

II. FISCAL IMPACT ANALYSIS

A. Five Year Summary of Fiscal Impact:

Fiscal Years	2023	2024	2025	2026	2027
Capital Expenditures					
Operating Costs	<u>\$1,315,932</u>	<u>\$1,355,410</u>	<u>\$1,396,072</u>	<u>\$1,437,954</u>	<u>\$1,481,093</u>
External Revenues					
Program Income (County)					
In-Kind Match (County)					
NET FISCAL	<u>\$1,315,932</u>	<u>\$1,355,410</u>	<u>\$1,396,072</u>	<u>\$1,437,954</u>	<u>\$1,481,093</u>

ADDITIONAL FTE POSITIONS (Cumulative) _____

Is Item Included in Current Budget? Yes X No

Does this item include the use of federal funds? Yes No X

Budget Account No.:

Fund 1226 Department 380 Unit 3162 Object Various Program _____

B. Recommended Sources of Funds/Summary of Fiscal Impact:

Fiscal Year 2023 management and operating costs are estimated to be \$1,315,932. Over the past five years, annual management and operating costs for County owned/managed natural areas have increased an average of 3% per year. Annual management and operating costs for FY 2024 and beyond may be higher or lower than projected. Funds for management and operation of the natural area are expected to come from the Natural Areas Fund (1226), Natural Areas Stewardship Endowment Fund (1220), Ag Reserve Land Management Fund (1222) and/or ad valorem funding sources.

C. Department Fiscal Review:

_____ *S. Henry*

III. REVIEW COMMENTS

A. OFMB Fiscal and /or Contract Dev. and Control Comments:

Lucy M. [Signature] 9/19/2023
 OFMB 9/17/23

John J. [Signature] 9/13/23
 Contract Development & Control
 TMD 9/13/23

B. Legal Sufficiency:

_____ 9/14/23
 Assistant County Attorney

C. Other Department Review:

 Department Director



MANAGEMENT PLAN FOR

PINE GLADES NATURAL AREA

14122 West Indiantown Road

Jupiter, Fl 33478

FCT PROJECT #05-028-FF5 - INDIAN LAKES NATURAL AREA

Original Plan: March 2008

Updated Plan: June 2023

Prepared by:

Palm Beach County

Department of Environmental Resources Management

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West Palm Beach, Florida 33411-2743

THE PALM BEACH COUNTY NATURAL AREAS SYSTEM MANAGEMENT STATEMENT

The Palm Beach County Natural Areas System is comprised of those environmentally sensitive lands that are owned or leased by the County and managed as natural areas by the County's Department of Environmental Resources Management. These natural areas were selected and acquired to preserve the rare and diverse native ecosystems present on these sites and the endangered, threatened, and rare species of plants and animals that live there.

Purpose and Goals of the Natural Areas System

- *The purpose of the Natural Areas System is to protect, restore and manage remnant native ecosystems, and the plants and animals characteristic of those ecosystems, in perpetuity, throughout Palm Beach County. The management of each natural area shall be coordinated with that of the other natural areas in the system.*
- *Attempts shall be made to maintain physical and/or biological connections with other publicly- or privately-owned natural areas through additional land acquisitions, conservation easements, interlocal agreements, greenway/trail connections and other appropriate actions.*

Management Considerations

- *County natural areas shall be open to the public for non-consumptive/non-destructive, resource-based recreation, environmental education and scientific research. Public use shall not take precedence over ecosystem protection. Public uses shall be limited to those that are compatible with the perpetual preservation and management of the native ecosystems, plants and animals found on the natural area.*
- *All public use facilities shall be chosen, designed and located to have minimal impact on the rare and imperiled plants, animals and natural communities found on the natural area. Facilities, structures or roads (other than management accessways/firebreaks or access roads) that would cause fragmentation of a natural area shall not be permitted.*
- *To the extent practicable, fire-maintained native ecosystems shall be burned at the fire interval necessary to maintain those ecosystems. Burns shall be conducted by trained personnel, using a prescribed burn plan that addresses safety and smoke concerns.*
- *Native ecosystems that have been impacted by invasive/nonnative plant infestations, land-clearing activities, drainage and/or other man-made disturbances shall be restored to their previous condition, if practicable, or to a native ecosystem that is better suited to current environmental conditions.*

- *The special requirements of listed species shall be considered in developing management strategies for each natural area, but an individual species' needs shall not take precedence over management of an entire ecosystem or be allowed to have a detrimental impact on that ecosystem's complement of species.*

Management Plan Development and Revision

- *A management plan shall be written for each natural area that: 1) describes the natural and cultural resources; 2) identifies any constraints associated with managing the natural area in an urbanized environment; and 3) identifies the strategies and techniques that will be used to preserve, restore and manage the native ecosystems, preserve the cultural resources, protect listed species, control invasive/non-native plants and animals, provide for appropriate public access, manage and maintain public use facilities, and prevent unauthorized access and activities.*
- *Each plan shall be reviewed by the Palm Beach County Natural Areas Management Advisory Committee (NAMAC), a citizens' advisory board, and the public shall be invited to comment on the plan at a public hearing held by NAMAC in the community in which the site is located. Following NAMAC's review of any comments received, the plan shall be sent to the Board of County Commissioners for approval.*
- *Each plan shall have a revision to include all changes since the initial plan. No further revisions shall be necessary unless major changes to the site occur.*

EXECUTIVE SUMMARY

The 6,429-acre Pine Glades Natural Area (natural area) is located in the north-central portion of Palm Beach County (County). The County owns the entire natural area. Funding for the natural area came from the Palm Beach County Environmentally Sensitive Lands Bond Issue Referendum of March 12, 1991, the Palm Beach County Lands for Conservation Purposes Bond Issue Referendum of March 9, 1999, the County's Natural Areas Stewardship Fund, and from state Florida Forever matching funds from the Florida Communities Trust (FCT).

Mesic flatwoods, wet flatwoods and wet prairie are the predominant natural communities present on the site. Smaller areas of depression marsh, dome swamp and marl prairie are also present. Thus far, 461 species of plants and 289 species of animals have been recorded on the site, including 19 plant and 28 animal species that have been designated as having some degree of endangerment by at least one governmental agency or are tracked by the Florida Natural Areas Inventory.

The primary purpose for the acquisition of this natural area was to preserve, restore/enhance and manage the site's ecological resources, including the existing natural communities, their component plant and animal species, and local groundwater resources. Acquisition, development and management of the site as a natural area has provided members of the public with opportunities for recreational activities, environmental education and scientific research that are consistent with the primary purpose of the site's acquisition. It also has helped the County comply with portions of its comprehensive plan.

Public use facilities have been constructed; the site opened to the public in February 2014. An accessible nature trail, hiking trails, wildlife observation platform with boardwalk, a picnic shelter, fishing pier, canoe/kayak launch, and kiosk with interpretive displays provide valuable opportunities for the public to observe and learn about the site's biologically unique plant communities and associated animals. The main public access, including parking facilities, a bicycle rack and pedestrian entrance, is located off Indiantown Road.

The original management plan for the site was completed in May 2008. This updated management plan: 1) identifies the existing natural and cultural resources, including rare and imperiled species and vegetation communities; 2) identifies factors that affect the preservation, restoration and long-term management of the existing resources; 3) addresses the site-specific goals, strategies and techniques that will be used to preserve, restore/enhance, manage and monitor the existing resources; 4) ensures that the natural area is managed in accordance with all applicable grant restrictions; and 5) identifies public recreational uses that may be accommodated without adversely affecting the site's natural and cultural resources. This management plan also includes information related to the site's connectivity with other conservation areas, estimated capital costs, estimated annual management and maintenance costs, and any other issues identified by staff.

The County will review and update this management plan as necessary based on new information, improvements in management techniques or other relevant factors.

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1. INTRODUCTION

1.1 LOCATION AND DESCRIPTION

Pine Glades Natural Area (natural area) is located in the north-central portion of Palm Beach County (County) (Figure 1). The 6,429-acre natural area is located within an unincorporated portion of the County. The natural area is bounded on the east side by a South Indian River Water Control District (SIRWCD) canal and the Jupiter Farms rural residential subdivision. It is bordered on the south side by Jupiter Farms, the Pratt Whitney Private Preserve, and the Palm Beach Park of Commerce industrial park. It is bordered on the west side by the J. W. Corbett Wildlife Management Area (Corbett WMA), the Bee Line Highway (State Road 710), the United Technologies manufacturing and engine testing complex, and several other industrial inholdings. The site is bordered on the north side by Indiantown Road (State Road 706) and the John C. and Mariana Jones/Hungryland Wildlife and Environmental Area (Hungryland WEA). The site is divided into east and west halves by north-south Pratt-Whitney Road (County Road 711). The site is fully acquired.

The nearest federal- or state-owned conservation areas within a 3-mile radius are the Corbett WMA immediately to the south and west and the Hungryland WMA immediately to the north of the natural area (Figure 1). The nearest significant waterbody is the state- and federally-designated Wild and Scenic Loxahatchee River which is located approximately 7 miles northeast of the natural area. County-owned natural areas within a 3-mile radius include Loxahatchee Slough 2 miles to the southeast, Cypress Creek 2.5 miles to the northeast and Hungryland Slough 0.5 miles to the south.

A larger, developed county park within a 3-mile radius of the natural area is Riverbend Park (Figure 1). In addition, there is one smaller county park in the vicinity of the natural area which is Jupiter Farms Park. There are no municipal parks with $\frac{1}{4}$ mile of the natural area.

The natural area is composed of a variety of wetlands and landforms. In general, uplands within the site – mesic flatwoods and wet flatwoods - exhibit very little relief. Wetlands within and immediately adjacent to the natural area include: depression marsh, dome swamp, marl prairie and wet prairie. Ground elevations within the natural area generally range from 15.4 feet to 28.8 feet North American Vertical Datum [NAVD] (PBC 2017 LIDAR).

Mesic flatwoods, wet flatwoods and wet prairie are the predominant natural communities present on the site. Smaller areas of depression marsh, dome swamp and marl prairie also are present. Florida Natural Areas Inventory (FNAI) tracks two of the intact natural communities present on the natural area as very rare (marl prairie and wet prairie) in Florida (FNAI 2022).

The natural area contains important habitat for many rare plant and animal species. Thus far, 461 species of plants and 289 species of animals have been recorded on the site, including 19 plant and 28 animal species that have been designated (“listed”) as having some degree of endangerment by

at least one governmental agency or are tracked by FNAI. A list of plant species recorded at the site is provided in Appendix A and a list of animal species recorded at the site is provided in Appendix B. The listed and tracked plant and animal species recorded at the site are identified in Tables 1 and 2, respectively. Definitions for the designations used by the agencies are provided in Appendix C.

1.2 PAST USES

The majority of the Pine Glades Natural Area has remained for the most part, as undisturbed native vegetation with minimal past uses. Perimeter and bisecting roads and canals have caused permanent changes to the native vegetation within their rights-of-ways, and have created disturbed areas along the edges of these rights-of-way. Previous agricultural and fill mining uses in the northwest corner in the 1940s and the northeast corner of the site in the 1950s created large disturbed areas. Intermittent fill mining also occurred in the 1980s, 1990s, and 2000s in the northeast corner. Otherwise, the past uses of the site have caused mostly temporary and/or minor problems on small areas scattered throughout the site. All slash pines on the site large enough to have usable timber were logged before 1950. Sporadic cattle grazing has occurred on the site. No noticeable effects from the grazing was observed. Perimeter disturbances associated with construction of railroads, roads, and canals and the development of adjacent industrial and rural residential properties began in the 1920s and these past disturbances continue to affect the natural area today.

Significant trash and construction debris dumping occurred where old jeep trails entered the natural area, especially around the former borrow pits; however, nearly all of the debris on the site was removed prior to initial acquisition by the County.

1.3 ADJACENT LAND USES AND IMPACTS

The entire natural area is located within unincorporated Palm Beach County. The natural area is designated as “Conservation” on the County’s Future Land Use Atlas (Palm Beach County 2021). The intent of the “Conservation” designation is to protect important natural environmental features, including endangered and threatened species. Since the County’s Unified Land Development Code (ULDC) allows natural areas with Future Land Use designations of “Conservation” to exist in all zoning categories, the County will not seek to change the zoning designation for this site.

Both localized and large-scale impacts from adjacent roads and adjacent and nearby commercial, residential, and recreational properties are expected at the natural area. Things that have impacted and continue to impact all or most of the natural area include invasion of the site by nonnative plant species via seeds produced by nonnative plants growing within adjacent roads, within adjacent and nearby properties; and the use of wells to provide potable water for the surrounding properties access to the site by off-highway vehicles (OHV); dumping; and animal mortality from vehicular traffic.

Domestic animals and pets have not been observed causing impacts at the natural area. Feral/free-roaming cats and stray dogs can cause wildlife disturbance and/or mortality. Efforts to mitigate for these potential impacts may include a nonnative/nuisance animal control program; public outreach, volunteer and interpretive programs; and enforcement of the provisions of the Palm Beach County Natural Areas Ordinance, as amended, (Chapter 11, Article XI of the Palm Beach County Code; <http://discover.pbcgov.org/erm/Publications/PBCNaturalAreasOrdinance.pdf>; Natural Areas Ordinance) regarding the prohibition of domestic animals and pets on the natural area.

1.4 USES THAT ARE NOT APPROPRIATE

The County's Board of County Commissioners (BCC) has adopted a Natural Areas Ordinance that regulates public uses on county natural areas such as Pine Glades Natural Area. The Natural Areas Ordinance restricts public uses within a county-managed natural area to those that are compatible with the perpetual preservation and protection of the natural area. This ordinance permits passive recreational activities such as hiking, nature study and photography. Other uses (for example, fishing, canoeing/kayaking, horseback riding and/or bicycling in areas designated for such uses, environmental education and scientific research) are permitted as long as they do not jeopardize the protection of the existing natural and cultural resources. The Natural Areas Ordinance prohibits destructive uses such as OHV use and dumping, and requires special permits for camping, horseback riding, scientific research involving collection of plant and animal specimens, public demonstrations and gatherings (including, but not limited to bicycling and/or equestrian events), erection of temporary or permanent structures, and after hours or nighttime use of the natural area. Except for service animals, no dogs, cats or other domestic animals are permitted on the natural area. The ordinance also prohibits damaging, taking, molesting, trapping, hunting and/or poaching of plants and animals. Although not prohibited by the Natural Areas Ordinance, logging is not appropriate for this natural area since it does not contain commercially-viable quantities of timber.

There are no plans for any concessions to be located on the site, nor are there plans to provide a camping area or allow horseback riding or boating on the natural area. There are sufficient retail businesses in the vicinity of the natural area to supply services normally provided by concessionaires. A camping area is not appropriate for the site given the rare status of two of its natural communities, and the sensitivity of the rare and endangered plant and animal species - both of which could be negatively impacted if camping was permitted - and due to the naturally wet conditions within the site.

Horses are not permitted on the site due to the rare status of two of the natural communities (marl prairie and wet prairie) and the sensitivity of the rare and endangered plant and animal species (Tables 1 and 2) - both of which would be negatively impacted if equestrians were permitted on the site - and due to the naturally wet conditions within the site. The natural area is a mitigation area for a variety of county and non-county projects and regulatory success criteria must continue

to be met in order to receive the mitigation credit and program funding. Post restoration evaluations are consistent with staff's recommendation to not allow equestrian use of the site.

Catch-and-release fishing is allowed in designated areas on the site. Canoeing and kayaking is allowed on the site, but no motorized boats are allowed

No vehicles (for example, OHVs, bicycles, skateboards, etc.) are permitted beyond the designated parking lot/trailhead, except to perform the monitoring, maintenance and land management activities described in this management plan, and except as authorized by the County's Access Policy for Use of Natural Area Trails and Other Public Use Facilities by Persons with Mobility Disabilities. Drones are not permitted within the natural area, except to assist with the management and monitoring activities described in this management plan, as permitted for scientific research or as needed during law enforcement investigations.

1.5 OUTPARCELS

There are no outparcels adjacent to the natural area that would be suitable for acquisition. All land(s) immediately adjacent to the natural area have already been developed or cleared for public, industrial, commercial, residential, recreational, or transportation purposes.

1.6 MANAGEMENT AND USE RESTRICTIONS

Management activities and public uses on the natural area are restricted to those that are consistent with the preservation and protection of the rare and endangered plants, animals and ecosystems found on the site. To ensure that the natural area is preserved and protected, in perpetuity, management activities and public uses on the site are regulated by the restrictions imposed by the Natural Areas Ordinance (see Section 1.4), and by conservation easements granted by the County to the South Florida Water Management District (see Section 1.7 and Appendix F).

Other significant management and public use restrictions are related to FCT grants associated with the site. Management and use of the natural area is limited by the conditions imposed in the FCT Declaration of Restrictive Covenants 05-028-FF5 dated November 14, 2006 (Appendix D).

The size, shape and location of the natural area do not restrict certain management activities such as invasive/nonnative vegetation removal or upland restoration activities. However, these factors do limit what can be done on the site relative to the reintroduction of fire and the hydrologic restoration of wetland areas. The site's proximity to Indiantown Road, Pratt Whitney Road, Jupiter Farms residential area, the Palm Beach Park of Commerce and other various industrial areas limits the options for prescribed burning.

There are no other known legislative or executive constraints that affect the development, use or management of the site. The natural area is not within an aquatic preserve or a designated area of critical state concern, and is not under study for such a designation.

1.7 LEASES AND EASEMENTS

Below is a summary of the easements, concessions, leases and other encumbrances on Pine Glades Natural Area. Copies of the recorded easements, leases and other encumbrances that restrict use of, or benefit, the Natural Area are available upon request.

No additional easements, concessions, or leases or other encumbrances are anticipated.

Active Easements, Concessions, Leases and Other Encumbrances

1.7.1 Posted and Viewed Road – Restricts a Portion of the West Half of Section 9 in Township 41 South, Range 41 East

In September 1929, the County accepted a 66-foot posted-and-viewed public road that ran in a zigzag fashion through present-day Jupiter Farms to a point near the southeast corner of Natural Area in Section 9. The posted-and-viewed road may have entered the southeast corner of the Natural Area before turning southwest through the present-day Palm Beach Park of Commerce to the former Randolph siding in Section 19, along the Seaboard Railroad. This road was never built except in Jupiter Farms where it is known as Randolph Siding Road. Although the portion of the posted-and-viewed road lying west/southwest of the east half of Section 9 was never released or constructed by the County, the stated purpose for the road – providing access to the Randolph siding - no longer exists. It may be investigated whether the portion of the posted-and-viewed road located within the west half of Section 9 can be abandoned.

1.7.2 Reservation of Oil, Gas, Sulphur and Other Minerals and Mineral Rights by Southern States Land & Timber Corporation (Southern States) – Encumbers Portions of Sections 1 and 12 in Township 41 South, Range 40 East

When Southern States sold the Natural Area to Lake Farms Company in July 1950, they reserved an undivided one-half interest in all oil, gas, sulphur and other minerals and mineral rights (oil, gas and mineral rights) over the entire Natural Area. Southern States also reserved the right to enter, explore, mine and develop the property for the reserved resources. In 1962, Southern States released its rights of entry and exploration/mining/development for natural area lands lying in Sections 10, 11 and 14 in Township 41 South, Range 40 East. Then in 1970, Southern States released its rights of entry and exploration/mining/development for natural area lands lying in Sections 3, 4 and 13, most of Section 2, the west half of Section 12 and the southwest portion of Section 1, all in Township 41 South, Range 40 East. In 1970, Southern States also released its rights of entry and exploration/mining/development for natural area lands lying in the eastern 1/8th of Section 6, the western halves of Sections 5 and 9, and all of Sections 7 and 8, all in Township 41 South, Range 41 East. (See Subsection 1.7.29 for an analysis of the reservations on the west half of Section 4 and east half of Section 5 in Township 41 South, Range 41 East).

The only oil, gas and mineral rights still held by Southern States are those affecting the east 9/16^{ths} and southern portion of the west 7/16^{ths} of Section 1, and east half of Section 12, in Township 41 South, Range 40 East. Southern States still holds an undivided one-half interest in all oil, gas and minerals found within these three areas, as well as the right of entry and exploration/mining/development. These retained rights will expire in June 2036, if Southern States fails to record a “Notice of Interest” on, or prior to, June 27, 2036. The rest of the unreleased Southern States’ oil, gas and mineral rights within the Natural Area appear to have been extinguished by the Marketable Records Title Act (Chapter 712, Florida Statutes).

1.7.3 Remaining One-quarter Interest in Oil, Gas and Mineral Rights Reserved by the Westervelt Family, Without Right of Entry – Northeast Corner of Section 1 and Southeast Corner of Section 12 in Township 41 South, Range 40 East – No Real Impact to Natural Area

In May 1957, the Westervelt family reserved an undivided one-fourth interest in all oil, gas and mineral in, under, or that may be produced from all of the Natural Area, except the east half of Section 5 and west half of Section 4 in Township 41 South, Range 41 East when it conveyed the underlying lands to Richard E. Branham. The reservation did not include the right of entry, exploration or development. Most of the Westervelt family’s oil, gas and mineral reservations merged with title when the affected lands reverted back to the Westervelt family in 1960 and 1962 or were extinguished by the Marketable Records Title Act in December 2013 (see Subsection 1.7.31). The only natural area lands currently subject to the 1957 Westervelt oil, gas and mineral reservation are the northeast parcel in Section 1 and the southeast parcel in Section 12. The Marketable Records Title Act will extinguish these remaining reservations in March 2030 unless the Westervelt family records an appropriate notice prior to that time.

Although the remaining oil, gas and mineral reservations are still in effect, they have no real impact on the Natural Area. The Westervelt family cannot enter, explore, mine or drill for oil, gas or minerals within the Natural Area without the County’s expressed consent. Furthermore, there is no requirement for the County to ever drill, mine or explore for any of the reserved resources.

1.7.4 Westervelt Family to Jorgen Hubschman – Retained Easement and Right of Way, As Amended – Benefits Natural Area Lands in Sections 7 and 8 in Township 41 South, Range 41 East

In June 1962, the Westervelt family sold Sections 17 and 18 in Township 41 South, Range 41 East, just south of the present-day Natural Area, to Mr. Hubschman. During the sale, the Westervelt family reserved an easement and right of way for ingress, egress and travel over, across, in and upon the north 40 feet of Sections 17 and 18, and east 40 feet of Section 17. This easement and right of way benefited present-day natural area lands in Sections 7 and 8 by providing legal access to and from those sections to Pratt Whitney Road and the proposed posted and viewed Randolph Siding Road extension in Section 17. As successor to the Westervelt family, the County acquired the easement when it purchased the MacArthur Tract.

In August 2014, the County released the portion of the easement lying within the west 410 feet of Section 17 and all of Section 18 in exchange for a non-exclusive, blanket ingress and egress easement over the approximately 79-acre, east-west oriented parcel just south of the Natural Area and east of Pratt Whitney Road. In October 2018, the County accepted a replacement, specific location, east-west oriented ingress-egress easement ranging in width from 20 feet to approximately 80 feet in width. The purpose of the new ingress-egress easement was to allow County employees, contractors and emergency vehicles to utilize the northern portion of the 79-acre parcel to access the southern portion of the Natural Area east of Pratt Whitney Road. In December 2018, the County released the remainder of the 79-acre parcel from the 2014 blanket easement. It appears that the County still holds a non-exclusive ingress-egress easement over the north 40 feet of Section 17, less the west 410 feet, and the east 40 feet of Section 17.

