MANAGEMENT PLAN FOR YAMATO SCRUB NATURAL AREA

October 2013

Lease No. 4176

Prepared by:

Palm Beach County
Department of Environmental Resources Management
2300 N. Jog Road, 4th Floor
West Palm Beach, Florida 33411-2743

ARC 4/11/14

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Land Management Plan Compliance Checklist

→ Required for State-owned conservation lands over 160 acres ←

Instructions for managers:
Complete each item and fill in the applicable correlating page numbers and/or appendix where the item can be found within the land management plan (LMP). If an item does not apply to the subject property, please describe that fact on a correlating page number of the LMP. Do not mark an "N/A" for any items below.

For more information, please visit the stewardship portion of the Division of State Lands' website at: http://www.dep.state.fl.us/lands/stewardship.htm.

Section A: Acquisition Information Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
1.	The common name of the property.	18-2.018 & 18-2.021	viii
2.	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	xvii
3.	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	1-7 to 1-10
4.	The legal description and acreage of the property.	18-2.018 & 18-2.021	Appendix D
5.	A map showing the approximate location and boundaries of the property, and the location of any structures or improvements to the property.	18-2.018 & 18-2.021	12-2, 12-7
6.	An **assessment** as to whether the property, or any portion, should be declared surplus. *Provide Information regarding **assessment and analysis** in the plan, and provide **corresponding map**.*	18-2.021	2-1
7.	Identification of other parcels of land within or immediately adjacent to the property that should be purchased because they are essential to management of the property. *Please clearly indicate parcels on a map.*	18-2.021	1-7
8.	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	1-4 to 1-6
9.	A statement of the purpose for which the lands were acquired, the projected use or uses as defined in 253.034 and the statutory authority for such use or uses.	259.032(10)	1-7, 2-1, 5-1 to 5-4
10.	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	1-1, 12-1

Section B: Use Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
11.	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	1-7
12.	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	1-3 to 1-4
13.	A description of alternative or multiple uses of the property considered by the lessee and a statement detailing why such uses were not adopted.	18-2.018	1-6 to 1-9
14.	A description of the management responsibilities of each entity involved in the property's management and how such responsibilities will be coordinated.	18-2.018	1-30, 4-1 to 4-2, 4-26 to 4-29, Appendix J
15.	Include a provision that requires that the managing agency consult with the Division of Historical Resources, Department of State before taking actions that may adversely affect archeological or historical resources.	18-2.021	3-37
16.	Analysis/description of other managing agencies and private land managers, if any, which could facilitate the restoration or management of the land.	18-2.021	4-4 to 4-5, 4-22 to 4-23
17.	A determination of the public uses and public access that would be consistent with the purposes for which the lands were acquired.	259.032(10)	5-1 to 5-4, 8-1

18.	A finding regarding whether each planned use complies with the 1981 State Lands Management Plan, particularly whether such uses represent "balanced public utilization," specific agency statutory authority and any other legislative or executive directives that constrain the use of such property.	18-2.021	8-1
19.	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	Appendix N
20.	An assessment of the impact of planned uses on the renewable and non-renewable resources of the property, including soil and water resources, and a detailed description of the specific actions that will be taken to protect, enhance and conserve these resources and to compensate/mitigate damage caused by such uses, including a description of how the manager plans to control and prevent soil erosion and soil or water contamination.	18-2.018 & 18-2.021	1-5 to 1-6, 4-23 to 4-26, 5-1
21.	*For managed areas larger than 1,000 acres, an analysis of the multiple-use potential of the property which shall include the potential of the property to generate revenues to enhance the management of the property provided that no lease, easement, or license for such revenue-generating use shall be entered into if the granting of such lease, easement or license would adversely affect the tax exemption of the interest on any revenue bonds issued to fund the acquisition of the affected lands from gross income for federal income tax purposes, pursuant to Internal Revenue Service regulations.	18-2.021 & 253.036	1-6 to 1-7, 2-3, 6-2
22.	If the lead managing agency determines that timber resource management is not in conflict with the primary management objectives of the managed area, a component or section, prepared by a qualified professional forester, that assesses the feasibility of managing timber resources pursuant to section 253.036, F.S.	18-021	1-6, 2-3
23.	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	1-6 to 1-7

*The following taken from 253.034(10) is not a land management plan requirement; however, it should be considered when developing a land management plan: The following additional uses of conservation lands acquired pursuant to the Florida Forever program and other state-funded conservation land purchase programs shall be authorized, upon a finding by the Board of Trustees, if they meet the criteria specified in paragraphs (a)-(e): water resource development projects, water supply development projects, storm-water management projects, linear facilities and sustainable agriculture and forestry. Such additional uses are authorized where: (a) Not inconsistent with the management plan for such lands; (b) Compatible with the natural ecosystem and resource values of such lands; (c) The proposed use is appropriately located on such lands and where due consideration is given to the use of other available lands; (d) The using entity reasonably compensates the titleholder for such use based upon an appropriate measure of value; and (e) The use is consistent with the public interest.

Section C: Public Involvement Items

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
24.	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	1-10 to 1-11, Appendixes F and G
25.	The management prospectus required pursuant to paragraph (9)(d) shall be available to the public for a period of 30 days prior to the public hearing.	259.032(10)	1-11, Appendix G
26.	LMPs and LMP updates for parcels over 160 acres shall be developed with input from an advisory group who must conduct at least one public hearing within the county in which the parcel or project is located. *Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.*	259.032(10)	1-10 to 1-11, Appendixes F and G
27.	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	1-10 to 1-11, Appendix G
28.	During plan development, at least one public hearing shall be held in each affected county. Notice of such public hearing shall be posted on the parcel or project designated for management, advertised in a paper of general circulation, and announced at a scheduled meeting of the local governing body before the actual public hearing. *Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.*	253.034(5) & 259.032(10)	1-10 to 1-11, Appendix G

29.	The manager shall consider the findings and recommendations of the land management review team in finalizing the required 10-year update of its management plan. *Include manager's replies to the team's findings and recommendations.*	259.036	1-10
30.	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	1-10
31.	If manager is not in agreement with the management review team's findings and recommendations in finalizing the required 10-year update of its management plan, the managing agency should explain why they disagree with the findings or recommendations.	259.036	1-10

Section D: Natural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
32.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. *Use brief descriptions and include USDA maps when available.*	18-2.021	3-1 to 3-4, 12-3
33.	Insert FNAI based natural community maps when available.	ARC consensus	3-6, 12-4
34.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding outstanding native landscapes containing relatively unaltered flora, fauna and geological conditions.	18-2.021	3-36
35.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding unique natural features and/or resources including but not limited to virgin timber stands, scenic vistas, natural rivers and streams, coral reefs, natural springs, caverns and large sinkholes.	18-2.018 & 18-2.021	3-36
36.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	3-6
37.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding mineral resources, such as oil, gas and phosphate, etc.	18-2.018 & 18-2.021	3-36
38.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding fish and wildlife, both game and non-game, and their habitat.	18-2.018 & 18-2.021	3-20, Appendix B
39.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding State and Federally listed endangered or threatened species and their habitat.	18-2.021	3-20 to 3-36, 13-1 to 13-3
40.	The identification or resources on the property that are listed in the Natural Areas Inventory. *Include letter from FNAI or consultant where appropriate.*	18-2.021	3-36 to 3-37, Appendix H
41.	Specific description of how the managing agency plans to identify, locate, protect and preserve or otherwise use fragile, nonrenewable natural and cultural resources.	259.032(10)	1-6 to 1-9, 2-1 to 2-6
42.	Habitat Restoration and Improvement	259.032(10) & 253.034(5) ↓	
42-A.	Describe management needs, problems and a desired outcome and the key management activities necessary to achieve the enhancement, protection and preservation of restored habitats and enhance the natural, historical and archeological resources and their values for which the lands were acquired.		2-1 to 2-3, 3-7. 3-17, 3-21 to 3-37, 4-1 to 4-26, 5-1 to 5-6, 7-1 to 7-4
42-B.	Provide a detailed description of both short (2-year planning period) and long-term (10-year planning period) management goals, and a priority schedule based on the purposes for which the lands were acquired and include a timeline for completion.		2-1 to 2-6, 5-6, 13-4
42-C.	The associated measurable objectives to achieve the goals.		2-2 to 2-6
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. *Include fire management plans - they can be in plan body or an appendix.*		4-1 to 4-29, 13-4, Appendix K

42-E.	A detailed expense and manpower budget in order to provide a management tool that facilitates development of performance measures, including recommendations for cost-effective methods of accomplishing those activities.		6-1 to 6-2 and 13-5
43.	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. *See footnote.*	253.034(5)	viii, xi, 3-6 to 3-19
44.	Sustainable Forest Management, including implementation of prescribed fire management	18-2.021, 253.034(5) & 259.032(10) ↓	
44-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		4-3, 4-5 to 4-10
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		2-2 to 2-3
44-C.	Measurable objectives (see requirement for #42-C).		2-2 to 2-3
44-D.	Related activities (see requirement for #42-D).		4-1 to 4-28, 13-4, Appendix K
44-E.	Budgets (see requirement for #42-E).		6-1 to 6-2, 13-5
45.	Imperiled species habitat maintenance, enhancement, restoration or population restoration	259.032(10) & 253.034(5) ↓	
45-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		3-20 to 3-36, 4-3 to 4-4
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		2-4
45-C.	Measurable objectives (see requirement for #42-C).		2-4
45-D.	Related activities (see requirement for #42-D).		4-5 to 4-25, 13-4
45-E.	Budgets (see requirement for #42-E).		6-1 to 6-2, 13-5
46.	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. *See footnote.*	253.034(5)	4-10 to 4-11
47.	Place the Arthropod Control Plan in an appendix. If one does not exist, provide a statement as to what arrangement exists between the local mosquito control district and the management unit.	BOT requirement via lease language	4-5
48.	*Exotic and invasive species maintenance and control*	259.032(10) & 253.034(5) ↓	
48-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		4-2 to 4-3, 4-10 to 4-16
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		2-4
48-C.	Measurable objectives (see requirement for #42-C).		2-5
48-D.	Related activities (see requirement for #42-D).		1-30 to 1-31, 4-10 to 4-16, 13-4
48-E.	Budgets (see requirement for #42-E).		6-1 to 6-2, 13-5

Section E: Water Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
49.	A statement as to whether the property is within and/or adjacent to an aquatic preserve or a designated area of critical state concern or an area under study for such designation. *If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.*	18-2.018 & 18-2.021	3-1
50.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding water resources, including water classification for each water body and the identification of any such water body that is designated as an Outstanding Florida Water under Rule 62-302.700, F.A.C.	18-2.021	3-4 to 3-6, 3-9, 4-24

51.	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding swamps, marshes and other wetlands.	18-2.021	3-5, 3-7 to 3-8, 4-24 to 4-25
52.	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. *See footnote.*	253.034(5)	viii, 3-7 to 3-8, 4-24 to 4-25
53.	Hydrological Preservation and Restoration	259.032(10) & 253.034(5) ↓	
53-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		2-5, 3-4 to 3-8
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		2-5
53-C.	Measurable objectives (see requirement for #42-C).		2-5
53-D.	Related activities (see requirement for #42-D).		4-23 to 4-25
53-E.	Budgets (see requirement for #42-E).		6-1 to 6-2, 13-5

Section F: Historical, Archeological and Cultural Resources

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
54.	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. *Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.*	18-2.018, 18-2.021 & per DHR's request	3-37 to 3-38
55.	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	1-32, 3-37 to 3-38
56.	A description of actions the agency plans to take to locate and identify unknown resources such as surveys of unknown archeological and historical resources.	18-2.021	1-32, 3-37 to 3-38
57.	Cultural and Historical Resources	259.032(10) & 253.034(5) ↓	
57-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		2-5
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		2-5
57-C.	Measurable objectives (see requirement for #42-C).		2-5
57-D.	Related activities (see requirement for #42-D).		1-32, 3-37 to 3-38
57-E.	Budgets (see requirement for #42-E).		6-1 to 6-2, 13-5

**While maps of Native American sites should not be included in the body of the management plan, the DSL urges each managing agency to provide such information to the Division of Historical Resources for inclusion in their proprietary database. This information should be available for access to new managers to assist them in developing, implementing and coordinating their management activities.

Section G: Facilities (Infrastructure, Access, Recreation)

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
58.	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. *See footnote.*	253.034(5)	3-6, 5-1 to 5-6, 13-5
59.	Capital Facilities and Infrastructure	259.032(10) & 253.034(5) ↓	
59-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		2-5 to 2-6, 4-3 to 4-4
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		2-5 to 2-6
59-C.	Measurable objectives (see requirement for #42-C).		2-5 to 2-6
59-D.	Related activities (see requirement for #42-D).		4-3 to 4-4, 13-4 to 13-5
59-E.	Budgets (see requirement for #42-E).		6-1 to 6-2, 13-5

60.	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	5-1 to 5-6, 12-7
61.	Public Access and Recreational Opportunities	259.032(10) & 253.034(5) ↓	
61-A.	Management needs, problems and a desired outcome (see requirement for # 42-A).		5-1 to 5-5
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		2-6
61-C.	Measurable objectives (see requirement for #42-C).		2-6
61-D.	Related activities (see requirement for #42-D).		2-6, 5-1 to 5-5, 13-4
61-E.	Budgets (see requirement for #42-E).		6-1 to 6-2 and 13-5

Section H: Other/ Managing Agency Tools

Item #	Requirement	Statute/Rule	Page Numbers and/or Appendix
62.	Place this LMP Compliance Checklist at the front of the plan.	ARC and managing agency consensus	ii to vii
63.	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	viii to xiv
64.	If this LMP is a 10-year update, note the accomplishments since the drafting of the last LMP set forth in an organized (categories or bullets) format.	ARC consensus	4-22 to 4-30, 5-1 to 5-6, 14-2 to 14-9
65.	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	13-4
66.	Summary budget for the scheduled land management activities of the LMP including any potential fees anticipated from public or private entities for projects to offset adverse impacts to imperiled species or such habitat, which fees shall be used to restore, manage, enhance, repopulate, or acquire imperiled species habitat for lands that have or are anticipated to have imperiled species or such habitat onsite. The summary budget shall be prepared in such a manner that it facilitates computing an aggregate of land management costs for all state-managed lands using the categories described in s. 259.037(3) which are resource management, administration, support, capital improvements, recreation visitor services, law enforcement activities.	253.034(5)	6-1 to 6-2 and 13-5
67.	Cost estimate for conducting other management activities which would enhance the natural resource value or public recreation value for which the lands were acquired, include recommendations for cost-effective methods in accomplishing those activities.	259.032(10)	6-1 to 6-2 and 13-5
68.	A statement of gross income generated, net income and expenses.	18-2.018	6-2

*** = The referenced inventories shall be of such detail that objective measures and benchmarks can be established for each tract of land and monitored during the lifetime of the plan. All quantitative data collected shall be aggregated, standardized, collected, and presented in an electronic format to allow for uniform management reporting and analysis. The information collected by the DEP pursuant to s. 253.0325(2) shall be available to the land manager and his or her assignee.

LAND MANAGEMENT PLAN EXECUTIVE SUMMARY (FOR ARC)

Lead Agency: Palm Beach County Department of Environmental Resources Management

Common Name of Property: Yamato Scrub Natural Area

Location: City of Boca Raton, Palm Beach County

Acreage: 217.12 acres (206.74 acres are State-owned; 10.38 acres are jointly owned by Palm Beach County and the City of Boca Raton)

Acreage Breakdown (rounded):

Natural Community	Acres	Natural Community	Acres
Scrub	136.6	Basin Marsh	6.8
Mesic Flatwoods	20.3	Disturbed Mesic Hammock	5.5
Scrubby Flatwoods	19.0	Developed Area	1.2
Disturbed Mesic Flatwoods	8.6	Canal	1.0
Mesic Hammock	8.1	Disturbed Hydric Hammock	0.9
Disturbed Scrub	8.7	Disturbed Scrubby Flatwoods	0.4

Lease/Management Agreement Number: 4176

Use: Single-use

Management Responsibilities

Agency: Palm Beach County is responsible for all management and maintenance activities, except for the maintenance of the El Rio Shared-Use Trail (El Rio Trail), public safety and law enforcement issues, and opening and closing of the parking lot gates. The City of Boca Raton is responsible for the maintenance of the El Rio Trail, public safety and law enforcement, and opening and closing of the parking lot gates

Responsibility: See delegation of responsibilities under “Agency” above.

Designated Land Use: The site is managed under the "single-use" concept, which means that it is managed to preserve and restore natural resource values. Scientific research, environmental education, and passive, resource-based recreation are encouraged as secondary management objectives as long as they do not jeopardize the protection of natural resources.

Sublease(s): None

Encumbrances: See Section 1.7

Type of Acquisition: Fee Simple Shared Acquisition – Conservation and Recreation Lands funds, Palm Beach County Environmentally Sensitive Lands Bond Referendum funds and City of Boca Raton Environmentally Sensitive Lands Bond Referendum funds

Unique Features

Natural**:** Within the context of Palm Beach County, the Pamlico Dune Ridge within the Yamato Scrub Natural Area should be considered a unique natural feature. Very few areas exist in the county where the Pamlico Dune Ridge can be viewed in a relatively unaltered state. The predominant natural community on the site is scrub, which is considered by the Florida Natural Areas Inventory to be imperiled both globally and in Florida. The Yamato Scrub is the southernmost large scrub in southeastern Florida. The natural area is managed to protect the natural resources on the site while allowing for passive outdoor recreation activities, scientific research and environmental education consistent with protection of those resources.

Archaeological/Historical: FDHR, which maintains the Florida Master Site File, shows three linear resources in the vicinity of the natural area – the L-40 Canal (8PB12923), the El Rio Canal (8PB12918) and the Seaboard Airline Railway (now the CSX Railroad, 8PB12917). Only one of these resources, the L-40 Canal, is located within a portion of the natural area.

Management Goals, Objectives and Actions

The goals for management of the Yamato Scrub Natural Area and the objectives identified to achieve those goals are listed in the following paragraphs and in Section 2.2 of the plan. Please refer to Section 5.6 and Table 3 of this management plan for recommended actions and priority schedule for proposed management and restoration activities. This ten-year management plan is based on the site conditions and available management resources that existed at the time the plan was developed and on anticipated future conditions and management resources. If site conditions and available management resources change significantly during the ten-year management planning cycle, it may become necessary to adjust the management plan's priority schedule and cost estimates to reflect those changing conditions and resources. Any significant changes will be reviewed by the County's Natural Resources Management Advisory Committee and appropriate City of Boca Raton personnel.

Natural Resource Management

Habitat Restoration and Improvement

Goal 1. Create a landscape mosaic of healthy scrub in various stages of regrowth that takes into account the historic vegetation of the site and the needs of the

listed species present, and that maximizes species diversity and habitat quality on the site (short-term and long-term).

Objective A *Burn the management units dominated by scrub at a 15- to 20-year interval to achieve a diversity of scrub successional stages.*

Objective B. *Follow the burn schedule provided in Table 3, and accelerate the schedule if weather conditions, funding opportunities and resources allow.*

Objective C. *Implement mechanical vegetative reduction of scrub habitat at 15- to 20- year intervals if fuel levels and smoke management and safety concerns result in extremely limited or unattainable prescribed burn conditions.*

Objective D. *Provide habitat for listed species that require early stages of scrub succession and those that require later stages by rotation burning of management units.*

Objective E. *Attempt to meet vegetation structure objectives recommended by the Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Natural Areas Inventory (FNAI) in the 2010 Scrub Management Guidelines for Peninsular Florida (FWC and FNAI 2010), or subsequent updated versions, with appropriate adjustments made based on the needs of imperiled species present on the site.*

Goal 2. **Maintain and enhance a healthy scrubby flatwoods community (short-term and long-term).**

Objective A. *Burn Unit 3 at an 8- to 15-year interval to maintain the scrubby flatwoods community on the site.*

Objective B. *Conduct a prescribed burn in Unit 3 in 2020.*

Objective C. *Follow the burn schedule provided in Table 3 and accelerate the schedule if weather conditions, funding opportunities and resources allow.*

Objective D. *Implement mechanical vegetative reduction of scrubby flatwoods habitat at 8- to 15-year intervals if fuel levels, and smoke management and safety concerns result in extremely limited or unattainable prescribed burn conditions.*

Goal 3. **Maintain and enhance a healthy mesic flatwoods community (short-term and long-term).**

Objective A. *Burn Unit 2 at a 5- to 8-year interval to maintain the mesic flatwoods community on the site.*

Objective B. *Conduct a prescribed burn in Unit 2 in 2014 and in 2021.*

Objective C. *Follow the burn schedule provided in Table 3.*

Objective D. *Implement mechanical vegetative reduction of mesic flatwoods habitat at 5- to 8-year intervals if fuel levels and smoke management and safety concerns result in extremely limited or unattainable prescribed burn conditions.*

Goal 4. **Maintain and enhance a healthy basin marsh community (short-term and long-term).**

Objective A. *Conduct a prescribed burn in Unit 3 in 2020.*

Objective B. *Follow the burn schedule provided in Table 3, and accelerate the schedule if weather conditions, funding opportunities and resources allow.*

Sustainable Forest Management

This management objective is not applicable to the Yamato Scrub Natural Area. The natural area does not contain commercial forest resources.

Imperiled Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration

Goal 1. **Protect and maintain imperiled species at existing population levels (short-term and long-term).**

Objective A. *Conduct prescribed burns in accordance with the schedule provided in Table 3 to maintain the diversity and health of the plant communities on the site.*

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

Objective C. *Conduct annual migratory and nonmigratory wildlife species, periodic gopher tortoise surveys and ongoing opportunistic surveys for all wildlife species observed on the natural area. Special care shall be taken to record all sightings of imperiled species, including those species identified as "focus species" by FWC.*

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, removal of eggs and nests, introduction or release of plants and animals, and prohibition of domestic animals and pets.*

Goal 2. **Increase populations of imperiled species present on the site or historically present on the site (long-term).**

Objective A. *Encourage local colleges and universities, governmental agencies and other appropriate entities to conduct research activities related to imperiled species present on the site, in order to obtain information useful for the management and maintenance of those species and their habitats.*

Objective B. *Assist botanical gardens, governmental agencies and other appropriate entities wishing to conduct restoration activities related to imperiled species present on*

the site or formerly present on the site, including reintroduction of those species where feasible.

Exotic and Invasive Species Maintenance and Control

Goal 1. Control nonnative (exotic) and invasive plant and animal species so that they do not significantly impact native communities (short-term and long-term).

Objective A. *Maintain coverage of invasive nonnative plant species at less than 1 percent of the natural area.*

Objective B. *Conduct annual nonnative plant treatments.*

Objective C. *Prevent excessive growth of invasive native vines with annual treatments or as needed.*

Objective D. *Monitor the site for domestic and feral cats, coyotes, and other nuisance nonnative animals during opportunistic observations and scheduled wildlife monitoring surveys, and remove/control the population of nonnative animals as necessary and feasible.*

Hydrological Preservation and Restoration

Goal 1. Evaluate the success (short-term and long-term) of the basin marsh restoration project.

Objective A. *Monitor water levels and vegetation in the restored basin marsh to determine if hydroperiods, water levels and vegetation within the wetland begin to resemble what is found in similar, intact wetlands on other natural areas in Palm Beach County. This information will be used to determine if any changes in management procedures are needed.*

Cultural and Historical Resources

Although three linear historical resources – the former Seaboard Airline Railway (8PB12917), Lateral Canal L-40 (8PB12923) and El Rio Canal (8PB12918) - have been identified within and/or adjacent to the natural area (Appendix I), none of these resources is managed by the County. The former Seaboard Airline Railway property that lies just east of the central and southern portions of the natural area is owned and managed by CSX Transportation. The L-40 Canal that runs through the central portion of the natural area and the El Rio Canal that runs along the western edge of the northern portion of the natural area are both managed by the LWDD. The activities proposed in this management plan will have no effect on these resources.

