds of recreational uses that are permitted on the Myakka Wild and Scenic River. For the purposes of determining a carrying capacity of the Myakka River, the MWSRMP identifies four distinct river segments. The first segment consists of the state park, including the Upper and Lower Myakka Lakes.

For the river segment within the park and north of SR 72, the current carrying capacity was established by estimating the number of recreational uses that could physically occur on the river at one time with enough spacing between them to avoid overcrowding. The remaining portion of this segment located south of SR 72 is within the Wilderness Preserve and has an established carrying capacity based on a wilderness experience. In this segment, recreational use by all users (hiking, boating, and canoeing/kayaking) is limited to 30 visitors per day. This approach is consistent with the recommendations of the MWSRMP. Boating access in the remaining portions of the park will remain limited to the park's existing boat ramp and paddling launch. Parking, ingress, and egress at undesignated access points along the lakeshores, the park road, and State Road 72 is strongly discouraged.

There is a need to establish a more accurate recreational carrying capacity that includes greater consideration of the appropriate social and ecological values outlined in the MWSRMP. The DRP will work with the Myakka River Management Coordinating Council on recreational carrying capacity efforts.

Action 2 Develop a conceptual master plan for the park

Current recreational demand indicates that gradual redevelopment of the park's existing use areas will be needed to maintain the balance between safe public access and protection of park resources. To address this challenge, the DRP will create a comprehensive vision for the park through the development of a new conceptual master plan. The master plan will address potential redesign of the park's most popular day use destinations through careful consideration of interpretative programming, recreational activities, park operations, pedestrian and bicycle circulation, accessibility, critical viewsheds, and potential impacts to the park's natural and cultural resources. Items to be considered during the master planning process include, but are not limited to:

- South entrance design/traffic circulation
- Parking considerations
- Recreational use patterns
- Mobility options between use areas
- Interpretive programming

The DRP will develop the new conceptual master plan with public input received through a series of public workshops and key stakeholder meetings. The conceptual master plan will then be used to guide the implementation of any proposed improvements and additions.

Action 3 Continue, improve, and develop new interpretive programs

Myakka River State Park currently offers 30 interpretive, recreational, and educational programs and events. Programs are offered on a daily, weekly, and monthly basis, some seasonally (winter/spring) and others throughout the year. The interpretive and educational programs focus primarily on the park's natural resources, with programs on the history of the park playing an important but smaller role. The goal of these programs is to foster an appreciation and understanding of the natural and cultural resources within Myakka River State Park.

Current programs offered by park rangers, the citizen support organization, and the concessionaire include guided boat and tram tours, bird and wildlife identification walks, history walks, natural community tours, campfire presentations, and special guest presentations. Interpretive exhibits and displays are located at the visitor center, the canopy walkway, the birdwalk observation area, Meadow Sweet Pastures historic site, and nature trails. The Junior Ranger Program provides an opportunity for young people to learn about and protect the park's natural and cultural resources through a series of self-

paced activity worksheets and ranger led programs. Educational and curriculum-based programs on a variety of topics are provided upon request for area schools and special groups.

Recreational programming offered at the park gives visitors a chance to have outdoor adventures and learn about potential new hobbies and activities. Currently, the park's recreational programs include guided kayak and canoe tours, a fishing clinic, guided bicycle tours, and a concert series.

The park plans to develop an interpretive master plan to guide the development of new interpretive programs for the next ten years. Examples include living history programs focused on the role of the Myakka region in Florida history, and a "Link to the Past" interpretive trail throughout the use areas of the park featuring stories from the Civilian Conservation Corp at Myakka. The park also plans to upgrade exhibits and displays within the current visitor center. The "Myakka Movies" film series will be updated and new exhibits will be provided to better interpret the park's significant cultural history and the natural processes of the park's diverse ecosystem.