1.7.5 Gene T. and Evelyn M. Dyer to Palm Beach County – (Road) Right of Way Deed – Restricts Portions of the Natural Area in Sections 10, 11 and 14 in Township 41 South, Range 40 East

In December 1962, the Dyers conveyed road rights of way within Sections 10, 11 and 14 to the County in order to facilitate future development of the adjacent parcels. However, the road rights of way within the overall boundaries of the Natural Area have never been used. In May 2022, the BCC approved re-designation of the unused road rights of way lying immediately east, north and west of the former Moroso Motorsports Park (Moroso) property to “natural area lands” and their incorporation into the Natural Area. The other road rights of way inside and outside of the boundary of the Natural Area are still in effect. The remaining road rights of way that are within the boundaries of the Natural Area are treated by the County on an ongoing basis to eliminate potential seed sources for invasive/nonnative vegetation.

1.7.6 My Future, Inc. and Stanley N. Howard to Florida Power and Light (FPL) and Southern Bell Telephone and Telegraph Company (Southern Bell) – Powerline and Telephone Line Easements – Restrict Portions of the Natural Area in Sections 10, 11 and 14 in Township 41 South, Range 40 East, Lying North of SR 710

In June 1963, My Future, Inc. granted FPL and Southern Bell two 10-foot-wide easements over lands it owned north of, and immediately adjacent to, SR 710 in Sections 10, 11 and 14. In July 1963, Stanley N. Howard conveyed FPL and Southern Bell a similar 10-foot-wide easement over lands he had an interest in Section 10 lying north of, and immediately adjacent to, SR 710. The easements gave FPL the right to: 1) install and maintain wires, poles, guy stubs, guy wires and anchors, and necessary appurtenances for electric transmission and distribution lines; 2) allow other companies and persons to attach conduits, wires or cables to power poles placed within the easements; and 3) cut, trim and clear vegetation that might endanger the construction, operation and maintenance of the powerlines. Southern Bell was specifically granted the right to set poles and anchors within the same area as FPL.

1.7.7 Westervelt Family to FPL – Powerline Easement - Restricts Portions of Sections 3 and 4 in Township 41 South, Range 40 East, Lying North of State Road 710 (SR 710)

In July 1963, the Westervelt family granted FPL a 10-foot-wide easement in Sections 3 and 4 in Township 41 South, Range 40 East, north of, and immediately adjacent to, SR 710 (also known as Beeline Highway). The easement granted FPL the right to: 1) install and maintain wires, poles, guy stubs, guy wires and anchors, and necessary appurtenances for electric transmission and distribution lines; 2) allow other companies and persons to attach conduits, wires or cables to power poles placed within the easements; and 3) cut, trim and clear vegetation that might endanger the construction, operation and maintenance of the powerlines.

1.7.8 Westervelt Family to FPL – Powerline Easement - Restricts a Portion of Section 13 in Township 41 South, Range 40 East, Lying North of SR 710

In May 1964, the Westervelt family granted FPL a 10-foot-wide easement over lands it owned north of, and immediately adjacent to, SR 710 in Section 13. The easement gave FPL the right to: 1) install and maintain wires, poles, guy stubs, guy wires and anchors, and necessary appurtenances for electric transmission and distribution lines; 2) allow other companies and persons to attach conduits, wires or cables to power poles placed within the easements; and 3) cut, trim and clear vegetation that might endanger the construction, operation and maintenance of the powerline and poles.

1.7.9 Creation of Two Drainage Easements by My Future, Inc. – Restricts and Drains a Portion of Section 10 in Township 41 South, Range 40 East

In January 1973, My Future, Inc. created a 120-foot-wide northwest-southeast oriented drainage easement in the eastern Natural Area parcel in Section 10. The easement lies parallel to, and about 590 feet north of, the right of way for SR 710. My Future also created a 37.20-foot-wide easement in the northeast corner of the western Natural Area parcel in Section 10. The easements were created when ownership of the underlying natural area lands were conveyed to Stanley N. Howard, trustee. Although the deed failed to identify the benefactor of the easements, the easements appear to have been created to protect portions of a ditch that was constructed approximately 590 feet north of SR 710 prior to 1957 (HistoricAerials.com, 1957; see Subsection 1.7.20).

1.7.10 Eugene Uvanile to SIRWCD – (Flowage) Easement Deed – No Effect on the West Half of Section 4, Township 41 South, 41 East

In February 1986, Mr. Uvanile conveyed an Easement Deed to SIRWCD creating a 130-acre flowage easement within the northern, eastern and southern portions of Section 4. The purpose of the flowage easement was to store excess surface waters from the west half of Section 4 and east half of Section 5, thereby limiting the amount of water discharging from the proposed development area into SIRWCD's drainage system at any given time. Although the flowage easement is still technically in effect, it has no negative effect on the Natural Area since SIRWCD cannot pump

excess water from its drainage district into the flowage easement area.

1.7.11 Eugene Uvanile and Stuart Enterprises, Inc. to SIRWCD – (Drainage/Canal Right of Way) Easement Deed – Benefits the West Half of Section 4 and East Half of Section 5, both within Township 41 South, 41 East

In February 1986, Mr. Uvanile and Stuart Enterprises, Inc. conveyed several drainage/canal right of way easements to SIRWCD. The 80-foot-wide easements gave SIRWCD the right to construct canals/berms generally along the northern, eastern, southern and western edges of the east half of Section 5, as well as the northern and southern edges of the west half of Section 4. The easements were granted in anticipation that the area would be soon be annexed by SIRWCD. Although the easements were never officially abandoned, the annexation never happened and most of the drainage/canal right of way easements can be considered moot since the area is now part of the Natural Area. The only drainage/canal right of way easement that still appears to be valid is the one that lies just south of Indiantown Road. The canal/berm system that was constructed within the northern easement benefits the Natural Area by keeping untreated runoff from Indiantown Road from draining into the Natural Area. The berm that is part of the northern canal/berm system also helps keep surface water from the Natural Area from draining into the canal and discharging into SIRWCD's drainage system.

1.7.12 FPL and Trustees of the MacArthur Liquidating Trust Agreement – Restricts a Portion of Section 13, Township 41 South, Range 40 East

In September 1993, FPL and the trustees of the MacArthur Liquidating Trust Agreement entered into a Stipulated Final Judgment which gave FPL a 10-foot-wide by 100-foot-long, east-west easement over a portion of the Natural Area in Section 13. The easement area lies perpendicular, and adjacent, to the western edge of the Pratt Whitney Road right of way. The center line of the easement is 885 feet south of the north section line. The easement includes a power pole, powerlines, bracing structures and necessary appurtenant equipment to connect the FPL substation east of Section 13 to the north-south powerline that runs along the west right of way line for Pratt Whitney Road. The easement allows for the construction, operation, maintenance and replacement of FPL facilities and communication lines within the easement area. FPL also may construct roads, bridges and culverts, and cut and keep clear all trees and undergrowth within the easement area.

1.7.13 Pine Glades South Mitigation Area (SFWMD Permit No. 50-05422-P [Application No. 040817-16]; United States Army Corps of Engineers [USACE] Permit No. 2004-10276); and Acreage Reliever Road Mitigation Area (SFWMD Permit No. 50-05422-P [Application No. 070328-19]; USACE Permit No. 2002-8273) – Benefit the East Half of Section 8 and West Half Section 9 in Township 41 South, Range 41 East; and a Portion of the West Half of Section 5 in Township 41 South, Range 41 East, Respectively

In December 2005, SFWMD issued a joint permit to Minto Communities, Inc. (Minto) and the County to create an offsite mitigation area within the east half of Section 8 and west half of Section

9. Restoration of the offsite mitigation area, now known as Pine Glades South Mitigation Area, provided mitigation for wetland impacts associated with a Minto-owned, 250-acre residential development project in another portion of the County. The County assumed full responsibility for the Pine Glades South Mitigation Area in December 2006.

In July 2007, the SFWMD issued an offsite mitigation permit for wetland impacts related to a portion of the County's Acreage Reliever Road project. The 11.67-acre offsite mitigation area, known as the Acreage Reliever Road Mitigation Area, is located in the west half of Section 5.

Pursuant to the permit requirements, the County must conduct regular maintenance activities to ensure the integrity and viability of these offsite mitigation areas. Maintenance must be conducted in perpetuity to ensure that each mitigation area is free of Category 1 exotic vegetation (as defined by the Florida Exotic Pest Plant Council at the time of permit issuance) immediately following a maintenance activity. In addition, coverage of exotic and nuisance plant species may not exceed 5 percent total cover between maintenance activities, nor may they dominate any given section of either mitigation area. The permit-required Conservation Easements were granted to SFWMD in November 2005 and May 2011, respectively (Subsection 1.7.16). These Conservation Easements placed additional protections/restrictions over the Pine Glades South and Acreage Reliever Road Mitigation Areas.

1.7.14 Pine Glades West Mitigation Area Permits (SFWMD Permit No. 50-08187-P, multiple USACE permits); and Pine Glades North/Pine Glades Scripps Mitigation Area Permits (SFWMD Permit Nos. 50-08231-P and 50-00610-S-24; USACE Permit No. SAJ-2007-4122) – Benefit the West Halves of Sections 5 and 8, and All of Sections 6 and 7 in Township 41 South, Range 41 East; and West Half of Section 4 and East Half of Section 5 in Township 41 South, Range 41 East, Respectively

In December 2007, SFWMD issued an offsite mitigation area permit for approximately 1,872 acres in the western halves of Sections 5 and 8, and Sections 6 and 7. This mitigation area is known as the Pine Glades West Mitigation Area.

In January 2008, SFWMD issued an offsite mitigation area permit for just over 615 acres in the west half of Section 4 and east half of Section 5. This mitigation area is known as Pine Glades North Mitigation Area. In June 2010, an approximate 194-acre portion of the Pine Glades North Mitigation Area was carved out to mitigate for impacts related to the Scripps Florida Phase II project.

All three of these mitigation areas are bound by nearly identical SFWMD permit conditions, which include, but are not limited to: 1) maintaining each of the mitigation areas, in perpetuity, at less than 5 percent coverage exotic nuisance plants (as defined by the Florida Exotic Pest Plant Council at the time of permit issuance); 2) maintaining each of the mitigation areas, in perpetuity, at less than 5 percent coverage by all other nuisance plants; and 3) maintaining each of the mitigation areas so that no 0.5-acre area exceeds the 5 percent coverage rule. In May 2011, the County

granted SFWMD a Conservation Easement that fulfilled the conservation easement requirements for the Pine Glades West and Pine Glades North/Scripps Mitigation Areas (see Subsection 1.7.16). The May 2011 Conservation Easement placed additional protections and restrictions over these two offsite mitigation areas.

1.7.15 County and State of Florida Department of Transportation (FDOT) – License Agreement for Discharge of Pretreated Stormwater into Natural Area – Portions of the Natural Area Adjacent to SR 710

On July 31, 2014, the County entered into a License Agreement with FDOT to allow pre-treated stormwater from SR 710 to discharge into the Natural Area. The License Agreement allows FDOT to discharge stormwater that meets state water quality criteria through outfall structures at eighteen agreed upon locations along the western boundary of the Natural Area. The County may modify the License Agreement for convenience at any time with twelve month written notice to FDOT.

1.7.16 County to SFWMD – Three Conservation Easements - Benefit the Natural Area

Three conservation easements have been placed over portions of the Natural Area. In September 2005, the County granted the SFWMD a conservation easement over the 547-acre Lara/Johnson Tract (Figure 2). The purpose of this conservation easement was to permanently protect lands that were donated to the County pursuant to an agreement between the owner of the Lara/Johnson Tract, SFWMD and an entity that owned developable land within the County's Ag Reserve. In November 2005, the County granted the SFWMD a conservation easement over 659 acres of natural area lands in the west half of Section 9 and east half of Section 8, both in Township 41 South, Range 41 East (southeast portion of the Natural Area). This conservation easement was granted pursuant to a November 15, 2005 Agreement for Mitigation between the County and Minto Communities, LLC (Minto) that allowed Minto to use wetland mitigation credits created as a result of Minto-funded environmental restoration activities within the 659-acre Pine Glades South Mitigation Area (see Subsection 1.7.13). The last conservation easement affecting Pine Glades Natural Area was granted to SFWMD, with third party enforcement rights to the U.S. Army Corps of Engineers, in May 2011. This conservation easement was required by permits that authorized the creation of the Acreage Reliever Road Mitigation Area (SFWMD Permit No. 50-05422-P [Application No. 070328-19]), Pine Glades North/Scripps Mitigation Area (SFWMD Permit Nos. 50-08231-P and 50-00610-S-24) and Pine Glades West Mitigation Area (SFWMD Permit No. 50-08187-P). This conservation easement protects nearly all of the Natural Area, including the unused road rights of way within the natural area boundaries and the west half of the re-designated right of way (Former Road Right Of Way Tract) that lies just west of the former Moroso property; the only areas not included in the last conservation easement are the 659-acre Minto mitigation area and a portion of the Former Road Right Of Way Tract.

These three conservation easements provide a level of protection that is not affected by the retirement of county and/or state conservation bonds. The conservation easements require the County to permanently retain the land and water areas in their natural condition, and retain and

manage those areas in a manner that will protect native plant and animal communities. These conservation easements limit improvements within the Natural Area to those that support land management activities, along with recreational opportunities that have little or no impact on natural resources. The conservation easements also allow for the removal/eradication of nonnative and nuisance plants and animals, use of prescribed fire, and implementation of environmental restoration/enhancement projects. The County will seek to find an environmental nonprofit or governmental entity that is willing to hold a conservation easement over the portions of the Former Road Right Of Way Tract that lie immediately east, north and west (east half of the right of way) of the former Moroso property (Figure 2).

1.7.17 FCT and the County – Declaration of Restrictive Covenants, as Amended – Stuart Enterprises Phase I, Stuart Enterprises Phase II and C-Venture Tracts – Restricts Portions of the West Half of Section 4 and East Half of Section 5 in Township 41 South, Range 41 East

The Stuart Enterprises Phase I, Stuart Enterprises Phase II and C-Venture Tracts (Figure 2) were acquired with matching funds from FCT and therefore are constrained by the conditions imposed in the November 2006 Declaration of Restrictive Covenants, as amended in July 2011 (Declaration). Pursuant to the Declaration, the County must manage the FCT project site for conservation, protection and enhancement of natural and historical (if any) resources, and compatible passive, natural resource-based public outdoor recreation. The County must provide FCT with at least sixty days prior written notice regarding any proposed lease of any interest in, the operation of any concession on, any sale or option related to the grant property, the granting of any management contracts to a nongovernmental entity, and any use of the FCT project site by any person other than in that person's capacity as a member of the general public. The County may not execute related documents without the prior written approval of FCT. All fees collected from a lease, concession contract, management contract, etc. on a FCT project site must be reported to FCT and placed in a segregated account solely for the upkeep and maintenance of that site. In addition, any proposed modification to the approved management plan and/or any site alterations or physical improvements that are not addressed in the approved management plan require prior FCT review and approval.

1.7.18 Florida Greenways and Trails Program Designation Agreement

The next to last known encumbrance on Pine Glades Natural Area is a 20-year-term Florida Greenways and Trails Program Designation Agreement (Designation Agreement) that the County voluntarily placed over the Natural Area in August 2011 (see Section 4.8). The Designation Agreement requires the County to manage, operate and maintain the Natural Area in accordance with its Board-approved management plan. The County may withdraw all or a portion of the Natural Area from the Designation Agreement at any time by submitting a written request to the Florida Department of Environmental Protection (FDEP).

1.7.19 County to Land and Water Conservation Fund (LWCF) – Notice of Limitation of Use/Site Dedication – Limits Uses on Almost all of the Natural Area

Between 2013 and 2014, trail and passive recreational facilities were constructed within the northeastern portion of the Natural Area using matching funds from LWCF. In accordance with LWCF program rules, the County was required to record a Notice of Limitation of Use/Site Dedication (LWCF Site Dedication) dedicating the project area, in perpetuity, as an outdoor recreation area for use and benefit of the general public. In 2014, when the LWCF Site Dedication was recorded, the County decided to include all of the +6,395 acres that made up the Natural Area at that time. The only portion of the present-day Natural Area that was not placed under the LWCF Site Dedication was the 13-acre Former Road Right of Way Tract; that tract was added to the Natural Area in 2022, eight years after the LWCF Site Dedication was recorded.

Encroachments (Listed in Order of How They Are Presented in the MacArthur Title Policy)

Since all of the encroachments listed below predate the County's acquisition of the affected Natural Area lands, they will be allowed to remain "as is." In the future, if the benefactor of any of these encroachments needs to expand or relocate its facilities within the Natural Area, they will be required to apply for an interest in a Conservation Land under the Conservation Lands Protection Ordinance.

1.7.20 Drainage/Borrow Ditch Approximately 590 Feet North of SR 710 – Sections 3, 4, 10, 13 and 14 in Township 41 South, Range 40 East – Negatively Affects the Natural Area

The northwest-southeast oriented drainage/borrow ditch that runs parallel to SR 710 within Sections 3, 4, 10, 13 and 14 in the western portion of the Natural Area appears to have been created without benefit of an easement (Lindahl, et al 2000a and 2000c). The ditch, which ranges in width from approximately 50 to 70 feet, was constructed prior to 1957 (HistoricAerials.com, 1957). It was most likely created to help drain excess surface waters from the SR 710 right of way and/or provide fill for the road. There are no known documents giving FDOT the right to create and use the drainage/borrow ditch in the Natural Area. However, since the ditch has provided continuous drainage for SR 710 for more than 20 years, FDOT likely has a prescriptive right to use the ditch. The ditch, which connects to Northern Palm Beach County Improvement District's drainage system, tends to over drain the adjacent natural area lands.

1.7.21 Two Ditch/Berm Systems Surrounding the Former Moroso Property – Section 11 in Township 41 South, Range 40 East – Negatively and Positively Affect the Natural Area

Portions of two, side-by-side, variable-width ditch/berm systems located along the eastern, western and northern edges of the former Moroso property encroach into the Natural Area in Section 11. Although most of the larger, interior ditch/berm system is located within the former Moroso property (Boyle Engineering 2008), portions of the outer berm encroach into the Natural Area by as much as 50 feet. Most of the smaller exterior ditch/berm system appears to have been

constructed within the Former ROW Tract; however, a few areas encroach into the former Moroso property.

These ditch/berm systems have had both negative and positive impacts on the Natural Area. On the negative side, construction of the ditch/berm systems eliminated the previously existing wetland and upland habitats within the footprint of the ditches and berms. On the positive side, the ditch/berm systems protect the Natural Area from unauthorized OHV access from the former Moroso property. The ditches also pretreat excess surface waters from the former Moroso property before discharging that water into the Natural Area via low spots in the exterior berm.

1.7.22 FPL Power Poles, Overhead Lines and Guy Wires - West of Pratt Whitney Road in Sections 1, 12 and 13 – Negatively Affect the Natural Area

Based on pre-acquisition surveys, several of the FPL power poles lying west of Pratt Whitney Road encroach into the Natural Area. One power pole near the intersection of Pratt Whitney Road and SR 710 lies 4.9 feet inside the Natural Area; the rest of the poles are generally less than 3 feet inside the Natural Area (Lindahl, et al. 1999 and 2000b). The overhead powerlines associated with these power poles also encroach into the Natural Area. There also appears to be a guy wire encroachment within Section 13, west of the entrance to the Palm Beach Park of Commerce. This guy wire extends approximately 37.8 into the Natural Area (Lindahl, et al. 2000b). These FPL facilities must be protected during prescribed burns. They also limit the height of vegetation that can grow underneath the lines and guy wires.

1.7.23 Southern Bell Telephone Company Underground Cables and Manholes – West of Pratt Whitney Road and North of SR 710 in Sections 1, 12 and 13 in Township 41 South, Range 40 East - Negatively Affect the Natural Area

At least seven telephone company manholes encroach into the Natural Area. Two telephone manholes encroach a maximum of 0.8 feet into Section 1 of the Natural Area, west of Pratt Whitney Road (Lindahl, et al 2000b). The other five telephone manholes, which are located within the Communities Finance Company Tracts in Sections 12 and 13, encroach a maximum of 9.9 feet into the Natural Area. Although the exact location of the underground telephone cable that is associated with these manholes is not known, it is assumed that the cable encroaches into the Natural Area in the vicinity of the encroaching manholes. The MacArthur Foundation survey (Lindahl, et al 1999) shows an additional twelve telephone manholes along the western edge of Pratt Whitney Road in Sections 1 and 12. However, since no distance notations are provided for the manholes, it is assumed that they are located either on the property boundary or within the road right of way. The presence of these underground facilities precludes excavation of the surrounding soils.

1.7.24 FPL Power Poles, Overhead Lines and Guy Wires - North of SR 710 and West of Pratt Whitney Road in Sections 3, 4, 10 and 13 in Township 41 South, Range 40 East - Negatively Affect the Natural Area

The FPL power poles and overhead powerlines located within the Natural Area, north of SR 710 and in Sections 3, 4 and 10, are within existing 10-foot-wide easements (Lindahl, et al 1999 and 2000a; see Subsections 1.7.7 and 1.7.8). However, guy wires associated with three of these power poles extend up to an additional 10.9 feet (beyond the 10 foot easement area) into the Natural Area. The rest of the encroaching guy wires identified on the 1999 and 2000 boundary surveys (Lindahl, et al 1999 and 2000a) appear to have been removed.

Two FPL power poles in Section 13, just west of the SR 710/Pratt Whitney Road intersection, encroach a maximum of 6.5 feet into the Natural Area. The overhead lines that connect to these poles also encroach into the Natural Area. The rest of the power poles in Section 13 and north of SR 710 appear to be within a 10-foot-wide easement (Lindahl, et al 2000c; see Subsection 1.7.8). The FPL facilities in Sections 3, 4, 10 and 13 must be protected during prescribed burns. They also limit the height of vegetation that can grow underneath the lines and guy wires.

1.7.25 Drainage Ditch - East Side of Pratt Whitney Road in Sections 6 and 7, Township 41 South, Range 41 East - Negatively Affects the Natural Area

The north-south oriented ditch that provides drainage for Pratt Whitney Road encroaches as much as 10 to 15 feet (estimated) into the western portion of Sections 6 and 7 in the Natural Area. The ditch discharges into the Palm Beach Park of Commerce's drainage system, which is controlled by Northern Palm Beach County Improvement District. Because there is little to no berm on the east side of the ditch, excess surface waters from the adjoining Natural Area tend to flow into the ditch. In 2013, the County constructed a 22.5-foot NGVD control elevation, sheet pile weir in the ditch near the southwest corner of Section 7 to raise the control elevation of the ditch, thereby reducing the amount of water draining from the Natural Area into the Park of Commerce's drainage system.

1.7.26 North-South SIRWCD Canal Berm – Eastern Boundary of Natural Area in the West Halves of Sections 4 and 9 in Township 41 South, Range 41 East – Negatively Affects Natural Area

The north-south oriented SIRWCD canal berm that borders the eastern portion of the Natural Area in Sections 4 and 9 encroaches 15 to 65 feet into the Natural Area. Prior to 2011, groundwater from the Natural Area seeped through the encroaching berm and into the adjacent SIRWCD canal. This seepage greatly reduced the hydroperiods of wetlands within the eastern portion of the Natural Area. In 2011, the County completed the construction of a seepage barrier along the western edge of the SIRWCD canal berm. This seepage barrier has greatly reduced the amount of groundwater lost through the SIRWCD berm.