If any new cultural or historical resources are identified on the site, Florida Department of State, Division of Historical Resources (FDHR) management procedures will be followed in order to

protect these resources (Appendix I). Any archaeological investigations that are proposed for the state-owned portion of the site will require a 1A-32 permit from FDHR prior to their commencement.

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 on a regular basis, including the parking lot and other paved areas, kiosks, signs, concrete nature trail, boardwalk bridges, portable restroom, fencing and gates.
Objective B. Close unsafe areas to the public immediately upon the detection of a problem.
Objective C. Replace damaged fencing and signage as soon as possible.
Objective D. Replace cracked/damaged infrastructure within six months of detection.

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

Objective A. Conduct volunteer site cleanup events at least annually.
Objective B. Maintain public use facilities weekly (cleaning of concrete nature trail, portable restroom, etc.) or on an as-needed basis.
Objective C. Mow management accessways and firebreaks on an as-needed basis.
Objective D. Continue to paint over or remove graffiti in the tunnel under Clint Moore Road at least annually.

Public Access and Recreational Opportunities

Goal 1. Continue to provide passive, resource-based public access and recreation opportunities within the natural area (short-term and long-term).

Objective A. Install remaining signage needed adjacent to El Rio Trail and at pedestrian walk-through entrance to natural area from El Rio Trail.
Objective B. Periodically monitor the part of the natural area adjacent to the El Rio Trail to identify any adverse impacts on the site related to use of the Trail.
Objective C. Plant native vegetation along the El Rio Trail in 2014 and 2015 to encourage natural revegetation of the area and enhance the visual experience of trail users.
Objective D. Provide additional public access and amenities by installing a pedestrian maze gate and benches at the north entrance to the tunnel under Clint Moore Road.

Ten-Year Implementation Schedule and Cost Estimates: See Tables 3 and 4, Section 5.6, and Chapter 6.

Acquisition Needs/Acreage: None

Surplus Lands/Acreage: No lands are considered surplus to the needs of the site.

Public Involvement: Public involvement was solicited at regularly-scheduled meetings of the Palm Beach County Natural Areas Management Advisory Committee on August 16, 2103, September 20, 2013 and November 22, 2013, at an advertised open house and public hearing on November 14, 2013, at a regularly-scheduled meeting of the Palm Beach County Board of County Commissioners on December 17, 2013, and at the Acquisition and Restoration Council Meeting at which the plan was reviewed.

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 on the basis of their biological characteristics and were 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 historic native ecosystems and their biological diversity throughout Palm Beach County. Examples of each ecosystem shall be acquired and managed to preserve in perpetuity the full complement of plants and animals characteristic of that ecosystem. The management of each natural area shall be coordinated with that of the other natural areas in the system to support existing populations and to reflect in perpetuity the subtropical biological diversity characteristic of Palm Beach County in pre-development times.*

- *The wilderness values of each natural area shall be preserved.*

- *Where a natural area currently is physically or biologically connected to another publicly- or privately-owned natural area, attempts shall be made to maintain that connection through additional land acquisitions, regulatory preserve set-asides, conservation easements, interlocal agreements, and other appropriate actions.*

Management Considerations

- *The natural areas in the system shall be available to the public for passive, resource-based recreation, environmental education, and scientific research. Public use shall not take precedence over ecosystem protection. Proposed public uses shall take into account the specific environmental conditions of each natural area, and may be modified in response to changing environmental conditions.*

- *Facilities for passive public use shall be provided on each site. These facilities shall be designed to have a minimal impact on native ecosystems and shall be located in previously disturbed areas as much as possible.*

- *Facilities, structures, or roads other than management or access roads that would cause fragmentation of a natural area shall not be permitted within a natural area.*

- *The establishment of compatible land uses and activities on lands adjacent to a natural area shall be encouraged.*

- *To the extent possible, fire-maintained native ecosystems shall be burned at the appropriate interval and season, as determined by historical data, to maintain those ecosystems. Burns shall be conducted by trained personnel, using a prescribed burn plan that addresses safety and smoke concerns. The seasonality of prescribed burns may be adjusted for initial fuel reduction burns and site safety constraints.*

- *Where ecosystems within a natural area have been impacted by invasive, nonnative plant infestations, land-clearing activities, drainage, or flooding, attempts shall be made to restore those ecosystems to their previous condition or to a natural ecosystem best suited to the existing conditions on the natural area.*

- *The special requirements of listed species shall be considered in developing management strategies for each natural area, but management for an individual species 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 specific management plan, based on biological, hydrological, and historical information and interpretation of this information, shall be written for each natural area that takes into account the environmental conditions found on that natural area.*

- *Each management plan shall address the strategies and techniques that will be used to manage and restore native ecosystems, to protect listed species, control the occurrence of invasive, non-native plants and animals, to allow for appropriate public access, and to 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 review of the comments received, the plan shall be sent to the Board of County Commissioners for approval.*

- *Each approved plan shall be subsequently reviewed at least every ten years by NAMAC.*

EXECUTIVE SUMMARY (FOR PALM BEACH COUNTY)

The 217.12-acre Yamato Scrub Natural Area is located within the northern portion of the City of Boca Raton. Palm Beach County (County) leases 206.74 acres from the State of Florida and jointly owns the remaining 10.38 acres of the site with the City of Boca Raton (City). This site was acquired in two purchases in 1994 and 1997. County funds for the acquisitions were provided from the sale of bonds authorized by the Palm Beach County Environmentally Sensitive Lands Bond Issue Referendum of March 12, 1991. City funds were provided from the sale of bonds authorized by the City of Boca Raton Environmentally Sensitive Lands Referendum of October 12, 1991. State Preservation 2000 matching funds for acquisition of the 207-acre tract were provided through the Conservation and Recreation Lands Program. Acquisition of this natural area has assisted Palm Beach County and the City of Boca Raton in implementing several policies within their respective comprehensive plans.

Scrub, scrubby flatwoods, mesic flatwoods, mesic hammock and basin marsh are the predominant natural communities present on the site. The site also contains a few small areas of hydric hammock and canal. The natural area contains important habitats for many rare and/or endemic plant and animal species. Thus far, 12 plant and 29 animal species recorded at the site have been listed as having some degree of endangerment by at least one government agency or the Florida Natural Areas Inventory.

The primary objective for management of this site is to ensure the preservation of high-quality scrub, scrubby flatwoods, mesic flatwoods, mesic hammock, basin marsh and hydric hammock vegetative communities and their associated wildlife populations. The secondary objectives are to provide for passive recreation, environmental education and scientific research consistent with protecting the natural resources of the natural area.

Fire exclusion and suppression, draining of wetlands by lowering groundwater levels, nonnative plant invasion, dumping, construction of adjacent roads and buildings, excess fill placement and off-highway vehicle traffic have all impacted the site. These factors must be dealt with in the management of the natural area. In addition, the site managers face special challenges unique to fragmented natural communities located within urban and suburban environments.

To protect the natural vegetation communities and wildlife of the site, public use must remain limited to passive, nonconsumptive recreation; environmental education; and scientific study. Public use facilities were constructed on the site and were opened to the public in 2007. An accessible nature trail, hiking trails and kiosks with interpretive displays provide valuable opportunities for the public to observe the site's distinctive plant communities and associated animals and to appreciate their biological uniqueness. Parking facilities are provided on the north side of Clint Moore Road. Opportunities for pedestrian access to the site are provided by the multiuse El Rio Trail, a portion of which runs inside the western boundary of the site, and by an accessible trail that connects with a sidewalk on the north side of Clint Moore Road.

Local schools are invited to use the natural area for nature study, environmental education, and community service projects. The volunteer program of the County's Department of Environmental Resources Management provides opportunities for people from local citizen's organizations, schools and businesses, and members of the general public to learn about the natural area through firsthand experience removing nonnative plants and trash, and through participating in restoration activities such as planting projects. Scientific research permitted on the site includes monitoring of populations of rare and/or endemic species and evaluation of restoration and management techniques.

It is anticipated that the Florida Fish and Wildlife Conservation Commission will include the site in the South Section of the Great Florida Birding and Wildlife Trail when that section of the trail guide is updated. The sites that form the trail were chosen for the excellent birding, wildlife viewing and/or environmental educational opportunities they provide.

The 2001 initial management plan for the site was revised during the period 2012-2013 to provide updated information on the management strategies used to protect, maintain, restore and enhance the biological communities on the site, and on public use facilities constructed and still proposed for the site. An annual stewardship report is provided each year to the Division of State Lands of the Florida Department of Environmental Protection. The management plan is reviewed at least once every ten years by the County's Natural Areas Management Advisory Committee and revised as necessary on the basis of new information, improvements in management techniques or other relevant factors.

Based on a review of annual stewardship reports from the period 2000 through 2013, listed species populations have remained stable within a normal range of fluctuation, the initial nonnative plant control work has been completed and the basin marsh restoration project has been completed. The prescribed burn program is behind schedule because the weather conditions required to burn in compliance with the very restrictive burn prescriptions for the individual management units have not been available. However, fuel loads in five management units have been reduced by mechanical chopping of vegetation to lessen the probability of a wildfire occurring. Monitoring activities are conducted on the site on a regularly-scheduled basis, and volunteer events are scheduled periodically to encourage members of the public to assist with site management activities. There have been several incidents of vandalism, illegal dumping, trespass and other unauthorized activities, but none of these has had a significant effect on the natural area. These issues are addressed in this first ten-year revision of the management plan, along with the actions that have been taken to deal with them. The next scheduled review of the plan by the Acquisition and Restoration Council will be in 2024.

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1. INTRODUCTION

1.1 LOCATION AND DESCRIPTION

The 217-acre Yamato Scrub Natural Area (natural area) is located in the northern portion of the City of Boca Raton (City) in Palm Beach County (County) (Figure 1). The Atlantic Ocean is located approximately 1.6 miles east of the natural area. The Arthur R. Marshall Loxahatchee National Wildlife Refuge is 8.5 miles to the west, the Everglades Wildlife Management Area (Water Conservation Area 2A) is 13 miles to the southwest, and the Lantana Scrub Natural Area, which is owned by the State of Florida (State) and managed by the County, is 12 miles to the north. There are no other federal- or state-owned parks or water resources within 15 miles of the natural area. County-managed natural areas in the vicinity include the Delray Oaks Natural Area, 0.7 mile to the north; Seacrest Scrub Natural Area, 5.5 miles to the north; and Pondhawk Natural Area, 1.5 miles to the southwest. The Leon M. Weekes Environmental Preserve in Delray Beach, located 1.2 miles northeast of the natural area, is owned jointly by the County and the City of Delray Beach and managed by the City of Delray Beach.

Palm Beach County parks in the vicinity, listed from north to south, are Caloosa, Green Cay Nature Center and Wetlands, Lake Ida, Morikami, South County Civic Center/Governor Lawton Chiles Memorial, and South Inlet. The County's Water Utilities Department owns and operates Wakodahatchee Wetlands, located approximately 5 miles northwest of the natural area; this site contains approximately 50 acres of created wetlands that are used to help remove excess nutrients from reclaimed, treated water. It also provides habitat for many species of birds and is a popular birding location. Green Cay Nature Center and Wetlands has 100 acres of similarly-created wetlands that receive treated wastewater.

Robert P. Miller Park, located immediately north of the Leon M. Weekes Environmental Preserve, Atlantic Dunes Park, and the Delray Municipal Beach in Delray Beach are operated by the City of Delray Beach's Parks and Recreation Department. Patch Reef, Countess deHoernle Park, Spanish River, James A. Rutherford, Red Reef, South Beach and Sugar Sand Parks and the Gumbo Limbo Nature Center in Boca Raton are operated by the Greater Boca Raton Beach and Park District, which manages these facilities and a number of city-owned nature preserves and smaller parks designed for active recreational use. Deerfield Island Park, a nature-themed park owned and managed by Broward County that has been designated as an Urban Wilderness Area and a Gopher Tortoise Refuge (Broward County Parks and Recreation Department undated), is located approximately 5.3 miles to the south in Broward County. Larger parks that are located close to the natural area are shown on Figure 1.

The natural area contains 217.12 acres. The State owns 206.74 acres purchased from Boca Commerce Center Associates, Inc. (the Boca Commerce Center tract), which are managed by the County, and the City and County jointly own and manage the 10.38-acre Knight Investments, Inc. (Knight) tract (Figure 2). Legal descriptions for the two tracts are provided in Appendix D.

The natural area is divided into a northern tract and a southern tract by Clint Moore Road (Figure 2). The northern tract is bordered on the north by a portion of Congress Avenue, a four-lane divided highway, portions of the Boca Commerce Center industrial park, and the US Foods distribution center; on the east by NW 6th Avenue, the US Foods distribution center, the CSX Transportation (CSX) railroad tracks (formerly the Seaboard Airline Railway, Florida Master Site File 8PB12917) and Interstate 95; on the south by Clint Moore Road, a four-lane divided highway that narrows to two lanes east of the natural area; and on the west by the Lake Worth Drainage District's (LWDD) E-4 Canal (Florida Master Site File 8PB12918), also known as the El Rio Canal in the Boca Raton area. Immediately to the west of the El Rio Canal, between Congress Avenue and Clint Moore Road, are a Costco warehouse club, a Florida Power and Light (FPL) transmission facility and a Southern Self-Storage facility.

LWDD's L-40 Canal (Florida Master Site File 8PB12923) runs east-west across the northern tract. The portion of the site south of the L-40 Canal is separated into two areas by the Boca Raton Shrine Club property. FPL's Boca Teeca substation is located on the south side of the L-40 Canal, adjacent to the railroad.

The southern tract is in one contiguous piece. It is bordered on the east by the CSX railroad tracks and I-95 and on the south and west by the Arvida Park of Commerce.

The natural area is composed of a variety of landforms and former wetlands. The upland portions of the site exhibit a low to moderate amount of relief. According to topographical maps prepared by the United States Geological Survey (USGS) and the Treasure Coast Regional Planning Council (TCRPC), elevations in the site historically ranged from a low of around 10 feet NGVD (National Geodetic Vertical Datum) in the former central wetland to a maximum elevation of 30 feet NGVD in the southwestern portion of the site (USGS 1962; TCRPC 1984). As a result of the wetland restoration project, ground elevations within the restored basin marsh now range from 3 to 7 feet NGVD. Elevations west of the historic wetland are generally less than 15 feet NGVD (TCRPC 1984).

The highest elevations in the natural area are associated with an upland ridge that borders the northern and eastern edges of the former wetland area. The ridge, which was historically shaped in the form of a "7," ran along the northern boundary of the natural area. The ridge then exited the natural area, continuing in an easterly direction through the Boca Commerce Center industrial park to a point just east of present-day I-95, before turning south where it re-entered the natural area to form the east-central and southern portions of the site. The portions of the ridge that were outside of the natural area have been altered by development; the portions of the ridge that lie within the boundaries of the natural area are relatively untouched. The portion of the ridge that makes up the northern border of the natural area is lower in elevation (maximum elevation is approximately 16 feet NGVD) than the portion of the ridge that lies in the east-central and southern portions of the site (maximum elevations range from 20 to 30 feet NGVD).

1.2 PAST USES

The Yamato Scrub 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 way. Clearing, grading and dumping of canal spoil material have created disturbed areas along the edges of the canal rights of way, and small areas of disturbed scrub were created as a result of clearing and filling activities along the edges of the Clint Moore Road right of way. Otherwise, the past uses of the site have caused mostly temporary and/or minor problems on small areas scattered throughout the site. Some minor levels of logging and hunting may have occurred on the site from pioneer times to the 1970s, but it does not appear that the site ever contained large stands of slash pine (*Pinus elliottii*) or large populations of game species. OHV traffic had caused some damage to the mesic flatwoods and former basin marsh communities in the northern portion of the site, and to certain portions of the scrub and scrubby flatwoods communities. Perimeter disturbances associated with construction of drainage canals, a railroad and roads, and the development of adjacent industrial and commercial properties began in the 1910s and 1920s, and continues today.

The portion of the El Rio Canal that lies adjacent to the natural area was dug by the Model Land Company in 1913; a dirt road was constructed along the western edge of the canal (Barry 2013a). The El Rio Canal later became part of the LWDD system; it was maintenance dredged for the first time in 1922 (Barry 2013a). The El Rio Canal was improved in the 1940s to provide better drainage for the Boca Raton Army Air Field (Barry 2013a). In November 1920, the LWDD dug an approximately 1,400-foot-long, narrow canal that ran eastward from the El Rio Canal to a point just west of the north-south scrub ridge that runs through the present-day natural area (Barry 2013b). This was the predecessor to the L-40 Canal. The remainder of the canal was merely a poorly-maintained swale from the 1920s until 1984 when the LWDD obtained sufficient right of way to widen and deepen the portion of the canal that lies east of the El Rio Canal to its current configuration (Barry 2013b; U.S. Coast and Geodetic Survey [USCGS] 1930). These two canals significantly lowered the water table within the natural area and converted the former basin marsh area to a disturbed upland habitat. Over the years, excess fill dredged from the canals was placed in the natural area in linear strips immediately adjacent to the canal rights of ways. Some spoil that was placed along the edge of the canal rights of way was removed a few years following the acquisition of the natural area; the remainder of the spoil was removed during a restoration project in 2005 and 2006.

The railroad tracks which lie just east of the natural area were constructed by the Seaboard Air Line Railroad (predecessor to CSX Transportation) in November and December 1926 (Goolsby 2013). Construction of the Boca Teeca electrical substation began in 1968 (USDA 1968); transmission lines and access roads associated with this substation pass through portions of the site. Congress Avenue and Clint Moore Road were built in the early and mid 1970s (USGS 1974), respectively, and widened in the 1980s. Illegal dumping over many years resulted in the accumulation of significant amounts of trash and construction debris on the site, including more

than 1,000 used tires deposited along the old jeep trail that led east from Congress Avenue, south into the natural area. Most of the debris in this area and on the remainder of the site was removed prior to acquisition of the site; the remainder of the debris was removed during volunteer site cleanup events. Construction of adjacent industrial buildings began in the early 1980s in the Arvida Park of Commerce and in the mid 1980s in the Boca Commerce Center (Palm Beach County Property Appraisers Office 1984a and 1984b). The Boca Raton Shrine Club built its adjacent facility on the north side of Clint Moore Road in 1994. A detailed account of past uses and disturbances is provided in Section 1.9, Site History.

1.3 ADJACENT LAND USES

Both tracts in the natural area are designated N (Conservation) on the 2035 Future Land Use Map adopted by the City Council in 2010 as part of the 2010 Comprehensive Plan (City of Boca Raton 2010a). This category designates land within the City that has been protected due to vegetation or wildlife habitat. The area north and east of the natural area and east of Congress Avenue is designated as IM (Manufacturing Industrial). It contains the US Foods distribution center, warehouses in the Boca Industrial Park, the Homestead hotel and several commercial buildings. The lands just north of the natural area, from Congress Avenue west to the El Rio Canal are designated PM. It contains the Beacon Square Corporate Center business park.

The area immediately west of the Knight tract is designated IM; it contains a Southern Self Storage facility. The area between the storage facility and Congress Avenue contains a gas station/convenience store designated IM and veterinary clinic designated C. The Boca Raton Shrine Club tract north of Clint Moore Road and the FPL substation just south of the L-40 Canal are both designated IM.

All of the area south of Clint Moore Road and west of the natural area is designated PM. This area contains the Arvida Park of Commerce, an 850-acre multi-use complex that contains light industry facilities, warehouses, office buildings, and several hotels. It also contains the South Congress Industrial Center, another large multi-use complex, which is located west of Congress Avenue.

The eastern boundary of the natural area is the CSX railroad tracks, which lie between the natural area and I-95. I-95 is designated PI (Public Institutional). The area just east of I-95 and north and south of the L-40 Canal contains a mixture of single-family and multi-family residential areas, as well as a few golf courses. Future Land Use designations in this area include RL (Residential Low), RM (Residential Medium Density), RH (Residential High) and PR (Recreation and Open Space). Residential developments within this area include Hidden Valley Country Club, Hidden Lake, Boca Teeca, San de Vance Golf and Tennis Club, Delray Manors, and Boca Lake Estates.

The area north of the L-40 Canal and west of the El Rio Canal lies in Palm Beach County. The part between the natural area and Congress Avenue is designated CH/5 (Commercial High, with

an underlying MR-5 [Medium Residential, 5 units per acre] designation) in the County's Future Land Use Atlas (Palm Beach County Planning, Zoning and Building Department 2012). It contains a Costco warehouse club, which includes gas pumps, and an FPL facility. The area just west of Congress Avenue is designated MR-5. The eastern part contains the Boca Golf and Tennis Country Club and the southern part contains the Pheasant Walk community.

The zoning designation on the City of Boca Raton's 2012 District Zoning Map (City of Boca Raton 2012) for both tracts in the natural area is PL (Public Lands). The areas east of Congress Avenue, and just north and east of the natural area are zoned M3 PID (Manufacturing, Planned Industrial Development). All of the areas west of Congress Avenue, and just north of the natural area are zoned M3, except for a water retention area which is zoned M3 PID. East of Congress Avenue and north of Clint Moore Road, the gas station, the Southern Self Storage facility, the FPL substation, and the Boca Raton Shrine Club are zoned M3; the veterinary clinic is zoned C1 (Commercial). Most of the parcels south of Clint Moore Road and east of Congress Avenue are zoned LIRP (Light Industrial Research Park), however, a few are zoned W1 (Warehouse).

The residential communities that lie just east of I-95 and north of the L-40 Canal are zoned R1D (One Family Dwelling, 1,250 square feet), although a small undeveloped strip in the western part of the Hidden Valley complex is zoned R1A (One Family Dwelling, 2,200 square feet). The condominium communities east of I-95 and south of the L-40 Canal are either zoned R3 or R3C (Residential Multiple-Family). The single-family residential communities located south of the L-40 Canal are zoned R1D. The associated golf courses are zoned REC (Recreation) and the overall developments are zoned PUD (Planned Unit Development).

In the area north of the L-40 Canal and west of the El Rio Canal Avenue that lies in Palm Beach County, the FPL substation is designated AR (Agriculture Residential), the Costco wholesale facility is designated CG (Commercial General), and the Boca Golf and Tennis Club and Pheasant Walk residential communities are designated PUD and RS (Residential Single Family) (Palm Beach County Planning, Zoning and Building Department 2013).

Both direct and indirect impacts from adjacent and nearby land uses are to be expected. The biggest threats posed by frontage on Clint Moore Road and Congress Avenue are invasion of the site by nonnative plant species growing in the road rights of way, dumping, and animal mortality from vehicular traffic. Adjacent and nearby commercial, industrial and residential developments also may be a threat to the natural area in that they contain nonnative plants that act as a seed source which could allow the plants to invade the natural area.

The Costco fueling facility east of Congress Avenue, the gas station on the northeast corner of the intersection of Congress Avenue and Clint Moore Road, and large ethanol and diesel fuel oil storage tanks at the southern Biotest Pharmaceuticals Corporation building just west of the southern portion of the natural area have the potential to adversely impact the groundwater resources at the natural area. Groundwater impacts could occur from a large fuel spill or from a leaking underground petroleum storage tank system. However, storage tank compliance

inspections performed by Palm Beach County Department of Environmental Resources Management (ERM) inspectors and secondary containment systems have greatly reduced the potential for fuel spills and leaks from petroleum and other storage tank systems. The presence of the above-ground storage tanks on the Biotest Pharmaceuticals Corporation property will also make it more difficult to conduct prescribed burns in the southern portion of the natural area.