The park would also like to pursue long-term partnerships with area schools and organizations through coordination with teachers and organizers to develop educational and interpretive programing that promotes environmental stewardship. An example might include a water-monitoring program for students, highlighting the state-designated Myakka Wild and Scenic River. New interpretive signage explaining the importance of maintaining dark skies within the park will be developed for installation at appropriate locations within the park, beginning with the park's campgrounds and cabin area.

To provide staff and volunteers with appropriate training opportunities and conduct yearly park interpretive need assessments, the park will conduct regular in-park interpretive training/development workshops and pursue other training opportunities from outside sources. Myakka River State Park also plans to improve ADA accessibility to existing and newly created interpretive programs and exhibits for persons with special needs and special populations.

Objective B: Improve recreation and support facilities

Deferred maintenance and gradual deterioration of the park's facilities will require the DRP to repair, renovate, or replace recreation and support structures as funding becomes available over the next ten years. Relocation of some support facilities may also be needed, and additional recreation facilities should be considered if they are approved during the master planning process. As stated previously, most of the park's use areas are within the protected river area. Any improvement that expands the footprint of an existing structure or new development, including road paving, within the protected river area will require a Myakka River permit. The DRP will complete the permitting process as needed and will comply with all regulations governing the river area.

Action 1 Maintain all recreation and support facilities in the park

The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. All capital facilities, trails and roads within the park will be kept in proper condition through the daily or regular work of park staff and/or contracted help.

Action 2 Relocate park management support facilities

Currently, there are four support areas that contain park management facilities such as shops, storage shelters, volunteer campsites, and staff residences. These support areas are located at the wilderness preserve trailhead, STOP camp area, south entrance, and north entrance. In order to redesign and improve the south entrance area, it is recommended that support facilities at the south entrance be either consolidated in another support area or relocated to a newly developed support area. Some of the structures at the south entrance support area are CCC-era historic structures, and proper DHR review will be needed in the event that these structures are relocated, modified, or removed. Potential locations for a new support area include a spoil area to the west of the south entrance or a currently undeveloped area east of the utility corridor trailhead.

Action 3 Address facility repair and renovation needs

Over the next several years, efforts will focus on repairs and renovations to address maintenance, accessibility, and public safety. Major repair projects for park facilities may be accomplished within the ten-year term of this management plan, if funding is made available. These include the modification of existing park facilities to bring them into compliance with the Americans with Disabilities Act (a top priority for all facilities maintained by DRP). To conserve the park's dark skies the development of all new park facilities will comply with the lighting standards set forth by the International Dark-Sky Association. Inexpensive modifications to current lighting fixtures such as motion sensors will be completed. Implementation of all proposed park improvements will need to carefully evaluate potential impacts to the viewshed of the Myakka Wild and Scenic River. Designs should minimize the intrusion of manmade elements into the river's critical viewshed.

The DRP is currently in the process of conducting a comprehensive facility assessment for the structures at Myakka River State Park. This assessment will evaluate seven components of park facilities: structural, exterior, roofing, HVAC, electrical, plumbing, and interior finishes. Each component is weighted by a percentage of the total replacement cost associated with a facility type, and each structure will receive a score between one and five with one being the lowest. Preliminary evaluations indicate the following structures need to be repaired or renovated over the next ten-year planning period:

- Big Flats Campground bathhouse
- Big Flats Campground sewage treatment plant
- Upper Myakka Lake boat ramp
- Old Prairie Campground bathhouse
- Primitive Group Camp restroom
- Five staff residences

Park roads should also be improved during this planning period. In particular, the road in the Big Flats Campground and the road leading to the equestrian camping area should be paved. The Big Flats Campground road is within the River Area and Myakka River Protection Zone, and since this project would increase the impervious surface within the River Area, a Myakka River permit will be required to conduct the road paving. The road leading to the equestrian camping area, known as All Weather Road, is within the Myakka River Protection Zone about half a mile north of the utility corridor. If this portion of the All Weather Road is to be paved, a permit from Sarasota County will need to be obtained. The main park road is firmly within the Myakka River floodplain and is frequently flooded following heavy rain events. As such, an engineering study is needed to guide improvements that could include road raising, road resurfacing, installation of culverts, and culvert replacement. Structural improvements to the main park road bridge crossing over the Myakka River may also need improvements. Depending on the outcome of the engineering study, a Myakka River permit may be needed to implement the suggested park road improvements.