1.7.27 Pratt Whitney Road – Southeastern Portion of Natural Area in Section 13, Township 41 South, Range 40 East - Negatively Affects the Natural Area

A portion of Pratt Whitney Road that lies just north of SR 710 appears to have been constructed within the boundaries of the Natural Area. Based on the March 2000 Watermark Communities, Inc. boundary survey (Lindahl, et al 2000b), the road segment that encroaches into the Natural Area is approximately 240-feet-long. The width of the pavement encroachment ranges from 0 to about 25 feet. County Roadway mows an additional 0- to 25-foot-wide area west of the pavement as part of the roadway. County Roadway also maintains a guardrail where the FDOT drainage/borrow ditch (see subsection 1.7.20) connects to a drainage pipe under the road.

Inactive Easements, Concessions, Leases and Other Encumbrances

1.7.28 Released Posted and Viewed Road – Sections 5 and 8 in Township 41 South, Range 41 East

In 1939, the County adopted a north-south oriented, posted and viewed road of unknown width along the east-west centerlines in Sections 5 and 8, both in Township 41 South, Range 41 East. The posted and viewed road continued southward an additional 9 miles. The portion of the road right of way lying within the Natural Area was never used and was abandoned by the County in 2008.

1.7.29 Extinguished Fifty Percent Interest in Oil, Gas, Sulphur and Other Minerals and Mineral Rights Reserved by Southern States – West Half of Section 4 and East Half of Section 5 in Township 41 South, Range 41 East

When Southern States sold the Natural Area to Lake Farms Company in July 1950, they reserved an undivided one-half interest in all oil, gas, sulphur and other minerals and mineral rights (oil, gas and mineral rights) over the west half of Section 4 and east half of Section 5. Southern States also reserved the right to enter, explore, mine and develop the property for the reserved resources. On January 6, 1959, Southern States conveyed its 50 percent interest in oil, gas and mineral rights for the west half of Section 4 and east half of Section 5 to Walter G. Blum and Louis Morris, along with its right of exploration. A few days later, Mr. Blum and Mr. Morris conveyed the same interests and rights to A.L. Rosenfeld. On November 1, 1973, A. L. Rosenfeld conveyed his oil, gas and mineral rights to Robert C. Scott, trustee, along with a right of exploration. The following day, Mr. Scott conveyed a 40 percent interest in the oil, gas and mineral rights, without the right of exploration, to the Westervelt family. This 40 percent interest was extinguished by the Marketable Records Title Act when the Westervelt family failed to record notice of its interest prior to January 2, 2005.

On August 12, 1977, Mr. Scott conveyed his retained 10 percent oil, gas and mineral reservation, along with right of exploration, to Eugene Uvanile. Since Mr. Uvanile owned all of the underlying land at the time, the 10 percent reservation immediately merged with title and was extinguished.

1.7.30 Extinguished One-half Interest in Oil, Gas and Mineral Rights Reserved by Lake Farms Company – West Half of Section 4 and East Half of Section 5 in Township 41 South, Range 41 East

In November 1953, when Lake Farms Company sold the west half of Section 4 and east half of Section 5 to George C. Westervelt and Kenneth P. Foster, it reserved an undivided one-half interest in all oil, gas and minerals on, in or under the lands, along with the right to prospect for, and remove, these resources. In August 1973, the remaining directors of the dissolved Lake Farms Company (members of the Westervelt family) extinguished their rights of entry and exploration for oil, gas and minerals, but retained the right to any rents or royalties related to any oil, gas or minerals produced from the subject lands. Although multiple deeds were subsequently executed by successors in title to the Westervelt family, the deeds did not reference the official records book and page that established the reservations. As a result, the Westervelt family's oil and mineral interests were extinguished when the family failed to record notice of its reservations prior to November 1, 2003.

1.7.31 Extinguished One-quarter Interest in Oil, Gas and Mineral Rights Reserved by the Westervelt Family – All of the Natural Area, Except the East Half of Section 5 and West Half of Section 4 in Township 41 South, Range 41 East

In May 1957, the Westervelt family reserved an undivided one-fourth interest in all oil, gas and mineral in, under, or that may be produced from all of the Natural Area, except the east half of Section 5 and west half of Section 4 in Township 41 South, Range 41 East when it conveyed the underlying lands to Richard E. Branham. The reservation did not include the right of entry, exploration or development. The Westervelt oil, gas and mineral reservation merged with title when most of the referenced lands reverted back to the Westervelt family in 1960 and 1962. The Westervelt family failed to reinstate their prior oil, gas and mineral reservations when they conveyed natural area lands in Sections 10, 11 and 14 in Township 41 South, Range 40 East to Gene and Evelyn Dyer in 1961. Similarly, the Westervelt family failed to reinstate their prior oil, gas and mineral reservations when they conveyed natural area lands in Sections 1 (southwest portion only), 2 (all but the northeast 54 acres), 3, 4, 5 (west 1/2 only), 6 (east 1/8 only), 7, 8, 9 (west 1/2 only), 12 (west 1/2 only) and 13 in Township 41 South, Range 40 East to O. P. Corporation in 1969.

The only former Westervelt lands that did not merge with title in 1960 or 1962 – the east 9/16 and northwest portion of Section 1, north east 54 acres of Section 2 and east 1/2 of Section 12 - were sold to Banker's Life & Casualty by Mr. and Mrs. Feil in 1967. These lands were sold subject to the 1957 Westervelt oil, gas and mineral reservations. However, since most of the lands were subsequently sold without specific reference to the reservation, most of the Westervelt family's oil and mineral interests in were extinguished by the Marketable Records Title Act on December 31, 2013. The only lands still subject to the 1957 Westervelt oil, gas and mineral reservation are the northeast parcel in Section 1 and the southeast parcel in Section 12 (see Subsection 3).

1.7.32 Extinguished Reservation of Drainage Easements by My Future, Inc. – Section 11 in Township 41 South, Range 40 East

In December 1970, My Future, Inc. created north-south drainage easements in a portion of Section 11 when it conveyed ownership of the underlying land to Royal American Industries, Inc. Since none of these deed-created drainage easements were ever used or conveyed to a governmental entity, and since they were not specifically referenced in subsequent deeds dating back to 1992, these drainage easements appear to have been extinguished by the Marketable Records Title Act.

1.7.33 SIRWCD and Land Sales Development, Inc./Stuart Enterprises, Inc. – Obsolete Annexation Agreement and Draft Bill – West Half of Section 4 and East Half of Section 5 in Township 41 South, Range 41 East

In March 1974, SIRWCD and Land Sales Development, Inc. entered into an Annexation Agreement in which SIRWCD agreed to annex the west half of Section 4 and east half of Section 5 once the drainage works were substantially complete within proposed development area. The Agreement was amended in 1982 and 1995. The annexation process went as far as the creation of a draft annexation bill. However, the bill was never passed, the required drainage infrastructure was never completed and the lands were never annexed by SIRWCD. Since the affected lands were acquired for conservation purposes, there is no need for them to be annexed by SIRWCD.

1.7.34 Stuart Enterprises, Inc. to Indian Lake Estates Property Owner’s Association, Inc. (Indian Lake Estates POA) – Null and Void Non-exclusive Ingress/Egress/Utility and Drainage Easements, as Corrected – West Half of Section 4 and East Half of Section 5 in Township 41 South, Range 41 East

In August 1977, Stuart Enterprises granted the Indian Lake Estates POA a 100-foot-wide, north-south oriented, non-exclusive ingress/egress and utility easement to provide access and utilities to each of the 5-acre parcels in the western portion of Indian Lake Estates (the west half of the east half of Section 5). Stuart Enterprises concurrently granted three, 100-foot-wide, non-exclusive drainage easements to the Indian Lake Estates POA, but incorrectly identified the easements as being in the east half of Section 4. The drainage easement locations were corrected in August 1987 to include the west 100 feet, east 100 feet and south 100 feet of the western portion of Indian Lake Estates. In October 2004, the Indian Lake Estates POA assigned the access, utility and drainage easements to the County and six remaining property owners. The Indian Lake Estates POA dissolved in January 2005. All of these easements became null and void in 2009 when the County acquired the last Indian Lake Estates lot.

1.7.35 Stuart Enterprises, Inc. – Released Declaration of Covenants and Restrictions for Indian Lake Estates – West Half of East Half of Section 5 in Township 41 South, Range 41 East

In August 1977, Stuart Enterprises recorded a “Declaration of Covenants and Restrictions” (Declaration) over the 5-acre parcels in the western portion of Indian Lake Estates. This document

regulated the future development and use of the subject parcels. The covenants and restrictions ran with the land and were binding on the subsequent owners, but could be changed via a recorded document signed by at least 66 2/3 percent of the property owners. All of the covenants and restrictions contained in the Declaration were released by C-Venture, Inc. in October 2004. At the time C-Venture owned more than 66 2/3 percent of the affected lands.

1.7.36 County to the Western Portion of Indian Lake Estates – Null and Voided Affidavit of Exemption – West Half of the East Half of Section 5 in Township 41 South, Range 41 East

In March 1978, the County granted an Affidavit of Exemption from the County's Subdivision and Platting Regulation (Ordinance 73-4) for the west half of the east half of Section 5 (western portion of Indian Lake Estates). The subdivision was approved on the basis that the land had been subdivided into parcels containing more than 5 acres and there were to be no public roads. The Affidavit of Exemption became null and void when the County acquired all of the affected lots.

1.7.37 County to a Representative of Stuart Enterprises, Inc. – Null and Voided Affidavit of Exemption - East One-quarter of Section 5 and a Sliver of Land in the Southwest Corner Section 4 in Township 41 South, Range 41 East

In July 1978, the County granted an Affidavit of Exemption from the County's Subdivision and Platting Regulation (Ordinance 73-4) for the east one-quarter of Section 4 and a sliver of land in the southwest portion of Section 5. The subdivision was approved on the basis that the land had been subdivided into parcels containing more than 5 acres and there were to be no public roads. The Affidavit of Exemption became null and void when the County acquired all of the affected lots.

1.7.38 SIRWCD and Stuart Enterprises, Inc. - Obsolete Agreement for Temporary 24-inch Outfall Pipe into SIRWCD's Drainage System - West Half of Section 4 in Township 41 South, Range 41 East

In January 1979, SIRWCD and Stuart Enterprises, Inc. entered into an agreement whereby Stuart Enterprises was permitted to install a 24-inch diameter outfall pipe through the western berm of the SIRWCD canal that lies just east of the Natural Area. Since Stuart Enterprises no longer owns the subject land, the Agreement is null and void. The outfall was supposed to be temporary, but was never removed. It is now recognized as an official inflow from the Natural Area into the SIRWCD system (SIRWCD 2012).

1.7.39 Stuart Enterprises, Inc. to Indian Lake Estates POA - Null and Void Drainage Easement - Portion of the East Half of Section 5, Township 41 South, Range 41 East

In January 1993, Stuart Enterprises, Inc. conveyed a 150 to 176-foot-wide drainage easement along the western edge of the east half of Section 5 to the Indian Lake Estates POA. This easement became null and void when the County acquired all of the affected lands and the POA dissolved.

1.7.40 County and MacArthur Foundation – Released Agreement for Purchase and Sale, as Amended, and Mitigation Agreement - MacArthur Tract within the Natural Area

In March 1999, the County and MacArthur Foundation entered into a Mitigation Agreement that reiterated the mitigation rights retained by the MacArthur Foundation as part of the January 1999 Agreement for Sale and Purchase, as amended (S&P Agreement). Pursuant to the Mitigation Agreement and S&P Agreement, the MacArthur Foundation retained the exclusive right to use the conveyed lands to mitigate for development impacts on other properties for a period of 10 years. In December 2003, the MacArthur Foundation released the retained mitigation rights from the Natural Area after receiving payment equal to 50 percent of the value of the reserved mitigation rights from the County.

1.7.41 Parcel Previously Acquired by FLP for Future Substation - Acquired by the County without Objection

In December 2004, FPL purchased an approximate 5-acre parcel within the Indian Lakes Estates subdivision with the intention of constructing a substation on the parcel. However, FPL later agreed to allow the parcel to be acquired by the County for conservation purposes. In 2008, FPL agreed to allow the County to acquire its 5-acre parcel through the eminent domain process, but reserved the right to use eminent domain to acquire County-owned lands in the future.

1.7.42 County to Northern Palm Beach County Improvement District (NPBCID) – Terminated Temporary Access and Construction Easement – Southeast Portion of Section 8 in Township 41 South, Range 41 East

In October 2007, the County granted NPBCID a Temporary Access and Construction Easement for the construction of a water control structure in Section 8 that would allow for the discharge of water from the Natural Area into NPBCID's drainage system. The easement was terminated when NPBCID transferred title to the water control structure to the County in May 2008.

1.8 PLAN DEVELOPMENT AND REVIEW

The BCC approved the initial management plan for this site on May 6, 2008. Although it is the County's goal to review each approved management plan at least once every ten years, budget constraints and the resulting loss of staff have delayed the preparation of this update. This updated management plan identifies changes that occurred at the natural area since the preceding management plan was approved by the BCC.

The main goal of this management plan is to help ensure that the site's natural and cultural resources are protected in perpetuity. Scientific research, environmental education and resource-based recreational uses are permitted as long as they do not jeopardize the protection of these resources. In keeping with these goals, this management plan: 1) identifies the existing natural and cultural resources, including rare and imperiled species and vegetation communities; 2)

identifies any changes that occurred to those resources subsequent to approval of the initial management plan; 3) identifies factors that affect the preservation, restoration and long-term management of the existing resources; 4) addresses the site-specific goals, strategies and techniques that will be used to preserve, restore/enhance, manage and monitor the existing resources going forward; 5) ensures that the natural area continues to be managed in accordance with applicable grant and conservation easement restrictions, management agreements, use permits and/or lease conditions; 6) evaluates the effect, if any, of existing recreational uses on the site's natural and cultural resources; and 7) identifies any recreational uses that could be added or that should be discontinued at the site. This management plan also includes information related to the site's connectivity with other conservation areas, an estimation of annual management and maintenance costs, and any other issues identified by staff.

All draft natural areas management plans prepared by ERM are reviewed by a seven-member, BCC-appointed, advisory committee known as the Natural Areas Management Advisory Committee (NAMAC). The purpose of NAMAC is to review and comment on draft management plans developed for natural areas acquired and/or managed by the County, and to hold public hearings on initial management plans prior to their review and adoption by the BCC. As development of each draft management plan nears completion, NAMAC members are invited to tour the natural area with staff. All comments received from NAMAC members during the site visit are taken into consideration during completion of the draft management plan. The draft management plan is then sent to NAMAC and any adjacent conservation land manager for review and comment. The draft management plan also is posted on the ERM website for public review and comment.

Members of the public were invited to comment on this draft management plan at the July 21, 2023 regularly scheduled meeting of NAMAC when the plan was initially discussed by the committee. No comments were received during the public review process. Members of the public also had the opportunity to comment on the plan on October 3, 2023 when it was considered and approved by the BCC. This updated management plan was reviewed and approved by FCT on (month day year).

1.9 ACQUISITION HISTORY

In 1986, the BCC funded an inventory of the native ecosystems in Palm Beach County by two Florida Atlantic University professors, Dr. Grace Iverson and Dr. Daniel Austin (Iverson and Austin 1988). The study was completed in 1988, with additional work in 1989. The study identified 38 "A" quality sites, including 14 identified as "high-priority acquisition sites" by the County's Environmentally Sensitive Lands Acquisition Advisory Committee (ESLAAC). On March 12, 1991, the voters of Palm Beach County approved a \$100 million bond referendum to purchase environmentally sensitive lands with emphasis on the 14 high-priority sites. Although the Corbett Buffer ecosite (now known as the Pine Glades Natural Area) was not selected as a high-priority site by ESLAAC, it was added to ERM's priority acquisition list at the request of a County Commissioner.

In 1998, ERM and the County's Environmentally Sensitive Lands Acquisition Selection Committee (ESLASC) identified 39 environmentally sensitive sites that were to be targeted for acquisition with funds from an additional \$150 million Land Acquisition for Conservation Purposes Bond Referendum. On March 9, 1999, the voters of Palm Beach County approved the \$150 million bond referendum to purchase these environmentally sensitive lands. "Corbett Buffer" was one of these sites.

In November 1993, the MacArthur Foundation donated a 100-acre parcel to the County as part of a settlement agreement for unauthorized impacts to environmentally sensitive lands elsewhere in the County. In March 1999, Palm Beach County bought 6,844.45 acres for \$6,655,000 from the MacArthur Foundation. The County purchased 399.05 acres from Communities Finance Company in March 2000 for \$445,739. In July 2001, the County purchased the 4.44-acre Tamburri-Lindstrom outparcel for \$12,960. In April 2004, the County sold 2,120.96 acres to the State for \$1,934,360, which was incorporated into the Hungryland WMA. During May 2004 through May 2009, the County purchased a total of 644.82 acres known as "Indian Lakes Estates" through willing seller and the eminent domain process for \$8,712,230. The last acquisition transaction occurred during the time Indian Lakes Estates was being acquired. The County received title to the 544.23-acre Lara/Johnson tract from SFWMD in November 2005. The transfer was part of a complicated transaction in which SFWMD received title to the tract in exchange for the transferable development rights on SFWMD-owned wetlands in southern Palm Beach County. SFWMD then deeded the Lara/Johnson tract to the County in exchange for a conservation easement over the 544.23 acres back to SFWMD. In May 2022, the County added a 13-acre County-owned right-of-way to the natural area.

In April 2005, the County submitted an application to FCT's Florida Forever Program for matching funds to help pay for acquisition of "Indian Lakes Natural Area" project. The County received \$3,394,981.50 in matching funds from FCT in December 2006.

Information regarding notable events taking place at the natural area during and subsequent to 1993 is in the following chapters: "Management and Restoration Activities" (Chapter 4), "Site Development and Improvement" (Chapter 5) and "Chronology of Major Events" (Chapter 8).

2. PURPOSE AND OBJECTIVES

2.1 PURPOSE OF ACQUISITION

The primary purpose of the County's Natural Areas System is to protect native ecosystems and biological diversity throughout Palm Beach County. The primary purpose for the acquisition of this natural area was to preserve, restore/enhance and manage the site's ecological resources, including the existing natural communities, their component plant and animal species, and local groundwater resources. The complete acquisition and development of the site as a natural area have provided members of the public with opportunities for recreational activities, environmental education and scientific research that are consistent with the primary purpose of the site's acquisition.

It also has helped the County comply with portions of its comprehensive plan by preserving and restoring/enhancing the natural and cultural resources of the natural area, while providing compatible public uses. Policies and objectives outlined in the County's comprehensive plan that are furthered by the acquisition and management of the site include, but are not limited to: the preservation and protection of native communities and ecosystems to ensure that representative communities remain intact (Conservation Element, Goal 2, Objective 2.1); the protection and preservation of endangered and threatened species, species of special concern and their associated habitats (Conservation Element, Goal 2, Objective 2.4); and the continued efforts to eradicate prohibited invasive non-native vegetation (Conservation Element, Goal 2, Objective 2.5).

All portions of the natural area are important to preserving the ecological resource values found on the site. Because every portion of the site provides habitat for at least one rare or endangered plant species, animal species or natural community, no portions of the property can be declared as surplus.

2.2 MANAGEMENT GOALS AND OBJECTIVES

The natural area contains depression marsh, dome swamp, marl prairie, mesic flatwoods, wet flatwoods and wet prairie native vegetation communities (Figure 3). These communities, most of which can be considered as moderate- to high-quality within the context of urbanized southeastern Florida, were in a somewhat degraded condition at the time of site acquisition. Maintaining and improving the ecological quality of these native vegetation communities is one of the primary management goals for this site. Another primary goal is to restore, enhance and/or manage disturbed areas in a manner that will enhance the overall biological diversity of the site and/or meet specific needs of listed species. Habitats for listed species are managed for the needs of individual species when such management is compatible with the overall management of the ecosystems within the natural area.

The following goals and objectives reflect desired management outcomes that are specific to Pine Glades Natural Area. The objectives are actions or measureable outcomes of management targeted

to achieve short-term (achievable within 2 years) or long-term goals (achievable within 10 years). All of the following goals and objectives are subject to and contingent upon annual budgetary funding and appropriations by the BCC.

Habitat Restoration and Improvement

Goal 1. Maintain and enhance healthy upland communities (short-term and long-term).

Objective A. Conduct prescribed burns within the appropriate upland communities as recommended by FNAI (2010). [Note: Prescribed burning is contingent upon appropriate weather conditions, smoke and safety considerations, funding and resource availability, and other factors required for burning within an urban environment.]

Status: The most recent prescribed burn was conducted in April 2021. See Section 4.4.1 for detailed information.

Objective B. If prescribed burning in Objective A cannot be conducted, the use of mechanical vegetative reduction methods within the site will be utilized, as needed, to create a mosaic of natural communities and successional stages, and reduce the risk of catastrophic wildfire.

Status: The site has had had mechanical vegetative reduction five times for a total of 293 acres. See Section 4.4.1 for detailed information.

Goal 2. Maintain herbaceous wetland communities as part of the adjacent fire-dependent upland communities.

Objective A. All prescribed fires from the adjacent fire-dependent upland communities will be allowed to burn into the fire-dependent wetland communities.

Status: The most recent prescribed burn was conducted in April 2021 and was allowed to burn into the fire dependent wetland communities. See Section 4.4.1 for detailed information.

Goal 3. Restore, enhance and/or create upland and wetland habitat within the FCT portion of the natural area (short-term).

Objective A. Enhance/restore 19 acres of upland habitat in terms of biological composition and ecological function.

Objective B. Enhance/restore 162 acres of wetland habitat in terms of biological composition and ecological function.

Objective C. Conduct nonnative vegetation removal/treatment and/or replanting activities as needed to ensure that all restored areas meet the stated goal.

Status: Restoration/enhancement projects for Objectives A – C completed in 2013. See section 4.4.4 for detailed information.

Imperiled Species Habitat Maintenance, Enhancement, Restoration or Population Restoration

Goal 1. Protect, restore/enhance and maintain imperiled species habitat (short-term and long-term).

Objective A. Conduct prescribed burns to maintain the diversity and health of the native plant communities on the site.

Status: The most recent prescribed burn was conducted in April 2021. See Section 4.4.1 for detailed information.

Objective B. Monitor the status of imperiled plant species populations in accordance with species-specific monitoring schedules established by ERM.

Status: Staff regularly monitors the status of imperiled plant species populations. See Section 7.2 for a detailed breakdown of the monitoring.

Objective C. Conduct periodic animal species surveys and ongoing opportunistic surveys for all animal species observed on the natural area, including imperiled species.

Status: Staff regularly conducts periodic animal species surveys. See Section 7.3 for a detailed breakdown of the monitoring.

Objective D. Enforce relevant provisions of the Natural Areas Ordinance, such as those dealing with damage to or removal of plants, molestation or harassment of animals, introduction or release of nonnative plants and animals, and prohibition of domestic animals and pets.

Status: ERM employs Palm Beach County Sheriff's office deputies that are charged with enforcing the relevant provisions of the Natural Areas Ordinance. See Section 4.7 for detailed information.

Nonnative, Invasive and Nuisance Species Maintenance and Control

- Goal 1. Control nonnative and invasive plant species, and nonnative and nuisance animal species so that they do not significantly impact native plant communities (short-term and long-term).
- Objective A. Conduct ongoing invasive/nonnative plant treatments, as needed, to maintain coverage of invasive/nonnative plant species at less than 1 percent of the natural area.
- Objective B. Monitor the site for feral hogs (*Sus scrofa*), domestic and feral cats, stray dogs, coyotes (*Canis latrans*), raccoons (*Procyon lotor*) and other nonnative/nuisance animals, as needed, during opportunistic observations and scheduled wildlife surveys, and remove/control populations of nonnative/nuisance animals as necessary and feasible.