Domestic and feral cats (*Felis catus*) and dogs (*Canis lupus familiaris*) can cause wildlife mortality. The number of domestic animals likely to enter the site is anticipated to be low, since most of the site is bordered by commercial and industrial facilities, not residential developments. Ongoing efforts to mitigate for any impacts associated with domestic animals include an aggressive nonnative species control program, public outreach, volunteer and interpretive programs, and enforcement of the Palm Beach County Natural Areas Ordinance (Chapter 11, Article XI of the Palm Beach County Code; Appendix E) provision concerning the prohibition of domestic animals and pets on the natural area.

1.4 USES THAT ARE NOT APPROPRIATE

Public uses on county natural areas such as the Yamato Scrub Natural Area are regulated by the Palm Beach County Natural Areas Ordinance (Natural Areas Ordinance) which was adopted by the County's Board of County Commissioners (BCC). This ordinance provides for passive recreational activities such as hiking, nature study, and photography; fishing in designated areas; environmental education; and scientific research. It prohibits destructive uses such as off-highway vehicle use, dumping, and poaching of plants and animals, and requires special permits for camping, horseback riding, scientific research involving collection of plant and animal specimens or the use of watercraft in wetlands, and nighttime use of the natural area.

There are no plans for any concessions or support services to be located on the site, nor are there plans to provide a camping 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 given the large area it would impact and the imperiled status of many of the upland natural communities on the site. Horseback riding is not appropriate because of the loose soils found at this site and because the site is located in an urban area far from equestrian communities. Trapping and hunting are prohibited by the Palm Beach County Natural Areas Ordinance (Chapter 11, Article XI of the Palm Beach County Code; Appendix E), and the site does not contain significant populations of game or fish species. Mountain bicycle usage of the site is prohibited by the Natural Areas Ordinance, and there will be no bicycle access to the site from the El Rio Shared-Use Trail (El Rio Trail) on the western edge of the natural area except via the sidewalk and bicycle lanes on Clint Moore Road. There are no navigable waters on the site, so there is no need to accommodate boating uses. There are no other alternative activities that were considered but not adopted as acceptable uses for the natural area.

1.5 OUTPARCELS

An 8.72-acre parcel adjacent to the southern tip of the natural area that was within the original state Conservation and Recreation Lands (CARL) program project boundary is still undeveloped and contains good-quality scrub vegetation. This parcel was purchased by Biotest Pharmaceuticals Corporation (Biotest Pharmaceuticals) in 2007, along with two adjacent parcels to the west, for $30,272,000. The 8.72-acre parcel is designated as Environmentally Sensitive Lands on the Natural Areas Map in the City's Comprehensive Plan (City of Boca Raton 2010b), however, the current Future Land Use designation for the parcel is PM and the current zoning designation is W1. Only the western portion of one of the other two Biotest Pharmaceuticals parcels has been developed. The eastern portion of this parcel, which adjoins the 8.72-acre parcel, still contains good-quality scrub vegetation. Although this area is designated as Preserve on the City's Natural Areas Map (City of Boca Raton 2010b), there was no formal designation of such a preserve for this portion. The current Future Land Use designation for this parcel is PM and the current zoning designation is LIRP. Both of the undeveloped scrub areas are located within the Arvida Park of Commerce, which is exempt from the City's set-aside requirement since approvals for the development were obtained prior to adoption of the City's Comprehensive Plan, and therefore could be developed.

1.6 MANAGEMENT CONSTRAINTS

The natural area is managed under the single-use concept by Palm Beach County, and therefore has no multiple-use potential for revenue generation. The Board of Trustees of the Internal Improvement Trust Fund (TIITF) of the State of Florida (State) holds a 100 percent title interest in the 206.74 acres of the natural area that were purchased with state Preservation 2000 matching funds through the CARL program as a joint city/county/state acquisition. The state-owned portion of the site is managed under the constraints imposed by the 50-year state management lease (lease no. 4176) from TIITF to Palm Beach County. This lease runs until the year 2047. The lease provisions require that the County manage the leased premises only for the conservation and protection of natural and historic resources and for resource-based public outdoor recreation that is compatible with the conservation and protection of these public lands, as set forth in subsection 253.023(11), Florida Statutes.

The County prepared an initial management plan for the leased premises that was in accordance with Chapters 18-2 and 18-4 of the Florida Administrative Code (FAC) and contained the information required under Section 259.032, F.S. The initial plan was approved by the Division of State Lands (DSL) of the Florida Department of Environmental Protection (FDEP) on October 6, 2001. The management plan was amended on December 14, 2009 to include the El Rio Trail (Appendix M). This management plan is the first revision of the initial management plan. The next revision to the plan will be due in 2024.

The most significant management constraint on the natural area is the requirement to protect rare and endangered plants, animals and ecosystems. The size, shape, and location of the natural area

do not restrict certain management activities such as nonnative and invasion vegetation removal, or upland restoration activities. These factors do, however, limit what can be done on the site relative to the reintroduction of fire and the restoration of former wetland areas. The site's proximity to the CSX railroad tracks, Interstate 95 and other major roads, and above-ground ethanol and diesel fuel oil storage tanks on the Biotest Pharmaceuticals property severely limit many of the options for prescribed burning, whereas the site's proximity to the El Rio and L-40 canals, and the need to provide drainage for developments east of I-95 severely limit what can be done to restore the hydrology of the site. The portions of the site on which public use facilities have been constructed historically were wetlands, but are now uplands and are not susceptible to flooding because of a regional drawdown of the water table by the drainage canal network. There are no other known legislative or executive constraints that affect the development 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.

Although the surrounding industrial, commercial and residential uses do not directly conflict with the management of the natural area, they are a source of invasive nonnative plant and domestic pet incursions, and complicate prescribed burn management. The need to convey drainage water from the Hidden Valley Country Club, Hidden Lake, Boca Teeca, San de Vance Golf and Tennis Club, Delray Manors and Boca Lake Estates developments through the site via the L-40 Canal conflicts with the goal of wetland restoration, since the drainage canal draws down adjacent former wetlands on the natural area. Clint Moore Road and Congress Avenue are major divided thoroughfares and are a significant cause of animal mortality from vehicular traffic.

In December 2012 the lease was amended to include a 32.57-acre state-owned tract located at the 150-acre A.G. Holley State Hospital campus in Lantana, FL. This tract had been identified by the County's Environmentally Sensitive Lands Acquisition Advisory Committee (ESLAAC) as having high priority for acquisition with funds from the 1991 Environmentally Sensitive Lands Acquisition bond referendum, but was not able to be acquired, and those funds were expended. In 2004 the Florida Department of Health (DOH), in conjunction with the Town of Lantana, began to develop a master plan for the A.G. Holley campus. The master plan included preservation of approximately 35 acres of Florida scrub to be managed by ERM. In 2011 the Legislature authorized the closure of the hospital and the surplusing of the A.G. Holley property. ERM was able to negotiate the preservation of the scrub tract for environmental purposes. The lease for the Yamato Scrub was then amended to include management of the 32.57-acre tract, which is now known as the Lantana Scrub Natural Area. The lease amendment contains a provision that would allow DOH to relocate gopher tortoises (*Gopherus polyphemus*) from lands leased to DOH under a separate lease (lease no. 2603) to the 32.57-acre tract, if such relocation is permissible under current state law at the time of the relocation. A site-specific management plan will be developed for the Lantana Scrub Natural Area prior to the development of any public use facilities on that site.

The County also manages the natural area under the constraints of the Palm Beach County Natural Areas Ordinance (Chapter 11, Article XI of the Palm Beach County Code; Appendix E). This ordinance regulates public uses on county-managed natural areas. This ordinance provides for passive recreational activities such as hiking, nature study, and photography; fishing in designated areas; environmental education; and scientific research. It prohibits destructive uses such as off-highway vehicle use, dumping, and poaching of plants and animals, and requires special permits for camping, horseback riding, scientific research involving collection of plant and animal specimens or the use of watercraft in wetlands, and nighttime use of the natural area. No dogs, cats, or other domestic animals are permitted on the natural area. Chapter 14 of the Code of Ordinances of Boca Raton, Florida also prohibits dumping.

1.7 EASEMENTS, CONCESSIONS AND LEASES

There are nine easements on the natural area - five on the state-owned tract and four on the city- and county-owned tract. There also is a restrictive covenant over the city- and county-owned tract.

FPL has a 36-foot utility easement along the southern border of the L-40 Canal in the state-owned tract. The westernmost 50 feet of this easement is 65 feet wide. This easement contains an electrical transmission line and is used primarily for access to the Boca Teeca substation; it contains a 12-foot-wide shellrock road that is accessed via the Boca Raton Shrine Club property. The City of Boca Raton has a 15-foot utility easement along two portions of the northern border of Clint Moore Road that contains a water force main. FPL has an easement for an electrical distribution line that runs along the eastern 10 feet of the state-owned tract from the L-40 Canal to the US Foods property and a 2,250-square-foot easement on the north side of the L-40 Canal, approximately 823 feet west of that 10-foot easement, for a power pole and guy anchor. FPL also has a 500-square-foot easement on the south side of Clint Moore Road, 25 feet west of the right of way for the railroad.

There is an easement for the LWDD L-40 Canal on the northern 82 feet of the city- and county-owned tract. Immediately south of the LWDD easement is a 20-foot FPL easement for an electrical transmission line. There is another FPL easement on the western 12 feet of this tract, but it appears to be unused because all of the power poles are located west of the easement. In May 2012 ERM requested that FPL release this easement, but FPL was not willing to do so. A 10-foot utility easement runs along the southern border of the tract just north of the Clint Moore Road right of way. There also is a restrictive covenant over the former Knight tract – if any portion of the tract is ever used for a purpose other than for a public nature preserve, the tract will be controlled by the Declaration of Covenants and Restrictions for Arvida Park of Commerce East, as amended.

There also is an easement on an adjacent property that provides access to the northeastern portion of the state-owned tract. In 2009, US Foods granted the State a perpetual, 10-foot-wide, non-exclusive utility and a 0.116-acre access easement along an abandoned section of the right

of way of NW 6th Avenue. This easement allows for the installation of utilities to the natural area and allows management vehicles to access the natural area from Congress Avenue using NW 6th Avenue as an access route.

The only other encumbrances on the natural area at the time of its acquisition were several old TIITF deeds retaining oil, mineral, and right of way reservations on various portions of the state-owned tract. When TIITF took ownership of the Boca Commerce Center tract, these reservations merged with TIITF's ownership of the underlying lands.

On September 13, 2005, the BCC expressed a desire to place conservation easements on all County natural areas and approved a resolution establishing standard form conservation easements (R2005-1770). The conveyance of conservation easements over County natural areas provides the natural areas with a level of protection that is not affected by retirement of County or State conservation bonds. The County is working with the City to develop a conservation easement over the Knight tract that will be granted by both the City and the County to the South Florida Water Management District (SFWMD) to provide additional long-term protection to the natural area.

There are no encroachments on the site, no concessions on the property, and no leases other than the management lease granted to the County by the State over the Boca Commerce Center tract, as amended to include the small A.G. Holley tract (now known as Lantana Scrub Natural Area).

1.8 PLAN DEVELOPMENT AND REVIEW

State statutes require DSL to conduct a land management review every five years for all state-owned conservation lands that are greater than 1,000 acres in size, but do not exclude the review of sites smaller than 1,000 acres. If the FDEP land management review team has conducted a management review of a site, the findings and recommendations of the review team are required to be considered in the preparation of the 10-year update to that site's management plan. A land management review has not yet been conducted at the Yamato Scrub Natural Area and no management recommendations for this site have been received from FDEP.

On August 16, 1994, the BCC adopted Resolution 94-1051, which established a seven-member Natural Areas Management Advisory Committee (NAMAC) to review and comment on management plans developed by staff for natural areas acquired and/or managed by the County and to hold public hearings on these plans prior to their review and adoption by the BCC. On February 24, 2009, the original resolution was repealed and NAMAC was reestablished by Resolution 2009-0319. The current membership categories are: a member with experience in the management of natural areas, a biological scientist, a professional educator with knowledge of South Florida ecosystems, a representative of a local municipal government parks and recreation program, a member of the Palm Beach County Parks and Recreation Department staff, and two citizens having an interest in the preservation and conservation of natural areas. A list of the current members of NAMAC and their affiliations is provided in Appendix F.

Members of the public were invited to provide comments on the draft of the revised management plan at the August 16, 2013 and September 20, 2013 regularly-scheduled meetings of NAMAC as the plan was being reviewed by NAMAC prior to approval for public hearing and by mail during the one-week period following the September 20, 2013 meeting. City representatives also participated in that review, and had the opportunity to review and comment on the revised plan. A copy of the draft revised plan also was provided to a representative of the Palm Beach Soil and Water Conservation District, who was invited to submit comments on the plan and to participate in the NAMAC review. The members of NAMAC held a publicly-noticed evening public hearing on the draft revised management plan on November 14, 2013 at the Boca Raton Main Library. A notice of the public hearing was posted in each kiosk on the natural area, in a newspaper of general circulation, and on the ERM website. An announcement of the public hearing was made at the October 1, 2013 BCC meeting. An open house held prior to the public hearing allowed the public to review and discuss the management plan with county staff, and to view a display of the existing and proposed public use facilities. Copies of the plan were available at public facilities such as libraries and the City of Boca Raton City Hall and also available through ERM for 30 days prior to the public hearing.

Members of the public who could not attend the hearing or who attended but wished to provide comments after the hearing were allowed to submit written comments to the County during the one-week period following the hearing. A single comment was received (Appendix H). Members of the public also were invited to provide comments at a regularly-scheduled meeting on NAMAC held on November 22, 2013. No additional comments were received on the revised management plan. NAMAC members took those comments into consideration, and voted unanimously to send the draft revised plan to the BCC with a recommendation that it be approved. Members of the public also had the opportunity to comment on the plan on December 17, 2013 when it was considered and approved by the BCC, and on April 11, 2014 when it was reviewed and approved during a public hearing held by the Acquisition and Restoration Council (ARC). No public opinion surveys or other mechanisms for public input were conducted prior to the BCC's adoption of the revised plan. A copy of the notice for the public hearing, a copy of the minutes from the BCC meeting and City Council meeting at which the public hearing was announced, and a summary of the comments made at the November 14, 2013 public hearing and provided to the County during the week following the hearing are included as Appendix G.

This management plan will be reviewed and updated by ERM and DSL as necessary or at least every ten years, as required by Section 253.034, Florida Statutes. Major structural improvements and management activities conducted since the last update will be discussed, and their degree of success evaluated. A general review of management efforts related to natural communities and the status of listed species also will be provided as part of the review process.

1.9 SITE HISTORY

Pre – 1840

The Yamato Scrub was formed by a long series of natural processes dating back millions of years. The former wetlands north of the site were originally the estuary of a river that flowed into the Atlantic Ocean when sea levels were higher. Sand from river transport and littoral drift built up in dunes on the south side of the estuary, and on the Atlantic Ocean shoreline south of the estuary mouth. The scrub natural community, present in the northern and eastern portion of the site, formed on these dunes. The present-day pine flatwoods communities formed on shallower sand deposits at the southern and western shoulders of the dune. In the low area between the dunes, where no sand was deposited, a basin marsh formed that existed until recent drainage lowered the water table. When ocean water levels fell and the Pamlico Ridge formed to the east of the natural area, the ridge blocked the estuary mouth, and a freshwater marsh referred to as the Yamato Marsh formed (Austin et al. 1977). Excess water from the Yamato Marsh system and the basin marsh on site flowed south through a north-south wet prairie/marsh swale to the Hillsboro River, which had cut through the Pamlico Ridge. The vegetation type was largely determined by ground elevations - scrub formed at 15 feet NGVD and higher, pine flatwoods between 15 feet and 11 feet NGVD, wet prairie and basin marsh between 11 feet and 9 feet NGVD, and depression marsh below 9 feet NGVD.

Southeast Florida has a long history of human use; Paleo-Indian usage of the area dates back 12,000 years (Carr et al. 2003, Procyk undated, Snyder 2003). About a dozen Native American villages were located in present-day Boca Raton (Ashton 1979) prior to the discovery of Florida in 1513. These villages were located along the edges of a sawgrass marsh that was later dredged to form the present-day Atlantic Intracoastal Waterway (AIWW), and along the shores of present-day Lake Wyman, Lake Boca Raton and Lake Rogers. By the 1750s, the original inhabitants of South Florida had virtually disappeared, victims of European diseases, warfare and the slave trade (Procyk 1999, Florida Department of State Division of Historical Resources (FDHR) undated[a]). The surviving Native Americans reportedly were taken to Cuba by the Spanish when Florida was turned over to the British in 1763 (Snyder 2003).

In the late 1600s and early 1700s, Native Americans from the Creek and Cherokee tribes in Georgia and Alabama began to move south into north Florida (FDHR undated[b], Procyk 1999, Robison and Andrews 1995). This movement accelerated in the 1810s. These Native Americans were being pushed out by white settlers or were on the losing side of a civil war among the Creek tribes (Robison and Andrews 1995). They welcomed runaway black slaves, who joined them as freed allies, or became subject to the Native Americans in a less onerous form of slavery. This agglomeration of tribes became known as the Seminoles. This word was derived from a word meaning “free people” in their language (Seminole Tribe of Florida undated). The Seminoles reportedly came to the Boca Raton area each summer to hunt and fish; they had a camp on the Hillsboro River, about 2 miles from the beach (Boca Raton Historical Society 1973a). Conflicts between white settlers in Georgia and Alabama, and the Seminoles and their

black allies would lead to the first of three periods of open warfare known as the Seminole Indian Wars.

The Seminole Indian Wars and Early Settlers - 1840 to 1876

The First Seminole Indian War took place in northern Florida and southern Georgia from 1817 - 1818. During this short war, U.S. forces quickly defeated the Seminoles and their black allies, pushing them out of northern Florida and into the interiors of the state. An 1823 treaty confined the Seminoles to a reservation in the interior portions of central and southern Florida. Then in 1830, the U.S. Congress passed the Indian Removal Act, which gave the government the authority to forcibly move Native Americans from Florida and Georgia to Oklahoma (FDHR undated[b], Robison and Andrews 1995). While most Seminoles were relocated, some refused to leave and tensions mounted between the U.S. Army, white settlers and the Seminoles (Robison and Andrews 1995). The Second Seminole Indian War (1835-1842) ended when the U.S. Army gave up trying to force all Seminoles to relocate to Oklahoma. After the Third Seminole Indian War ended in 1857, the Seminoles slowly emerged from their hideouts deep in the Everglades.

As the Seminole Indian Wars period ended and the turmoil of the Civil War receded, Palm Beach County became attractive to settlers. Palm Beach County's first permanent settler, Charlie Moore, moved to the shores of Lake Worth Lagoon near the present-day Town of Hypoluxo in November 1872 (Corbett 1992). By 1874, 10 to 12 people were living along the lake. The first person known to settle in the Boca Raton area was Joshua A. Bowen who built a palmetto shack on the north side of the Hillsboro River sometime in the mid 1870s (Boca Raton Historical Society 1973a).

Railroads, Canals and Agriculture – 1877 to 1920

Private and government engineers and surveyors visited southeast Florida numerous times from the 1820s through the early 1880s to determine the feasibility of an inland transportation canal along the Atlantic coast. Even though the canal was determined to be feasible, the federal government declined to appropriate funds for the construction of the canal, citing the then-minimal population of South Florida. The State offered 3,840 acres of free swampland for each mile of canal constructed and the right to collect tolls on completed portions of the canal, inducing the Florida Coast Line Canal and Transportation Company (canal company) to begin constructing an inland waterway known as the Florida East Coast Canal (the predecessor to the AIWW) southward from St. Augustine in 1882 (Crawford 2002). The portion of the canal lying between Lake Worth and Biscayne Bay, including the portion east of the natural area, was completed on January 1, 1896 (Corbett 1992).

Sections 6 and 31 in the natural area were part of the lands deeded in 1890 from the State of Florida to the canal company for work on the canal. In 1892, all of Section 6 was conveyed to a canal company subsidiary, the Boston and Florida Atlantic Coast Land Company. In 1896, all of

Section 31 was conveyed to the Model Land Company, land development division of Henry Flagler's railroad company, the Jacksonville, St. Augustine and Indian River Railroad.

One of the first man-made disturbances in the vicinity of the natural area was the clearing in 1890 of a sand "county road" that connected the northern and southern portions of what was then Dade County. The road was located approximately 0.9 mile east of the natural area. Early maps of Boca Raton indicate that the county road was in approximately the same location as present-day U.S. Highway 1 (also known as Federal Highway in some areas)(Ling 2007).

The next disturbance was the construction in 1895 of the segment of the Jacksonville, St. Augustine and Indian River Railroad in the Boca Raton area. A portion of this railroad was constructed approximately 0.7 mile east of the natural area. Also in 1895, the Jacksonville, St. Augustine and Indian River Railroad changed its name to the Florida East Coast (FEC) Railway (Boca Raton Historical Society 1974).

Then in 1905, a nine-foot-wide road was constructed just outside the right of way for the FEC tracks. This road later became part of the Dixie Highway, a system of roads that ran from Jacksonville to Miami. In 1909, Palm Beach County was formed out of the northern portion of Dade County. In 1916, Palm Beach County voters passed a $1 million bond to pave and widen the Dixie Highway from 9 feet to 24 feet throughout the County (Boca Raton Historical Society 1973b). The construction of the Jacksonville, St. Augustine and Indian River Railroad, Florida East Coast Canal, county road and the precursor to the Dixie Highway greatly enhanced access to the area east of the natural area and opened the area to settlers. The FEC Railway also provided fast, reliable transportation to markets in the northeast, thereby making fruit and vegetable farming profitable for farmers in Southeast Florida (Boca Raton Historical Society 1974).

One of the earliest settlers in Boca Raton was Captain Thomas Moore Rickards, a civil engineer and land surveyor. Captain Rickards purchased an undivided ½ interest in just under 49 acres of land along the northern shore of Lake Boca Raton in 1884; he acquired full title to the land in 1888 and moved to Boca Raton in 1895 (Ling 2005, Boca Raton Historical Society 1973a). Hired by the FEC and Model Land Company as a land developer/promoter/station agent/surveyor/civil engineer, one of Rickards' jobs was to sell railroad-owned land to farmers and investors who would plant crops and then ship their produce in FEC freight cars (Ling 2007). Most of the lots were sold to absentee owners who hired Rickards to oversee the clearing, planting and management of their lands. With funding from the Model Land Company, Captain Rickards began clearing company land in 1899 for the development of an orange grove near the intersection of present-day Palmetto Park Road and Federal Highway (Ashton 1979, Boca Raton Historical Society 1973a). In 1903 a hurricane hit Boca Raton destroying all of the groves and other crops, as well as 13 windmills (Ashton 1979). As a result of these losses and his wife's failing health, Rickards left Boca Raton in 1906 (Ashton 1979).

In 1903, Joseph Sakai, an American-educated expatriate and developer from Japan, signed an agreement with the FEC Railway to establish a colony of Japanese farmers in the Boca Raton area (Morikami Museum and Japanese Gardens undated, Pozzetta and Kersey 1976). The first immigrants arrived in late 1904 and chose the name "Yamato" or large peaceful country, an ancient name for Japan, for their colony (Boca Raton Historical Society 1977, Pozzetta and Kersey 1976). The Japanese settled on the north and south sides of Yamato Road, east of the present-day Interstate 95/Yamato Road interchange and just south of the natural area (Morikami Museum and Japanese Gardens undated, U.S. Coast and Geodetic Survey [USCGS] 1930). The colony had a post office, school and general store; a railroad station was constructed at Yamato Road and the FEC railroad tracks in 1907 (Austin et al. 1977, Gillis and the Boca Raton Historical Society 2007). Yamato Road was extended eastward from the colony to connect to the railroad tracks and Dixie Highway.