Action 4 Consider developing additional recreational facilities

As stated in the vision for the park, new recreational development is secondary to the primary purposes of this management plan's land use objectives. However, additional recreational facilities can be considered during the master planning process. New picnicking amenities could potentially benefit the visitor experience at the park. For example, the picnic tables to the north of the concession building at the Upper Myakka Lake area are frequently used by visitors waiting for the boat tour. These tables are not sheltered, and a pavilion could provide shade to visitors on sunny days. Additional picnic pavilions in the southern day use areas could also accommodate more group and family gathering functions. The meeting facility at the former STOP Camp area could be used to expand the range of programming available at the park. This facility can support an array of special activities, meetings, and programs that feature the natural resources, wildlife, and history of the park and surrounding region. All of these new recreational developments, if approved by the master planning process, would require Myakka River permits.

Optimum Boundary

The optimum boundary map reflects lands considered desirable for direct management by the DRP as part of the state park. These

parcels may include public or privately-owned land that would improve the continuity of existing parklands, provide the most efficient boundary configuration, improve access to the park, provide additional natural and cultural resource protection or allow for future expansion of recreational activities. Parklands that are potentially surplus to the management needs of DRP are also identified. As additional needs are identified through park use, development, and research, and as land use changes on adjacent property, modification of the park's optimum boundary may be necessary.

Identification of parcels on the optimum boundary map is intended solely for planning purposes. It is not to be used in connection with any regulatory purposes. Any party or governmental entity should not use a property's identification on the optimum boundary map to reduce or restrict the lawful rights of private landowners. Identification on the map does not empower or suggest that any government entity should impose additional or more restrictive environmental land use or zoning regulations. Identification should not be used as the basis for permit denial or the imposition of permit conditions.

The Down's parcel consists of approximately 235 acres along the southwestern corner of the park. The Myakka River abuts this property for nearly one mile. Inclusion in the optimum boundary identifies the importance of securing the health of the Wild and Scenic River corridor within the park. Acquisition would also facilitate removal of a dam on the river and more thorough hydrologic restoration of the river and park.