Hydrological Preservation/Restoration

- Goal 1. Evaluate the success (short-term and long-term) of the hydrological preservation/restoration project.
- Objective A. Monitor water levels within the restored portion of the site and compare the results with pre-project levels.
- Objective B. Monitor vegetation within the restored freshwater wetlands to see if the vegetation within these wetlands resembles similar, intact wetlands elsewhere on the site.
- Goal 2. Restore historic hydroperiods and surface water flow patterns as much as possible to help restore onsite wetlands (short-term and long-term).
- Objective A. Plug/fill the drainage ditches and remove berms/roads within targeted restoration areas.
- Objective B. Conduct nonnative vegetation removal/treatment.
- Objective C. Install a culvert and seepage barrier within the eastern portion of the site.

Objective D. Construction of approximately 37.62 acres of flow-ways in the northern restoration area.

Objective E. Construction of a sheet pile weir along the southern boundary of the site.

Status: Hydrologic restoration/enhancement projects for Objectives A – E completed in 2013. See section 4.4.4 for detailed information.

Cultural and Historical Resources

Goal 1. Protect and preserve the Old Wire Trail (Florida Master Site File 8PB14827) and the Trail of Tears (Florida Master Site File 8PB17117 (short-term and long-term).

Objective A. Conduct pre-construction cultural and historical resource investigations in areas that have not already been investigated for such resources and that will be disturbed as a result of public use facility construction or environmental restoration activities.

Objective B. Avoid disturbances to the soils and native vegetation surrounding any known cultural or historical resource. If additional cultural/historical resources are found within the natural area, the procedures used to protect the newly discovered cultural/historical resource(s) will depend on which agency has the ultimate review authority - FDHR or the County pursuant to Article 9 of the County's Unified Land Development Code.

Status: For Objectives A and B, staff conducted cultural and historical resource investigations prior to completion of the restoration/enhancement of the natural area. See section 3.5 for detailed information.

Sustainable Forest Management

This management objective is not applicable to Pine Glades Natural Area. The natural area does not provide commercial forest resources.

Capital Facilities and Infrastructure

Goal 1. Maintain the existing facilities and infrastructure in safe condition (short-term and long-term).

Objective A. Monitor the integrity and condition of facilities and infrastructure on a regular basis.

Objective B. Close unsafe areas to the public immediately upon the detection of a problem.

Objective C. Replace/repair damaged fencing and signage as soon as possible.

Objective D. Replace/repair minor cracked/damaged infrastructure issues within six months of detection, contingent upon receipt of any necessary permits, construction contract requirements and/or site conditions.

Objective E. Replace/repair major cracked/damaged major infrastructure issues within one year of detection, contingent upon receipt of any necessary permits, construction contract requirements and/or site conditions.

Status: For Objectives A – E, the site and its facilities are maintained and repaired/replaced on an as needed basis. See Section 4.3 for detailed information.

Goal 2. Maintain the overall appearance and aesthetics of the natural area (short-term and long-term).

Objective A. Maintain public use facilities (cleaning of concrete nature trail, boardwalk, parking lot, etc.) on a biweekly or as-needed basis.

Objective B. Mow management accessways and firebreaks on an as-needed basis.

Objective C. Paint over or remove graffiti from public use facilities on an as-needed basis.

Status: For Objectives A – C, the site and its facilities are maintained and repaired/replaced on an as needed basis. See Section 4.3 for detailed information.

Public Access and Recreational Opportunities

Goal 1. Continue to provide non-consumptive/non-destructive, resource-based public access and recreational opportunities within the natural area (short-term and long-term).

Status: The County has completed construction of its public use facilities and was opened to the public in 2014. See Section 5.1 for detailed information.

Security

Goal 1. Implement appropriate security and access control measures to prevent unauthorized activities, such as use by OHVs, dumping and off-trail use (short-term and long-term).

Objective A. Install and maintain a fence and gate system designed to restrict public vehicular access to the designated parking lot and eliminate dumping on the site.

Objective B. Install and maintain signage to identify the site as a natural area and inform the public as to the uses and activities permitted and not permitted on the site.

Objective C. Continue to fund the Wildlands Task Force to enforce the Natural Areas Ordinance, as amended.

Objective D. Provide annual training sessions designed to educate local law enforcement officers about County ordinances related to the protection of natural areas and site-specific security issues.

Status: For Objectives A – D, the County has installed fencing, gates and signage on site, as well as implemented security measures to prevent unauthorized activity. See Sections 4.5, 5.2 and 5.3 for detailed information.

3. NATURAL AND CULTURAL RESOURCES

Pine Glades Natural Area contains a remnant of the native upland and wetland communities formerly present in southeastern Florida. Agriculture, urbanization, road and railroad construction, hydrologic modifications, fire suppression and other human-related disturbances have eliminated or severely modified most of the native upland and wetland communities near the natural area. The site's natural communities currently represent a mosaic of historical, successional and altered vegetation communities. The natural area is not a designated area of state concern or under study for such designation, and is not within an aquatic preserve.

A thorough inventory and assessment of the existing natural resources had to be conducted before meaningful management goals and objectives could be developed for the natural area. The following sections summarize the site's existing natural resources. Disturbances that have affected, and/or continue to affect, these natural resources also are identified. Restoration, enhancement and management activities designed to mitigate for adverse impacts to the site's natural resources are described in Chapters 4 and 5. A discussion of the archaeological and historical resources is provided in Section 3.5.

Both the scientific and common names of plant and animal species are provided the first time the species is mentioned in this management plan. After the initial reference, only the common name is used. Lists of plants and animals recorded at the natural area are provided in Appendixes A and B, respectively.

3.1 HYDROLOGY

Two aquifers separated by confining beds lie beneath the natural area. The Surficial Aquifer System is a shallow non-artesian layer of unconsolidated sand and shell, with discontinuous clay and silt lenses overlying limestone and sandstone that ranges in thickness from 150 to 350 feet. Water in this shallow aquifer is replenished primarily by rainfall. Some recharge also occurs by infiltration from surface water features, including freshwater marshes. During periods of drought, the availability of water in the Surficial Aquifer is reduced significantly and saltwater intrusion has occurred in coastal areas. This system is the primary source of fresh water for eastern Palm Beach County and historically provided water resources critical to wetland and upland natural communities.

Wetland elevations range from 25 feet NGVD in the northwest corner of the site to 20 feet along the eastern edge. Historically, surface water flows were mostly to the east-northeast, with the water flowing into tributaries of Cypress Creek and eventually into the Loxahatchee River. The site was impacted by agricultural alterations and/or drainage ditches and canals causing increased drainage and seepage.

Currently, water flows on the natural area are mostly to the southeast because of human-induced changes. All interior berms and ditches within the Natural Area have been restored, making

hydrology generally dependent on rainfall and overland flow in the historically east-northeast direction. In the portion of the natural area west of Pratt-Whitney Blvd., a conveyance ditch/canal system runs southeast parallel to Beeline Hwy. This is controlled by a weir within the canal, controlling the water at approximately 22.5 ft NGVD upstream of the weir. Water flows beneath Pratt-Whitney road from west to east through a series of small culverts connecting wetlands on the west side of the road to a ditch on the east side of the road. The ditch on the east side of the road is controlled by a weir installed in 2013 that controls water upstream (north) of the weir at 22.5 ft NGVD. Because of these weir structures in the roadside canals/ditches, water will stage up during the wet season and flow in the historic east-northeast direction over land, as well as through the previously mentioned weir structures.

Once in the portion of the natural area east of Pratt-Whitney Road, surface water flows over land and exits the natural area in one of three ways: 1) through a 36" riser structure, controlled at 21 ft NGVD on the southern boundary of the natural area into the PBPC drainage system, 2) through a 24"/18" riser structure, controlled at 19 ft NGVD in the northeast corner of the natural area flowing into the Jupiter Farms drainage system, or 3) north of Indiantown Rd. There are thirteen equalizing culverts in eleven locations along Indiantown Road on the northern border of the natural area. This allows water to flow into Hungryland WEA. Water flow in this area is north out of the natural area and goes into the Cypress Creek Tributary System and eventually into the Loxahatchee River.

Earth moving hydrological restoration projects were completed between 2006 and 2013. These projects included the removal of invasive/nonnative vegetation, removal of berms and asphalt roads, filling of ditches, installation of a seepage barrier, flow-way construction, culvert installation and sheet pile weir construction. The restoration projects are described in Sections 4.4.4.

3.2 NATURAL COMMUNITIES

The following discussion provides a general description of each of the "intact" and altered ("disturbed") plant communities present on the natural area (Figure 3). Unless otherwise indicated, the descriptions provided for intact communities are based upon FNAI's classification system (FNAI 2010). If a community is so altered that it no longer resembles or functions as an intact plant community, an alternative description has been developed. The phrase "natural community" is used in this plan, even when a plant community has been altered. A list of the typical plant species found in the County is provided for each of the intact plant communities found on the site; these lists are based on plant community descriptions contained in FNAI (2010) and species ranges provided by Wunderlin and Hansen (2011).

The goal of natural communities management is to restore and maintain as many of the natural communities that historically occupied the site as possible. Nearly all of the natural communities on the natural area have been enhanced or restored (see Section 4.4). They will be maintained through the implementation of invasive/nonnative plant and nonnative/nuisance animal control

programs (see Sections 4.4.2 and 4.4.3), through the closure of all old OHV trails that are not part of the management accessway/firebreak system, through security measures designed to eliminate OHV use and dumping (see Section 4.5), and through the maintenance of more natural hydroperiods. Fire-maintained communities will also be maintained through the implementation of a prescribed burn program and/or through mechanical vegetation reduction (see Section 4.4.1).

The only area that lacks a natural community is the “developed area” (Figure 3). This 1-acre area includes the parking lot and entrance driveway.

3.2.1 Borrow Pit

This community consists of areas that were excavated for the removal of fill materials and have refilled as permanent bodies of water. Nonnative plants such as Australian-pine and melaleuca were often associated with borrow pit areas. Disturbed areas are common around the perimeter of borrow pits and often have thin deposits of shelly fill materials. Filling the borrow pits is generally not feasible, since most of the excavated spoil has been transported offsite. Establishing a littoral shelf at borrow pits with steep sides was investigated on a pit by pit basis. Where two or more borrow pits are adjacent to each other, and only separated by a thin strip of uplands, the upland strip was scraped down to form a shallow wetland connection. The connected borrow pits have a more natural appearance and better wildlife functions due to the increased littoral areas. Where extra fill material from spoil removal and flow-way creation was available, it was placed into the deeper areas of the borrow pits and the side slopes were contoured to create a meandering shoreline with additional littoral habitat. An invasive plant control program will be implemented in this community and a control program for melaleuca has already been initiated at this site. No prescribed burning program will be implemented for this community since it does not tend to burn due to the general wetness of this community and the discontinuous fuels. Borrow pits have a permanent hydroperiod, but water levels vary and reflect the groundwater level. At the natural area this community occupies approximately 45 acres.

3.2.2 Canal/Berm

A 35-foot-wide canal lies 800 feet north and parallel to the Bee Line Highway, and crosses through the southern portion of the natural area. The canal appears to have been created to provide fill for the construction of the Bee Line Highway. A disturbed road area lies on the southern edge of the canal and was probably used to dig and remove the spoil dirt. Periodic haul roads connect the canal bank to the Bee Line Highway, and a thin layer of shelly fill is associated with these haul roads and the southern canal bank.

Deeper canal areas have remained open water, while shallower areas and edges have been colonized primarily with spikerush, spatterdock, and cattails. The native vegetation usually is typical of the natural community adjacent to the canal or ditch. The canals and ditches are utilized by animals typical of wetland habitats. As this is a human-created community, it does not have a

natural hydroperiod or fire frequency. The canal area totals 17 acres (Figure). Listed animal species observed in this community include American alligator, great egret, limpkin, little blue heron, tricolored heron, and wood stork.

3.2.3 Depression Marsh

Depression marsh is characterized as a small, shallow, usually rounded depression that is surrounded by fire-maintained matrix communities. Hydroperiods are highly variable, and range from as few as 50 days or less, to more than 200 days per year (FNAI and FDNR 1990). Typical depression marsh plant species that occur in the County include longleaf threeawn (*Aristida palustris*), beaksedges (*Rhynchospora* spp.), myrtleleaf St. John's-wort (*Hypericum myrtifolium*), peelbark St. John's-wort (*Hypericum fasciculatum*), blue maidencane (*Amphicarpum muhlenbergianum*), sand cordgrass, Baldwin's spikerush (*Eleocharis baldwinii*), Elliott's yelloweyed grass (*Xyris elliotii*), corkwood (*Stillingia aquatica*), pipeworts (*Eriocaulon compressum* and *E. decangulare*), maidencane (*Panicum hemitomon*), Jamaica swamp sawgrass (*Cladium jamaicense*), pickerelweed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*) and American white waterlily (*Nymphaea odorata*). The outer edges of depression marshes in xeric communities have bluestem grasses, falsefennel (*Eupatorium leptophyllum*), witchgrasses (*Dichantherium* spp.), Small's bogbutton (*Lachnocaulon minus*) and yellow hatpins (*Syngonanthus flavidulus*). Listed animal species typically associated with depression marshes, and that are found in Palm Beach County, include gopher frog (*Lithobates capito*), white ibis (*Eudocimus albus*), wood stork (*Mycteria americana*) and Florida sandhill crane (*Grus canadensis pratensis*) (Bartlett and Bartlett 2011a, FNAI and FDNR 1990, Pranty et al. 2006).

Fire is important in maintaining this community by limiting peat buildup, and preventing the invasion of trees and shrubs (Craighead 1971, FNAI 2010). Fire is most frequent at the edge of the marsh. At the natural area, this community will be burned at the same time and frequency as the predominate, adjacent fire-maintained community. This community covers approximately 512 acres.

FNAI (2022) tracked depression marsh as G4/S4 - apparently secure globally and in Florida, but possibly rare in part of its range.

3.2.4 Dome Swamp

Dome swamp is characterized as a relatively shallow, circular or elliptically-shaped, forested depression wetland that is found in isolated patches within a fire-maintained community. Standing water is present 180 to 270 days per year (Casey and Ewel 1998), with the longest durations at the center. In South Florida, dome swamps are typically dominated by pond-cypress. Other typical dome swamp plant species that are found in the County include slash pine (*Pinus elliotii*), dahoon (*Ilex cassine*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), red maple (*Acer rubrum*), loblolly bay (*Gordonia lasianthus*), pond apple (*Annona glabra*), coco

plum (*Chrysobalanus icaco*), Virginia willow (*Itea virginica*), fetterbush (*Lyonia lucida*), coastalplain willow (*Salix caroliniana*), wax myrtle (*Morella cerifera*), St. John's-worts (*Hypericum* spp.), common buttonbush (*Cephalanthus occidentalis*), Virginia chain fern (*Woodwardia virginica*), royal fern (*Osmunda regalis* var. *spectabilis*), cinnamon fern (*Osmunda cinnamomea*), swamp fern (*Telmatoblechnum serrulatum*), maidencane (*Panicum hemitomom*), Jamaica swamp sawgrass (*Cladium jamaicense*), beaksedges (*Rhynchospora* spp.), lizard's tail (*Saururus cernuus*), Carolina redroot (*Lachnanthes caroliniana*), taperleaf waterhorehound (*Lycopus rubellus*), false nettle (*Boehmeria cylindrica*), smartweeds (*Polygonum* spp.), Spanish moss (*Tillandsia usneoides*), wild pines (*Tillandsia* spp.), sphagnum (*Sphagnum* spp.), big floatingheart (*Nymphoides aquatica*), water spangles (*Salvinia minima*), duckweeds (*Lemna* spp.), dotted duckweed (*Landoltia punctata*), fireflag (*Thalia geniculata*), bulltongue arrowhead, eastern poison ivy (*Toxicodendron radicans*), white twinevine (*Funastrum clausum*) and laurel greenbrier (*Smilax laurifolia*). Dome swamp listed animal species that are found in Palm Beach County include American alligator, striped mud turtle (*Kinosternon baurii*), white ibis and wood stork (Bartlett and Bartlett 2011b, FNAI 2010, FNAI and DNR 1990, Pranty et al. 2006).

Fire is essential for maintaining the structure and species composition of dome swamps. Pondcypress is tolerant of light surface fires, but fires that burn into the peat can kill most of the trees. At the natural area, this community will be burned at the same time and frequency as the predominate, adjacent fire-maintained community. Prescribed fire will be allowed to burn into the dome swamp as far as available fuels and moisture levels allow it to go. Dome swamps at the natural area cover 34 acres.

FNAI (2022) tracks dome swamp as G4/S4 - apparently secure globally and in Florida, but possibly rare in part of its range.

3.2.5 Marl Prairie

Marl prairie is a seasonally inundated graminoid-dominated community found on marl substrates in South Florida. This community depends on a short hydroperiod of two to four months. Longer hydroperiods favor the development of peat and the dominance of sawgrass; shorter hydroperiods permit the invasion of woody species. Within this community are isolated pockets of wet flatwoods that are not documented on the vegetation map. Most of the many plant species in marl prairie contribute little cover and, while a diverse plant community, over 90 percent of the cover is contributed by only two or three dominant species in any given area. Dominants may include one or more of the following: Gulf hairawn muhly (*Muhlenbergia sericea*), spreading beaksedge (*Rhynchospora divergens*), Florida little bluestem (*Schizachyrium rhizomatum*), black bogrush (*Schoenus nigricans*), Elliott's lovegrass (*Eragrostis elliottii*), sand cordgrass (*Spartina bakeri*), and a short form of sawgrass (*Cladium jamaicense*). Other characteristic species include southern beaksedge (*Rhynchospora microcarpa*), bluejoint panicum (*Panicum tenerum*), Gulfdune paspalum (*Paspalum monostachyum*), rosy camphorweed (*Pluchea rosea*), starrush whitetop (*Rhynchospora colorata*), alligatorlily (*Hymenocallis palmeri*), arrowfeather threeawn (*Aristida purpurascens*), and narrowleaf yellowtops (*Flaveria linearis*). A rare plant species endemic to

South Florida found in marl prairies is meadow jointvetch (*Aeschynomene pratensis*) and is found on Pine Glades Natural Area in this community. Listed animal species at Pine Glades Natural Area that are typically associated with marl prairie include shorttailed hawk (*Buteo brachyurus*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*) and tricolored heron (*Egretta tricolor*).

This community will be fire-maintained to restrict invasion by woody plant species, encourage herbaceous and graminoid diversity, and enhance habitat for ground nesting birds. Marl prairie at the natural area covers 104 acres.

FNAI (2022) tracks marl prairie as G3/S3 - very rare and local throughout its global range but either very rare and local in Florida, found locally in a restricted range, or vulnerable to extinction due to other factors.

3.2.6 Mesic Flatwoods

Mesic flatwoods is the most widespread natural community in Florida. It is characterized as having an open overstory of pines, which in South Florida consists of slash pine. The understory generally includes a low, dense groundcover layer of grasses, forbs and shrubs. Other typical mesic flatwoods plant species that occur in the County include saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), coastalplain staggerbush (*Lyonia fruticosa*), fetterbush, dwarf huckleberry (*Gaylussacia dumosa*), shiny blueberry (*Vaccinium myrsinites*), dwarf live oak (*Quercus minima*), running oak (*Quercus pumila*), wiregrass (*Aristida stricta*), witchgrasses and bluestem grasses, plus a large number of showy forbs.

Mesic flatwoods communities require frequent fire; all of the common plant species recover quickly after a fire and several plant species require fire to reproduce. Reintroduction of fire into long unburned flatwoods can result in high pine mortality due to excessive smoldering at the base of the trees, a side effect of fuel and litter build-up. Growing season fires (April to mid-August) are favored over winter burns because many of the grasses and forbs require fire to flower and set seed.

The mesic flatwoods community at the natural area currently occupies 2,179 acres. It will be prescribed burned, contingent upon appropriate weather conditions, smoke and safety considerations, funding and/or resource availability, and other factors that may limit burning within an urban environment prescribed burn. If an “ideal” burn frequency cannot be met, prescribed burns and/or mechanical vegetative reduction methods will be used, as needed, to create a mosaic of natural communities and successional stages within management units that contain the mesic flatwoods community, and reduce the risk of catastrophic wildfire.

FNAI (2022) tracks mesic flatwoods as G4/S4 - apparently secure globally and in Florida, but possibly rare in part of its range.

3.2.7 Sand/Shell

Three small sand/shell rock islands were constructed during site restoration activities to provide a nesting area for the least tern (*Sterna antillarum*) and other shorebirds. The islands cover approximately 1 acre. The sand/shell islands will be maintained free of vegetation to provide optimal shorebird nesting habitat.

3.2.8 Spoil/Fill

The spoil community occurs in areas next to borrow pits where excavated fill materials were piled and left in order to drain away excessive water content. When the fill was removed, a thick layer of sandy or shelly material was left behind in upland areas. The layer of sandy or shelly material can be several feet thick.

Those portions of the spoil community that are either not slated for public use facilities or needed for hydroperiod integrity along the perimeter of the site were restored by removal of all invasive plant species, primarily by mechanical means. Spoil deposits were scraped up and removed until the native soil surface was exposed. These spoil materials were used to fill in ditches or shallow borrow pits. Areas formerly covered by spoil were allowed to recruit naturally and was successful. The restored spoil areas will be managed to encourage their succession to the appropriate mesic flatwoods, wet flatwoods, depression marsh, or wet prairie natural community. Prescribed burning and invasive species control programs will be implemented that are appropriate for the restored community and the appropriate hydroperiod will also be maintained. The spoil/fill community currently occupies 14 acres.

3.2.9 Wet Flatwoods

Wet flatwoods are characterized as relatively open-canopy forests of scattered slash pine, with a sparse or absent midstory and a dense groundcover of hydrophytic grasses, herbs and low shrubs. Typical understory plant species that may be found in the County include sweetbay, swamp bay, loblolly bay, pond-cypress, cabbage palm, dahoon, wax myrtle, gallberry, saw palmetto, fetterbush, wiregrass, blue maidencane, toothachegrass (*Ctenium aromaticum*), coastalplain yelloweyed grass (*Xyris ambigua*), Carolina redroot and beaksedges. During the rainy season, water frequently stands on the surface, inundating the wet flatwoods for one month or more per year. Natural fire frequency in wet flatwoods has been estimated at 1 to 10 years. Shorter fire intervals favor grassy wet flatwoods, while longer intervals favor a shrubbier subtype. The recommended burn interval for South Florida wet flatwoods is once every 4 years.

The wet flatwoods community at the natural area currently occupies 1,422 acres. The wet flatwoods community will be prescribed burned, contingent upon appropriate weather conditions, smoke and safety considerations, funding and/or resource availability, and other factors that may limit burning within an urban environment prescribed burn. If an “ideal” burn frequency cannot

be met, prescribed burns and/or mechanical vegetative reduction methods will be used, as needed, to create a mosaic of natural communities and successional stages within this community, and reduce the risk of catastrophic wildfire

FNAI (2022) tracks wet flatwoods as G4/S4 - apparently secure globally, but rare in parts of its range, and apparently secure in Florida.