Most of the Yamato colonists were young, single men who did not stay long (Morikami Museum and Japanese Gardens undated). Some returned to Japan to marry and bring their wives back to the colony (Morikami Museum and Japanese Gardens undated). The Yamato Colony had grown to 40 persons by 1908, when blight devastated the pineapple crop (Ling 2005, Thuma 2003). As a result of the blight, many of the colonists began growing tomatoes and other winter vegetables (Boca Raton Historical Society 1985a, Pozzetta and Kersey 1976). When Flagler extended his railroad south to Key West in 1912, lower-priced Cuban pineapples became readily available, thereby making pineapple farming unprofitable in Florida (Ashton 1979, Boca Raton Historical Society 1974). Hard freezes in 1917 and 1918 brought an end to the pineapple industry in South Florida (Ashton 1979, Hutchinson and Paige 1998, Linehan 1980).

By the mid 1920s, most of the Yamato colonists had returned to Japan or were forced to seek employment elsewhere in the United States (Ashton 1979, Thuma 2003). By 1940, only three Japanese households remained at Yamato although some property was still owned by former residents (Morikami Museum and Japanese Gardens undated). George Sukeji Morikami, who later donated the lands on which Morikami Park now stands, was one of the settlers who stayed and continued farming in the area (Morikami Museum and Japanese Gardens undated). In May 1942, farmland in the Yamato area still owned by the Japanese was confiscated by the U.S. government for a military installation (Morikami Museum and Japanese Gardens undated).

In the early 1910s, land owners and developers in the Boca Raton area began to construct a series of interconnected canals to help drain their lands and make them more suitable for development. The first major drainage canal to be dug in the Boca Raton area was the Hillsboro Canal. This canal was created by deepening and widening the Hillsboro River from the Florida East Coast Canal (present-day AIWW) to Lake Okeechobee. The eastern portion of this canal was created along the southern limits of present-day Boca Raton in 1911 (Ashton 1979).

In 1913, the Model Land Company dug the section of the El Rio Canal that lies west of the natural area; a dirt road was constructed along the western edge of the canal (Ashton 1979, Barry 2013a). The El Rio Canal was created by deepening and straightening the northern branch of the

Hillsboro River. Prior to its channelization, the north branch of the Hillsboro River ran through a wetland swale system that was located between the eastern coastal sand ridge and the more westerly pine flatwoods. The El Rio Canal was constructed with a dividing structure at the northwest portion of the site, where present-day Congress Avenue crosses the canal. Waters south of the structure flow southward to the Hillsboro Canal, whereas waters north of the structure flow northward to Lake Ida (Ashton 1979).

Then in 1915, the Lake Worth Drainage District (LWDD) was created to help alleviate flooding issues west of the coastal ridge in southern and central Palm Beach County. The El Rio Canal became part of the newly-formed LWDD; it was maintenance dredged for the first time in 1922 (Barry 2013a). The El Rio Canal was improved in the 1940s to provide better drainage for the Boca Raton Army Air Field (Barry 2013a).

Soon after its creation, the LWDD began to dig a network of canals to drain the area west of the coastal ridge and east of State Road 7/U.S. Highway 441 that lay between Okeechobee Road and the Hillsboro Canal. Major north-south canals, known as equalizing canals, were dug every 2 to 2.5 miles; smaller east-west lateral canals were dug every half mile. The L-40 Canal, which runs through a portion of the natural area, was one of the lateral canals created by the LWDD. In November 1920, the LWDD dug an approximately 1,400-foot-long, narrow canal that ran eastward from the El Rio Canal to a point just west of the north-south scrub ridge that runs through the present-day natural area (Barry 2013b). This was the predecessor to the L-40 Canal. The remainder of the canal was merely a poorly-maintained swale from the 1920s until 1984 when the LWDD obtained sufficient right of way to widen and deepen the portion of the canal that lies east of the El Rio Canal to its current configuration (Barry 2013b; U.S. Coast and Geodetic Survey [USCGS] 1930). The L-40 Canal was constructed from the El Rio Canal, eastward through a wetland swale system, through the Yamato Scrub ridge to an arm of the Yamato Marsh that lay in the present-day Hidden Valley and Boca Teeca residential developments.

Initially, the El Rio and L-40 Canals were not as wide or deep as they are today, and were not as effective at draining the former wetlands on the natural area. Spoil from the canal excavations was placed along the canal banks, limiting direct surface flows into the canals. Although the canals did result in reduced and shallower hydroperiods in the wetlands on the site, they did not end the functioning of the wetlands until a much later date.

In 1914, the Boston and Florida Atlantic Coast Land Company platted the western ¾ of Section 6 into 5- to 11.5-acre tracts. A 30-foot-wide north-south road and an adjacent 30-foot-wide north-south canal (present-day El Rio Canal) were in the middle of the platted area. East-west roads were depicted along the northern and southern section boundaries, and in four locations within the section to provide access to each of the tracts. Although many of the tracts depicted in this plat were sold multiple times in the 1920s, the land eventually came under federal and state ownership and the plat was vacated. The plat map shows the natural vegetation that was present when the plat was created – scrub was present in the eastern portion of the plat; a strip of "pine"

(pine flatwoods) was present just west of the scrub area in the northern 2/3 of the plat; west of the pine strip was an area of prairie marsh; a few areas of hammock were present in the northern and central portions of the plat; and a mixture of marsh, bush and marsh, and marsh prairie covered the remaining portions of the plat.

The Land Boom and the Military Base – 1921 to 1949

In 1923, while the rest of Florida was experiencing a land boom, Boca Raton was still a sleepy little town of only 12 families (Boca Raton Historical Society 1973b). The town was first incorporated in 1924 as the "Town of Boca Ratone", but was officially recognized by the Florida legislature as the "Town of Boca Raton" in May 1925 (Ashton 1979, Boca Raton Historical Society undated[b], Gillis and the Boca Raton Historical Society 2007). When plans to build a 1,600-acre residential/resort development in Boca Raton were announced in 1925 (Ling 2007), the town saw its population jump to 600 (Ashton 1979). The town quickly experienced a corresponding boom in land prices and development. By October 1925, over 2,000 workers were reportedly leveling and grading roads associated with the proposed residential/resort development (Ling 2007). Construction of King's Highway (present-day U.S. Highway 1/Federal Highway) east of Dixie Highway began in 1925 and was completed in 1927 (Gillis and the Boca Raton Historical Society 2007, Ling 2007). Forty homes and the 100-room Cloister Inn (which later became known as the Boca Raton Club, and is now known as the Boca Raton Resort & Club) were quickly constructed as part of the residential/resort development. In November and December 1926, the Seaboard Air Line Railroad (the present-day CSX) was built along the eastern border of the natural area (Goolsby 2013).

Even though the natural area was outside the original town limits, lands within the present-day natural area were not immune to Boca Raton's land boom. The Model Land Company sold 615 acres in Section 31, including all but 10 acres of the northern half of the natural area, to the O'Mara Investment Company, Inc. in 1925 and took back a mortgage. O'Mara Investment sold the land to the Commercial Bank and Trust Company that same day. The remaining 10 acres within the northern portion of the natural area were sold to George Morikami, Hideo Kobayashi and his wife, Umeko Kobayashi, in September 1925. Mr. Morikami and his partners sold the land to J.W. Yager, F.F. Tolley and Thomas Field a month later. The southern portion of the state-owned tract was sold three times between 1924 and 1925. The present-day city- and county-owned tract was part of two different tracts during the mid 1920s. The eastern portion of the city- and county-owned tract was sold twice during the land boom. The owner of the western portion of the city and county-owned tract, John F. Dismukes, was the only owner to hold onto his land during the land boom.

Then in September 1926 a devastating hurricane struck Miami and many people who were considering moving to Florida were scared away. Investors stopped putting money in Florida ventures and the land boom collapsed when there were no new buyers willing to pay higher prices. About a year after it started, the real estate boom came to a halt in Boca Raton. Then in September 1928, a Category 4 hurricane hit Palm Beach County killing thousands around Lake

Okeechobee. Thirteen months later, the Stock Market crashed and the whole nation was plunged into the Great Depression.

Unable to sell their lands or pay their real estate taxes and/or mortgages, all of the owners of lands within the natural area eventually lost title to their lands. A state law was passed in 1937, known as the Murphy Act, which allowed the State to take title to properties with delinquent taxes if the back taxes were not paid by June 9, 1939 (Florida Department of Natural Resources, Bureau of State Lands Management 1981). Nearly all of the natural area reverted back to state ownership under this law. However, state law also allowed other taxing entities to file ownership claims on properties with delinquent taxes and both the LWDD and Palm Beach County filed claims for lands in Section 31, Township 46 South, Range 43 East. In 1942 and 1944, approximately 188 acres within Section 31, including a small portion of the natural area, were deeded by the state to the LWDD. Then between 1944 and 1947, Palm Beach County filed three lawsuits requesting ownership of most of the lands within Section 31 in lieu of payment of the outstanding county taxes. Palm Beach County was ultimately granted title to the lands, including some of the lands previously granted to the LWDD by the state.

Between 1946 and 1951, deeds were issued for lands within the natural area by the Trustees of the Internal Improvement Fund of the State of Florida to four different entities. In 1946 the State sold the former 10-acre Morikami/Kobayashi parcel in the southeast ¼ of Section 31 to W.S. Carper for $15 in back taxes. That same year, it sold all of the present-day state-owned natural area lands in Section 6 to the Boca Raton Land Corporation for $227 in back taxes. In 1949 the State sold a tract in the southeast ¼ of Section 31 to Neil and Nellie MacMillan for $22.50 in back taxes. And in 1951, the State gave the County a deed which included the easternmost portion of the natural area in Section 31.

World War II resulted in drastic changes in the Town of Boca Raton. In 1942, the Army Air Corps began to search for a site for a base to train radar operators and other electronics personnel (Ling 2007). James Cleveland (J.C.) Mitchell, the mayor of Boca Raton, saw an opportunity to attract a military base to the area because of the existing town airport and the availability of large tracts of land. Mayor Mitchell lobbied heavily for a base to be located at or near the city's airport (Ling 2005, Ling 2007). By December 1942 the Army had acquired or leased 5,820 acres of land, including most of the Yamato Colony, present-day Florida Atlantic University campus, the Boca Raton Airport and the Boca Raton Club (present-day Boca Raton Resort & Club) (Boca Raton Historical Society 1985a and 1985b, Morikami Museum and Japanese Gardens undated). The size of the base expanded to 5,860 acres during the war (Ling 2007). It generally included the area from present-day Yamato Road south to Palmetto Park Road and from Military Trail east to Dixie Highway, although some lands remained in private hands (Wood 2013). The only portion of the natural area within the base's boundaries was the present-day city- and county-owned tract north of Clint Moore Road.

Construction of the Boca Raton Army Air Field started in June 1942 (Boca Raton Airport Authority undated, Ling 2007). Although the base was declared open in October 1942, the work

was not completed until January 1943 (Boca Raton Historical Society 1985b, Ling 2005). Approximately 800 buildings, 4 runways, and a water and sewer plant were constructed as part of the Boca Raton Army Air Field improvements (Boca Raton Historical Society 2012). The El Rio Canal was improved to provide better drainage to the Air Field (Barry 2013a). By 1945 the population of service personnel peaked at 16,000 stationed on site, along with an estimated 1,200 civilian support personnel (Boca Raton Airport Authority undated). After the war ended in September 1945, personnel were quickly discharged or transferred. By May 1947, plans were being made to close the base (Ling 2007). Then a Category 4 hurricane came ashore near Fort Lauderdale on September 17, 1947, causing $3 million in damage to the base (Boca Raton Airport Authority undated, Ling 2005, Ling 2007, Thuma 2003). A second hurricane hit the area just a few weeks later causing additional flooding, and shutdown of the base was accelerated. The Town of Boca Raton purchased 2,400 acres of the former air field property from the federal government in 1949 (Jakubek and Gillis 2012).

The first aerial photographs of the vicinity of the natural area were taken in 1927 from a U.S. Army blimp. They were compiled into a coastal map by the USCGS in 1930 (USCGS 1930). The El Rio Canal, L-40 ditch, the Seaboard Air Line Railroad, and Yamato Road are visible on the map, as are the abandoned fields within the Yamato Colony, south of the natural area. Cultivated fields are shown south of present-day Yamato Road and west of the El Rio Canal. Yamato Road is shown as extending as far west as the El Rio Canal, then crossing the canal on a bridge and continuing westward as a dirt trail on the north bank of the L-42 Canal.

One of the dirt trails shown on the 1930 map (USCGS 1930) provided access to portions of the natural area. This trail started east of King's Highway (present-day U.S. Highway 1/Federal Highway) and ran in a west-southwest direction, crossing King's Highway, Dixie Highway and the FEC Railway tracks, before splitting into two trails about 0.3 mile west of the FEC Railway tracks (USCGS 1930). The north fork of the trail headed north-northwest from the trail split, following the western edge of the Boca Teeca arm of the Yamato Marsh, before crossing the L-40 ditch/canal a few hundred feet east of the Seaboard Air Line Railroad tracks. Once it crossed the L-40, the north fork of the trail turned almost due west, following the northern bank of the L-40 ditch/canal across the railroad tracks and through the central portion of the natural area. The trail then crossed a bridge over the El Rio Canal and continued westward along the north side of the L-40 ditch/canal.

The south fork of the trail headed in a northwest direction from the trail split, crossing the Seaboard Air Line Railroad tracks and entering the southern half of the natural area a few hundred feet south of the L-40 ditch/canal. The trail continued in a northwest direction until it crossed the L-40 ditch/canal. It then turned to the northeast and followed what was then the ecotone (or transition zone) between the scrub and pine flatwoods communities. When the scrub ridge turned back to the west in the northern portion of the natural area, the trail followed the ecotone westward. The trail left the natural area at the point where it crossed the water control structure in the El Rio Canal. Portions of this dirt trail still exist in the northern and eastern portions of the site today and have been incorporated into the hiking trail system. Other than the

improvements noted above, there were no clearings or other significant disturbances shown within the natural area in 1927 (USCGS 1930).

Aerial photographs of the natural area taken in 1940 (USGS 1940) do not show many changes from the 1930 map; the natural communities on the site appear to be intact. The LWDD canals, the Seaboard Air Line Railroad tracks and Yamato Road are present and do not appear to have been improved since 1927. The clearings associated with the former Yamato Colony are still visible, but are being recolonized by vegetation. Water is still present in the deeper portions of the Yamato Marsh north of the natural area, but the higher spots are exposed and some are being farmed. Also visible in the 1940 photographs is the newly constructed Boca Raton Airport. This airport is located about 1.6 miles southwest of the natural area; in 1940 it consisted of a triangle of grassed runways created in a drained wet prairie west of the El Rio Canal and north of Glades Road (USGS 1940).

Sale of former Boca Raton Army Air Field Lands, Consolidation of Ownerships, Annexation and Drainage – 1950 to 1966

Most of the lands in Section 6 that were condemned by the federal government in 1942 were sold as surplus lands to private entities in 1949 and 1950. The east ¼ of the west ½ of Section 6, lying north of the railroad tracks, was sold by the federal government to Thomas S. Wylly, Elizabeth Wylly Molten and Robin Wylly Hood in September 1949. This included the western portion of the future Knight tract. The west ¾ of the west ½ of Section 6, and about 95 acres in the east ½ of Section 6, including the eastern portion of the future Knight tract, were sold to M.A. Weaver in 1950. In both of these transactions, the federal government reserved the rights to any uranium that might be present on the surplused lands and provided certifications to the new owners that no active bombs or shells had been left on the sites.

By 1956, both portions of the future Knight tract had been acquired by Arthur Vining Davis. In 1958, Mr. Davis set up the Arvida Corporation (Arvida) and transferred his landholdings in and adjacent to the natural area to the corporation. A year later, Arvida conveyed title to the lands to Centar Development Company (Centar). In 1963, Centar changed its name to University Park, Inc. University Park, Inc. conveyed title to the future Knight tract and other lands back to the Arvida Corporation in 1969.

The state-owned portion of the natural area also changed hands several times during the 1950s and 1960s. All of the present-day state-owned natural area lands in Section 6 were sold by the Boca Raton Land Corporation to Harry Simberg, Max Gordon and Joseph Garfink in December 1952. Mr. Simberg and his partners quickly flipped the land to Florida Boca Raton Housing Association, Inc. in January 1953.

In 1949, the state sold approximately 12 acres of land in Section 31 northwest of the intersection of the L-40 Canal and the Seaboard Air Line Railroad tracks to Neil and Nellie MacMillan. The MacMillans sold their land to the Stonehenge Florida Corporation (Stonehenge) on October 5,

1950. That same day, Stonehenge purchased the rest of the natural area lands lying in Section 31, with the exception of the 10-acre former Morikami/Kobayashi parcel, from Palm Beach County. Both of the natural area tracts owned by Stonehenge were sold to the Buena Vista Development Corporation in 1957, and then to Florida Boca Raton Housing Association, Inc. in January 1960.

The 10-acre former Morikami/Kobayashi parcel was sold twice in 1957. It was then sold to Florida Boca Raton Housing Association, Inc. in February 1960 by then owners Howard H. Gabel, Frank Zappala and Dominic D'Agostino. This temporarily gave Florida Boca Raton Housing Association, Inc. ownership of all of the present-day state-owned lands within the natural area. However, Florida Boca Raton Housing Association, Inc. soon defaulted on the mortgage for the 10-acre former Morikami/Kobayashi parcel, and ownership of the parcel reverted to Mr. Gabel and his partners in October 1961. The property was ultimately sold to Mr. Cal Kovens in 1979, and would later become part of the state-owned portion of the natural area.

In 1957, the Town of Boca Raton became the City of Boca Raton (Boca Raton Historical Society undated[a]). In 1958 and 1959 the City of Boca Raton annexed nearly all of the natural area except the future Knight tract. The Knight tract was annexed into the City of Boca Raton in 1971.

In December 1958, Arvida granted Florida Power and Light, Inc. (FPL) an easement for an electric transmission and distribution line which was centered 82 feet south of the northern section line in Section 6. In the vicinity of the natural area, this easement extended from the western boundary of Section 6, east to the eastern boundary of the present-day Boca Raton Shrine Club property. In 1959, Florida Boca Raton Housing Association, Inc. granted FPL a corresponding 36-foot-wide easement which was centered 82 feet south of the northern section line of Section 6. This easement extended from the eastern boundary of the present-day Boca Raton Shrine Club property, east to the present-day FPL substation southwest of the intersection of the L-40 Canal and the railroad tracks. An electric power line was constructed within these easements in the early 1960s. The line was installed along the west side of the El Rio Canal from south of the natural area to the L-40 Canal (Palm Beach County Property Appraiser 1965a and 1965b). When it reached the L-40 Canal, the power line turned east and cut through the natural area on the south bank of the L-40 Canal until it crossed the Seaboard Air Line Railroad tracks. The power line then turned north and paralleled the railroad tracks until it crossed the C-15 Canal. Sections of the spoil bank in the scrub ridge along the south bank of the L-40 Canal were leveled at that time to permit installation of the power line poles.

Private, local drainage efforts continued in the vicinity of the natural area into the 1950s. By 1952, a drainage ditch had been dug to help drain the southern lobe of Yamato Marsh, east of the Seaboard Air Line Railroad tracks (USGS 1952). The ditch, which was located approximately 600 to 1,300 feet east of the railroad tracks, extended north in a "stair step" fashion from a newly-widened L-40 Canal to the present-day C-15 Canal (USGS 1952). The ditch then turned to the east, ending at the eastern edge of the Yamato Marsh (USGS 1952). A few interconnected

ditches north of the eastern portion of the "C-15 Canal" ditch connected deeper water wetlands within the main portion of the Yamato Marsh to the new ditch. By December 1957, the stair step portion of the ditch had been abandoned and a new, straight north-south ditch had been dug to connect the newly-widened portion of the future C-15 Canal ditch to the L-40 Canal (USGS 1957).

By 1952, a shallow, narrow north-south drainage ditch had been dug south from the L-40 Canal to the Seaboard Air Line Railroad tracks, approximately 600 feet east of the El Rio Canal (USGS 1952). This ditch ran along the eastern edge of the Wylly property, separating it from lands owned by M.A. Weaver. It also slightly increased the drainage of water from the wetlands within, and adjacent to, the southern portion of the natural area. The ditch is still present on the natural area as a dry swale.

The improvement of existing canals and the construction of new canals by LWDD affected the site starting in the early 1950s. The El Rio Canal between the C-15 Canal and the sand berm control structure was widened in the early 1950s (USGS 1952). After additional right of way was obtained in 1962-63, the LWDD L-38 Canal, which previously terminated at the El Rio Canal, was extended eastward for 2.2 miles to the AIWW as the much wider C-15 Canal (United States Department of Agriculture [USDA] 1964). Previously, the only outfalls for the El Rio Canal were the Boynton Canal to the north and the Hillsboro Canal to the south. Both of these canals were some distance away from the Yamato Marsh, which limited the drainage ability of the El Rio Canal. With a new direct route to the AIWW, water levels dropped further in the El Rio Canal. Virtually all of the standing water in the Yamato Marsh had disappeared by 1965 (Palm Beach County Property Appraiser 1965a and 1965b). All the standing water in the basin marsh within the natural area also disappeared by that time, leaving a herbaceous depression with scattered cabbage palms (*Sabal palmetto*) and remnant patches of Jamaica swamp sawgrass (*Cladium jamaicense*).

Several other changes at the natural area are visible in the early to mid 1960s aerial photographs (Palm Beach County Property Appraiser 1965a and 1965b, USDA 1964 and USGS 1961). Six north-south survey cuts approximately 200 feet apart are visible in the southern portion of the natural area in a 1961 aerial photograph (USGS 1961); similar survey cuts were made within the present-day Boca Teeca development as well. These survey cuts were likely made by the Florida Boca Raton Housing Association, Inc. as part of their development planning process. However, Florida Boca Raton Housing Association, Inc. soon ran into financial difficulties and the surveyed natural area lands were not developed.

By 1964, the portion of the old jeep trail that cut across the scrub ridge in the southern portion of the natural area had fallen into disuse and had nearly disappeared (USDA 1964). Vehicles were instead coming up from Yamato Road, crossing the L-40 Canal on the railroad embankment, before turning west onto the old jeep trail that ran north of the L-40 Canal. This new trail continued west along the northern edge of the L-40 Canal, past the northerly turn for the northern fork of the old jeep trail, to the El Rio Canal. Upon reaching the El Rio Canal, the new trail

turned north and paralleled the canal until it rejoined the old jeep trail at the sand berm crossing. The rest of the northern fork of the old jeep trail appears to still have been in use in the mid 1960s (Palm Beach County Property Appraiser 1965a and 1965b, USDA 1964).

Developers - Boca Teeca Corporation, Cal Kovens, Boca Commerce Center Associates and Knight Investments - Roadways and Early Preservation Efforts – 1967 to 1985

The Boca Teeca Corporation purchased the Florida Boca Raton Housing Association, Inc. holdings in 1967. This included all of the state-owned lands within the natural area (except for the former Morikami/ Kobayashi parcel), the present-day Boca Commerce Center and the present-day Boca Teeca subdivision. The Boca Teeca Corporation began development of their lands east of present-day I-95 in 1968, but borrowed heavily to finance their development. In June 1982, the corporation sold its holdings in Sections 6 and 31, and its remaining holdings east of I-95 to Mr. Cal Kovens. These lands were conveyed subject to multiple mortgages. This purchase gave Mr. Kovens ownership of all of the present-day state-owned lands within the natural area. Two months prior to the sale to Mr. Kovens, the Boca Teeca Corporation gave the City a 15-foot-wide utility easement on the north side of present-day Clint Moore Road for the installation and maintenance of water and sewer lines.