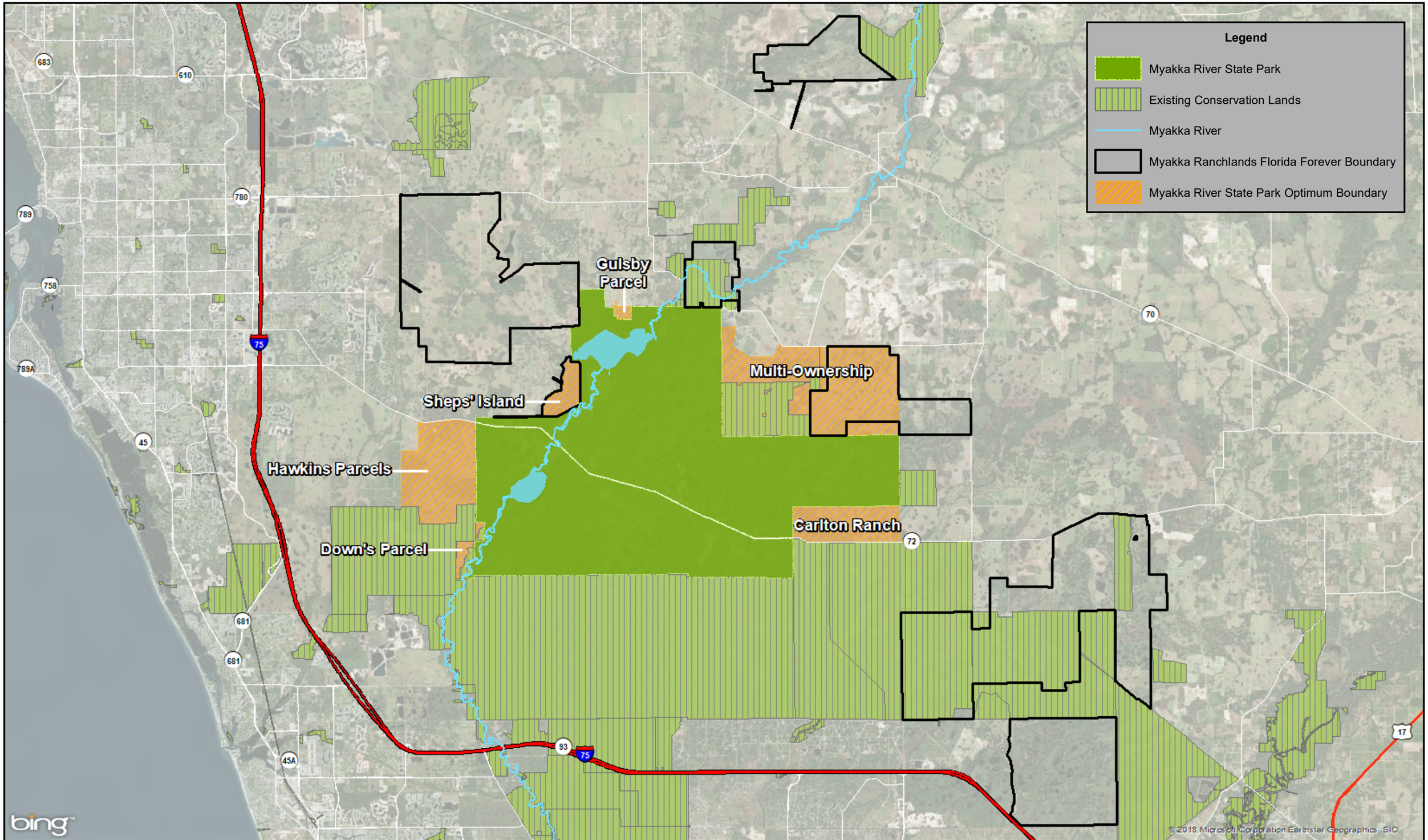
The Gulsby parcel consists of approximately 110 acres along the northern park boundary. The property is significant for a large red maple swamp and seepage slope from which drainage flows into the park. It is also one of the few locations in Sarasota County that has surficial exposed limestone outcrops associated with seeps. Fire management and restoration of the park property north of Upper Myakka Lake will be greatly aided if this property is obtained.

The Lanier parcel (Sheps' Island) consists of approximately 710 acres on the western boundary of the park. Acquisition of this parcel would allow for the restoration of Vanderipe Slough.

The multi-ownership parcel abutting the park panhandle consists of approximately 6,000 acres along nearly 7.5 miles of shared boundary. Fire management is current difficult along this boundary owing to the many large wetlands, which flow into the park and are bisected by the boundary. The headwaters of both Deer Prairie Slough and Mossy Hammock Slough are within these recommended parcels. Hydrological restoration of these wetlands is essential for successful restoration of thousands of acres of dry prairie in the park. The level of disturbance on these properties is readily revertible through sound hydrologic and fire management measures.

The Carlton Ranch parcels consist of approximately 1,900 acres along the southeastern boundary, adjacent to the panhandle of the park. These parcels would extend the eastern boundary south to SR 72 and would provide additional management access to the far eastern portions of the park. Deer Prairie Slough and Mud Slough could potentially benefit from enhanced conservation and landscape restoration efforts.

The Hawkins parcels consist of approximately 3,300 acres along the west boundary of the park, adjacent to the park's wilderness preserve. The acquisition of these parcels would provide a buffer between potentially developable areas of Sarasota County and the park's wilderness preserve. Preservation of the solitude and tranquility of the wilderness preserve is paramount to the purpose of this portion of the park.



MYAKKA RIVER STATE PARK

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OPTIMUM BOUNDARY MAP