3.2.10 Wet Prairie

Wet prairie is characterized as an herbaceous community found on continuously wet, but not inundated, soils on flat or gentle slopes between lower lying communities such as depression marshes, shrub bogs or dome swamps and slightly higher wet or mesic flatwoods or dry prairies. Wiregrass typically dominates the drier portions of the wet prairie community. In the County, the wetter portions of the community may be dominated by wiregrass, plumed beaksedge (*Rhynchospora plumosa*), Baldwin's nutrush (*Scleria baldwinii*), slenderfruit nutrush (*Scleria georgiana*) and/or longleaf threeawn (*Aristida palustris*). Other typical wet prairie plant species that may be found in the County include sundews (*Drosera* spp.), butterworts (*Pinguicula* spp.), bladderworts (*Utricularia* spp.), yellow-flowered butterwort (*Pinguicula lutea*), toothachegrass, pineland rayless goldenrod (*Bigelovia nudata* subsp. *australis*), flattened pipewort (*Eriocaulon compressum*), water cowbane (*Tiedemannia filiformis*) and coastalplain yelloweyed grass. The only listed animal species typically found in wet prairie in Palm Beach County is Audubon's crested caracara (*Polyborus plancus audubonii*) (FNAI and FDNR 1990, Pranty et al. 2006). Fires naturally occur in wet prairies at intervals of 2 to 3 years.

At the natural area this community will be treated with prescribed fire, contingent upon appropriate weather conditions, smoke and safety considerations, funding and/or resource availability, and other factors that may limit burning within an urban environment prescribed burn. If an "ideal" burn frequency cannot be met, prescribed burns and/or mechanical vegetative reduction methods will be used, as needed, to create successional stages within the communities, and reduce the risk of catastrophic wildfire. The wet prairie community at the natural area occupies 2,100 acres.

FNAI (2022) tracks wet prairie as G2/S2 – imperiled both globally and in Florida because of rarity or vulnerability to extinction.

3.3 PLANTS AND ANIMALS - OVERVIEW

As of September 2022, 461 species of plants have been recorded at the natural area (Appendix A). Of these, nineteen have been listed for protection or special management by a government agency or are tracked by FNAI (Table 1). Fifty-four species of plants recorded at the site are not native to the South Florida mainland (see Section 4.4.2 and Appendix A).

As of September 2022, 289 species of animals have been recorded at the natural area (Appendix B). Twenty-eight of these species have been listed for protection or special management by a

government agency or are tracked by FNAI (Table 2). Eleven species of invertebrates and eleven species of vertebrates recorded at the site are not native to the South Florida mainland (see Section 4.4.3 and Appendix B).

Some native plant and animal species recorded at the natural area are habitat-specific, using only one natural community, while others use a variety of natural communities. Therefore, the preservation, restoration, enhancement and management of all of the natural communities at the natural area are critical to the long-term preservation of plant and animal species indigenous to the site.

3.4 LISTED SPECIES

3.4.1 Plants

Nineteen plant species recorded at the natural area have been listed for protection or special management by at least one governmental agency or are tracked by FNAI (Table 1). These species will be protected as components of the natural communities of which they are a part. All listed/tracked plant species recorded at the natural area will be protected by implementing management activities designed to restore, enhance and maintain the natural communities in which they occur; controlling/removing invasive/nonnative vegetation; implementing a prescribed burn program; maintaining and restoring the hydrology of the site; routing management accessways, trails and other public use facilities away from known populations whenever possible; relocating plants that cannot be avoided during construction and restoration activities; controlling feral hog populations; and protecting the site from plant collectors. Species known to be susceptible to fire may be protected during prescribed burn activities by one or more of the following actions: having multiple management units, burning only one unit at a time to maintain a seed source on the unburned parts of the site, maintaining a mosaic of seral stages on the site, creating temporary firebreaks, avoiding the areas in which the plants occur during mechanical vegetation reduction activities and prescribed burn activities or relocating individual plants to other locations on the site prior to a prescribed burn. Information regarding the monitoring of listed/tracked plant species is provided in Section 7.3.

This section includes a brief description of each listed/tracked plant species and any species-specific management/protection strategies that may be used to protect that species. The ranks and designations assigned to the species are provided in Table 1. Listed/tracked plant species recorded at the natural area are discussed below in alphabetical order by common name. The typical habitats provided for each species are as described by Wunderlin and Hansen (2011) unless otherwise noted.

Banded airplant (*Tillandsia flexuosa*)

This epiphytic bromeliad was first recorded at the natural area by ERM staff in 2004; it is rarely observed at the natural area. Banded airplant is typically found in hammocks and cypress swamps;

ERM staff also observes this species in scrub communities within the County's natural areas (Griffiths and Tolbert 2018). All species of *Tillandsia* may be killed directly by fire, or indirectly as a result of the loss of the protective tree canopy or death of the host tree (Robertson and Platt 1992 and 2001).

Blueflower butterwort (*Pinguicula caerulea*)

This perennial, carnivorous herb was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. This species is typically found in wet flatwoods communities; it requires moist to wet soils and is intolerant of long periods of drought (Gann et al. 2016a). Blueflower butterwort can be shaded out by competing vegetation when fires are infrequent.

Catesby's lily (*Lilium catesbaei*)

This bulbous perennial herb was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. Catesby's lily is typically found in moist to wet flatwoods and savannas (Gann et al. 2016b, Wunderlin and Hansen 2011). It can be shaded out by competing vegetation and disappear or become dormant when fires are infrequent (Huegel 2011).

Celestial lily (*Nemastylis floridana*)

This endemic perennial herb was first recorded at the natural area by ERM staff in 2005; it is occasionally observed at the natural area. Celestial lily is typically found in swamps, marshes and wet flatwoods. The grass-like plants are inconspicuous except when flowering (NatureServe 2018). The deep blue flowers, which only last one day, typically open after 3:00 p.m. and close by 6:00 p.m.; celestial lily flowers in the fall (Chafin 2000, Huegel 2009).

Cinnamon fern (*Osmundastrum cinnamomeum*)

This terrestrial fern was first recorded at the natural area by ERM staff in 1993; it is occasionally observed at the natural area. Cinnamon fern is typically found in freshwater marshes, swamps and bogs.

Common wild pine (*Tillandsia fasciculata*)

This epiphytic bromeliad was first recorded at the natural area by FDEP biologists in 1991; it is frequently observed at the natural area. It is typically found in cypress swamps, hammocks and flatwoods. All species of *Tillandsia* may be killed directly by fire, or indirectly as a result of the loss of the protective tree canopy or death of the host tree (Robertson and Platt 1992 and 2001).

Florida butterfly orchid (*Encyclia tampensis*)

This epiphytic orchid was first recorded at the natural area by FDEP biologists in 1991; it is rarely observed at the natural area. Florida butterfly orchids are typically found in hammocks, hardwood swamps, cypress swamps, mangroves and palm groves. Florida butterfly orchids may be killed directly by fire, or indirectly as a result of the loss of the protective tree canopy or death of the host tree (Robertson and Platt 1992 and 2001).

Giant wild pine (*Tillandsia utriculata*)

This epiphytic bromeliad was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. Giant wild pine is typically found in hammocks and cypress swamps. All species of *Tillandsia* may be killed directly by fire, or indirectly as a result of the loss of the protective tree canopy or death of the host tree (Robertson and Platt 1992 and 2001).

Inflated & reflexed wild pine (*Tillandsia balbisiana*)

This epiphytic bromeliad was first recorded at the natural area by FDEP biologists in 1991; it is frequently observed at the natural area. Inflated & reflexed wild pine is typically found in hammocks and scrub. All species of *Tillandsia* may be killed directly by fire, or indirectly as a result of the loss of the protective tree canopy or death of the host tree (Robertson and Platt 1992 and 2001).

Lacelip ladiestresses (*Spiranthes laciniata*)

This perennial terrestrial orchid was first recorded at the natural area by ERM staff in 2004; it is occasionally observed at the natural area. This species is typically found in marshes and open cypress swamps.

Longlip ladiestresses (*Spiranthes longilabris*)

This perennial terrestrial orchid was first recorded at the natural area by ERM staff in 2004; it is occasionally observed at the natural area. It is typically found in wet prairies and flatwoods.

Manyflowered grasspink (*Calopogon multiflorus*)

This terrestrial orchid was first recorded at the natural area by FDEP biologists in 1991; it is rarely observed at the natural area. It is typically found in dry to moist flatwoods (Chafin 2000, Wunderlin and Hansen 2011). Manyflowered grasspink has become rare in Florida due to fire suppression and conversion of habitat to pine plantations (Chafin 2000). It will be protected by maintaining a mosaic of seral stages within the flatwoods community through prescribed burning.

Meadow jointvetch (*Aeschynomene pratensis* var. *pratensis*)

This endemic, terrestrial, perennial herb was first recorded at the natural area by ERM staff in 2007; it is occasionally observed at the natural area. It is typically found in pinelands.

Nodding club-moss (*Lycopodiella cernua*)

This terrestrial fern ally was first recorded at the natural area by ERM staff in 1993; it is rarely observed at the natural area. It is typically found in wet flatwoods, pond margins, bogs, hammocks and ditches.

Rose pogonia (*Pogonia ophioglossoides*)

This terrestrial orchid was first recorded at the natural area in FDEP biologists in 1991; it is occasionally observed at the natural area. It is typically found in marshes and wet flatwoods.

Royal fern (*Osmunda regalis* var. *spectabilis*)

This terrestrial fern was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. This species is typically found in swamps, marshes and bogs. Royal fern has a low tolerance to fire (LaRue 2008).

Saw palmetto (*Serenoa repens*)

This perennial shrub was first recorded at the natural area in (year) by FDEP biologists in 1991; it is frequently observed at the natural area. This species is typically found in pinelands, scrub and coastal upland communities (Gann, et al. 2016c). Saw palmetto is protected from commercial exploitation, but it is not currently rare or imperiled. Saw palmetto is adapted to fire.

Snowy orchid (*Platanthera nivea*)

This perennial terrestrial orchid was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. It is typically found in wet flatwoods, prairies, bogs and wet ditches.

Yellow-flowered butterwort (*Pinguicula lutea*)

This perennial herb was first recorded at the natural area by ERM staff in 2006; it is rarely observed at the natural area. Yellow-flowered butterwort is typically found in flatwoods and bogs.

3.4.2 Animals

Twenty-eight animal species recorded at the natural area have been listed for protection or special management by at least one governmental agency or are tracked by FNAI (Table 2). The listed/tracked animal species at the natural area will be managed and protected as components of the natural communities of which they are a part. All listed/tracked animal species will be managed and protected through the implementation of management activities designed to restore, enhance and maintain the natural communities used by these species; by establishing a protective buffer zone around any known nest or rookery, or any nest or rookery discovered in the future; and by enforcing anti-poaching regulations. ERM will coordinate with FWC on the management of the site for protection of listed animals.

This section includes a brief description of each listed/tracked animal species, including the habitats in which it is typically found and the species' primary diet. The ranks and designations assigned to the species are provided in Table 2. Listed/tracked animal species recorded at the natural area are discussed in alphabetical order by common name.

American alligator (*Alligator mississippiensis*)

This large aquatic reptile was first recorded at the natural area by FDEP biologists in 1991; it is regularly observed at the natural area. It is a carnivore; its diet is primarily snails, aquatic insects and crustaceans when young, and fish, turtles, snakes, small mammals and birds when older (Ashton and Ashton 1991). The American alligator is primarily a freshwater species. It may be present in any water-retaining habitat, including ponds, canals, lakes, rivers, large streams, borrow pits, swamps and marshes (Bartlett and Bartlett 2011b).

Audubon's crested caracara (*Polyborus plancus audubonii*)

A single Audubon's crested caracara was first recorded at the natural area by ERM staff in 2010; it is occasionally observed at the natural area. This large, terrestrial, carrion-eating raptor is a permanent resident of the interior portion of the Florida peninsula (Pranty et al. 2006). It typically inhabits prairies, pastures and other upland grasslands. This species is not known to nest at the natural area.

Bachman's sparrow (*Peucaea aestivalis*)

This small, nonmigratory, ground-nesting songbird was first recorded at the natural area by ERM staff in 1993; it is occasionally observed at the natural area. Bachman's sparrows feed on seeds, a variety of insects and other invertebrates (Maehr and Kale 2005). This species typically inhabits pine flatwoods and dry prairies (Pranty et al. 2006). It does not nest in South Florida (Maehr and Kale 2005).

Bald eagle (*Haliaeetus leucocephalus*)

This very large bird of prey was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. Bald eagles feed primarily on fish and waterbirds (Pranty et al. 2006). This species inhabits coastal beaches, salt marshes, dry prairies, mixed pine and hardwood forests, wet prairies and marshes, pine flatwoods, sandhills and agricultural areas (Maehr and Kale 2005). In Florida, most bald eagles are year-round residents, but winter migrants do occur. Bald eagles typically nest in pine trees, but also may nest in mangrove trees or cypress; most nests are built more than 50 feet off the ground (Stevenson and Anderson 1994). The bald eagle is not known to have nested on the natural area.

Black-crowned night-heron (*Nycticorax nycticorax*)

This medium-sized wading bird was first recorded at the natural area by ERM staff in 2008; it is frequently observed at the natural area. Black-crowned night-herons hunt small fish, amphibians, snakes and invertebrates in shallow freshwater, estuarine and marine wetlands, usually at night (Maehr and Kale 2005, Pranty et al. 2006). In Florida, they typically nest with other wading birds in large colonies (Pranty et al. 2006). Nesting occurs between December and June; platform nests are constructed in a variety of shrubs and trees (Maehr and Kale 2005, Pranty et al. 2006). This species is not known to nest at the natural area.

Ceraunus blue butterfly (*Hemiargus ceraunus antibubastus*)

This butterfly was first recorded at the natural area by members of the Atala Chapter of the North American Butterfly Association in 2018; it is occasionally observed at the natural area. The ceraunus blue butterfly inhabits scrubs, sandhills, flatwoods and weedy, disturbed sites (Minno et al. 2005). Its larval food plants include partridge pea (*Chamaecrista fasciculata*), Florida alicia (*Chapmannia floridana*), sensitive pea (*Chamaecrista nictitans*), Carolina indigo (*Indigofera caroliniana*), hairy indigo (*Indigofera hirsute*) and trailing indigo (*Indigofera spicata*). The only plant species that have been found on the natural area are partridge pea and sensitive sea.

Eastern diamond-backed rattlesnake (*Crotalus adamanteus*)

This large, heavy-bodied, venomous snake was first recorded at the natural area by ERM staff in 2017 and has not been recorded since that time. The eastern diamond-backed rattlesnake is a carnivore; its diet is primarily small mammals, ranging in size from mice to rabbits (Bartlett and Bartlett 2003). This species typically occurs in pine woods, palmetto scrubland, coastal strand and the Everglades. It may occasionally be found in gopher tortoise burrows (Ashton and Ashton 2008).

Everglade snail kite (*Rostrhamus sociabilis plumbeus*)

This medium-sized bird of prey was first recorded at the natural area by FDEP biologists in 1991; it is frequently observed at the natural area. The Everglade snail kite's distribution in North America is restricted to the freshwater marshlands of central and southern Florida (Maehr and Kale 2005). It preys almost exclusively on the Florida applesnail (*Pomacea paludosa*) and moves around as the availability of snails changes with fluctuations in water levels (Pranty et al. 2006). Snail kites typically forage in shallow, relatively open water with a low density of emergent vegetation. They are vulnerable to changes to foraging habitat caused by the invasion of nonnative aquatic plants, especially common water-hyacinth (*Eichhornia crassipes*) (Maehr and Kale 2005). The most suitable wetlands are those that remain wet nearly year-round and only become dry on an occasional and sporadic basis. Nests are constructed in low trees or shrubs or emergent marsh vegetation over standing water (Maehr and Kale 2005, Pranty et al. 2006). This species will abandon its nest if the site loses standing water. It is not known to nest at the natural area.

Florida sandhill crane (*Antigone canadensis pratensis*)

This large wading bird was first recorded at the natural area by FDEP biologists in 1991; it is frequently observed at the natural area. The non-migratory Florida sandhill crane typically nests and feeds in wetland habitats such as wet prairies and depression marshes, but also forages for invertebrates and small vertebrates in wet flatwoods and open pastures, as well as on golf courses and suburban lawns (Maehr and Kale 2005, Pranty et al. 2006). It builds platform nests in basin marshes and depression marshes. Florida sandhill crane has been observed nesting on the site.

Glossy ibis (*Plegadis falcinellus*)

This medium-large wading bird was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. Glossy ibis typically feed on crayfish, fish, reptiles, amphibians and insects (Maehr and Kale 2005, Pranty et al. 2006). They inhabit freshwater marshes, swamps, lakes, flooded agricultural areas and occasionally estuaries (Pranty et al. 2006). Nesting occurs in mixed colonies with other wading birds in shrubs and trees that are either over standing water or on islands. Glossy ibises build platform nests made of sticks. This species is not known to nest at the natural area.

Hairy woodpecker (*Dryobates villosus*)

This nonmigratory bird species was recorded at the natural area by ERM staff in 2019 and has not been recorded since that time. Hairy woodpeckers seem to be dependent on fire-maintained pine forests, where they feed on the larvae of wood-boring beetles that become abundant soon after a pine tree is killed (Pranty et al. 2006). This species also may eat other insects, nuts and fruits. It is typically found in pine flatwoods or plantations, mixed pine and cypress forests, and riparian forests. Hairy woodpeckers nest in cavities excavated in live or dead tree trunks or limbs. This species is not known to nest on the natural area. Potential nesting habitat for this species will be

protected by allowing dead pine trees to remain standing on the site unless they pose a hazard to the public or land management personnel.

Least tern (*Sternula antillarum*)

This small tern species was first recorded at the natural area by ERM staff in 2010; it is occasionally observed at the natural area. This migratory species is present in Florida from March through September (Maehr and Kale 2005). It feeds on small fish and shrimp (Pranty et al. 2006). Least terns typically inhabit beaches, dunes, soil islands and inland areas near large lakes. Nesting occurs throughout Florida from April through September (Maehr and Kale 2005, Pranty et al. 2006). Least terns are colonial ground nesters. Historically they nested on beaches, dunes, islands and river shores; they now nest on light-colored human-made habitats such as spoil islands, construction sites, phosphate mines and gravel rooftops. Least terns are known to nest on the natural area.

Limpkin (*Aramus guarauna*)

This unusual wading bird was first recorded at the natural area by FDEP biologists in 1991; it is frequently observed at the natural area. Limpkin feed primarily on applesnails (*Pomacea* spp.) and freshwater clams, although lizards, frogs, worms, insects, crustaceans and other snails also may be taken (Maehr and Kale 2005, Pranty et al. 2006). This species typically inhabits freshwater marshes, cypress swamps and the edges of rivers and creeks (Pranty et al. 2006). The species is known to nest on the natural area.

Little blue heron (*Egretta caerulea*)

This medium-sized heron was first recorded at the natural area by FDEP biologists in 1991; it is regularly observed at the natural area. Little blue herons feed on small fish and amphibians, aquatic crustaceans, insects, worms and snakes (FWC 2013a). This species inhabits coastal beaches, salt marshes, mangroves, hardwood swamps, cypress swamps, wet prairies, freshwater marshes, lakes and ponds, and flooded agricultural areas (Maehr and Kale 2005, Pranty et al. 2006). Nesting occurs from late February through August in single species or multiple species wading bird colonies, mainly at saltwater sites (Maehr and Kale 2005). The species is known to nest on the natural area.

Malachite (*Siproeta stelenes*)

This large butterfly was first recorded at the natural area by ERM staff in 2004; it is very rarely observed at the natural area. Malachite larvae feed mainly on Browne's blechum (*Ruellia blechum*) (Minno et al. 2005), a nonnative, weedy plant that has been recorded at the natural area. This species is typically found in upland hammocks, thickets, groves and shrubby disturbed areas.

Merlin (*Falco columbarius*)

This small- to medium-sized falcon was first recorded at the natural area by ERM staff in 2010; it is very rarely observed at the natural area. This species preys chiefly on small birds, but may feed on small mammals and insects (Maehr and Kale 2005, Pranty et al. 2006). Merlins can be seen in virtually any open habitat, usually near water (Pranty et al. 2006). These migratory falcons can be locally common along the Atlantic coast of Florida from September to April. This species does not nest in Florida.

Peregrine falcon (*Falco peregrinus*)

This large migratory raptor was first recorded at the natural area by ERM staff in 2007; it is very rarely observed at the natural area. It feeds on a variety of birds, including ducks, shorebirds and gulls (Pranty et al. 2006). The peregrine falcon inhabits a variety of open, mostly coastal habitats, as well as inland lakes and marshes (Maehr and Kale 2005, Pranty et al. 2006). Florida represents an important wintering area for this species, especially for the Arctic subspecies (Maehr and Kale 2005). This species does not nest in Florida (Pranty et al. 2006).

Red-cockaded woodpecker (*Picoides borealis*)

This highly-social woodpecker was first recorded at the natural area by FDEP biologists in 1991; it is very rarely observed at the natural area. The species has not been observed on the natural area since 1993. It feeds primarily on insects and spiders, and rarely on seeds and berries (Pranty et al. 2006). The red-cockaded woodpecker is perhaps the rarest woodpecker in Florida; it is found in old-growth pine flatwoods (Maehr and Kale 2005, Pranty et al. 2006). Nesting occurs in live pine trees where adults excavate cavities that are used for multiple years (Pranty et al. 2006). Resin wells drilled around the nest entrance make the “white-washed” trees easy to identify as nesting sites (Maehr and Kale 2005). This species is not known to nest at the natural area.

Numerous colonies of red-cockaded woodpeckers are present in the nearby J.W. Corbett Wildlife Management Area in a portion that was never logged and contains old-growth slash pines. The sighting of the red-cockaded woodpecker at the natural area should be considered as a possible expansion of the Corbett WMA population, but it is likely that this bird could also take up residence at this site in the future as a prescribed burn program lowers the understory vegetation and as the regrowth slash pines mature. FWC is currently introducing the species at the Hungryland WEA immediately north of the natural area.

Reddish egret (*Egretta rufescens*)

This large wading bird was first recorded at the natural area by ERM staff in 2011; it is very rarely observed at the natural area. Reddish egrets typically feed on small fish (Pranty et al. 2006). This species is restricted to coastal areas (FWC 2013a; Maehr and Kale 2005); it may be found in coastal lagoons, tidal flats, estuaries and mangrove swamps (Pranty et al. 2006). The reddish egret is a

colonial nester which builds platform stick nests on coastal islands in mangroves or Brazilian pepper (FWC 2013a, Pranty et al. 2006). It is not known to nest at the natural area.

Round-tailed muskrat (*Neofiber alleni*)

This large, nocturnal semi-aquatic rodent was first recorded at the natural area by ERM staff in 1993; it is rarely observed at the natural area. It eats roots and stems of aquatic and semi aquatic vegetation; major food plants include arrowheads (*Sagittaria* spp.), pickerelweed, water lilies (*Nymphaea* spp.), maidencane, cutgrass (*Leersia* sp.), sedges and grasses (*Panicum*, *Sporobolus* and *Echinochloa*) (Cassola 2016). Round-tailed muskrats typically live in grassy freshwater marshes and certain brackish coastal marshes, but in some parts of Florida also may tunnel in both cultivated and abandoned fields (Brown 1997, Whitaker and Hamilton 1998). During times of low water they live in burrows (Whitaker and Hamilton 1998). Individual animals are rarely seen, but they construct feeding platforms and small lodges that reveal their presence.