In 1983, Mr. Kovens platted an approximately 47-acre portion of land north of the natural area as Phase I of the Boca Commerce Center. He sold the platted area to the Boca Commerce Center Associates (BCCA) partnership later that same year. Development activities in the 47-acre platted area began in 1984 (Palm Beach County Property Appraiser 1984b). Undesirable soils removed from an area being cleared for construction for a warehouse/office complex were dumped in the northern portion of the former basin marsh on the natural area, as shown on 1984 aerial photographs (Palm Beach County Property Appraiser 1984b). Construction vehicles used the north fork of the old jeep trail to access the construction site from Congress Avenue; the trail appears to have been widened at that time, as shown in the 1984 photograph.

In 1983 Mr. Kovens sought approval from the City for a 282-acre industrial/warehouse/office park on former Boca Teeca Corporation lands west of the present-day CSX railroad tracks. The proposed development included approximately 207 acres in the present-day natural area and 75 acres north of the natural area. The development was originally called the Kovens Commerce Center, but later became known as the Boca Commerce Center. Initially, only 2.39 acres of scrub were scheduled for preservation (TCRPC 1984). However, because of the size and impacts of the project, it was declared to be a Development of Regional Impact (DRI) which required review by TCRPC. There was substantial public opposition to the project, based largely on the desire to preserve the dwindling scrub habitat in Palm Beach County. TCRPC ultimately recommended the preservation of approximately 115 acres, or almost 41 percent of the 282-acre site. The recommended preserve area included all of the state-owned natural area lands lying south of the L-40 Canal, as well as the former Morikami/Kobayashi and MacMillan parcels which were located just north of the L-40 Canal and west of the CSX railroad tracks.

The DRI lands were sold to BCCA on November 19, 1984. The sale occurred a few days after the issuance of a development order which released the northern 167 acres of the project for development. The development area (Area A) included most of the natural area north of the L-40 Canal and about 75 acres north of the natural area. No development was allowed in the 115-acre preservation area (Area B) unless further study determined that development of a portion of Area B could be accomplished while still maintaining the site's existing environmental and natural resource values. If the study indicated that a portion of Area B could be developed consistent with preserving these values, then an amended application for development approval would be submitted and treated as a substantial deviation from the original development order (TCRPC 1984).

Although the 1984 development order did not require any preserves in Area A, it required that all listed plant and animal species in Area A be relocated to Area B prior to the commencement of development. A preliminary survey of Area A conducted in 1985 revealed the presence of three listed animal species: gopher tortoise, scrub lizard (*Sceloporus woodi*) and Florida mouse (*Peromyscus floridanus*) (Richardson 1985). In 1985 and 1986, several gopher tortoises, scrub lizards and Florida mice were trapped in Area A and relocated to Area B of the proposed development (Richardson et al. 1986). These relocation attempts were only marginally successful (Richardson et al. 1986).

The 1984 development order also required that the habitat in Area B be managed in a manner that effectively supported the relocation of listed plant and animal species from Area A to Area B (TCRPC 1984). In early 1986, two prescribed burns on the scrub natural community were conducted by consultants for the developer in an effort to maintain habitat diversity. Both burn sites were roller-chopped to reduce fuel loads, and most of the sand pines (*Pinus clausa*) present were felled several weeks prior to the burn. The first burn, in January 1986, was on the southernmost 10 acres of the natural area. The second burn, in February 1986, was on approximately 10 acres between Clint Moore Road and the L-40 Canal. Both burns resulted in a very dense scrub oak monoculture. It appeared that the roller chopping cut and fragmented the scrub oaks' root systems, which allowed for the growth of multiple trees from what had previously had been a single tree. Sand pine regeneration was minimal, and the few sand pine seedlings that appeared did not survive (Austin 2000).

In April 1979, Arvida sold its holdings north of Clint Moore Road and east of Congress Avenue to the Heminway Corporation. The Heminway Corporation immediately conveyed the former Arvida lands to a land trust held by the First National Bank and Trust Company of Riviera Beach, Florida. The purchased lands included the future city- and county-owned portion of the natural area, and the future Boca Raton Shrine Club, veterinary clinic, gas station and self-storage properties located northeast of the Congress Avenue/Clint Moore Road intersection. All of these lands were encumbered by a Declaration of Covenants and Restrictions for Arvida Park of Commerce East that was recorded simultaneously with the warranty deed from Arvida.

In 1985, Knight Investments, Inc. (Knight Investments) bought the Heminway Corporation lands from First American Bank and Trust, the successor trustee to the Heminway Corporation land trust. The purchase included the present-day city- and county-owned tract which became known locally as the Knight tract. A few days after its land purchase, Knight Investments gave LWDD easements for the L-40 Canal along the northern border of its properties, including an 82-foot-wide easement on the Knight tract in the natural area.

A surge in electrical transmission facility construction occurred adjacent to the natural area between the late 1960s and the mid 1980s. FPL acquired a 300- by 300-foot parcel from the Boca Teeca Corporation that was located just south of the present-day L-40 Canal right of way and just west of the present-day CSX railroad tracks (formerly known as the Seaboard Air Line Railroad) on April 24, 1968. That same day, Boca Teeca granted FPL a 36-foot-wide easement for the installation and maintenance of underground electric transmission and distribution lines within the state-owned portion of the natural area, just south of the present-day L-40 Canal right of way. However, no transmission lines were installed within the 1968 easement area and the easement was converted to an ingress and egress easement in 1997. Another transmission line easement was granted over the eastern 12 feet of the present-day city- and county-owned property by Arvida in 1978. Although, no transmission lines have been installed in this easement, FPL is unwilling to release this easement at this time.

By 1970, both the Boca Teeca substation and a second FPL substation located just west of the El Rio Canal and north of the L-40 Canal had been built (Palm Beach County Property Appraiser 1970a and 1970b). In addition, a limerock road had been constructed on the east side of the El Rio Canal from Yamato Road to just south of the L-40 Canal in order to provide access to the Boca Teeca substation. FPL's access rights on the portion of the limerock road in the city- and county-owned tract have been terminated, but FPL still has access rights on the portion of this road that lies within the state-owned tract. By 1977, the FPL substation west of the El Rio Canal had been expanded, and one of the north-south survey cuts made in the natural area in the 1960s was being used to access the western edge of the Boca Teeca substation from Clint Moore Road (Palm Beach County Property Appraiser 1977a and 1977b).

The portion of Congress Avenue that lies west of the natural area was platted by the County in 1971. In the early 1970s, Congress Avenue was extended southward as a two-lane road from the Delray Beach – Boca Raton city line to Yamato Road USGS 1974, Palm Beach County Property Appraiser 1977a and 1977b). This road now forms a portion of the northwestern boundary of the natural area. It was a low-traffic road when it was first constructed. The north fork of the old jeep trail connected to Congress Avenue and provided access for illegal dumpers who, for the next 10 years dumped huge amounts of used tires, other auto parts and construction debris on either side of the western 500 feet of the trail. This debris was removed during site cleanup prior to acquisition.

The portion of Clint Moore Road that lies between Congress Avenue and I-95 was platted by the County in 1972. This road was constructed as a 4-lane road from east of I-95 to Congress

Avenue in the mid 1970s (USFS 1974, Palm Beach County Property Appraiser 1977a). The road crosses a portion of the natural area, the CSX railroad tracks and I-95 on an overpass with a raised embankment, and connects to Jeffery Street in the Boca Teeca development. A golf cart underpass was built through the embankment, because the Boca Teeca Corporation had plans to build another golf course on the natural area. By 1984 Clint Moore Road had been extended west from Congress Avenue to Military Trail (Palm Beach County Property Appraiser 1984a). Today the road bisects the eastern portion of the natural area and forms the southern boundary of the Knight tract.

In the mid-1970s, Interstate 95 was constructed just east of the present-day CSX railroad tracks, with an interchange at Yamato Road (USGS 1974). The Interstate was opened for use in 1975.

Aerial photographs taken in 1977 and 1984 indicate that both the El Rio and L-40 canals were improved during this timeframe (Palm Beach County Property Appraiser 1977a, 1977b, 1984a and 1984b). The portion of the El Rio Canal that lies between Congress Avenue and the L-40 Canal was dredged in 1977; the excess spoil was placed along the west side of the canal (Palm Beach County Property Appraiser 1977a). This section of the El Rio also was deepened and widened in 1984, as was the portion of the L-40 Canal that lies within and south of the natural area (Barry 2013b, Palm Beach County Property Appraiser 1984a and 1984b). The excess spoil from the canals was piled in the natural area on the east side of the El Rio Canal and the north side of the L-40 Canal. Along the L-40 Canal, the spoil was leveled in the western section of the natural area adjacent to the mesic hammock and former basin marsh, and piled up in the eastern portions that crossed the scrub ridge. These spoil piles were removed following acquisition of the natural area.

The excavation for the L-40 Canal was deep enough to reach calcareous material, which was rapidly colonized by Australian-pine (*Casuarina equisetifolia*) when the fill material was placed in the spoil piles north of the canal. The L-40 Canal was deepened to provide better drainage for the Hidden Valley and Boca Teeca developments. The deeper canals pulled groundwater levels down to as little as 4 feet in elevation (NGVD) and resulted in the loss of its remaining wetlands. Standing water was present only for short periods of time in small depressions that were underlain by hardpans or other impervious soil layers. By 1977, the sawgrass areas in the former basin marsh had declined and thinned out to the point that Brazilian pepper (*Schinus terebinthifolius*) was beginning to invade these areas; this invasive nonnative species was not visible on the site on aerial photographs taken prior to 1977. Over the next 30 years, Brazilian pepper spread and covered the former wetland areas with muck soils, while pine flatwoods vegetation and weedy grasses invaded the areas with sandy soils.

By 1970 additional survey lines had been cut through the natural area (Palm Beach County Property Appraiser 1970a). These included several diagonal survey lines within, and adjacent to, the future right of way for Clint Moore Road. By 1977, a couple of east-west survey lines had been cut through the extreme southern portion of the natural area; one of the old north-south survey cuts was being used by off road vehicles to drive south from Clint Moore Road into scrub

vegetation in the natural area (Palm Beach County Property Appraiser 1977a). By 1977, Arvida had established a plant nursery on its property south of Clint Moore Road and east of the El Rio Canal (Palm Beach County Property Appraiser 1977a and 1977b). By 1984, three warehouses had been constructed in the Arvida Park of Commerce, west of the southern portion of the natural area (Palm Beach County Property Appraiser 1984a).

In 1983, the Royal Palm Audubon Society developed a citizens' initiative to protect examples of each type of ecosystem that was present in the County in pre-development times. These examples were called "wilderness islands" because many of them were isolated areas of native Florida vegetation that were surrounded by development. One of the "wilderness islands" was the Boca Commerce Center site, known locally as the Yamato Scrub. In 1984, other conservation groups and individuals joined with the Royal Palm Audubon Society to form the Coalition for Wilderness Islands (CWI) and push for the preservation of a significant portion of the Yamato Scrub through the DRI process.

In 1984, the CWI proposed to the BCC that the County identify and protect the best examples of each native ecosystem in the County as part of the County's park system. The development proposed for Yamato Scrub was used as an example of why public acquisition of these areas was needed. The BCC approved the Wilderness Islands proposal in concept in 1984.

Preservation Efforts and Public Acquisition – 1986 to 1997

In December 1987, Knight Investments and FPL entered into an agreement wherein FPL agreed to release its rights to the limerock access road that curved through the western and northern portions of the city- and county-owned tract, and the northern portion of the present-day Boca Raton Shrine Club property. In exchange, Knight Investments granted FPL a new 20-foot-wide, east-west electric utility easement just south of the existing L-40 Canal right of way. This easement extended from the El Rio Canal right of way to the eastern boundary of the future Boca Raton Shrine Club property. Knight Investments also granted FPL a new north-south 24-foot-wide access easement along the eastern edge of the future Boca Raton Shrine Club tract to provide access from Clint Moore Road to the new east-west easement. After receiving these easements, FPL was supposed to stop using the limerock access road which curved through the natural area tract, but did not actually do so until pressured by the County in the late 1990s. Knight Investments sold the eastern 3± acres of its landholdings to the Boca Raton Shrine Club Holding Corporation for $600,000 in April 1988; a meeting hall and parking lot were constructed on the site in 1994.

Pursuant to the requirements contained in TCRPC's Development of Regional Impact Assessment Report (1984), BCCA began the environmental assessments necessary to determine how much of Area B could be developed and still maintain the existing environmental and natural resource values. A group of consultants lead by Donald R. Richardson completed an environmental site study of the DRI lands in July 1986. The study concluded that 56 acres south of Clint Moore Road would need to be preserved in order to maintain the existing environmental

and natural resource values of Area B (Richardson et al. 1986). BCCA did not accept this conclusion and hired a new consultant in 1988. The second consultant recommended that only 27 acres needed to be preserved in Area B (Gaby and Gaby, Inc. 1990). However, TCRPC objected to the second consultant's recommendation because the proposed preserve was less than 25 percent of the existing native habitat.

In late 1990, BCCA submitted a substantial deviation application for development approval for the site that technically met TCRPC's 25 percent preserve requirement in that it set aside 46.7 acres of native habitat. However, the proposed preserves were scattered throughout the site. The new proposal also contained a request that a portion of the site be approved for single-family and multi-family residential use, which required a land use amendment and would have substantially increased the traffic impacts. In 1991, BCCA applied to the City to have the property rezoned to allow for residential development, and began development activities on the portion of the property to be used for the future Kraft Foodservice, Inc. (Kraft Foodservice, now US Foods) warehouse. An economic recession started in late 1991, resulting in the demand for industrial parcels disappearing and land values falling. Activity on the Boca Commerce Center DRI substantial deviation application stalled, as concurrency issues and traffic impacts remained unresolved, and the application expired in March 1992.

As the BCCA actively pursued approvals to develop a portion of the Yamato Scrub, attempts were made by others to acquire and preserve a portion of it. Several acquisition proposals were submitted to the state CARL program by CWI and the City between 1984 and 1986. The size of the proposed acquisition areas ranged from 56 to 260 acres. CARL approved a 65-acre proposal from the City for project assessment in 1987 and for project design analysis in 1988. However, action was deferred until DRI issues on the site, including the size of the area to be preserved, were resolved. Then in early 1991, the City and County submitted a joint proposal to CARL for state matching funds for acquisition of the 247-acre Yamato Scrub, and the project received enough votes to be accepted for ranking. The project was ranked 43rd on the 1992 CARL priority list.

In the early to mid 1980s it became evident that most or all of the native habitats in the county, including the Yamato Scrub, would be lost to development if actions were not taken to preserve and protect some of the remaining natural lands. 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 Yamato Scrub Natural Area was identified in this study and was one of the 39 "A" quality sites, 14 of which were given high priority for acquisition by the County's Environmentally Sensitive Lands Acquisition Advisory Committee (ESLAAC) in 1990. 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. The Yamato Scrub ecosite was one of those 14 high-priority sites. The City of Boca Raton held a similar bond referendum on October 12, 1991, with the same results: City voters approved

a $12 million bond referendum to purchase 9 environmentally sensitive lands within the City, including the Yamato Scrub.

Once the Yamato Scrub acquisition project received a favorable ranking from CARL, the County authorized its contractor, The Nature Conservancy (TNC), to begin negotiations with the owners of the Yamato Scrub properties. In December 1991, BCCA signed an option contract with TNC to sell approximately 250 acres of the site for 82.5 percent of the higher of two appraisals. In March 1992 a joint acquisition agreement for the Yamato Scrub was approved by the State, in which CARL would provide 50 percent of the funds, the County 34 percent and the City 16 percent. BCCA signed an amended and restated option contract in August 1992 that reduced the sale acreage to 211± acres.

When the appraisal values for the BCCA property were released in August 1992, the $11.67 appraised value and $9,627,750 calculated purchase price were well below the $30 million expectations of the owners. The appraisers cited the bulk sale of the property and the 10-year estimated build out of the site as the reasons for the lower than expected value. The owners objected to the methods used by the appraisers and claimed that the entity who signed the contract on their behalf was not authorized to sign it. The owners subsequently failed to perform the tasks required under the contract.

In July 1992, TNC obtained an option to purchase the 10-acre Knight tract in the natural area for 82.5 percent of the appraised value. Knight Investments accepted the appraised values and moved to sell the Knight tract. Because state regulations required that the largest tract be purchased first, the State could not participate in the purchase of the Knight tract. The City agreed to provide the State's share along with its share, which totaled 66 percent of the purchase price. The County agreed to provide the other 34 percent and to share title to the property with the City. After issues relating to site cleanup and future assessments were resolved, the City and the County purchased the Knight tract for $1,452,500 in February 1994. The City contributed $958,650 and the County $493,850, which included a payment of $50,000 to help clear unpaid assessments and to waiver all future assessments owed to the Arvida Park of Commerce Association. Knight Investments paid the other $50,000 of unpaid assessments so that clear title could be obtained to the property.

In late 1992, the County, City and State agreed to sue BCCA if the owners failed to fulfill the terms of the contract. BCCA defaulted on the contract on February 1, 1993 and legal proceedings were filed by the County in March 1993. Settlement offers were made by BCCA to sell half of the site, put a regional mall on the other half and pay the County to drop its claims against the property. These settlement offers were rejected. During the settlement negotiations, ownership of the DRI property came into question and a bankruptcy proceeding was ultimately filed.

By the time a settlement agreement was reached in late 1995, the demand for industrial space had increased significantly and property values had risen. As a result, the price to purchase

approximately 211 acres of the DRI property was set at $17.5 million. The County and City also agreed to pay $1,714,876.13 in unpaid real estate taxes; the County paid two-thirds of the outstanding taxes and the City paid the remaining one-third. However, it took over a year for all the settlement conditions to be worked out. One of the issues that came up during this timeframe was a reduction in the acreage covered by the agreement from 211 to 206.74 acres. In February 1997, the BCCA tract was purchased for $17,500,000, with the State providing $5,800,000 (33.1 percent), the County $7,956,000 (45.5 percent) and the City $3,744,000 (21.4 percent). As this was a CARL-funded acquisition, the state took title to the property at closing. Prior to the sale, BCCA granted several easements to FPL and amended several existing easements.

In August 1992 a perpetual drainage easement was placed over the 4.22 acres of BCCA property that was used to resolve the drainage and road issues related to the development of the 15-acre tract to be used by Kraft Foodservice. In January 1993 construction began on a distribution facility on the Kraft Foodservice tract. NW 6th Avenue was extended 200 feet. A row of invasive nonnative Indian laurel trees (*Ficus microcarpa*) was planted outside the road right of way, in the future natural area, concurrently with the construction of the road. A 2.5-acre stormwater retention area was constructed in the drainage easement area. The area was scraped down and an earthen berm constructed around the perimeter. The retention area subsequently was colonized by transitional wetland species such as wax myrtle (*Myrica cerifera*) and coastalplain willow (*Salix caroliniana*). A linear strip of scrub was preserved on the southern border of the Kraft Foodservice tract, just north of the natural area. Gopher tortoises and several other species were relocated into the portion of the natural area immediately southwest of the Kraft Foodservice tract, between that tract and Congress Avenue. Kraft Foodservice paid for the removal of several thousand tires that had been illegally dumped in the tortoise receiving area over the years and the transport of the tires to the County's Solid Waste Authority facility for disposal. In 1996, Kraft Foodservice became part of Alliant Foodservice (Wikipedia undated). In March 1997, the 4.22-acre drainage easement tract was quit-claimed to Boca Commerce Center Association, Inc.

Post-acquisition Activities – 1998 to Present

In February 1998, the State leased the 206.74-acre state-owned tract to Palm Beach County for 50 years for management purposes. The lease will expire in 2048.

In late 1998 and early 1999, approximately 348 cabbage palms that were salvaged from road construction and development projects were planted by outside contractors in the disturbed mesic flatwoods and disturbed mesic hammock areas on the Knight tract. Few of these survived, mostly because of poor planting techniques and a lack of irrigation.

In 1999, a 2-acre scrape-down area was created in a portion of the former basin marsh west of the 4.22-acre drainage easement tract as part of a cut-throat grass (*Panicum abscissum*) relocation project. The project, which was constructed by an outside consultant, included the removal of Brazilian pepper and common ragweed (*Ambrosia artemisiifolia*) from a 2-acre area,

the removal of approximately 1 foot of soil to remove partially oxidized muck and the installation of a temporary irrigation system. Several thousand cut-throat grass clumps were brought in from another site in the Arvida Park of Commerce that was being developed by a private developer. However, neither the hydrology nor the subsoil in the scraped-down area were favorable for cut-throat grass restoration and most of the grass clumps died. The southern portion of the cut-throat grass restoration area was later incorporated into the recreated basin marsh; ERM staff later planted the northern portion of the former scrape-down area with slash pines and saw palmettos (*Serenoa repens*).

In April 2000, 7700 Congress, Ltd. purchased the triangular area between Congress Avenue and NW 6th Avenue, just north of the natural area, from a BCCA affiliate and began filling in the former marshland. However, construction of an office park with three multistory buildings in this area was delayed and was not completed until 2005.

The draft initial management plan for the natural area was developed in 2000 and was reviewed by NAMAC. An open house and public hearing held on the draft plan at the Gumbo Limbo Nature Center in the City of Boca Raton in December 2000. The initial management plan and an associated interlocal agreement with the City were approved by the BCC in June 2001. The plan was then sent to ARC for review. ARC members were supportive of the plan, but requested that the County look at ways to speed up the initial prescribed burning schedule. ERM staff was able to reschedule some of burn units for an earlier date, which satisfied ARC, and the plan was approved by ARC in October 2001.

In 2002 the invasive nonnative Indian laurel trees that were planted on the border of the natural area along NW 6th Avenue were removed by ERM, over the objections of the Boca Commerce Center Association. The association tried to bypass the County and appealed to the State and ARC, but was rebuffed. ERM agreed to let the association plant suitable native trees, such as gumbo limbo (*Bursera simaruba*) and live oak (*Quercus virginiana*), as replacements for the Indian laurel trees. Also that year, the management accessways for the natural area were constructed and FPL replaced the old wooden power poles in the easement south of the L-40 Canal with 15 concrete poles. The first prescribed burn was conducted in May 2003 on Unit 7 in the southern portion of the natural area. There were numerous complaints from adjacent Arvida Park of Commerce businesses about the smoke that drifted in their direction.

In June 2003 a temporary one-year access agreement was reached with LWDD for ERM to use the LWDD gate on the east side of the El Rio Canal at Congress Avenue. The agreement was so difficult to obtain that the County did not renew it when it expired, and constructed its own access gate on Congress Avenue. Also in 2003, the Brazilian pepper in the disturbed mesic flatwoods and mesic hammock north of the L-40 Canal was chipped into mulch and removed, as was some Australian-pine and Brazilian pepper on spoil piles adjacent to the El Rio Canal. Hurricanes Frances and Jeanne in September 2004 did not have much impact on the natural area, but Hurricane Wilma in October 2005 toppled or broke off the tops of many of the sand pines

within the scrub community, leaving a much more open canopy and large amounts of woody debris on the ground.

In September 2005 an archaeological survey of the areas proposed for public use facilities and wetland restoration was performed by the Archaeological and Historical Conservancy (Longo 2005), but no archaeological sites were found. In November 2005, 55 cabbage palms were relocated from the central portion of the basin marsh restoration project area to areas outside the restoration area. Excavation began in November 2005 in the drained basin marsh north of the L-40 Canal to create two basins, a northern deep one and a southern shallow one. Excavation was essentially complete by March 2006, and plantings of wetland vegetation occurred during the next several years as plants, funds and volunteers were available. Excavation depths and wetland elevations were determined by previously-installed groundwater monitoring gauges, but water levels turned out to be higher than predicted, especially in the northern basin. A pair of least grebes (*Tachybaptus dominicus*) nested at the northern restored wetland in 2008 (Hasse and Hasse 2009). This species had been recorded only a few times previously in Florida and was not known to nest in the state. Many birders from Florida and other states visited the site.

The contract for the public use facilities was awarded in April 2006 and the facilities were completed in the summer of 2007. The grand opening of the natural area facilities was held on October 10, 2007.

Alliant Foodservice had become part of U.S. Foodservice, Inc. (U.S. Foodservice) in 2001 (Wikipedia undated). In 2008 U.S. Foodservice began to pursue an expansion of its warehouse facility. The strip of scrub on the southern boundary of its property, adjacent to the natural area, was scheduled for clearing, so tree spades were used to remove plugs of soil with native vegetation. The plugs were then planted along the hiking trail north of the L-40 Canal, where that trail passed through a bare area that had been created by the removal of the large canal spoil piles. U.S. Foodservice provided $18,000 to ERM as payment for the relocation of up to nine gopher tortoises from the scrub strip to the natural area, but only two tortoises were found. Those tortoises were relocated to the natural area in August 2008.

U.S. Foodservice petitioned the City to abandon an unbuilt, approximately 600-foot-long southern extension of NW 6th Avenue so that U.S. Foodservice could use it to resolve drainage and parking issues. The City approved the U.S. Foodservice petition in September 2008. The County agreed to the abandonment after U.S. Foodservice agreed to make changes at the existing end of NW 6th Avenue to make that area more suitable as an access point for management vehicles and to provide an access easement over the area. When U.S. Foodservice had the scrub strip cleared in November 2008, its contractors damaged 225 feet of chain-link fence and undermined portions of the perimeter management road. The company repaired the damage by January 2009 and built a retaining wall to shore up portions of the management road. It also paid a $2,000 fine for violations of the Natural Areas Ordinance.

In January 2009 U.S. Foodservice granted a 10-foot access and utility easement to the State and constructed a curb cut to allow the County to access the natural area from the abandoned section of the road. Construction of the expanded U.S. Foodservice warehouse facility began late 2009 and was completed in 2010. In September 2011 U.S. Foodservice changed its name to US Foods (Wikipedia undated).

In December 2009 FDEP approved Amendment 1 to the state lease for management of the natural area, which provided for modification of the management plan to allow the City to construct a portion of the multiuse El Rio Trail on the state-owned tract. The interlocal agreement between the City and the County was amended in August 2010 to include responsibilities for construction and management of the trail segment. Construction began in November 2011 and the trail segment was opened to the public in October 2012. The construction of the El Rio Trail created a new pedestrian access point to the natural area. A new pedestrian maze gate, informational kiosk and bench were installed along the northwestern edge of the natural area as part of the trail construction project.

On July 6, 2010, a small wildfire broke out near the US Foods property. The wildfire consumed a few hundred square feet of vegetation before it was extinguished by the Boca Raton Fire Department.

In December 2012, FDEP approved Amendment 2 to the state management lease, which provided for inclusion of the 32.57-acre Lantana Scrub Natural Area.

Site management and habitat restoration activities conducted since acquisition are described in Chapter 4, Management and Restoration Activities, and in Chapter 14, Chronology of Major Events.

2. PURPOSE AND OBJECTIVES

2.1 PURPOSE OF ACQUISITION

The primary purpose for acquisition of the natural area was to preserve the largest tract of Atlantic Coastal Ridge scrub left in southern Palm Beach County, and the largest tract of scrub left in Florida south of Juno Beach. It also was acquired to preserve high-quality examples of mesic flatwoods, scrubby flatwoods, and mesic hammock communities and to protect critical habitat for rare and endangered species such as cut-throat grass and Florida mouse. Acquisition of this site has provided public opportunities for passive recreational activities, environmental education, and scientific research. The preservation of this site has helped to protect the quality and quantity of groundwater resources and helped Palm Beach County and the City of Boca Raton comply with portions of their respective comprehensive plans. All portions of the natural area are important to preserving natural resource values. Because virtually every acre of the site provides habitat for at least one rare or endangered plant species, animal species, or natural community, there are no portions of the property that can be declared as surplus.

2.2 MANAGEMENT GOALS AND OBJECTIVES

The natural area consists of scrub, scrubby flatwoods, mesic flatwoods, mesic hammock, hydric hammock and basin marsh natural communities. These communities, most of which can be considered as high-quality within the context of urbanized southeastern Florida, were in a somewhat degraded condition at the time of site acquisition as a result of fire exclusion and suppression, nonnative plant invasions, drainage, off-highway vehicle (OHV) traffic, dumping and other human-caused disturbances. The primary goal of site management is to preserve and, where appropriate, enhance historic scrub, scrubby flatwoods, mesic flatwoods, mesic hammock, hydric hammock and basin marsh communities, together with their component species, as described in Section 3.3, Natural Communities. Maintaining and improving the ecological quality of these communities is the primary management objective for this site. Management efforts to date have included restoration of disturbed mesic flatwoods and disturbed scrub, re-creating a basin marsh community, and the implementation of prescribed burning and invasive nonnative plant control programs.

Habitats for listed species will be managed for the needs of individual species when such management is compatible with the overall management of the ecosystems within the natural area. In addition, the restoration and management of disturbed scrub, disturbed scrubby flatwoods, disturbed mesic flatwoods and disturbed mesic hammock communities will be conducted to enhance the overall biological diversity of the site and/or the specific needs of listed species.

The site is managed under the "single-use" concept, which means that it is managed to preserve and restore natural resource values. Scientific research, environmental education and passive, resource-based recreation are encouraged as secondary management objectives as long as they

do not jeopardize the protection of natural resources. In general, passive recreation includes activities such as nature appreciation and study, hiking and photography.

The following goals and objectives reflect desired management outcomes that are specific to the Yamato Scrub Natural Area. The objectives are actions or measurable outcomes of management targeted to achieve either short-term goals (achievable within 2 years) or long-term goals (achievable within 10 years).

Habitat Restoration and Improvement

Goal 1. Create a landscape mosaic of healthy scrub in various stages of regrowth that takes into account the historic vegetation of the site and the needs of the listed species present, and that maximizes species diversity and habitat quality on the site (short-term and long-term).

Objective A. Burn the management units dominated by scrub at a 15- to 20-year interval to achieve a diversity of scrub successional stages.

Objective B. Follow the burn schedule provided in Table 3, and accelerate the schedule if weather conditions, funding opportunities and resources allow.

Objective C. Implement mechanical vegetative reduction of scrub habitat at 15- to 20-year intervals if fuel levels and smoke management and safety concerns result in extremely limited or unattainable prescribed burn conditions.

Objective D. Provide habitat for listed species that require early stages of scrub succession and those that require later stages by rotation burning of management units.

Objective E. Attempt to meet vegetation structure objectives recommended by the Florida Fish and Wildlife Conservation Commission (FWC) and the Florida Natural Areas Inventory (FNAI) in the 2010 Scrub Management Guidelines for Peninsular Florida (FWC and FNAI 2010), or subsequent updated versions, with appropriate adjustments made based on the needs of imperiled species present on the site.

Goal 2. Maintain and enhance a healthy scrubby flatwoods community (short-term and long-term).

Objective A. Burn Unit 3 at an 8- to 15-year interval to maintain the scrubby flatwoods community on the site.

Objective B. Conduct a prescribed burn in Unit 3 in 2020.

Objective C. Follow the burn schedule provided in Table 3, and accelerate the schedule if weather conditions, funding opportunities and resources allow.

Objective D. Implement mechanical vegetative reduction of scrubby flatwoods habitat at 8- to 15-year intervals if fuel levels, and smoke management and safety concerns result in extremely limited or unattainable prescribed burn conditions.

Goal 3. Maintain and enhance a healthy mesic flatwoods community (short-term and long-term).

Objective A. Burn Unit 2 at a 5- to 8-year interval to maintain the mesic flatwoods community on the site.

Objective B. Conduct a prescribed burn in Unit 2 in 2014 and 2021.

Objective C. Follow the burn schedule provided in Table 3.

Objective D. Implement mechanical vegetative reduction of mesic flatwoods habitat at 5- to 8-year intervals if fuel levels, and smoke management and safety concerns result in extremely limited or unattainable prescribed burn conditions.

Goal 4. Maintain and enhance a healthy basin marsh community (short-term and long-term).

Objective A. Conduct a prescribed burn in Unit 3 in 2020.

Objective B. Follow the burn schedule provided in Table 3, and accelerate the schedule if weather conditions, funding opportunities and resources allow.

Sustainable Forest Management

This management objective is not applicable to the Yamato Scrub Natural Area. The natural area does not contain commercial forest resources.

Imperiled Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration

Goal 1. Protect and maintain imperiled species at existing population levels (short-term and long-term).

Objective A. Conduct prescribed burns in accordance with the schedule provided in Table 3 to maintain the diversity and health of the plant communities on the site.

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

Objective C. Conduct annual migratory and nonmigratory wildlife species, periodic gopher tortoise surveys and ongoing opportunistic surveys for all wildlife species observed on the natural area. Special care shall be taken to record all sightings of imperiled species, including those species identified as "focus species" by FWC.

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, removal of eggs and nests, introduction or release of plants and animals, and prohibition of domestic animals and pets.

Goal 2. Increase populations of imperiled species present on the site or historically present on the site (long-term).

Objective A. Encourage local colleges and universities, governmental agencies, and other appropriate entities to conduct research activities related to imperiled species present on the site, in order to obtain information useful for the management and maintenance of those species and their habitats.

Objective B. Assist botanical gardens, governmental agencies and other appropriate entities wishing to conduct restoration activities related to imperiled species present on the site or formerly present on the site, including reintroduction of those species where feasible.

Exotic and Invasive Species Maintenance and Control

Goal 1. Control nonnative (exotic) and invasive plant and animal species so that they do not significantly impact native communities (short-term and long-term).

Objective A. Maintain coverage of invasive nonnative plant species at less than 1 percent of the natural area.

Objective B. Conduct annual nonnative plant treatments.

Objective C. Prevent excessive growth of invasive native vines with annual treatments or as needed.

Objective D. Monitor the site for domestic and feral cats, coyotes, and other nuisance nonnative animals during opportunistic observations and scheduled wildlife monitoring surveys, and remove/control the population of nonnative animals as necessary and feasible.

Hydrological Preservation and Restoration

Goal 1. Evaluate the success (short-term and long-term) of the basin marsh restoration project.

Objective A. Monitor water levels and vegetation in the restored basin marsh to determine if hydroperiods, water levels and vegetation within the wetland begin to resemble what is found in similar, intact wetlands on other natural areas in Palm Beach County. This information will be used to determine if any changes in management procedures are needed.

Cultural and Historical Resources

Although three linear historical resources – the former Seaboard Airline Railway (8PB12917), Lateral Canal L-40 (8PB12923) and El Rio Canal (8PB12918) - have been identified within and/or adjacent to the natural area (Appendix I), none of these resources is managed by the County. The former Seaboard Airline Railway property that lies just east of the central and southern portions of the natural area is owned and managed by CSX Transportation. The L-40 Canal that runs through the central portion of the natural area and the El Rio Canal that runs along the western edge of the northern portion of the natural area are both managed by the LWDD. The activities proposed in this management plan will have no effect on these resources.

If any new cultural or historical resources are identified on the site, Florida Department of State, Division of Historical Resources (FDHR) management procedures will be followed in order to protect these resources (Appendix I). Any archaeological investigations that are proposed for the

state-owned portion of the site will require a 1A-32 permit from FDHR prior to their commencement.

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 on a regular basis, including the parking lot and other paved areas, kiosks, signs, concrete nature trail, boardwalk bridges, portable restroom, fencing and gates.

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 cracked/damaged infrastructure within six months of detection.

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

Objective A. Conduct volunteer site cleanup events at least annually.

Objective B. Maintain public use facilities weekly (cleaning of concrete nature trail, portable restroom, etc.) or on an as-needed basis.

Objective C. Mow management accessways and firebreaks on an as–needed basis.

Objective D. Continue to paint over or remove graffiti in the tunnel under Clint Moore Road at least annually.

Public Access and Recreational Opportunities

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

Objective A. Install remaining signage needed adjacent to the El Rio Trail and at the pedestrian walk-through entrance to natural area from the El Rio Trail.

Objective B. Periodically monitor the part of the natural area adjacent to the El Rio Trail to identify any adverse impacts on the site related to use of the trail.

Objective C. Plant native vegetation in disturbed areas along the El Rio Trail in 2014 and 2015 to encourage natural revegetation of the area and enhance the visual experience of trail users.

Objective D. Provide additional public access and amenities by installing a pedestrian maze gate and benches at the north entrance to the tunnel under Clint Moore Road.

3. NATURAL AND CULTURAL RESOURCES

The Yamato Scrub Natural Area represents a small remnant of an extensive mosaic of upland and wetland communities formerly present along the coastline of southeastern Florida. Agriculture, urbanization, road and railroad construction, hydrologic modifications, and a host of other human disturbances have eliminated or severely modified the majority of the upland natural communities in this area. Likewise, human disturbances have eliminated most freshwater wetland communities in the vicinity of the natural area. The natural area is not a designated area of state concern or under study for such designation, and is not within an aquatic preserve.

Acquisition of sites like the natural area is important because it helps preserve examples of rare natural communities and rare and/or endemic plant and animal species in southeastern Florida. If the goal of preserving these historic remnants is to succeed, however, management of these sites must be conducted in a proactive manner. Managers must recognize that these sites are disturbed fragments of larger historic ecosystem mosaics, and management activities must include the elimination or mitigation of as many unnatural disturbances to the remaining natural communities as possible.

In order to develop meaningful management objectives, policies and procedures, a thorough inventory and assessment of the site's natural resources must be conducted. Information must be obtained on soils; water resources and hydrology; mineral resources; unique natural features; natural communities and their constituent plants; fish and wildlife; listed natural features and species; and outstanding native landscapes. Within these categories, it is critical to identify the disturbance processes that may alter ecosystem structures and functions, and thereby affect long-term management goals. The following sections provide this information regarding the site’s natural resources. Every effort has been made to identify information gaps where they exist.

Both the scientific name and the common name of a plant or 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. The scientific and common names of the plants and animals recorded at the natural area are provided in Appendixes A and B, respectively.

3.1 SOILS

Brown et al. (1990) urged caution when using soil maps, even at the scales of county soil maps, because soil properties are highly variable over the landscape. Despite these limitations, the Palm Beach County soil maps (USDA, SCS 1978; USDA, NRCS 2013) are useful tools in determining the historic distributions of natural communities and plants as well as in predicting responses of natural communities to alterations of historic hydrology and fire frequency.

The following descriptions of soil series, soil phases, and vegetation are based on a combination of updated soil series descriptions available on the USDA, NRCS website (USDA, NRCS undated) and more detailed soil descriptions contained in USDA, SCS (1978). In this plan,

scientific names have been added to the descriptions for clarification where possible. USDA, SCS (1989) correlated soil types with ecological communities in Florida, and these correlations are listed for each soil series. USDA, SCS (1989) used a different ecological community classification system than the FNAI system that is used in other parts of this plan.

Although the present tense has been used to describe these soils, most soils in Palm Beach County have been modified by hydrologic manipulations and other disturbances. Due to the lack of organic matter and the natural depth to water table, it is not likely that the areas of St. Lucie-Paola-Urban land complex soils have been greatly impacted by regional drainage. The Immokalee soils have become more xeric due to lowering of the local water table. The Pompano soils have a reduced or nonexistent hydroperiod as a result of drainage, and had been invaded by invasive nonnative and transitional native plant species prior to acquisition.

Four soil series are present on the site: Immokalee, Paola, Pompano and St. Lucie (Figure 3). In addition, one soil mapping unit representing artificial soils is present on the site: Urban Land. The eastern and southern portions of the natural area, along with two small areas in the northern portion of the natural area, are classified within the St. Lucie-Paola-Urban Land complex. The Immokalee and Pompano soil series are restricted to the northwestern and north-central portions of the natural area.

3.1.1 Immokalee

The Immokalee series consists of nearly-level to gently-sloping, deep and very deep, poorly-drained and very-poorly-drained sandy soils (USDA, SCS 1978; USDA, NRCS undated). They occur in flatwoods and in depressions. Under natural conditions, the water table is within 6 to 18 inches of the surface for 1 to 4 months and within 18 to 36 inches of the surface for 2 to 10 months during most years (USDA, NRCS undated). It is below 60 inches during the dry season. Depressional areas are covered with standing water 6 to 9 months per year or more. Permeability is rapid or very rapid to a depth of 35 inches, and moderate or moderately between 35 to 54 inches. The available water capacity is medium in the weakly-cemented layer and low or very low in all other layers (USDA, SCS 1978). Natural fertility is low. USDA, SCS (1989) listed South Florida flatwoods as the typical ecological community found on this soil. The natural vegetation is described as including longleaf pine (*Pinus palustris*), slash pine, saw palmetto, gallberry (*Ilex glabra*), wax myrtle and wiregrass (*Aristida stricta* var. *beyrichiana*) in upland areas and cypress (*Taxodium* sp.), loblolly bay (*Gordonia lasianthus*), red maple (*Acer rubrum*), sweetbay (*Magnolia virginiana*), maidencane (*Panicum hemitomon*), blue maidencane (*Amphicarpum muhlenbergianum*), chalky bluestem (*Andropogon virginicus* var. *glaucus*), sand cordgrass (*Spartina bakeri*) and bluejoint panicum (*Panicum tenerum*) in depressional areas (USDA, NRCS undated).

This series is represented at the natural area by Immokalee fine sand. Immokalee fine sand covers most of the northwestern part of the natural area; it also is present in a narrow band across the northern tip of the site and in a band that runs from the southwest to the northeast across the

center of the site (Figure 3). It is primarily associated with the mesic flatwoods, mesic hammock, scrub and scrubby flatwoods communities (Figure 4).

3.1.2 Paola

The Paola series consists of very deep, nearly level to sloping, excessively-drained, deep, sandy soils in uplands (USDA, SCS 1978; USDA, NRCS undated). Under natural conditions the water table is below a depth of 72 inches (USDA, NRCS undated). Permeability is very rapid throughout. The available water capacity, organic matter content and natural fertility are all very low (NRCS, SCS 1978). USDA, SCS (1989) stated that sand pine scrub was the typical ecological community found on this soil. Scrubby flatwoods also may be found on this soil, especially following disturbance of the natural fire regime. The natural vegetation is described as including sand pine, slash pine, longleaf pine, sand live oak (*Quercus geminata*), scattered turkey oak (*Quercus laevis*) and bluejack oak (*Quercus incana*) in the canopy, and an understory of cacti, mosses, lichens, fiveangled dodder (*Cuscuta pentagona*), Florida rosemary (*Ceratiola ericoides*) and scattered saw palmetto (USDA, NRCS undated).

This soil series is represented at the natural area as part of the St. Lucie – Paola – Urban land complex, 0 to 8% slopes (Figure 3). It is located in a band that runs in an east to west direction near the northern boundary of the natural area, in small area in the northwestern portion of the site and is the only soil type found in the eastern and southern portions of the natural area. This complex is associated with disturbed scrub and scrub communities (Figure 4).

3.1.3 Pompano

The Pompano series consists of nearly-level, very deep, very-poorly-drained, rapidly permeable sandy soils in depressions, drainageways and broad flats (USDA, SCS 1978; USDA, NRCS undated). Under natural conditions, the water table is within 10 inches of the surface for 2 to 6 months in most years, and within 30 inches for more than 9 months, even during dry periods. In depressions, the water table is above the surface for more than 3 months in most years. Permeability is rapid or very rapid, but internal drainage is impeded by a very shallow water table. The available water capacity, organic matter content and natural fertility all are low. USDA, SCS (1989) stated that cypress swamp and freshwater marsh and ponds were the typical ecological communities present on this soil. The natural vegetation is described as including widely-spaced cypress, cabbage palm and slash pine, with wax myrtle, wiregrass, sand cordgrass and other native grasses (USDA, SCS 1978; USDA, NRCS undated).

This series is represented at the natural area by Pompano fine sand. Pompano fine sand is present in southwest-northeast oriented strip in the north-central portion of the site (Figure 3). It is primarily associated with the basin marsh, disturbed mesic flatwoods and mesic hammock communities (Figure 4).

3.1.4 St. Lucie

The St. Lucie series consists of nearly-level to sloping, excessively-drained, very deep, sandy soils on long, narrow, dune-like ridges and isolated knolls near the Atlantic coast (USDA, SCS 1978; USDA, NRCS undated). Under natural conditions the water table is below a depth of 72 inches (USDA, NRCS undated). Permeability is very rapid throughout. The available water capacity, organic matter content and natural fertility are all very low (NRCS, SCS 1978). USDA, SCS (1989) stated that sand pine scrub was the typical ecological community present on this soil. The natural vegetation for this soil series is described as including sand pine, sand live oak, saw palmetto, dwarf willow (*Salix humilis*), Florida rosemary, pricklypear cactus (*Opuntia* sp.), Dixie reindeer lichen (*Cladina subtenuis*) and sparse clumps of wiregrass and rose natalgrass (*Melinis repens*) (USDA, SCS 1978; USDA, NRCS undated).

This series is present at the natural area in combination with other soils as part of the St. Lucie-Paola-Urban land complex. Additional information is provided in Section 3.1.2, Paola.

3.1.5 Urban Land

This mapping unit consists of soils that have been so altered by dredging, filling or regrading that the parent soil can no longer be easily recognized. It occurs adjacent to and within developed areas. No single soil profile represents this mapping unit.

Urban land soils are present at the natural area in combination with other soils as part of the St. Lucie – Paola – Urban land complex. Additional information is provided in Section 3.1.2, Paola.

3.2 HYDROLOGY

A healthy basin marsh community once existed within the north-central portion of the natural area where the (restored) basin marsh, disturbed mesic flatwoods and a portion of the disturbed mesic hammock communities now exist (Austin et al. 1977; USGS 1940). This historic basin marsh was bordered to the north and east by a coastal ridge, and to the west by a shallow water wetland/transitional area (Austin et al. 1977; USGS 1940). The marsh drained from the northeast to the southwest, emptying into the north-south "prong" of the Hillsboro River (identified as the "Hillsborough River" on some maps) a few hundred feet west of the present-day natural area (Williams 1870a and 1870b). The Hillsboro River was channelized sometime before 1913 (Austin 1984) and the newly-formed north-south canal became known as the El Rio Canal.

Channelization of the north-south "prong" of the Hillsboro River to form the El Rio Canal and the subsequent construction of the L-40 Canal through the middle of the natural area caused groundwater levels within the site to drop by 6 to 6.5 feet. Ground elevations within the former basin marsh were historically between 10 and 11 feet NGVD and pre-drainage groundwater elevations ranged from 10.5 to 14 feet NGVD (TCRPC 1984). In contrast, current groundwater

levels within the north-central portion of the natural area typically fluctuate between 4.5 and 7.5 feet NGVD (based on hydrological data collected by ERM from mid 2007 to mid 2013). This drop in the groundwater level eliminated the basin marsh community that once existed within the site.