Roseate spoonbill (*Platalea ajaja*)

This large, colorful wading bird was first recorded at the natural area by ERM staff in 2008; it is occasionally observed at the natural area. Roseate spoonbills feed on fish, crustaceans, mollusks and other aquatic animals (Pranty et al. 2006). They inhabit shallow estuaries and bays, mangrove swamps, coastal islands and flooded agricultural fields. Roseate spoonbills are fairly common permanent residents in the southern half of the Florida peninsula. In Florida, mainland populations normally breed from late February or early March to June (Sustainable Ecosystems Institute 2007). Nesting usually occurs with other wading birds in large colonies on thick thickets of mangroves; spoonbills construct bulky stick nests (Pranty et al. 2006). This species is not known to nest on the natural area.

Snowy egret (*Egretta thula*)

This wading bird was first recorded at the natural area by FDEP biologists in 1991; it is frequently observed at the natural area. The snowy egret feeds on a variety of fish, aquatic crustaceans, insects, and small amphibians, worms or snakes (FWC 2013a). It is a common and widespread Florida resident that is found in almost any wetland habitat, including coastal beaches, freshwater and salt marshes, mangroves, hardwood swamps, cypress swamps, wet prairies, flooded agricultural areas and urban environments (Maehr and Kale 2005, Pranty et al. 2006). Platform nests are created in shrub-covered wetlands or islands in coastal lakes and lagoons (Maehr and Kale 2005). Snowy egrets nest in colonies with other wading birds; eggs are laid from March through August. This species is known to nest at the natural area.

Swallow-tailed kite (*Elanoides forficatus*)

This long-tailed bird of prey was first recorded at the natural area by FDEP biologists in 1991; it is occasionally observed at the natural area. This species feeds on large insects, tree frogs, small

snakes and nestling birds (Pranty et al. 2006). Swallow-tailed kites require a mosaic of communities, with tall, accessible trees for nesting and open areas for foraging. Habitats include xeric scrub, hardwood and cypress swamps, mesic hammocks, mixed pine and hardwood forests, pine flatwoods, sandhills, riparian forests and agricultural environments (Maehr and Kale 2005, Pranty et al. 2006). This species typically builds platform nests in tall pine or cypress trees (Pranty et al. 2006). This species is not known to nest on the natural area. Portions of the natural area are located within a proposed Strategic Habitat Conservation Area for swallow-tailed kite as identified by FWC (Endries et al. 2009).

Tricolored heron (*Egretta tricolor*)

This long-necked wading bird was first recorded at the natural area by FDEP biologists in 1991; it is regularly observed at the natural area. It feeds primarily on small fish (Pranty et al. 2006). Tricolored herons are fairly-common permanent residents in Florida, except in the western Panhandle. They primarily live in coastal habitats such as estuaries and mangroves, but also are present in many types of wetlands, including the edges of inland marshes, lakes and ponds, and flooded agricultural fields. Tricolored herons are colonial nesters; they create platform nests in mangroves or other dense aquatic shrubs. Eggs are laid from late February through July (Maehr and Kale 2005). The tricolored heron is known to nest at the natural area.

3.5 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

Florida Department of State, Division of Historical Resources (FDHR), which maintains the Florida Master Site File, identifies six resources within the portion of the natural area – the Trail of Tears (Florida Master Site File 8PB17117) and the Old Wire Trail (Florida Master Site File 8PB14827). These resources are owned and managed by the County. The activities proposed in this management plan will have no effect on these resources.

No other archaeological or historical resources are known to exist within the site (LAAC and FNAI 1991). Any future ground disturbance will be coordinated with FDHR and the Palm Beach County Archaeologist. If any archaeological or historical sites are discovered in the future, FDHR's and the County's best management procedures will be followed to protect those sites. If human remains are found, the provisions of Section 872.05, Florida Statutes, will be followed. The County will comply with Chapter 267, Florida Statutes, in its management of any archaeological or historical sites discovered on the natural area. If historical resources are found on the natural area, a historical resources protection plan will be developed in consultation with the Palm Beach County Historic Preservation Officer. If future resources permit and funding is appropriated, the County will consider conducting an archival and historical study to determine the historical significance of said resource(s).

4. MANAGEMENT AND RESTORATION ACTIVITIES

Baseline environmental assessments of the existing plant communities, and plants and animals were conducted by ERM staff between 1993 and 2008. This information was used to identify the initial management activities necessary to protect, restore/enhance and maintain the natural resources of the site, and to determine the locations and types of public use facilities that were installed. Additional environmental investigations conducted between 2009 and 2022 were analyzed to identify any changes that should be made to the existing public use facilities, land management practices or monitoring requirements. This information serves as the basis for this updated management plan.

4.1 MANAGEMENT RESPONSIBILITIES

The County is responsible for all management activities on the site. Volunteers from the local community may assist with some of the responsibilities; these activities are coordinated by ERM.

4.2 MANAGEMENT UNITS

The natural area is divided into seven management units using management accessways, and natural and manmade features as boundaries and firebreaks (Figure 4). The management units have been designed to maximize the long-term diversity of natural communities, and native plant and animal species on the site. These units range in size from 444 to 1,198 acres, and are small enough to allow for safe and practical fire management. A management unit may be subdivided into smaller units or combined with other units in order to facilitate management and/or monitoring activities, to minimize the effect of smoke on adjacent properties or take advantage of preferred weather conditions during a prescribed burn. The boundaries of the management units were not modified from those proposed in the original management plan.

4.3 MAINTENANCE

4.3.1 Removal of Debris and Litter

All of the debris and litter found on the natural area at the time of its acquisition has been removed. If additional debris is found, it will be removed in a timely manner unless such removal would cause undesirable damage to a rare or imperiled natural community, or listed species. The installation of perimeter fencing and management access gates has and will continue to help prevent dumping on the site. Periodic site cleanups to remove litter are conducted by county staff with the assistance of volunteers.

4.3.2 Trail Maintenance

Periodic trail maintenance will be performed by county staff and community volunteers. All existing trails not used for site management or as part of a designated public use trail will be allowed to revegetate with native vegetation.

4.3.3 Facilities Maintenance

County staff is responsible for the maintenance of all public use facilities, fencing/gates, signage and management accessways/firebreaks.

4.4 RESTORATION AND ENHANCEMENT ACTIVITIES

The site has been and will continue to be managed in a manner that preserves, restores and enhances the natural resource values. Restoration/enhancement activities conducted to date include the commencement of a fire management program (see Section 4.4.1), implementation of invasive/nonnative plant and nonnative/nuisance animal control programs (see Sections 4.5.2 and 4.5.3, respectively), exclusion of unauthorized uses (see Section 4.5) and completion of several environmental restoration/enhancement projects (see Section 4.4.4).

4.4.1 Fire Management

Because of development, natural, lightning-induced fire can no longer fulfill the needs of natural communities in the County which are dependent upon fire for their long-term survival (for example, basin marsh, depression marsh, dome swamp, mesic flatwoods, scrub, scrubby flatwoods, slough marsh, wet flatwoods and wet prairie). Natural fire can no longer spread from adjacent lands onto the natural area because most of the surrounding fire-dependent communities have been significantly altered by development. When natural fire does occur within or adjacent to the natural area, it is quickly extinguished due to the threat it poses to adjacent developed areas. Prescribed fire and mechanical fuel reduction activities will be used at this site to help maintain the existing fire-dependent communities and reduce the risk of damage from wildfire on the adjacent developed areas.

ERM has assumed the primary responsibility for prescribed burning at the natural area. Assistance in the form of firefighting staff and equipment will be requested from Palm Beach County Fire Rescue. Additional assistance may be provided by Florida Department of Agriculture and Consumer Services' (FDACS) Florida Forest Service (FFS), the County's Parks and Recreation Department, FWC and trained volunteers. Fire-related safety training is required of anyone participating in a prescribed burn. All prescribed burns will comply with Section 590.125(3), Florida Statutes (Certified Prescribed Burning; Legislative Findings and Purpose).

ERM has written a flexible fire management plan for the natural area (Appendix G). Development of the fire management plan was coordinated with FFS and FWC. The fire management plan takes

into consideration surrounding land uses, smoke management concerns, safety issues, and the ecological benefits and consequences of the specific fire management strategies. It contains specific tools and management practices designed to minimize adverse impacts to native vegetation and wildlife, while maximizing the beneficial effects of prescribed burns. A specific burn plan will be prepared for the proposed burn area prior to conducting a prescribed burn.

Development-related smoke management concerns dictate extremely narrow weather conditions in which prescribed burning may take place at the natural area. Mechanical reduction of vegetation may be used as a surrogate for fire if a given area/habitat cannot be burned.

Surveys for fire-intolerant listed plant species will be conducted before each prescribed burn. If deemed appropriate, fire-intolerant plants may be relocated outside the burn area. If relocation is not practical due to the presence of hard-to-relocate species or larger populations of listed plants, a temporary firebreak may be created to protect the area that contains the listed species from the planned burn. These relatively small unburned areas will increase the diversity of the site. A permit will be obtained for the relocation of a listed plant species when required.

All of the management units identified for this site will be treated with prescribed fire. Therefore, each management unit also can be considered a “burn unit.” Depending on the specific conditions and objectives of a burn, a management unit may be subdivided into smaller subunits to reduce smoke concerns or provide specific habitat benefits.

Each burn unit was designed so that fire can burn through ecotones and move in a natural, spotty fashion across the landscape. The resulting patchwork of burned and unburned areas will produce a mosaic of vegetation at various stages of maturity, thereby maximizing diversity within and among the various plant communities. This will provide habitat for species that typically use, or may even be restricted to, communities in a particular state of maturity.

The following table lists the fire and vegetation reduction activities to date at the site.

Year	Reduction Type	Management Units
2009	1 Prescribed Burn	Unit 7
2009	1 Wildfire	Unit 6
2009	1 Mechanical Vegetation Reduction	Units 6 & 7
2010	2 Prescribed Burns	Units 6 & 7
2011	1 Mechanical Vegetation Reduction	Unit 7
2012	1 Prescribed Burn	Unit 6
2012	2 Wildfires	Units 3, 5 & 6
2012	1 Mechanical Vegetation Reduction	Unit 6
2013	1 Mechanical Vegetation Reduction	Unit 7
2014	1 Prescribed Burn	Unit 6
2014	1 Wildfire	Units 5 & 6

Year	Reduction Type	Management Units
2014	1 Mechanical Vegetation Reduction	Units 6 & 7
2015	2 Prescribed Burns	Units 6 & 7
2016	3 Prescribed Burns	Unit 6
2017	3 Prescribed Burns	Unit 6
2018	1 Prescribed Burn	Units 6 & 7
2019	5 Prescribed Burns	Units 5 & 6
2020	1 Prescribed Burn	Unit 6
2021	6 Prescribed Burns	Units 5, 6 & 7
2021	1 Mechanical Vegetation Reduction	Unit 5
2021	Pine Thinning	Units 5 & 6
2022	1 Mechanical Vegetation Reduction	Unit 5
2022	1 Prescribed Burn	Unit 6
2023	4 Prescribed Burns	Unit 5
2023	Continued Mechanical Vegetation Reduction	

When the use of prescribed fire is not feasible/permitted, ERM will strive to create a mosaic of natural communities and successional stages, and reduce the risk of catastrophic wildfire through the use of mechanical vegetation reduction methods, subject to and contingent upon annual budgetary funding and appropriations by the BCC. This methodology uses a machine to reduce (grind or shred) vegetation into mulch-sized chips. The mulch chips are then left in place to allow for recycling of nutrients. Seventy-five percent of the 2021 mechanical vegetation reduction costs were paid for by a Federal Emergency Management Agency (FEMA) grant.

The risk of wildfire also has been reduced through the thinning of unnaturally-dense slash pine stands. Under this method, a timber harvester paid the County for the right to cut down and physically remove excess pine trees from the portions of the natural area that have been targeted for thinning by the site manager. Slash pines were reduced to densities that mimic those found in natural communities where fire has not been suppressed for an extended period of time.

If a wildfire occurs on the site in the future, the appropriate actions will be taken by the authorized fire emergency response agency. Active fire suppression measures will be used only if deemed necessary by that agency since they are extremely destructive to vegetation and other natural features. If such measures are undertaken to control a wildfire, all plow lines will be backfilled after the fire has been extinguished and disturbed areas will be rehabilitated to the greatest extent possible.

A prescribed fire public education campaign has been developed for this natural area. This campaign includes informing the adjacent residents and business owners of the necessity and benefits of fire, the safety features of prescribed burning versus wildfires, and the strategies that will be developed to minimize the impacts of smoke on the nearby developed areas. The County

will coordinate with the appropriate fire emergency response agencies and the FDOT prior to conducting a prescribed burn. If requested, county staff will meet with local community groups (for example, homeowners' associations) to coordinate with residents, provide information on the necessity of conducting prescribed burns and describe the safety precautions that will be taken to protect adjacent lands.

4.4.2 Invasive/Nonnative Plant Control

Like many fragmented conservation lands in southeastern Florida, the natural area has been invaded by a number of nonnative plant species. To date, fifty-four nonnative plant species have been recorded at the natural area – 11.7 percent of the plant species recorded on the site (Appendix A). Many of these species were brought to the site by animals (especially birds), planted on the site by previous property owners, and/or spread from adjacent properties or from vegetation piles that were dumped on the site prior to its acquisition. Many species were recorded prior to the implementation of the invasive/nonnative plant control program and may no longer be present. Nonnative plant species are expected to continue to colonize the site from surrounding properties; periodic invasive/nonnative plant control treatments will be required to prevent these species from adversely affecting the natural area.

A number of the nonnative, and some native, plant species recorded at the natural area exhibit invasive tendencies. In this management plan, the phrase “invasive plant species” includes the plants designated as Category I (invasive) and Category II (potentially invasive) by Florida Invasive Species Council (FISC 2019), those designated as noxious weeds, or Class I or Class II prohibited aquatic plants by Florida Department of Agriculture and Consumer Services (FDACS 2016a and 2008, respectively), as well as native plant species that are harmful to other native vegetation (such as love vine [*Cassytha filiformis*]) or that are too dense or inappropriate for the targeted vegetation community. Invasive nonnative plant species pose a serious threat to the natural communities and listed species found at the site, and are a major management concern.

Twenty-four (5 percent) of the nonnative plant species recorded at the natural area are designated as either Category I or Category II species by FISC (2019). A current copy of FISC’s list of invasive nonnative plant species can be found at <https://floridainvasivespecies.org/>. Seven (2 percent) of the nonnative plant species have been designated as noxious weeds by FDACS (2020a) and four (1 percent) have been designated as either Class I or Class II prohibited aquatic plant species (FDACS 2008). All of these species are identified in Appendix A.

The control of nonnative and nuisance native plant species is a high priority at this site. A multi-phase invasive/nonnative plant control program began in December 2003 and was completed in 2011. Follow-up invasive/nonnative plant treatments have been conducted since 2011. The site is now in maintenance condition. A site is considered to be in “maintenance condition” when the coverage of invasive/nonnative plant species does not exceed 1 percent of the canopy or understory layers within any given management year. Ongoing invasive/nonnative vegetation treatments will be needed in order to keep the site in maintenance condition. In addition to invasive/nonnative

plant species, nuisance native species also can have an adverse impact on fragmented natural communities. Native plant species that have an adverse effect on other native species at the natural area, or are too dense or inappropriate for the targeted vegetation community, may be targeted for eradication/control until such time that the nuisance native species is no longer having an adverse impact on the site.

Methodologies used to control/eradicate invasive nonnative and invasive native plant species at the natural area have included and/or may include mechanical removal, herbicidal treatment, hand removal and the use of periodic prescribed fire. Biological control methods may be used on a case-by-case basis. Ruderal species, which are typical of open disturbed sites and do not invade functioning natural communities, are controlled through prescribed burning and avoiding unnecessary disturbances.

Mechanical removal methods are typically used to remove accessible, dense stands of highly invasive nonnative trees such as Australian-pine (*Casuarina equisetifolia*), Brazilian pepper (*Schinus terebinthifolia*) and melaleuca (*Melaleuca quinquenervia*). The tree and its root system are mechanically removed, with the resulting debris either left on-site or taken off-site for disposal. Any outlying sprouts or resprouts from root remnants are treated with herbicides.

Herbicidal treatments are typically used to control/eradicate individual and scattered invasive/nonnative trees, shrubs and palms; inaccessible (by heavy equipment) dense stands of invasive/nonnative trees; and invasive/nonnative vines and groundcover species. Aquatic plant species that become problematic at the site may be controlled using an appropriate aquatic herbicide. Herbicidal application methodologies include hack-and-squirt, cut-stump, basal bark, foliar treatments and broadcast spraying. Hack-and-squirt, cut-stump and basal bark methods are typically used to control/eradicate individual and scattered nonnative trees, shrubs and palms. Foliar treatments are used for invasive/nonnative vines, and for small patches of invasive/nonnative grasses, sedges and forbs. Broadcast spraying is primarily used for larger areas of invasive/nonnative grasses, sedges and forbs. Invasive/nonnative plant species that are resistant to herbicides or that easily resprout from basal mats, roots or vegetative fragments may require repeated herbicide application before the species is eradicated from an area. All herbicide treatments comply with the instructions on the herbicide label, are applied under the supervision of a licensed applicator and employ Best Management Practices for their application.

Hand removal is used for seedlings of invasive/nonnative tree and shrub species. Since tree and shrub seedlings are not reproductive, they are typically pulled out of the ground and left to decompose on site after the soil has been shaken from the roots of the plant.

Hand removal also may be used in combination with herbicide treatments to treat invasive/nonnative vines, as well as invasive/nonnative plants that are resistant to herbicides. In the case of invasive/nonnative vines, the targeted vine is cut at an appropriate height. The base is then hand-pulled or treated with a systemic herbicide; vine stems are either removed from the supporting plant or left to decompose in the trees. In the case of plants that are resistant to

herbicides, hand removal may be used as the sole plant control method or it may be used as a follow up method to remove plants that are still alive following an herbicidal treatment.

Finally, hand removal may be used to help control plant species that readily reestablish from seed (for example, rose natalgrass [*Melinis repens*] and thalia lovegrass [*Eragrostis atrovirens*]) or that resprout from vegetative fragments (for example, air potato [*Dioscorea bulbifera*], American evergreen [*Syngonium podophyllum*], arrowleaf elephant's ear [*Xanthosoma sagittifolium*], golden pothos [*Epipremnum pinnatum*] and nightblooming cactus [*Hylocereus nudatus*]). In these cases, the seedheads and vegetative parts of the invasive/nonnative plants are bagged and removed from the site.

4.4.3 Nonnative/Nuisance Animal Control

Nonnative and nuisance (feral and certain native species) animals can be a problem on sites like the natural area. The presence and impacts of nonnative/nuisance animals are monitored as part of the systematic and opportunistic wildlife surveys. Targeted surveys for nonnative/nuisance animals also may be performed if additional information is required. Nonnative/nuisance animal control programs will be developed and implemented, as necessary, to control species that adversely affect the natural area.

Thus far, eleven species of invertebrates and eleven species of vertebrates recorded at the natural area are not indigenous to the South Florida mainland (see Appendix B). Native vertebrate species recorded at the natural area that may become a nuisance include the coyote (*Canis latrans*) and raccoon (*Procyon lotor*). A short description of the potentially harmful nonnative invertebrate species and all nonnative/nuisance vertebrate species found on the natural area is provided below. No control methods will be used for species identified below as having no significant impact on the natural area.

4.4.3.1 Nonnative Invertebrates

Asian tiger mosquito (*Aedes albopictus*)

The Asian tiger mosquito breeds in containers with standing water (Rios and Maruniak 2011). It is a daytime feeder (USDA 2013) and can be found in shady areas. This mosquito is a known vector of dengue fever, Eastern equine encephalitis, West Nile virus and Zika virus (Rios and Maruniak 2011, USDA 2013). There currently are no feasible methods to eradicate this mosquito at the natural area or to prevent it from being reintroduced from adjacent properties. Remnant canals on site serve as deep water refugia to encourage a year-round population of Eastern mosquitofish (*Gambusia holbrooki*); the presence of this mosquito larvae-eating fish should help control mosquito populations at the natural area.

Cottony cushion scale (*Icerya purchasi*)

The cottony cushion scale feeds on leaves, twigs and branches of trees, resets and nursery stock (Hamon and Fasulo 2005). This decreases tree vitality, and may cause fruit drop and/or defoliation in a wide variety of tree and other plant species. The use of a biological control may be considered if one becomes available since this species may have a significant adverse impact on native vegetation within the natural area.

Elongate twig ant (*Pseudomyrmex gracilis*)

The elongate twig ant is a large, slender, wasp-like ant which has a relatively painful sting (Toth 2007). These ants nest in naturally-occurring hollow cavities such as dead twigs, small branches and large plant stalks. They feed on live insect, fungus spores and honeydew created by aphids. The elongate twig ant does not appear to be having an adverse impact on the natural area.

Honeybee (*Apis mellifera*)

Although the honeybee is an introduced species, it is beneficial for pollination of crops, native plants and honey production (Mortensen et al. 2013). Any naturally occurring non-Africanized honeybee hives will be left in place; any Africanized honeybee (*Apis mellifera scutellata*) hives detected within the natural area will be removed.

Island applesnail (*Pomacea insularum*)

The island applesnail (*Pomacea insularum*) is the most common introduced applesnail in Florida (Fasulo 2011, FWC 2006). This species eats rooted aquatic plants and may adversely affect Florida aquatic ecosystems. Predators in Florida include limpkins, Everglade snail kites, raccoons, turtles and alligators (FWC 2006). Redear sunfish and some ducks may consume smaller snails. There currently are no known practical methods that could be used to help control or eradicate this species at the natural area.

Lobate lac scale (*Paratachardina pseudolobata*)

The lobate lac scale attacks a wide range trees and shrubs, including 83 species native to Florida (Howard et al 2014). Some of the more susceptible native species include wax myrtle, coco plum, buttonwood (*Conocarpus erectus*), strangler fig, myrsine, red bay (*Persea borbonia*) and wild coffee. Dense infestations of this species may cause branch dieback and even death of the host plant. This species was first recorded on the site in 2002, however, very little scale has been noted since the initial outbreak. There currently are no known practical methods that could be used to help control or eradicate this species at the natural area.

Lovebug (*Plecia nearctica*)

Lovebugs are small black flies (Denmark et al. 2012). The larval stages of this species help convert decaying vegetative matter into organic matter and may be beneficial to natural areas. This species does not appear to have an adverse impact on natural vegetation communities.

Melaleuca psyllid (*Boreioglycaspis melaleucae*)

The melaleuca psyllid was deliberately released in Florida in 2002 to provide biological control of melaleuca (Wineriter et al. 2003, Wood and Flores 2002). Both adults and nymphs feed on melaleuca, but feeding by nymphs can kill young plants or saplings (Wineriter et al. 2003). This insect can survive in permanently flooded sites. It is not currently having a significant negative impact on the melaleuca population at the natural area. No control methods will be undertaken for this beneficial species.

Melaleuca snout beetle (*Oxyops vitiosa*)

The melaleuca snout beetle was deliberately released in Florida in 1997 to provide biological control of melaleuca and can reduce flowering by melaleuca trees up to 90 percent (Cuda et al. 2009). This insect disperses slowly and a coordinated redistribution program is needed to aide its establishment throughout the portions of Florida that have melaleuca infestations. It cannot survive at permanently flooded melaleuca sites since its pupal stage occurs in the soil (Wineriter et al 2003). The melaleuca snout beetle is not currently having a significant negative impact on the melaleuca population at the natural area. No control methods will be undertaken for this beneficial species.

Pantropical jumper (*Plexippus paykulli*)

The pantropical jumper is a small species of jumping spider native to Africa. Adults and immatures feed on a wide variety of arthropod prey, including flies, moths, smaller spiders, and flying ants (Edwards et al. 1974). This species does not appear to be having a negative impact on the natural area.

Red imported fire ant (*Solenopsis invicta*)

The red imported fire ant is an aggressive ant that can cause dramatic reductions in populations of native ants and other insects (Core 2003). It also poses a threat to hatchlings of ground-nesting wildlife, including gopher tortoises, sea turtles, alligators and birds (Core 2003, Wetterer and Moore 2005). Red imported fire ants have a very painful sting (Core 2003). There are no effective and acceptable methods to control this species at this time, but a control strategy may be implemented in the future if such methods are developed.

4.4.3.2 Nonnative/Nuisance Vertebrates

Black acara (*Cichlasoma bimaculatum*)

The black acara is a small, stout fish that is most common in shallow, stagnant, roadside ditches or similarly disturbed habitats (FWC undated[a]). It also may be found infrequently in larger canals and lakes. This fish feeds mostly on aquatic insects, plant material, snails and detritus. It is rarely observed at the natural area. There currently are no feasible methods to eradicate this species from ditches and/or canals within or adjacent to the natural area or prevent it from being reintroduced via connections with adjacent water bodies.

Blue tilapia (*Oreochromis aureus*)

The blue tilapia is widespread and abundant in lakes, ponds, rivers, streams and canals throughout the state; it also is tolerant of saltwater and is present in some nearshore marine habitats (FWC undated[b]). This species feeds primarily on plankton and small organisms living in or on bottom detritus. While this fish is currently frequently observed at the natural area, there was no observation until after opening the public use facilities. It is believed that members of the public purposely introduced this species to the site after 2014. There currently are no feasible methods to eradicate this species from ditches and/or canals within or adjacent to the natural area or prevent it from being reintroduced via connections with adjacent water bodies.

Brown anole (*Anolis sagrei*)

The brown anole is very common in South Florida. This prolific species is well adapted to habitats modified by humans and can live in most inland and coastal habitats, including disturbed areas (Meshaka et al. 2004). Although its primary diet is insects, the brown anole also eats smaller green anoles (*Anolis carolinensis*); this predation appears to have caused a rapid decline in the population of the native green anole in Florida. This species is frequently observed at the natural area. Potential control efforts for this species will be explored if it is determined that it is having a negative effect on the natural area.

Brown basilisk (*Basiliscus vittatus*)

The brown basilisk is a long-limbed, fast-moving lizard that can run on its hind legs (Bartlett and Bartlett 2011b). This species is commonly present along canals and pond edges, in agricultural habitats, and in low-density suburban areas (Bartlett and Bartlett 2011b, Meshaka et al. 2004). This lizard primarily feeds on invertebrates, but may eat some fruits; it is prey for various species of snakes (Meshaka et al. 2004). It is rarely observed at the natural area. Potential control efforts will be explored if it is determined that the brown basilisk is having a negative effect on the natural area.

Brown hoplo (*Hoplosternum littorale*)

The brown hoplo is found in ditches, canals, borrow pits, marshes, ponds, streams and slow-moving rivers (FWC undated [c]). This fish has a broad tolerance in regard to salinity and dissolved oxygen levels, but may be susceptible to low temperatures (Masterson 2007a). The brown hoplo consumes a variety of benthic invertebrates, algae and detrital material. This species is rarely observed at the natural area. There currently are no feasible methods to eradicate this species from ditches and/or canals within or adjacent to the natural area or prevent it from being reintroduced via connections with adjacent water bodies.

Coyote (*Canis latrans*)

The coyote disappeared from eastern North America about 12,000 years ago (McCown and Scheick 2007). Coyotes began expanding their range back into the northwestern portion of Florida in the 1970s, presumably taking advantage of an ecological niche left open by the extirpation of the red wolf in the eastern United States (FWC undated[d], McCown and Scheick 2007). The coyote now occurs statewide in Florida and is considered to be a native or naturalized species by FWC. In Florida, the coyote uses all available habitats, including swamps, dense forest, agricultural lands, parks and other green spaces within cities (McCown and Scheick 2007). Dens are located in thickets, hollow logs, brush piles or burrows. The impact of the coyote on native animals is not well quantified, other than sea turtle nests and gopher tortoises, and the harm or benefit to them is under debate. Coyotes are opportunistic omnivores; they eat whatever animal or plant material is most abundant, including sea turtle eggs in late spring and early summer, and saw palmetto berries in late summer and early fall. This species is occasionally observed at the natural area. Although coyotes may provide a benefit to the natural area by preying on feral cats and raccoons, there is a concern that they could have a significant negative impact on native wildlife, including ground-nesting birds and gopher tortoises. Wildlife cameras and opportunistic surveys will be used to monitor the coyote population at the natural area and determine if any additional actions need to be taken to control this species.

Cuban treefrog (*Osteopilus septentrionalis*)

The Cuban treefrog is the largest species of treefrog in Florida (Johnson 2017). Cuban treefrogs are present in a variety of natural and human-modified habitats (Bartlett and Bartlett 2011a, Johnson 2017). This species eats a wide variety of food items including roaches, snails, millipedes, spiders and a vast array of insects; it is a known predator of native treefrogs (Johnson 2017, Meshaka et al. 2004). This species is occasionally at the natural area. Potential control efforts will be explored if this species appears to be negatively impacting native species at the natural area.

Feral hog (*Sus scrofa*)

Feral hogs are omnivorous. They use their tusks to root through the ground in search of roots, tubers, bulbs, worms, insects, slugs and snails and other dietary items (Masterson 2007b). Additionally, they will consume fallen acorns and other nuts, frogs, lizards and snakes, rodents and other vulnerable mammals, and bird eggs. Their rooting activities dig up and overturn sizable patches of earth, destroy native vegetation and seed banks, expose tree roots, encourage the spread of ruderal and nonnative vegetation, and disturb ground-nesting birds. This species also carries a number of diseases, including some that may be harmful to humans. Feral hogs have a significant, adverse impact on natural vegetation communities throughout Florida, including those found at the natural area. This species is frequently observed at the natural area. The County began an ongoing feral hog control program within affected natural areas in 2002. The County will investigate other possibilities for controlling the hog population should the current method of using a private vendor to trap and remove feral hogs prove unsuccessful on this site.

Green iguana (*Iguana iguana*)

The green iguana is a popular pet and individuals frequently are released or escape (Bartlett and Bartlett 2011b). It is adversely affected by cold temperatures. Green iguanas live in most urban and suburban habitats in South Florida (Bartlett and Bartlett 2011b, FWC undated[e]). They prefer dense tree canopies near water, but may be found on canal banks, urban sidewalks and backyards. They also dig burrows that can undermine sidewalks, seawalls and foundations (Kern 2004). Green iguanas are primarily herbivores; they feed primarily on foliage, flowers and fruit, but also are known to consume insects, lizards, nestling birds and eggs. Green iguanas are also known to consume butterfly eggs and larvae, and were implicated as one of the causes for the 2010 extirpation of Miami blue butterflies from Bahia Honda Key (eating new growth of gray nickerbean (*Guilandina bonduc*) host plants harboring eggs and larvae). Domestic dogs are known to kill green iguanas, but no natural predators are known in Florida for this species (Meshaka et al. 2004). This species is rarely observed at the natural area. Potential control measures will be explored if it is determined that this species is having a negative effect on the natural area.

Greenhouse frog (*Eleutherodactylus planirostris*)

The greenhouse frog is present in a wide variety of coastal and inland upland, freshwater, urban, suburban, disturbed and agricultural habitats (Bartlett and Bartlett 2011a, FWC undated[f]). It is a tropical species and is adversely affected by cold temperatures (Bartlett and Bartlett 2011a). This primarily nocturnal species is a gopher tortoise commensal (Meshaka et al. 2004). It does not have an aquatic tadpole stage and therefore does not require standing water to breed (Bartlett and Bartlett 2011a, FWC undated[f]). Greenhouse treefrogs eat ants, beetles, roaches and other invertebrates and probably are preyed upon by Cuban treefrogs and snakes (FWC undated[f], Meshaka et al. 2004). This species is very rarely observed at the natural area. It is not expected to adversely affect the natural area.

Purple swamphen (*Porphyrio porphyrio*)

The purple swamphen is a member of the rail, gallinule and coot family. These birds are very shy wetland birds with short, stubby tails and wings (Johnson and McGarrity 2009). Purple Swamphens are omnivorous but predominantly vegetarian. Little is known of the ecological impacts of Purple Swamphens in Florida. However, they are known to be highly territorial and aggressive, and often fight amongst themselves and with other species over food (Johnson and McGarrity 2009). This species is rarely observed at the natural area and is not expected to adversely impact the natural area.

Raccoon (*Procyon lotor*)

The raccoon is common throughout Florida (FWC undated[g]). It feeds on fruits, plant material, eggs, crustaceans, small animals and garbage. Raccoons are found wherever suitable combinations of woods and wetlands provide acceptable food and den sites, from swamps and marshes to mesic woods, cultivated areas and urban situations (Whitaker and Hamilton 1998). This species is one of the primary carriers of the rabies virus in the United States (The Humane Society of the United States 1997). This species is occasionally observed at the natural area. Wildlife cameras and opportunistic surveys may be used to monitor the raccoon population within the natural area, if necessary to determine if any actions are needed to control this species. Wildlife cameras and opportunistic surveys may be used to monitor the raccoon population within the natural area, if necessary to determine if any additional actions are needed to control this species.

Rock pigeon (*Columba livia*)

Rock pigeons nest in stick and grass nests built on building roofs and ledges, and under bridges or highway overpasses (Pranty et al. 2006). They eat grain and other seeds, and will occasionally eat insects. It is very rarely observed at the natural area. Rock pigeons are not expected to adversely affect the natural area.

4.4.4 Restoration and Enhancement Projects

The restoration and enhancement of natural communities within the natural area has been completed (See Figure 5). Activities conducted to date include the implementation of a prescribed burn program, and ongoing mechanical vegetation reduction and pine thinning activities designed to reduce fuel levels and create a mosaic of natural communities and successional stages within the site (see Section 4.5.1); implementation of ongoing invasive/nonnative plant and nonnative/nuisance animal control programs (see Sections 4.4.2 and 4.4.3, respectively); installation of native plantings (see Subsection 4.4.4.1); completion of four restoration/enhancement projects (see Subsections 4.4.4.2, 4.4.4.3 and 4.4.4.4 and 4.4.4.5); and removal of trash dumped on the site prior to its acquisition by the County.

Restoration/enhancement activities conducted to date have already begun to improve the natural communities in terms of biological composition and ecological function. However, it will take several years for planted native vegetation to mature and for additional native plants to recruit into the restored/enhanced areas. Once this has happened, restoration of the site will be considered complete.

4.4.4.1 Native Plantings

Three native planting events were conducted on the site between 2013 and 2019 as part of targeted restoration efforts.

In May 2013, plants were installed around the public use facilities as part of the Land and Water Conservation Fund (LWCF) grant requirements. Species planted included pond-cypress, red maple and laurel oak.

In October 2014, plants were installed along the Americans with Disabilities Act (ADA)-compliant nature trail and included muhly grass and sand cordgrass.

In March 2019, plantings occurred as part of a mitigation requirement for the proposed “Surf Ranch” project on a property adjacent to the natural area. Species planted in this area south of the fishing pier included red maple and pond-cypress.

4.4.4.2 Minto Restoration Area

Restoration activities for this area began in March 2006 with mechanical vegetation removal and ground treatment of invasive nonnative vegetation. A geotechnical analysis of seepage loss was performed during the spring of 2007 and presented ways to improve hydrology within the project area. A 36” culvert was installed in the spring of 2008 to divert excess water during the rainy season which frequently flooded the project area. A 150-foot section of berm was removed to restore a more natural water flow to approximately 340 acres. A seepage barrier was installed in 2011 to assist with the seepage loss to the SIRWCD canal. In total, two linear miles of seepage barrier was installed on the south and eastern boundary of the Minto Restoration Area and the eastern boundary of the North Mitigation Restoration Area. This seepage barrier project also increased the hydroperiod in the easternmost areas of the site. The project was completed in June 2012.

4.4.4.3 North Mitigation Restoration Area

Restoration activities for this area began in 2008 with mechanical vegetation removal and ground treatment of invasive nonnative vegetation over 115 acres. This effort was followed by a 410-acre prescribed burn in 2009 which assisted in reducing levels of nonnative vegetation and encouraged seeding by native species. Between 2010 and 2012, 38 acres of sloughs/flow-ways were constructed in this project area, which resulted in habitat increases for aquatic animals, wading

birds and waterfowl. Approximately 3 miles of berms (2010-2012) and 1.5 miles of asphalt roads (2013) were removed and the ground restored to the adjacent grade. One mile of seepage barrier was installed to assist with seepage loss and increase the hydroperiod. The project was completed in 2013 and resulted in a total creation of 38 acres of wetlands and 40 acres of uplands.

4.4.4.4 West Hydrological Restoration

In 2013, a sheet pile weir was constructed in the roadside ditch on the east side of Pratt Whitney Road just north of the southern boundary. The weir allows water to stage at 22.5 feet NGVD before flowing over and rehydrates drained wetlands in the area. In the same year, a perimeter ditch/berm that surrounded a wetland north of the installed weir was cleared of vegetation, the berm was removed and the spoil was used to fill in the ditch. This now allows water to stage in the ditch and flow east through the natural area during the wet season. The project was completed in 2013 and resulted in an extended hydroperiod within the project area.

4.4.4.5 Acreage Reliever Road Mitigation Area

In 2007, the County's Department of Engineering and Public Works needed to mitigate for wetland impacts incurred as part of the Acreage Reliever Road project. ERM staff identified an approximately 12-acre area within the natural area that could be restored as mitigation for the additional wetland impacts. The Acreage Reliever Road Mitigation Area was disturbed by historic farming activities, ditched and furrowed, and was overtaken by nonnative and nuisance plant species. The restoration work was conducted from May through June 2007 and included vegetation removal, ditch filling, berm removal and re-grading of the entire area to remove the furrows. This project was completed in 2007 and resulted in a positive native species response and return to a more natural hydroperiod.

4.5 SECURITY

The Palm Beach County Sheriff's Office [Sheriff's Office] has the primary responsibility for public safety and law enforcement at the (Pine Glades Natural Area including routine patrols of the boundaries. The County also has contracted with the Sheriff's Office to have Wildlands Task Force deputies conduct extra patrols of the natural area when needed. The Wildlands Task Force is a specially trained and specially equipped unit that was formed to prevent illegal activities on natural areas managed by the County and to enforce the provisions of the Natural Areas Ordinance. There is no on-site manager or security guard and no on-site staff residence. Instead, ERM staff, trained volunteer site stewards and/or neighborhood watch groups (where available) visit the site on a regular basis and report any signs of illegal and prohibited activities to the Wildlands Task Force.

The County's Natural Areas Ordinance regulates public use of the natural area. The ordinance provides for passive recreational activities (for example, hiking, nature study and photography), environmental education and scientific research. It prohibits destructive uses such as OHV use,

dumping, and poaching of plants and animals. The ordinance gives law enforcement personnel the authority to fine and/or arrest persons damaging a natural area.

The Palm Beach County Parks and Natural Areas Trespass Ordinance (Trespass Ordinance; Ordinance 2016-021) allows law enforcement personnel to issue a Trespass Notice to an individual who violates any applicable local or state law while on a natural area or park that is owned and/or operated by the County. For the purpose of the Trespass Ordinance, the term “applicable local law” includes county ordinances, rules and regulations, as well as notices contained on posted signs. The Trespass Ordinance also provides due process for individuals receiving a Trespass Notice by way of an appeals process before a special magistrate. The Trespass Notice prohibits such individuals from returning to the county natural area(s) or park(s) specified in the notice for one, five or ten years, after receiving their first, second or third Trespass Notice, respectively. Dumping on public lands is prohibited by state law (state statute 403.413).

The natural area is open to the public daily from sunrise to sunset. Access hours are posted at each public entrance. In addition, regulatory signs have been posted at each corner of the natural area and every 500 feet along the perimeter of the natural area. The regulatory signs state that the site is a protected natural area and cite the appropriate county ordinance.

With the exception of portions of the south boundary adjacent to commercial/industrial areas, the entire perimeter of the site is fenced to help prevent unauthorized access to the natural area (see Section 5.2). Currently, the County is responsible for opening and closing the gates to the parking lot. Gate responsibility may be delegated to a local steward or stewardship group if approved by the County.

4.6 STAFFING

Because of the following factors, on-site staffing is not proposed for this natural area:

- the low-impact, non-consumptive activities allowed on the site require limited oversight by staff;
- the site is closed from sunset to sunrise;
- sufficient security measures (fencing, regulatory signage, Wildlands Task Force) are in place to protect the site when it is closed to the public;
- ERM staffing levels are insufficient to provide on-site staffing at any of the County’s natural areas; and
- construction and use of a permanent office or residence for on-site staff would adversely affect the site’s natural and/or cultural resources.

Instead, ERM has created a roving management team trained to conduct all levels of management activities, including invasive/nonnative vegetation control, prescribed burning, mechanical vegetation reduction activities and environmental monitoring. ERM also has created a volunteer site steward program. These trained volunteers periodically visit their assigned site and provide feedback to staff regarding the site’s condition and any problems noted. Volunteers from local

citizens' organizations, businesses and schools provide additional support where feasible and necessary.

4.7 COORDINATION WITH ADJACENT LAND MANAGERS

Conservation lands adjacent to the natural area include the Corbett WMA and Hungryland WEA. (Figure 1). All adjacent land managers were invited to review and comment on this management plan as it was reviewed by NAMAC. Staff members who serve on NAMAC facilitated review of this management plan by the County's Parks and Recreation Department, and SFWMD. ERM staff has and will continue to coordinate with adjacent land managers whenever proposed hydrological changes or other management activities, such as prescribed burns and nonnative/nuisance animal control, could affect an adjacent conservation land.

The County will review any land use changes or development plans proposed for properties adjacent to the natural area to ensure the protection of biological communities and to avoid or minimize adverse impacts to listed species.

4.8 GREENWAY CONNECTIONS/MANAGEMENT

The natural area was designated as part of the Florida Greenways and Trails System in 2011 (Appendix H). The Florida Greenways and Trails designation program was established to further the purposes, goals and objectives of the Florida Greenways and Trails System; ensure an inclusive and interconnected system of greenways and trails; encourage voluntary partnerships in conservation, development and management of system components; provide recognition for individual components of the system and those partners involved; and raise public awareness of the conservation and recreation benefits of the system components.

4.9 PUBLIC OUTREACH, ENVIRONMENTAL EDUCATION AND SCIENTIFIC RESEARCH

ERM has a very active public outreach and environmental education program. To help members of the public become invested in the natural area, numerous volunteer opportunities, environmental education events and resource-based recreational activities are provided each year. These events may be led by ERM staff or by volunteer community groups, clubs, businesses and/or knowledgeable individuals.

Interpretative exhibits have been prepared and installed in the kiosk located adjacent to the parking lot. These exhibits help educate the public about the natural resources present on the site, the negative impacts of invasive/nonnative plants and nonnative/nuisance animals, any restoration/enhancement projects that have been undertaken at the site, ongoing management activities such as prescribed fire and/or mechanical vegetation reduction activities, and/or any other relevant topics.

Information related to the site's natural resources, location, size and any existing public use facilities/recreational amenities may be found on ERM's Pine Glades Natural Area webpage. The site's trail guide, current management plan and any restoration project summaries are available upon request to ERM. A free natural areas map application for mobile devices is available at www.pbcnaturalareas.com. Printed copies of the site's trail guide are available in a brochure box attached to the kiosk that is adjacent to the parking lot.

ERM staff will request that the Florida Fish and Wildlife Conservation Commission include Pine Glades Natural Area in the South Florida section of the Great Florida Birding and Wildlife Trail when that section of the trail is updated.

No specific research needs have been identified for this site. ERM does not anticipate performing any scientific research other than compiling and interpreting the data from monitoring activities, but will allow researchers affiliated with institutes of higher learning, botanical gardens and government agencies to conduct scientific research on a permit basis.

4.10 RESPONSE TO SIGNIFICANT EVENTS

Five hurricanes affected the natural area between 1999 and 2017 - Hurricane Irene in October 1999; Hurricanes Francis and Jeanne in September 2004; Hurricane Wilma in October 2005; and Hurricane Irma in September 2017. Tropical Storm Isaac in 2012 caused an internal berm blow-out. The berm was repaired and four 36" culverts were installed to allow water flow through the berm to prevent future issues. All of these storms caused minor tree/limb damage and deposited invasive/nonnative seeds within the natural area. Invasive/nonnative plants that sprouted after each storm event were treated as part of the ongoing invasive/nonnative plant control program.

If a natural or human-caused event severely damages structures or native vegetation, or alters the natural values of the site in the future, ERM staff will assess the nature of the damage/alteration and take actions necessary to protect the public and minimize/mitigate impacts to the site. The first priority following a significant event will be to secure the site to ensure public safety and prevent dumping, vandalism and unauthorized vehicular use. If hazardous conditions exist, the natural area will be closed to the public until such conditions have been eliminated. The site also may be closed until public use facilities have been repaired. Damaged/altered native plant communities will be managed to encourage natural regeneration following such an event. Management practices will be adjusted, if necessary, to accommodate the new conditions at the site. The County will inform the State about any impacts caused by the event, and any actions designed to help restore damaged/altered natural resources and/or public use facilities. If the natural values of the site are severely limited or eliminated, the County and the State will discuss future plans for the site. All significant events affecting the natural area will be discussed in the next scheduled Annual Site Evaluation (ASE). The event also will be summarized in the next update to the management plan.

4.11 CLIMATE CHANGE

The natural area will help address climate change in the following ways:

- The preservation and restoration/enhancement of the existing plant communities will help reduce greenhouse gases by converting carbon dioxide to oxygen.
- The restored/enhanced plant communities will serve as a refuge for wildlife affected by climate change-induced habitat losses.
- The hydrological restoration of historic wetlands will reduce carbon dioxide releases caused by over drainage of the associated wetland soils; rehydration of these wetland areas will help rebuild carbon stores within the soils.
- The completed hydrologic restoration activities allow the site's wetlands to hold more water for longer periods of time, thereby reducing the effect of changes in rainfall patterns on wetland-dependent plant and animal species.
- The extra water stored in the wetlands helps recharge the underlying aquifer, thereby helping to mitigate and reduce impacts that may occur to the aquifer due to changes in rainfall patterns.
- The stored water provides additional freshwater flows to the Wild and Scenic Loxahatchee River during the dry season, thereby reducing climate change/sea level rise-induced salt water intrusion in the northwest fork of the Loxahatchee River.

5. SITE DEVELOPMENT AND IMPROVEMENT

All structural improvements and major land alterations were done in compliance with applicable local, state, regional and federal laws and regulations. All required licenses and permits were obtained prior to the commencement of any construction, native vegetation removal or major land alterations on the natural area. All of the existing improvements were constructed in disturbed portions of the site to the greatest extent practicable. A minimum 100-foot buffer was provided between the parking lot and the nearest wetland. The location of each improvement was surveyed for listed species prior to the construction of that facility. If any listed species were found within the construction area, the location of the improvement was adjusted to avoid impacts to the listed species, or the listed species was relocated to a safe location on the natural area.

5.1 PUBLIC USE FACILITIES AND ACCESS

The natural area is a publicly owned preserve and resource-based, outdoor recreational site. It is open to the public during daylight hours, unless a special, after-hours use permit has been issued. The hours of operation are posted at each designated public access point.