There were no natural bodies of water existing on the natural area at the time of acquisition. At the time of its acquisition, the El Rio Canal and the L-40 Canal were the only water bodies within or adjacent to the natural area. Both of these canals are managed by LWDD. The L-40 Canal which bisects the natural area north of Clint Moore Road receives stormwater from developments located east of the site. The water in the L-40 Canal drains to the west and into the El Rio Canal (LWDD 2012). The portion of the El Rio Canal that lies adjacent to the natural area drains to the south and eventually connects with the Hillsboro Canal (LWDD 2012). Water levels within the L-40 and El Rio Canals are controlled by a water control structure that is located within the El Rio Canal approximately 2.8 miles south of its intersection with the L-40 Canal (LWDD 2012). Although the control elevation for both the L-40 and El Rio Canals is 4.3 feet NGVD (LWDD 2012), water levels near the natural area tend to be a little higher than the stated control elevation. Based on hydrological data collected by ERM from mid 2007 to mid 2013, water levels in the L-40 Canal typically fluctuate between 4.5 and 5.0 feet NGVD within the boundary of the natural area. Following significant rain events, water levels in the L-40 Canal can rise to a height of 7 feet NGVD. During periods of drought, water levels within the L-40 Canal can drop below 4 feet NGVD. Water levels within the L-40 Canal are typically 1.5 to 2.0 feet lower than groundwater levels in the natural area. As a result, groundwater from the natural area seeps into the L-40 Canal year-round.

Between 2005 and 2009, a wetland restoration project was conducted on the natural area to recreate a portion of the basin marsh community. The restoration work included the creation of two unconnected ponds - one shallow pond that is designed to dry out during the dry season and one deeper pond which is designed to hold water year round. Additional information on the basin marsh restoration project is provided in Section 4.5.4, Restoration and Enhancement Projects. The two ponds are classified as Class III waters by the State. Class III includes surface waters that are used for fish consumption, recreation, and propagation of a healthy, well-balanced population of fish and wildlife. There are no Outstanding Florida Waters on the site.

No improper storage or disposal of hazardous wastes which could pose a serious threat to local groundwater resources are permitted on the natural area, and precautions were taken prior to acquisition of the site to insure that the site was not contaminated at the time of purchase. Environmental audits were performed on all tracts within the site prior to their acquisition by the state and City/County. No significant hazardous waste sites were identified during these audits, although some areas containing small amounts of potentially hazardous waste were found (Keith & Schnars 1994). These areas, which were associated with illegal dumping activities, were cleaned up and the waste materials disposed of properly prior to acquisition of the natural area properties. The 1994 audit report for the Knight tract (Keith & Schnars 1994) contained a statement that a gas station in the vicinity of the site had a leak in its underground storage tanks

in August 1989, but that it was unlikely that contaminated groundwater would ever reach the natural area due to the distance between the contaminated site and the natural area, and the presence of the El Rio Canal between the two sites (Keith & Schnars 1994).

3.3 NATURAL COMMUNITIES

The following discussion provides a general description of each of the 11 natural and altered vegetative communities present on the natural area, together with an assessment of the condition of the community. This section also identifies the management techniques used to maintain, enhance and restore the natural communities at the site. A brief description of the developed area also is provided.

Wherever possible, the community descriptions are based upon the FNAI classification system and contain information on the rarity of the community worldwide and in Florida (FNAI 2013). If a community is so altered that it no longer resembles or functions as a natural community (as described by FNAI), an alternative description has been developed to supplement or replace the FNAI community description. Whenever this has been done, every effort has been made to identify and describe the natural community or communities that historically occupied the alternatively-classified area. The phrase "natural community" is used in this plan, even when a historic community has been heavily modified. Any classification system is artificial, and not all communities in a natural area will fall neatly into discrete classification units.

The only areas without an associated vegetation community are identified on the Vegetation Map (Figure 4) as developed areas. They include the parking lot, the entrance road leading from Clint Moore Road to the parking lot, the sidewalk extending from Clint Moore Road to the kiosk, the nature trail and the section of the El Rio Trail that lies north of the L-40 Canal. Developed areas cover approximately 1.2 acres, or approximately 0.6 percent of the site.

The plant communities at the natural area represent a mosaic of historic, successional and altered communities. Based on available information, historic natural communities on the site appear to have included basin marsh, hydric and/or mesic hammock, hydric and/or mesic flatwoods and scrub (Austin et al. 1977; Palm Beach County Clerk of Courts 1914). Drainage activities in and adjacent to the natural area have caused the site's historic upland communities to become more xeric and have converted all naturally-occurring wetland communities to upland habitats. Today, the natural communities include (restored) basin marsh, canal, disturbed hydric hammock, intact and disturbed mesic flatwoods, intact and disturbed mesic hammock, intact and disturbed scrub, and intact and disturbed scrubby flatwoods. There are no beaches or dunes on the property. Prior to acquisition of the site all of the wetlands within the natural area had transitioned to an upland community. Modifications to the historic natural communities are the result of decades of drainage, the placement and subsequent removal of spoil piles along the edges of canal rights of way, fire exclusion, OHV use, illegal dumping, road construction, development of adjacent properties and nonnative pest plant invasions.

The goal of natural communities management is to reverse or lessen the impact of as many of the human-caused disturbances to the natural area as possible, and to restore and maintain as many of the functions and values 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. They will be maintained through the implementation of a nonnative plant control program (see Section 4.5.2, Invasive/Nonnative Plant Control) and through the closure of all old OHV roads that are not part of the management accessway/firebreak system. The four fire-maintained communities on the natural area - basin marsh, mesic flatwoods, scrub and scrubby flatwoods - also will be maintained through the implementation of a prescribed burn program (see Section 4.5.1, Fire Management) or through mechanical chopping. Habitat-specific management information that is valid for both the intact and related disturbed portions of a natural community is provided in the description of the intact community.

3.3.1 Basin Marsh

Basin marshes are regularly inundated freshwater herbaceous wetlands situated in a relatively large and irregularly-shaped basin, usually with shallow to deep zones of aquatic vegetation and patches of shrubs (FNAI 2010). They occur in a variety of situations but, in contrast to depression marshes, are not small or shallow inclusions within a fire-maintained matrix community. Hydrologic alteration is the greatest threat to basin marshes in Florida (FNAI 2010). Typical plants found in basin marsh include American white waterlily (*Nymphaea odorata*), American lotus (*Nelumbo lutea*), spatterdock (*Nuphar advena*), pickerelweed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*), southern cattail (*Typha domingensis*), Jamaica swamp sawgrass, softstem bulrush (*Schoenoplectus tabernaemontani*), maidencane, smooth beggarticks (*Bidens laevis*), dotted smartweed (*Polygonum punctatum*), sand cordgrass, sweetscent (*Pluchea odorata*), spadeleaf (*Centella asiatica*), blue waterhyssop (*Bacopa caroliniana*), coastalplain willow, elderberry (*Sambucus nigra* subsp. *canadensis*), common buttonbush (*Cephalanthus occidentalis*) and wax myrtle (FNAI 2010). All the aforementioned plants have been recorded at the natural area except for American white waterlily, American lotus, spatterdock, smooth beggarticks, dotted smartweed, blue waterhyssop and common buttonbush. All of these species could be recorded at the natural area in the future (Wunderlin and Hansen 2011).

Animal species typical of basin marshes include two-toed amphiuma (*Amphiuma means*), lesser siren (*Siren intermedia*), greater siren (*Siren lacertina*), southern cricket frog (*Acris gryllus*), green treefrog (*Hyla cinerea*), American bullfrog (*Lithobates catesbeianus*), pig frog (*Lithobates grylio*), southern leopard frog (*Lithobates sphenocephalus*), American alligator (*Alligator mississippiensis*), red-bellied mudsnake (*Farancia abacura*), Mississippi green watersnake (*Nerodia cyclopion*), southern watersnake (*Nerodia fasciata*), striped crayfish snake (*Regina alleni*), black swampsnake (*Seminatrix pygaea*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), bald eagle (*Haliaeetus leucocephalus*) and northern harrier (*Circus cyaneus*) (FNAI and FDNR 1990). Of these, the southern cricket frog, green treefrog, southern leopard

frog, American alligator, great blue heron, great egret, snowy egret, little blue heron, tricolored heron and bald eagle have been recorded at the natural area. Three of the species typical found in basin marsh communities are not likely to occur at the natural area – northern harrier, lesser siren and Mississippi green watersnake. The restored basin marsh is much smaller than the historic basin marsh and may be unable to support certain species, such as the northern harrier. The natural area is out of the range of the lesser siren which does not occur south of Okeechobee (Bartlett and Bartlett 2011a), and the Mississippi green watersnake is very rare in Florida (Bartlett and Bartlett 2003). The natural area is within the reported ranges for two-toed amphiuma, greater siren, American bullfrog, pig frog, red-bellied mudsnake, southern watersnake, striped crayfish snake and black swampsnake; these species may be recorded at the site in the future as a result of site restoration efforts (Bartlett and Bartlett 2003; Bartlett and Bartlett 2011a; Maehr and Kale 2005).

Fire maintains open herbaceous basin marshes by restricting shrub invasion. The interval between fires varies with the dominant vegetation and the frequency of fire in the surrounding upland communities. Herbaceous marshes burn about once every 1 to 3 years, whereas marshes with substantial willow or buttonbush coverage burn about once every 3 to 10 years (FNAI and FDNR 1990). Fires during drought periods often will burn into mucky peat, if present, and will convert the marsh into a lake or create isolated potholes (FNAI and FDNR 1990). Prescribed fires in marsh communities have to be conducted with caution to avoid peat fires that kill dominant species, especially in areas where the water table has been lowered (FNAI 2010). Complete burns of basin marsh habitat are not desirable as they can extirpate animals that rely on the marsh community for foraging and nesting (FNAI 2010). The basin marsh community at the natural area is included within a management unit that contains mesic flatwoods, disturbed mesic flatwoods and scrubby flatwoods communities, and will be allowed to burn at the same time and frequency as these natural communities, if conditions allow.

Historically there were approximately 18.8 acres of basin marsh at the natural area - 14.5 acres within the Boca Commerce tract and 4.3 acres within the Knight tract. However, as the groundwater table within the site dropped from a historic level of 10.5 to 14 feet NGVD (TCRPC 1984) to 4.5 to 7.5 feet NGVD (based on hydrological data collected by ERM from 2007 to mid 2013), all of the onsite wetlands were lost. The last of the surface water in the former basin marsh disappeared in the early 1960s. By the 1990s, Brazilian pepper formed a dense monoculture in the lower areas where muck soils were once present, while mesic and scrubby flatwoods vegetation, mixed with ruderal and invasive nonnative herbs and grasses, colonized the sandy soils in the shallower portions of the former wetland. Portions of the former basin marsh also were affected by OHV traffic prior to the site's acquisition by the state, County and City. A restoration project was completed post-acquisition which recreated a portion of the basin marsh community. This project is described in Section 4.5.4, Restoration and Enhancement Projects. The natural area currently contains approximately 6.8 acres of basin marsh, or about 3.1 percent of the site (Figure 4). This community is located in the north-central portion of the site.

FNAI (2013) ranked basin marsh as G4/S3 - apparently secure globally but very rare and local in Florida, found locally in a restricted range, or vulnerable to extinction due to other factors.

3.3.2 Canal

A portion of LWDD's L-40 Canal is included in the west-central portion of the site. The banks of the canal contain invasive nonnative vegetation and ruderal grasses such as torpedograss (*Panicum repens*). There are native herbaceous wetland plants growing in patches in the bottom of this shallow canal, and it is used by animals typical of similar wetland habitats. The canal and its banks cover 1.0 acre, or 0.5 percent of the natural area (Figure 4). LWDD staff conducts periodic maintenance activities to control invasive nonnative vegetation along the canal banks and in the water.

3.3.3 Disturbed Hydric Hammock

Hydric hammock is characterized as an evergreen hardwood and/or cabbage palm forest with a variable understory often dominated by palms and ferns, occurring on moist soils, often with limestone near the surface. This community generally has a closed canopy of oaks and palms, an open understory, and a sparse-to-moderate groundcover of grasses and ferns (FNAI 2010). This community typically occurs on low, flat, wet sites where limestone may be near the surface. Hydric hammock soils are generally saturated, but are inundated only for short periods following heavy rains. The normal hydroperiod is seldom over 60 days per year (FNAI 2010). A normal hydroperiod must be maintained, or this community will gradually change to a drier hammock community or a wetter swamp community. Because of the generally saturated soils and sparse ground cover, this community rarely burns.

Typical plants include cabbage palm, laurel oak, live oak, red cedar (*Juniperus virginiana*), red maple, sweetbay, slash pine, water oak (*Quercus nigra*), swamp dogwood (*Cornus foemina*), loblolly pine (*Pinus taeda*), American elm, American hornbeam (*Carpinus caroliniana*), Walter's viburnum (*Viburnum obovatum*), wax myrtle, common persimmon (*Diospyros virginiana*), swamp bay, dwarf palmetto (*Sabal minor*), needle palm (*Rhapidophyllum hystrix*), eastern poison ivy, myrsine, wild coffee (*Psychotria nervosa*), American beautyberry (*Callicarpa americana*), sugarberry (*Celtis laevigata*), sweetgum, sedges (*Carex* spp.), woodoats (*Chasmanthium* spp.), smooth elephantsfoot (*Elephantopus nudatus*), Carolina scalystem (*Elytraria caroliniensis*), woodsgrass (*Oplismenus hirtellus*), maiden ferns (*Thelypteris* spp.), cinnamon fern, royal fern, swamp fern, netted chain fern, Virginia chain fern, golden polypody (*Phlebodium aureum*), shoestring fern (*Vittaria lineata*), wild pines, peppervine (*Ampelopsis arborea*), rattan vine (*Berchemia scandens*), trumpet creeper (*Campsis radicans*), cowitch vine (*Decumaria barbara*), yellow jessamine (*Gelsemium sempervirens*), greenbriers (*Smilax* spp.), summer grape (*Vitis aestivalis*) and muscadine (*Vitis rotundifolia*) (FNAI 2010).

To date, cabbage palm, laurel oak, live oak, slash pine, wax myrtle, common persimmon, eastern poison ivy, wild coffee, American beautyberry, myrsine, maiden ferns, swamp fern, shoestring

fern, wild pines, golden polypody, peppervine, greenbriers and muscadine have been recorded at the natural area. Of the remaining species, red maple, sweetbay, water oak, swamp bay, swamp dogwood, sweetgum, American elm, sugarberry, Walter's viburnum, sedges, Carolina scalystem, woodsgrass, cinnamon fern, royal fern, netted chain fern, Virginia chain fern, rattan vine, summer grape and yellow jessamine could be found on the site in the future; the other species do not occur in southeast Florida (Wunderlin and Hansen 2011).

Animal species typically found in hydric hammock communities include green anole (*Anolis carolinensis*), great crested flycatcher, Acadian flycatcher, warblers (*Setophaga* spp.) and eastern gray squirrel (*Sciurus carolinensis*) (FNAI and FDNR 1990). Except for the Acadian flycatcher, all of these species have been recorded at the natural area. Since Acadian flycatchers migrate through southeastern Florida, it is possible that this species will be recorded in the natural area in the future.

Hydric hammock is a not a fire-maintained community, but it does burn on occasion (FNAI 2010). When hydric hammock communities burn, the intensity of the fire determines which plant species will survive the fire. Cabbage palms are fire tolerant and are favored in hydric hammocks which have experienced high intensity fires. Live oaks can survive low intensity fires, but other hydric hammock species may be killed by fire. Because of their size (0.4 and 0.5 acre) and disturbed nature, the two small disturbed hydric hammock communities at the natural area may have temporary firebreaks created around them prior to the ignition of a prescribed fire in the affected management unit.

Based on historical information it appears that the natural area once supported one or more hydric hammock communities; most of this community transitioned to mesic hammock as a result of the drop in groundwater levels following the construction of the El Rio and L-40 Canals. A few areas within the former basin marsh community have been planted with hammock species in an attempt to recreate a few areas of hydric hammock at the natural area (see Section 4.5.4, Restoration and Enhancement Projects). One of these areas is immediately west of the restored basin marsh; it is located in a transitional area between the basin marsh and disturbed mesic flatwoods communities. The other area of disturbed hydric hammock is in a low-lying portion of the site just east of the US Foods stormwater retention area. Together, these two areas comprise 0.9 acre, or 0.4 percent of the natural area (Figure 4).

FNAI (2010) ranked hydric hammock as G4/S4 - apparently secure globally and in Florida, but possibly rare in part of its range.

3.3.4 Mesic Flatwoods

Mesic flatwoods is the most widespread natural community in Florida (FNAI 2010). It is characterized by a low, flat topography, and moderately- to poorly-drained, acidic, sandy soils often overlying an organic or clay hardpan (Abrahamson and Hartnett 1990; FNAI and FDNR 1990). An open overstory of pines usually is present, which in southern Florida consists of slash

pine and in north and central Florida consists of longleaf pine. The understory is quite variable, but generally includes a low, dense groundcover layer of grasses, forbs and shrubs such as saw palmetto, gallberry, coastalplain staggerbush (*Lyonia fruticosa*) and fetterbush (*Lyonia lucida*). Other typical plants include dwarf huckleberry (*Gaylussacia dumosa*), shiny blueberry (*Vaccinium myrsinites*), Darrow's blueberry (*Vaccinium darrowii*), dwarf live oak (*Quercus minima*), running oak (*Quercus pumila*), wiregrass, Curtiss' dropseed (*Sporobolus curtissii*), Florida dropseed (*Sporobolus floridanus*), witchgrasses (*Dichanthelium* spp.) and bluestem grasses, plus a large number of showy forbs (FNAI 2010). All of these plant species have been recorded at this site except for longleaf pine, dwarf huckleberry, Darrow's blueberry, running oak, Curtiss' dropseed and Florida dropseed. Four of these plant species - longleaf pine, Darrow's blueberry, Curtiss' dropseed and Florida dropseed - do not occur in southeastern Florida (Wunderlin and Hansen 2011). Dwarf huckleberry and running oak could be recorded at the natural area in the future (Wunderlin and Hansen 2011).

Animal species normally associated with mesic flatwoods include oak toad (*Anaxyrus quercicus*), little grass frog (*Pseudacris ocularis*), eastern narrow-mouthed toad (*Gastrophryne carolinensis*), racer (*Coluber constrictor*), red cornsnake *(Pantherophis guttatus*), American kestrel (*Falco sparverius*), brown-headed nuthatch (*Sitta pusilla*), pine warbler (*Setophaga pinus*), Bachman's sparrow (*Aimophila aestivalis*), hispid cotton rat (*Sigmodon hispidus*), cotton deermouse (*Peromyscus gossypinus*), Florida black bear (*Ursus americanus floridanus*), raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*) and white-tailed deer (*Odocoileus virginianus*) (FNAI and FDNR 1990). Of these species, eastern narrow-mouthed toad, racer, red cornsnake, American kestrel, pine warbler, cotton deermouse, raccoon and gray fox have been documented at the natural area. The Florida black bear has been extirpated from Palm Beach County, except for the occasional wandering bear from the southwest Florida population (FWC 2012, Simek et al. 2005). According to Maehr and Kale (2005) the brown-headed nuthatch is not found in Palm Beach County. All of the other animal species mentioned above are known to occur in similar-sized preserves in Palm Beach County and may be recorded in future surveys (Bartlett and Bartlett 2003 and 2011a, NatureServe 2012).

Due to the presence of a subsurface organic hardpan layer or clayey subsoil, mesic flatwood soils are usually saturated or inundated for brief periods each year (FNAI and FDNR 1990). During the dry season, groundwater is unattainable for many plant species because their roots do not penetrate the hardpan (FNAI and FDNR 1990). Thus mesic flatwoods plants must be able to tolerate soil saturation or inundation during the wet season, followed by very dry conditions during the dry season (FNAI 2010).

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 (FNAI 2010). Natural fire frequency in mesic flatwoods has been estimated at 2 to 10 years, with 2 to 3-year intervals being the most common (FNAI 2010). Studies have shown that mesic flatwoods which are subject to fire intervals of 1 to 3 years have very diverse, very dense groundcover layers, whereas sites with longer fire intervals have groundcover layers that are less diverse and less dense (FNAI 2010).

In the absence of fire, mesic flatwoods succeed into hardwood-dominated forests with a closed canopy that can eliminate the groundcover herbs and shrubs (FNAI and FDNR 1990). 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 (FNAI 2010). 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 occurs in three of the seven management units at the natural area (Figures 4 and 5). All three of these units will be treated on a periodic basis with prescribed fire if weather conditions and smoke restrictions permit. The mesic flatwoods area that is located in Management Unit 1 will be burned at intervals appropriate for the scrub community which dominates that management unit. The mesic flatwoods community within Management Units 2 and 3 will be burned or mechanically reduced on a 5- to 8-year and 8- to 15-year interval, respectively. Although these burn intervals are longer than what is typically desired for mesic flatwoods communities, the close proximity of numerous smoke-sensitive areas precludes the more frequent burning of these units. Management Unit 2 has been on the County's prescribed burn schedule since 2004, but each attempt to burn this unit has been cancelled because the weather conditions did not meet the very strict safety requirements contained in the burn prescription. Additional information concerning the use of prescribed fire is contained in Section 4.5.1, Fire Management.

There is one relatively large area of mesic flatwoods in the northern part of the natural area, occupying 20.3 acres, or 9.4 percent of the site (Figure 4). This area abuts scrub, scrubby flatwoods and disturbed mesic flatwoods communities. Some of the mesic flatwoods community at this site is of recent origin, having developed from former shallow wetland areas that were overdrained as a result of the lowered water tables. The plant species distribution in these areas is somewhat atypical, with an overstory of slash pine and little understory or groundcover other than pine needles, which reflects the recent conversion from a wetland. Due to the lowered groundwater table, scrubby vegetation is moving into some portions of the mesic flatwoods, and a transition to scrubby flatwoods appears to be occurring. For this reason, it is often difficult to find a good separation line between the mesic and scrubby flatwoods communities. Otherwise, the mesic flatwoods are generally in good condition at this site, with little evidence of disturbance other than fire exclusion and OHV trails.

FNAI (2013) ranked mesic flatwoods as G4/S4 - apparently secure globally and in Florida, but possibly rare in part of its range.

3.3.5 Disturbed Mesic Flatwoods

Disturbed mesic flatwoods occur where the historic basin marsh community was impacted by lowered groundwater levels, fire exclusion and invasion by nonnative plants. The canopy is comprised almost entirely of slash pine, but a few cabbage palms and mixed hardwood species, such as live oak and laurel oak (*Quercus laurifolia*), are present. The understory is patchy and

includes saw palmetto, fetterbush, gallberry and coastalplain staggerbush. Groundcover vegetation is composed of a mixture of ruderal herbaceous species and grasses. Restoration plantings have been installed in a portion of the disturbed mesic flatwoods community to facilitate its transition to a more intact community (see Section 4.5.4, Restoration and Enhancement Projects).

Fire frequency in this community is unknown, but is largely controlled by the fire frequency in the surrounding plant communities. The disturbed mesic flatwoods community that lies north of the L-40 Canal will be burned at the same interval as the intact scrubby flatwoods; the area south of the canal will not be treated with fire. Prescribed burning may initially be hard to establish in this community because of lack of fuel in the groundcover and shrub layers. Groundcover density and diversity should increase as a result of the reintroduction of fire into the disturbed mesic flatwoods community.

There are two areas of disturbed mesic flatwoods in the north-central portion of the natural area. These areas were once part of the former basin marsh community. The community occupies approximately 8.6 acres, or 4.0 percent of the site (Figure 4). Most of the areas currently identified as disturbed mesic flatwoods should transition to mesic flatwoods or scrubby flatwoods natural communities over time.