All public use facilities (Figure 7) were carefully chosen, designed and located so that they do not jeopardize the site's natural resources, including the rare and endangered plants, animals and natural communities. All public use facilities are on a preventative maintenance schedule subject to funding availability. Public Use Facilities were constructed from 05/2013 to 01/2014 with the site opening to the public in February 2014.

Public uses permitted on this site include nature appreciation and study, hiking, nature photography, bird/wildlife watching, canoeing/kayaking, picnicking and fishing. The relatively small size of the parking lot limits the number of people that are on the site at any given time. Except for the use of vehicles for management purposes, all human traffic within the natural area is by foot.

Several of the existing public use facilities are compliant with ADA requirements. The parking lot includes two designated ADA-compliant parking spaces. This parking spaces connect to an ADA-compliant pathway that leads to an interpretive kiosk and an ADA-compliant concrete nature trail. Other ADA-compliant public use facilities constructed on the site include a boardwalk and wildlife observation platform.

The primary public access is via a 26-car, 2-bus parking lot located just south of Indiantown Road (Figure 7). Bicycle racks have been installed adjacent to the parking lot to encourage visitors to ride bicycles to the natural area. Unpaved areas within the parking lot have been landscaped with native plants to provide additional wildlife habitat and to enhance the parking lot's appearance. Gates have been installed across the driveway to control entry to the parking lot. Staff may investigate the feasibility of installing solar-powered entrance gates.

Approximately 7.3 miles of trail have been created within the natural area (Figure 7). This includes a 1.5-mile-long nature trail, and approximately 5.8 miles of natural-surfaced hiking trails. The nature trail and hiking trails can be accessed from the parking lot.

The concrete nature trail begins at the parking lot. The nature trail is a minimum of 5-feet-wide to accommodate wheelchairs and other non-motorized mobility devices.

Access to the hiking trail system is from the concrete nature trail (Figure 7). All of the hiking trails within the natural area have a natural soil base. Improvements to the hiking trail system include the addition of color-coded blazes on trees and/or posts to help keep hikers on the trail, and the occasional removal of roots, rhizomes, rocks and/or other potential trip hazards. Most of the natural-surfaced portion of the hiking trail is maintained at a width of six feet. However, portions of the hiking trail that are co-located with one of the site's management accessways/firebreaks may be wider than six feet (see Section 5.4). Management accessways/firebreaks that are not part of the designated hiking trail also may be used for foot traffic, but will not be improved beyond what is necessary for their primary use. Public use of secondary trails is discouraged using signage and vegetative barriers, by not maintaining the trails and encouraging the regeneration of native vegetation on these trails.”

Non-trail amenities provided at the natural area include a canoe/kayak launch, shade shelter with picnic tables located just off the parking lot, a fishing pier and a wildlife observation platform with benches. The wildlife observation platform and fishing pier are accessible from the parking lot via the nature trail.

5.2 FENCING AND GATES

The majority of the site has been fenced to restrict access to and prevent unauthorized use of the site. The types of fencing that currently exist on the natural area include wooden 2-rail, field fencing and 5-strand barbed wire. Wooden 2-rail fencing was installed around the perimeter of the parking lot. Field fencing was installed along the eastern perimeter and part of the southeastern perimeter. Fencing has not been installed along the southern boundary where a canal separates the natural area from industrial/commercial properties. The rest of the perimeter is 5-strand barbed wire. The County will consider installing a fence to restrict access to the area with no fencing if security becomes a problem.

Seventeen management access gates have been installed at the natural area. Four gates are located in the parking area, and the rest are along the perimeter of the site. All of these gates currently provide vehicular access for management and monitoring activities, public safety and law enforcement.

5.3 SIGNS

An entrance sign was installed on Indiantown Road, near the entrance to the parking lot. A permanent dedication sign was installed underneath the entrance sign and states the natural area was acquired for environmental preservation and public recreation purposes with funds provided by the County and FCT. A separate dedication sign in the parking lot indicates that funding for public use facilities was provided by LWCF.

Regulatory signs have been posted at each corner of the natural area and every 500 feet along the perimeter of the natural area. These signs identify Pine Glades Natural Area as a protected site and cite the County's Natural Areas Ordinance. Access hours and natural area rules signs are installed adjacent to the parking lot. Signs that notify visitors of trail use restrictions, security patrols, the presence of hidden cameras and other site-specific information also have been or may be installed on the site. Trail markers have been installed at various points along the hiking trail to keep hikers on the designated trail.

"No Trash Area" signs have been installed adjacent to the parking area. Trash receptacles are not provided at the remainder of the natural area for the following reasons: 1) the lack of trash receptacles promotes the concepts of "carry in – carry out" and "leave only footprints"; 2) the use of trash receptacles within natural areas draws wildlife to areas where they may come in contact with, or be fed by, members of the public; 3) people empty all their vehicle trash into the receptacles which leaves little room for other trash; 4) people attempt to place trash in receptacles even after they are full resulting in unsanitary/unsafe conditions for other visitors and wildlife; 5) trash which is left in receptacles may blow into the adjacent natural communities or be scattered by wildlife; and 6) the removal of trash receptacles from county natural areas has not increased the amount of trash found on the site.

5.4 MANAGEMENT ACCESSWAYS/FIREBREAKS

A network of management accessways/firebreaks has been established around the perimeter of the natural area and between each of the management units (Figure 4). Management accessways/firebreaks are cleared, drivable trails. They typically have an unimproved sand/dirt surface; however, portions of the trail may be stabilized where very fine soils or other conditions make it difficult for management and/or emergency vehicles to access the site. Management accessways/firebreaks are primarily used for vehicular access related to land management activities and for the containment of wildfires and prescribed burns when they occur. Management accessways/firebreaks also may be used as part of a designated hiking trail.

Temporary firebreaks - firebreaks that are not part of the management accessway system - may be established within management units to separate fire-intolerant natural communities from adjacent burn areas and/or to create smaller burn units. These firebreaks, which are cleared on an as-needed basis, may include areas that have been cleared of vegetation (bare soil), as well as areas where

the vegetation has been mowed or cut/chopped. Temporary firebreaks are allowed to revegetate following a prescribed burn.

Management accessways/firebreaks were located on existing trails and within disturbed areas whenever possible; natural firebreaks were incorporated into the management accessway/firebreak design when feasible. Prior to construction, all management accessway/firebreak locations were surveyed for listed species. If a listed species was likely to be impacted by the proposed construction, the management accessway/firebreak was rerouted or the listed species was relocated elsewhere on the site.

5.5 OTHER STRUCTURES AND IMPROVEMENTS

No structures or improvements are planned for this site other than those described in Sections 5.1 through 5.4.

5.6 PRIORITY SCHEDULE FOR SITE MANAGEMENT AND RESTORATION ACTIVITIES

Completed and proposed restoration/enhancement activities - fire management, mechanical vegetation removal/thinning, invasive/nonnative plant removal/control, nonnative/nuisance animal control and restoration/enhancement projects - are described in Section 4.4. Completed site improvements are described in Sections 5.1 through 5.5. Public use facilities have been constructed; the natural area was officially opened to the public in February 2014. Management of the natural area is now in maintenance mode; invasive/nonnative vegetation and nonnative/nuisance animal control activities are ongoing, and structures will be replaced when needed due to age or damage.

A priority schedule for ongoing and proposed restoration and management activities over the next ten years is provided in Table 3. All of the activities shown in Table 3 are contingent upon annual budgetary funding and appropriations by the BCC.

6. COSTS AND FUNDING SOURCES

The County has primary responsibility for development, restoration/enhancement, management and maintenance of the Pine Glades Natural Area. Existing county personnel accomplish these activities with assistance from county contractors and community volunteers.

6.1 CAPITAL AND MAINTENANCE COSTS

As of June 2022, capital and maintenance costs for the site totaled \$16,467,534. Major expenditures included land acquisition, invasive/nonnative plant control, wildfire mitigation, environmental restoration/enhancement, site development and security projects/activities (see Sections 4.4, and 5.1 through 5.5). There are no remaining capital projects and/or activities planned.

6.2 ESTIMATED ANNUAL MANAGEMENT, MAINTENANCE AND REPLACEMENT COSTS

Annual management, maintenance and replacement costs are expected to average \$1,315,932 over the next ten years (Table 4). These costs will be minimized by coordinating the management and maintenance of natural areas on a countywide basis. Costs also will be minimized whenever possible through the use of volunteers for non-hazardous/non-technical activities. However, existing county personnel will do most of the ongoing management and maintenance work, including all hazardous and technical work, with assistance from county contractors. All future capital projects, management and maintenance activities (repair/replacement of site improvements, invasive/nonnative vegetation and nonnative/nuisance animal control activities, wildfire mitigation, etc.) are subject to, and contingent upon, annual budgetary funding and appropriations by the BCC.

6.3 FUNDING SOURCES

Most of the funds used to acquire, secure, develop, restore/enhance, manage and maintain the natural area have and will continue to come from county funding sources. Grants and other outside funding sources have been and will continue to be used to offset some of these costs as opportunities arise. To date, approximately \$200,000 of the capital public use facility construction costs were paid using grant funds received from LWCF.

Most of the capital costs, including acquisition costs, were paid using funds from the Palm Beach County Lands for Conservation Purposes Bond Issue Referendum of March 9, 1999. The balance of capital costs, as well as all long-term land management/maintenance costs, have and will continue to come from the Palm Beach County Natural Areas Fund, Palm Beach County Natural Areas Stewardship Endowment Fund, Ag Reserve Land Management Fund and/or Palm Beach County General Fund, as may be amended.

7. MONITORING AND REPORTING

The natural area is managed specifically to preserve, restore/enhance and maintain its natural resource values, and to allow public uses that do not adversely affect the existing resources. Restoration/enhancement and other land management activities are continually monitored and assessed to determine whether the stated objectives for natural vegetation communities and listed species are being achieved, and/or to identify any new species not previously identified on the site. Management practices are adjusted (a process known as “adaptive management”) if an analysis of the monitoring data indicates that management objectives are not being met. Likewise, anthropogenic impacts are monitored to ensure that public uses do not negatively impact the natural area. Monitoring data also is used to prepare Annual Site Evaluation reports (ASEs) (see Section 7.7).

Monitoring protocols have been developed to ensure consistency on all natural areas managed by ERM. Copies of the current monitoring protocols are available upon request. An overview of the types of monitoring activities conducted on the natural area is provided in the following sections. If any of the monitoring protocols described in this chapter are revised, or if new monitoring protocols are developed for this site prior to the next update of this management plan, the monitoring requirements contained in this chapter will automatically be revised so that they comply with the revised/new monitoring protocols.

7.1 PHOTOMONITORING

Photomonitoring is used to obtain a qualitative, long-term visual record of changes in the natural area’s vegetative structure and/or condition over time. This includes the effects of planned management and restoration/enhancement activities (for example, mechanical removal of invasive/nonnative vegetation, ditch filling/plugging, recontouring of areas which have been mined or filled, restoration planting activities, mechanical vegetation reduction and prescribed fire) or to document changes related to a destructive natural event (for example, a hurricane, wildfire, pest or disease).

7.2 VEGETATION MONITORING

Vegetation transects may be established within the natural area in the future to monitor the effect(s) of a destructive natural event (for example, a hurricane, wildfire, pest, disease or invasive species). Data collected from the vegetation transects may include information on vegetation community structure and/or composition of natural communities.

Any plant species that has been listed for protection or special management by at least one governmental agency and/or tracked as a S1, S2 or S3 species by FNAI, and that is being monitored in accordance with the vegetation monitoring protocol, has been and will continue to be recorded in ERM’s Environmental Enterprise Database (EEDB). Staff also may collect population and/or demographic information for one or more of the listed plant species found on the site to document

the effect(s) of land management activities, changing site conditions and/or a significant natural event on that plant species; and/or when permits require more intense monitoring.

Plant species that are encountered opportunistically (during a normal site visit) on a natural area and that have not previously been documented on the site are recorded in the EEDB.

7.3 WILDLIFE MONITORING

Migratory wildlife surveys are conducted at the natural area to record the resident and migratory wildlife found on the site. Optional nonmigratory wildlife surveys also may be conducted, if deemed appropriate by staff. Migratory wildlife surveys are conducted when migratory bird species are expected to be present - September through October and February through May. Nonmigratory wildlife surveys are conducted from June through August, or from November through January.

Any animal species observed at the site that has been listed for protection or special management by at least one governmental agency or that has been tracked as a S1, S2 or S3 species by FNAI, and that is being monitored in accordance with the wildlife monitoring protocol, has been and will continue to be recorded in ERM's EEDB. A species-specific monitoring plan may be developed for any listed animal species that is recorded as breeding on the site or if more intense monitoring is needed to help identify or evaluate management activities designed to help protect a particular species.

Animal species that are encountered opportunistically on a natural area and that have not previously been documented on the site are recorded in the EEDB.

7.4 HYDROLOGICAL MONITORING

Hydrological monitoring is used to help determine the effectiveness of hydrological restoration projects conducted within the natural area by measuring onsite surface and ground water levels over time. Readings from the hydrological monitoring station(s) are plotted against rainfall data obtained from a nearby rain gauge. Success of the hydrological restoration projects is determined based on vegetative changes within the site and a comparison of water levels versus rainfall over time.

7.5 AQUATIC MACROFAUNA MONITORING

Aquatic macrofauna (fish and aquatic macroinvertebrate) monitoring was used from 2006-2018 to track the effects of restoration activities on wetland communities that were affected by permitted restoration projects.

7.6 CLIMATE CHANGE MONITORING

All of the monitoring information gathered on the site will be evaluated for changes that may be the result of climate change. If significant changes in rainfall patterns and/or natural communities are noted over time, staff will attempt to mitigate for these changes. If the changes cannot be mitigated for, management practices will be modified to provide the highest quality natural communities practicable under the new climate conditions.

7.7 REPORTS

Staff will prepare an ASE report each year. Each ASE will include information related to structural improvements, natural events, land management activities, monitoring events and restoration/enhancement activities that occurred on the site during the prior year. A general review of land management and restoration/enhancement efforts, and the status of natural communities and listed species will be completed at the end of each management year and included in the ASE. ASEs will be used in conjunction with data stored in the EEDB to allow staff to analyze and evaluate the success of land management and restoration/enhancement activities over a period of years.

Information on all new listed plant and animal species recorded at the natural area will be provided to FNAI on an annual basis, using one of the forms that are available at <http://www.fnai.org/fieldreportingforms.cfm>, or as otherwise requested by FNAI.

FCT Requirements

Staff will prepare and submit a stewardship report to FCT each year until such time that FCT approves a 5-year reporting schedule for the site. Following approval of the 5-year reporting schedule, ERM will prepare and submit a stewardship report to FCT once every 5 years. The submittal date for the first 5-year report will be determined when FCT approves the 5-year reporting schedule. The County commits to follow up visits performed by FCT. Any revenue collected will be tracked by the County and reported annually to FCT. The stewardship report will be designed to meet the reporting requirements for the FCT-funded portion of the natural area.

The County understands its responsibility for preparing an Annual Revenue Report for each FCT project site, due on July 31 of each year. This report will include revenue earned on the project site during the previous State of Florida fiscal year (July 1-June 30). Any and all fees collected will be placed in a segregated account and used solely for the upkeep and maintenance of the project site.

The County also understands its responsibility to determine whether or not it must submit a State single or project-specific audit for any given fiscal year in accordance with Section 215.97, Florida Statutes; applicable rules of the Department of Financial Services; and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditors General.

The requirements imposed by other grant program funds that may be sought for activities associated with the project site shall not conflict with the terms and conditions of the FCT award.

**8. CHRONOLOGY OF MAJOR EVENTS
1993-2023**

Year	Month	Event
1993	November	MacArthur parcel donation (via settlement agreement) - 100 acres
1999	March	MacArthur tract acquisition – 6,844.45 acres
2000	March	WCI tract acquisition – 399 acres
2001	June	Tamburri-Lindstrom outparcel acquisition – 4.44 acres
2002		No notable events occurred
2003	December	Nonnative vegetation removal began
2004	April	Sale of land north of Indiantown Road to State – 2,121 acres
	May	Stuart Enterprises Phase I acquisition – 322.46 acres
	October	C-Venture tract acquisition – 125.8 acres
2005	March	3 staff gauges established
	March	Stuart Enterprises Phase II acquisition
	May/June	6 additional staff gauges established along eastern boundary
	May	Feral hog removal started – 6 hogs removed
	June	3 wells established as “dry” gauges
	November	LARA tract acquisition – 544.23 acres
2006		Various Indian Lakes Estates Acquisitions (Stuart Enterprises – 5 acres; Percival – 10 acres; Luong – 5 acres; Extreme Investments – 5 acres)
		Minto restoration - all mechanical and ground vegetation treatment complete
	March	Restoration activities began for the Minto development area (Minto Restoration Area) south of the Indian Lake Estates parcels Additional monitoring well installed
	May	Feral hog removal area expanded to west ½ of the site – 106 hogs removed
	November	Indian Lakes Estates acquisition – Martin parcel – 5 acres
December	\$3,394,981.50 in matching acquisition funds received from FCT for Indian Lakes Estates	
2007		One segment of management road installed to provide access to western portion of Minto restoration area
	Spring	Minto restoration - geotechnical analysis of seepage loss to SIRWCD canal performed
	April	Acreage reliever road mitigation area - restoration activities began
		Feral hog removal continued to east ½ of site – 186 hogs removed
June	Acreage reliever road mitigation area - restoration activities completed	

Year	Month	Event
	October	Hartsel Ranch parcels acquisition – 78.34 acres
		Migratory species monitoring and photomonitoring began as part of mitigation requirements
2008		Feral hog removal continued – 48 hogs removed
	March	36” culvert installed in southern berm of Minto restoration area
	April	North Mitigation Restoration Area - started with mechanical vegetation removal within the former agriculture area – 115 acres treated
	June	North Mitigation Restoration Area - mechanical vegetation removal completed
2009		Feral hog removal continued – 207 hogs removed
		Additional soil testing completed for technical analysis of seepage loss to SIRWCD canal
	January	North Mitigation Restoration Area- more mechanical vegetation removal
	Spring	Additional management road created
	February	3 staff gauges and associated wells established within the north mitigation area
	May	FPL parcel acquisition – 5 acres
		Wildfire - 10 acres
	June	North Mitigation Restoration Area - mechanical vegetation removal completed
August	Prescribed burn on the east side of the North Mitigation Restoration Area (Unit 7) - 410 acres	
2010		Feral hog removal continued – 55 hogs removed
		North Mitigation Restoration Area - total of 7.5 acres of sloughs/flow-ways created
		Hydro monitoring wells #6 and #13 temporarily removed for vegetation clearing activities. Well #6 reinstalled
	February	Prescribed burn (Unit 6) – 35 acres
	March	Staff gauge/well #3 removed due to restoration activities
	May	Prescribed burn (Unit 7) – 650 acres
	August	Wildfire in northeast portion of Unit 7 – 0.3 acres
2011		Feral hog removal continued – 83 hogs removed
		North Mitigation Restoration Area - 30.12 acres of sloughs/flow-ways created
	February	Martin County parcel acquisitions – 5 acres
	March	Minto Restoration Area - seepage barrier project construction began
		Staff gauge and well #10 removed for seepage barrier construction activities
May	Staff gauge and well #10 reinstalled with #13	

Year	Month	Event
	June	Minto Restoration Area - seepage barrier project construction completed
2012		Feral hog removal continued – 61 hogs removed
		Additional management accessway installed within Unit 6 to provide a firebreak – approximately 1500 feet
		Land and Water Conservation Fund grant received for public use facilities construction (\$200,000)
		Minto Restoration Area - small amount of ditch and berm leveling completed the restoration project dirt work
	April	North Mitigation restoration Area - 2 miles of berms and asphalt roads removed
	June	Patton parcel acquisition – 1.1 acres
		Prescribed burn in Unit 6 – 82 acres
	July	Eastern perimeter fence installed to eliminate OHV and equestrian use
		Staff gauge #17 installed near future public use facility area
Wildfire in Unit 4 – 1.7 acres		
		Wildfire in Unit 6 – 33.3 acres
2013		Feral hog removal continued – 77 hogs removed
	February	Mechanical vegetation reduction in Unit 7 – 120 acres
	April	Hydrological restoration - sheet pile weir constructed in the roadside ditch on east side of Pratt Whitney Road along the southern boundary
		Perimeter ditch/berm cleared of vegetation - berm removed and spoil used to fill ditch
	May	Public use facilities construction began
LWCF grant planting – 58 pond-cypress, 57 red maple, 25 laurel oak		
2014		Feral hog removal continued – 88 hogs removed
	January	Public use facilities completed
	February	Public use facilities open to the public
	April	Prescribed burn in Unit 6 – 197 acres
		Mechanical vegetation reduction in Unit 6 – 114 acres
	May	Grand opening of public use facilities
	June	Wildfire – 9 acres
October	Planting along the ADA trail – 2500 muhly grass	
2015		Feral hog removal continued – 67 hogs removed
	April	Prescribed burn in Unit 6 – 65 acres
	October	Prescribed burn in Unit 7 – 50 acres
		Parcel donation – 1.3 acres

Year	Month	Event
2016		Feral hog removal continued – 81 hogs removed
	March	Prescribed burn in Unit 6 - 13 acres
	April	Prescribed burn in Unit 6 - 1 acre
	May	Parcel acquisition – 1 acre
	October	Prescribed burn in Unit 6 - 75 acres
2017		Feral hog removal continued – 31 hogs removed
	January	Prescribed burn in Unit 6 – 209 acres
	March	Prescribed burn in Unit 6 – 246 acres
		Mechanical vegetation reduction in Units 5 and 6 – 134 acres
	April	Pine Flatwoods Rapid Assessments began
	June	Photomonitoring stations established in Units 5, 6 and 7
	August	Prescribed burn in Unit 6 – 273 acres
December	Parcel donations – 2.4 acres	
2018		Feral hog removal continued – 37 hogs removed
	May	Prescribed burn in Unit 7 – 368 acres
2019		Feral hog removal continued – 59 hogs removed
	March	“Surf Ranch” donation planting south of fishing pier – 45 maple, 200 pond-cypress
		Prescribed burn in Unit 6 – 2 acres
	May	Prescribed burn in Units 5 & 6 – 232 acres
	July	Prescribed burn in Unit 6 – 14 acres
November	Prescribed burn in Unit 6 – 24 acres	
2020		Feral hog removal continued – 40 hogs removed
	March	Prescribed burn around public use facilities and parking area – 30 acres
2021		Feral hog removal continued – 49 hogs removed
	January	Mechanical vegetation reduction in Management Unit 5 – 75% paid for by FEMA grant
		Pine thinning in Management Units 5 & 6
		Prescribed burn in Unit 6 – 5 acres
	February	Prescribed burn in Unit 6 – 188 acres and 127 acres
		Prescribed burn in Unit 7 – 82 acres
March	Prescribed burn in Units 6 & 7 – 1,552 acres	
April	Prescribed burn in Unit 6 – 39 acres	
2022		Feral hog removal continued – 40 hogs removed
	May	Mechanical vegetation reduction Unit 5 – 78 acres
		Inclusion of 13 acres of county-owned right-of-way into the main portion of the natural area
September	Prescribed burn in Unit 6 – 28 acres	
2023		Ongoing mechanical vegetation reduction – Unit 5

Year	Month	Event
		Feral hog removal continued – 11 removed at time of management plan
	January	Prescribed burn in Unit 6 – 5 acres
	February	2 prescribed burns in Unit 5 – 100 acres and 148 acres
	May	2 prescribed burn in Unit 5 – 161 acres and 18 acres
	July	NAMAC Approval
		FCT Approval
		BCC Approval

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