3.3.6 Mesic Hammock

Mesic hammock is a rarely-inundated, evergreen hardwood and/or palm forest. It is characterized by a closed canopy that is dominated by live oak with cabbage palm common in the canopy and subcanopy (FNAI 2010). North of Lake Okeechobee, southern magnolia (*Magnolia grandiflora*) and pignut hickory (*Carya glabra*) can be found scattered in the subcanopy. South of Lake Okeechobee, these species are replaced by gumbo limbo and satinleaf (*Chrysophyllum oliviforme*). Water oak (*Quercus nigra*), laurel oak, sweetgum (*Liquidambar styraciflua*), sugarberry (*Celtis laevigata*), slash pine and loblolly pine (*Pinus taeda*) also may be found in the canopy and subcanopy layers.

The shrubby understory is typically composed of saw palmetto, American beautyberry (*Callicarpa americana*), American holly (*Ilex opaca*), gallberry, sparkleberry (*Vaccinium arboreum*), hog plum (*Ximenia americana*), common persimmon (*Diospyros virginiana*), highbush blueberry (*Vaccinium corymbosum*), Carolina laurelcherry (*Prunus caroliniana*), yaupon (*Ilex vomitoria*), wild olive (*Cartrema americana*) and wax myrtle. Tropical shrubs such as Simpson's stopper (*Myrcianthes fragrans*), myrsine and wild coffee are common in more southern mesic hammock. The ground layer typically includes low panic grasses (*Panicum* spp.), witchgrasses, woodsgrass (*Oplismenus hirtellus*), longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), sedges (Cyperaceae), tall nutgrass (*Scleria triglomerata*), bracken (*Pteridium aquilinum*) and partridgeberry (*Mitchella repens*). Toothpetal false rein orchid (*Habenaria floribunda*) and other ground orchids are occasional. Abundant epiphytes, including Spanish moss (*Tillandsia usneoides*), wild pines (*Tillandsia* spp.), resurrection fern (*Pleopeltis*

polypodioides var. *michauxiana*), golden polypody (*Phlebodium aureum*), shoestring fern (*Vittaria lineata*), green-fly orchid (*Epidendrum conopseum*) and butterfly orchid (*Encyclia tampensis*), are common in mesic hammocks. Vines are often abundant and can create a solid groundcover in disturbed hammocks. Species include muscadine, sarsaparilla vine (*Smilax pumila*), greenbriers (*Smilax* spp.), yellow jessamine, eastern poison ivy (*Toxicodendron radicans*), crossvine (*Bignonia capreolata*) and Virginia creeper (*Parthenocissus quinquefolia*).

To date, live oak, cabbage palm, gumbo limbo, slash pine, saw palmetto, American beautyberry, gallberry, hog plum, common persimmon, wax myrtle, myrsine, wild coffee, panic grasses, witchgrasses, tall nutgrass, bracken, Spanish moss, wild pines, resurrection fern, golden polypody, shoestring fern, muscadine, greenbriers, eastern poison ivy and Virginia creeper have been recorded at the natural area. Laurel oak, sugarberry, satinleaf, water oak, sweetgum, sparkleberry, American holly, laurelcherry, woodsgrass, toothpetal false rein orchid, butterfly orchid and yellow jessamine could be found at the natural area in the future (Wunderlin and Hansen 2008). The remaining plant species are unlikely to be found on the site as they do not occur in southeastern Florida (Wunderlin and Hansen 2008).

Neither FNAI (2010) or FNAI and DNR (1990) provided a list of animals that typically inhabit the mesic hammock community.

Mesic hammock is a not a fire-maintained community. Intense fires can destroy mesic hammock. Although the three areas of mesic hammock at the natural area are not within a no-burn zone, the two larger areas will be protected from prescribed fire by the creation of temporary firebreaks and by the fact that prescribed fire will not be used as a management tool south of the L-40 Canal.

The mesic hammocks at the natural area are of natural origin. Some of the present-day mesic hammock areas were formed when hydric hammock areas in the west-central portion of the site became more xeric as groundwater levels dropped. The mesic hammock community has expanded in extent in response to fire suppression and lowered water levels in the historic basin marsh. There are three areas of mesic hammock in the northern part of the site. These areas comprise 8.1 acres, or 3.7 percent of the site (Figure 4). Areas of mesic hammocks too small to map occur at the ecotones between the former basin marsh and scrubby flatwoods.

FNAI (2013) ranked mesic hammock as G3/S3? – both globally and in Florida this vegetation community is either very rare and local throughout its range, or found locally in a restricted range or vulnerable to extinction from other factors. The question mark indicates that the state status is questionable at present.

3.3.7 Disturbed Mesic Hammock

The disturbed mesic hammock community occurs in three locations at the site; it currently covers 5.5 acres, or 2.5 percent of the site (Figure 4). A strip of disturbed mesic hammock occurs along

the western and southern edges of the intact mesic hammock community which lies just northeast of the intersection of the El Rio and L-40 Canals. This disturbed area was formed by the placement and subsequent removal of fill, and/or invasion by nonnative plants. The other two areas of disturbed mesic hammock were created by planting hammock vegetation within portions of the former basin marsh community in an effort to expand two intact mesic hammock communities (see Section 4.5.4, Restoration and Enhancement Projects). Disturbed mesic hammock typically has many of the same plants as intact mesic hammock, but the plants are smaller and sparser, and there are larger expanses of bare sand. At this site, the disturbed mesic hammock community has an overstory comprised mostly of live oak. The patchy understory includes saw palmetto, hog plum and American beautyberry. The disturbed mesic hammock that abuts the L-40 and El Rio Canal rights of way currently contains large expanses of bare sand and ruderal species. A small portion of this disturbed area was planted with native mesic hammock vegetation in an effort to facilitate its transition to a more intact community. The remainder of this area may receive restoration plantings if funding and/or appropriate native plant materials become available.

3.3.8 Scrub

Scrub communities are highly variable in form but generally are composed of nearly evergreen shrubs, with or without a canopy of pines, and occur on dry, infertile sandy ridges (FNAI 2010). The signature species – three species of shrubby oaks, sand pine and Florida rosemary – are found in scrubs statewide. The dominance of these species is variable from site to site. Oak scrub is typically dominated by myrtle oak (*Quercus myrtifolia*), sand live oak (*Quercus geminata*) and Chapman's oak (*Quercus chapmannii*), along with rusty staggerbush (*Lyonia ferruginea*) and saw palmetto. Sand pine and Florida rosemary are not common in oak scrub. Other scrubs have sand pine, scrub oak (*Quercus inopina*) and/or Florida rosemary as the dominant vegetation. Other typical scrub plants include threeawn grasses (*Aristida* spp.), hairsedges (*Bulbostylis* spp.), pinweeds (*Lechea* spp.), jointweeds (*Polygonella* spp.), sandyfield beaksedge (*Rhynchospora megalocarpa*) and ground lichens (*Cladonia* spp.) (FNAI 2010). All of these plant species have been recorded at the natural area, with the exception of rusty staggerbush and scrub oak; because the range of each of these species is restricted to areas further to the north (Wunderlin and Hansen 2008), they would not be expected to be present at the natural area.

Animal species typically associated with scrub include red widow spider (*Latrodectus bishopi*), burrowing wolf spiders (*Geolycosa* spp.), oak toad, six-lined racerunner (*Aspidoscelis sexlineata*), bluetail mole skink (*Plestiodon egregius lividus*), gopher tortoise, coachwhip (*Masticophis flagellum*), sand skink (*Plestiodon reynoldsi*), Florida scrub lizard (*Sceloporus woodi*), common ground-dove (*Columbina passerina*), yellow-rumped warbler (*Setophaga coronata*), loggerhead shrike (*Lanius ludovicianus*), eastern towhee (*Pipilio erythrophthalmus*), Florida mouse and eastern spotted skunk (*Spilogale putorius*) (Cox et al. 1987; FNAI and FDNR 1990; Myers 1990). All of these species except burrowing wolf spider, oak toad, bluetail mole skink and sand skink have been recorded at the site. The burrowing wolf spider and oak toad

could be recorded at the natural area in the future. The bluetail mole skink and the sand skink occur only in a few counties in central Florida and are not expected to be recorded at the natural area (Bartlett and Bartlett 2011b).

Scrub communities occur on sand ridges along former shorelines and are characterized by very-well-drained, nutrient-poor soils, a relatively open canopy, a dense-to-open understory layer, and a sparse groundcover. Scrub is one of the many pyric (fire-maintained) communities that occur in Florida (Fernald 1989; Myers 1990). In the prolonged absence of fire, the structure and species composition of scrub communities will gradually change, often resulting in succession to xeric hammock. Alternatively, where sand pines are present abundantly in the canopy, a dense sand pine forest may develop and shade out most of the other species that are typical of scrub (Fernald 1989). Fire frequency can range from 5 to 70 years, and is dependent on the dominant vegetation – oak scrub has a natural fire interval of 5 to 20 years, sand pine scrub has a variable fire interval ranging from 5 to 40 years, and rosemary scrub likely burns at intervals of 15 to 30 years (FNAI 2010). Much debate exists, however, concerning historic fire frequencies in scrub (Fernald 1989), and this subject deserves further attention in southeastern Florida. Periodic fire is one of the physical disturbances that may maintain the areas of open sand that characterize typical scrub. It probably is necessary for the growth and proliferation of many of the rare and/or endemic species that are found in scrub communities in Florida.

The density of sand pine within a scrub canopy often is a reflection of fire frequency. Individual sand pines usually are killed by fire, but normally are replaced through reseeding. It takes nearly 10 years for the replacement stand of sand pines to mature and begin producing new seeds (Austin 1976; FNAI 2010). Long-term fire exclusion also may lead to the elimination of sand pines from a scrub site. Stands of sand pines begin to break up after 50 years, and individual trees rarely reach 80 years of age (FNAI 2010). As such, a sequence of fires at relatively short intervals or relatively long intervals may eliminate sand pines from the system entirely. Florida rosemary, which also succumbs to fire and requires 10-15 years to reach reproductive maturity, may be eliminated from scrub because of relatively frequent fires (Johnson 1982). Most of the other scrub species resprout readily from root-shoots following fire, although their resistance to fire exclusion varies tremendously.

Many different scrub types have been noted in the literature (Fernald 1989). Distinctions between interior versus coastal scrubs, soil color ("white" versus "yellow" sands) and dominant species (sand pine, rosemary, oak) have been noted. Because no differentiation of scrub types occurring in the Treasure Coast Region had been published, Fernald (1989) did not distinguish between scrub types in his mapping units. He did distinguish between scrub and scrubby flatwoods in his discussion and separated scrubby flatwoods into scrubby oak flatwoods and scrubby pine flatwoods. His scrubby oak flatwoods may be equivalent to the oak scrub of other authors (e.g., Duever 1983). Iverson and Austin (1988) also did not distinguish between scrub types. Differences in scrub types may play an important role in the regional distribution of both flora and fauna, and deserve further attention.

The area of intact scrub habitat is approximately 136.6 acres, or 62.9 percent of the site (Figure 4). Scrub is found in the northern, eastern and southern portions of the natural area. Oak scrub is the dominant scrub type present in the southern two-thirds of the natural area, while sand pine scrub dominates the northern one-third of the site. At this site, the understory layer is a slightly open to dense thicket of Chapman's oak, sand live oak, myrtle oak and saw palmetto, with scattered hog plum and scrub palmetto. Underneath the oaks, gopher apple (*Licania michauxii*) and sand live oak root sprouts are present. In the open sandy areas, dominant herbs include gopher apple, hemlock witchgrass (*Dicanthelium portoricense*), jeweled blueeyed grass (*Sisyrinchium xerophyllum*), Deckert's pinweed (*Lechea deckertii*) and Feay's prairieclover (*Dalea feayi*).

FNAI (2013) ranked scrub as G2/S2 - imperiled both globally and in Florida because of rarity or vulnerability to extinction.

3.3.9 Disturbed Scrub

Disturbed scrub typically has many of the same plants as intact scrub, but the plants are smaller and sparser, and there are larger expanses of bare sand. There also is a higher-than-normal percentage of ruderal and nonnative plants such as rose natalgrass. Pioneer, high-light environment scrub plants such as skyblue lupine (*Lupinus diffusus*), narrowleaf silkgrass (*Pityopsis graminifolia*), Feay's prairieclover, and Deckert's pinweed are more common. The higher levels of herbaceous plants provide an important food source for gopher tortoises. This community generally does not burn because the vegetation is too sparse to carry a fire.

At this site, the disturbed scrub community consists of areas of scrub that were cleared as a result of road or canal construction, or that were impacted by the placement and subsequent removal of fill. There are seven areas of disturbed scrub at the natural area, totaling 8.7 acres or 4.0 percent of the site (Figure 4). Four of these areas are on the north and south sides of Clint Moore Road in the center of site. They were created by excessive clearing for the construction of the road in the mid-1970s. Two others are north and south of the L-40 Canal in the east central portion of the site; they were created by canal construction and fill placement/removal. The seventh area is in the northwestern part of the site, along the east side of the El Rio Canal. It was created during widening of the canal and was impacted by fill placement and subsequent removal. A portion of the El Rio Trail has been constructed in this area. Native plantings were installed within the disturbed scrub community located north and south of the L-40 Canal to facilitate the transition of these areas to a more intact scrub community (see Section 4.5.4, Restoration and Enhancement Projects). The transition of the other disturbed scrub areas to more intact scrub communities will be facilitated through the planting of native species as funding and/or appropriate native vegetation becomes available.

3.3.10 Scrubby Flatwoods

Scrubby flatwoods have an open canopy of widely-spaced pine trees and a low, shrubby understory dominated by scrub oaks and saw palmetto, often interspersed with areas of barren white sand (FNAI 2010). The principal canopy species are longleaf pine and slash pine. The understory is consists of one or more of four oaks - myrtle oak, Chapman's oak, sand live oak, and scrub oak, and shrubs typical of mesic flatwoods such as saw palmetto, gallberry, coastalplain staggerbush, fetterbush, rusty staggerbush, and deerberry (*Vaccinium stamineum*). Grasses and subshrubs include wiregrass, broomsedge bluestem (*Andropogon virginicus*), little bluestem (*Schizachyrium scoparium*), dwarf live oak, shiny blueberry (*Vaccinium myrsinites*), dwarf huckleberry, gopher apple, Chapman's goldenrod (*Solidago odora* var. *chapmanii*), running oak, coastalplain honeycombhead (*Balduina angustifolia*), narrowleaf silkgrass, and October flower (*Polygonella polygama*) (FNAI 2010). All of these plants have been recorded at the natural area except for longleaf pine, rusty staggerbush, scrub oak, deerberry, and dwarf huckleberry. Longleaf pine, scrub oak, and rusty staggerbush are not known to occur in Palm Beach County (Wunderlin and Hansen 2008), but deerberry and dwarf huckleberry could be recorded at the natural area in the future (Wunderlin and Hansen 2011).

Animals normally associated with scrubby flatwoods include oak toad, pine woods treefrog (*Hyla femoralis*), gopher tortoise, six-lined racerunner, eastern diamond-backed rattlesnake, Florida scrub lizard, blue-tailed mole skink (*Eumeces egregius lividus*), sand skink (*Neoseps reynoldsi*), northern bobwhite (*Colinus virginianus*), common ground dove (*Columbina passerina*), Florida scrub-jay, rufous-sided towhee, southeastern pocket gopher (*Geomys pinetis*), and Florida mouse (Abrahamson and Hartnett, 1990). Of these, the gopher tortoise, six-lined racerunner, eastern diamond-backed rattlesnake, Florida scrub lizard, northern bobwhite, common ground dove, Florida scrub-jay, Florida mouse, and rufous-sided towhee have been documented as occurring at the natural area. Southeastern pocket gopher, blue-tailed mole skink and sand skink would not be expected to occur at the natural area because their ranges do not include Palm Beach County. The oak toad and the pine woods treefrog could be found at the natural area in the future.

Scrubby flatwoods occurs in slight rises with mesic flatwoods, and in transitional areas between mesic flatwoods and scrub. While some authorities consider scrubby flatwoods as an ecotonal or even an artificial community, others classify it as a discrete community or association (Abrahamson and Hartnett 1990). Scrubby flatwoods differ from other the types of flatwoods in that they occur at slightly higher elevations, on more well-drained soils. The dominant soil on which the scrubby flatwoods community is located at the natural area is Pomello sand, a secondary scrub soil. Scrubby flatwoods will not flood, even under extremely wet conditions (Abrahamson and Hartnett 1990). The structure and species composition of scrubby flatwoods is more closely aligned with scrub than with other types of flatwoods. Due to the relatively sparse ground cover, the presence of dwarfed oaks, and the presence of open, sandy areas, fire frequency in scrubby flatwoods is lower than in other flatwoods communities, and higher than in scrub. Fire intervals can range between 5 to 25 years, but are most commonly in the 8- to 15-

year range (FNAI 2010). In the absence of regular fire, scrubby flatwoods may develop towards scrub on drier sites, or xeric live oak hammock on less-well-drained sites (Laessle 1942). A successional pathway from xeric live oak hammock to mesic hammock also has been proposed (Laessle 1942).

For inventory purposes, neither Iverson and Austin (1988) nor Fernald (1989) distinguished between scrub and scrubby flatwoods. Fernald (1989), however, did distinguish between scrub and scrubby flatwoods in his discussion, and differentiated between scrubby pine flatwoods and scrubby oak flatwoods. His scrubby oak flatwoods may be equivalent to the oak scrub of other authors (e.g., Duever 1983). Abrahamson and Hartnett (1990) noted that although the scrubby flatwoods community is nearly endemic to Florida and relatively limited in total area, this natural community has received little study. Scrubby flatwoods is associated with, and often grades into, mesic flatwoods, scrub, dry prairie, or sandhill. It differs from mesic flatwoods and dry prairie by the presence of dwarfed oak species, and from scrub by the presence of longleaf or slash pine, wiregrass, and the presence of flatwoods shrubs. Scrubby flatwoods is distinguished from sandhill by the minimal presence of deciduous oaks.

There are 19.0 acres of scrubby flatwoods at the natural area, or 8.7 percent of the site (Figure 4). This community is found on the eastern side of the basin marsh in the northern half of the site and on the western side of the mesic flatwoods community. It occurs predominantly on Immokalee soils. The overstory of the scrubby flatwoods is dominated by scattered slash pines. The understory is a moderately-open to dense thicket of sand live oak, myrtle oak, saw palmetto, coastalplain staggerbush, and fetterbush. The ground cover layer is characterized by coastalplain goldenaster (*Chrysopsis scabrella*), ground lichens, and scattered areas of sparsely-vegetated, open white sandy areas.

The scrubby flatwoods community will be maintained through prescribed burning or mechanical chopping and control of invasive vegetation.

FNAI (2013) ranked scrubby flatwoods as G2/S2? - imperiled both globally and in Florida because of rarity or vulnerability to extinction. The question mark indicates that the status is questionable at present.

3.3.11 Disturbed Scrubby Flatwoods

There are two small areas of disturbed scrubby flatwoods on the natural area - one in the central portion of the site, just north of the L-40 Canal, and one in the western portion of the site, just east of the El Rio Canal (Figure 4). This community occupies 0.4 acre, or 0.2 percent of the natural area. Most of the nonnative vegetation in this area has been removed, but some ruderal species are still present. This area is expected to recover through natural recruitment and selective planting of native scrubby flatwoods species. Fire frequency is unknown, but is largely controlled by the fire frequency in the surrounding upland plant communities.

3.4 PLANTS

A total of 390 species of plants have been recorded at the natural area (Appendix A). Of these, twelve are listed for protection or special management by a government agency or FNAI (Table 1). Ninety-eight species of plants recorded at the site are not native to the South Florida mainland. These species are discussed in more detail in Section 4.5.2, Invasive/Nonnative Plant Control.

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

3.5 ANIMALS

A total of 247 species of animals have been recorded at the natural area - 5 arachnids, 66 insects, 4 fishes, 9 amphibians, 6 turtles, 1 crocodilian, 17 snakes and lizards, 127 birds and 12 mammals (Appendix B). Of these, 29 are listed for protection or special management by a government agency or FNAI (Table 2). Four species of invertebrates and 16 species of vertebrates recorded at the site are not native to the South Florida mainland. These species are discussed in Section 4.5.3, Nonnative Animal Control.

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

3.6 LISTED SPECIES

3.6.1 Plants

Twelve plant species recorded at the natural area have been listed by at least one government agency or FNAI (Table 1). These species will be protected as components of the natural communities of which they are a part. All listed plant species recorded at the natural area will be protected through the implementation of management activities designed to restore, enhance and maintain the natural communities in which they occur, by control/removal of invasive nonnative vegetation at the natural area, and by protecting the site from plant collectors. Overall, listed plant populations at the site appear to be stable.

This section includes a brief description of each species, the general location(s) at which it was recorded on the site by ERM, any species-specific management/protection strategy that will be used to protect that species, and the ranks and designations assigned to the species. Listed plant species recorded at the natural area are discussed in alphabetical order by common name. Ranks

assigned by FNAI are from a June 2013 tracking list (FNAI 2013), designations assigned by Florida Department of Agriculture and Consumer Services (FDACS) are from FDACS (2004), and designations assigned by the United States Fish and Wildlife Service (USFWS) are from USFWS (undated). Definitions for the ranks and designations used by these entities are provided in Appendix C.

Banded airplant (*Tillandsia flexuosa*)

This epiphytic bromeliad was recorded at the natural area in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), and by ERM in 1991, 2003, 2005, 2006, 2008, 2009, 2011 and 2012. It is present in the scrub natural community in the northern portion of the site. The population is estimated at fewer than 50 plants. This species is adversely affected by the feeding activities of an imported bromeliad weevil that result in the eventual death of the plant (Frank 1999). There is no known practical treatment for imported bromeliad weevils. Banded airplant also is susceptible to fire. This species is becoming rare within the County's Natural Areas System. Since this plant is currently located in a single, small area at this site, it will be protected from prescribed fire by the creation of a temporary firebreak, avoiding the area in which it occurs during mechanical chopping activities or possibly relocating individual plants to other locations on the site prior to a prescribed burn. If additional populations of this species are found on the site, ERM will reevaluate the need to continue to protect this species during prescribed burns and mechanical reduction activities. Known populations of banded airplant will be surveyed on an annual basis to monitor population trends. Banded airplant is ranked by FNAI as G5/S3 and designated by FDACS as threatened; it is not listed by USFWS.

Common wild pine (*Tillandsia fasciculata*)

This epiphytic bromeliad was recorded at the natural area in 1984 by consultants for TCRPC (TCRPC 1984) and by Barnett (1984), in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), in 1990 by Gaby and Gaby, Inc. (1990), in 1998 by Institute for Regional Conservation (IRC) (Bradley and Woodmansee 1998) and by ERM in 1991, 2003-2006, 2008, 2009 and 2011. Individual plants are scattered throughout the site in the scrub, scrubby flatwoods, mesic flatwoods and mesic hammock natural communities. The common wild pine population decreased following the 2004 and 2005 hurricane seasons from over 100 to fewer than 50 plants. This species has been placed on the state's endangered list as a direct result of the feeding activities of an imported bromeliad weevil that result in the eventual death of the plant (Frank 1999). There is no known practical treatment for imported bromeliad weevils. Common wild pine also is susceptible to fire. Although individual plants will be killed by prescribed burning, it is expected that the regenerating trees and shrubs will be recolonized by airborne seeds drifting in from the unburned portions of the site. This species will be protected by having numerous management units, by burning only one unit at a time in order to maintain a seed source on the unburned parts of the site, or possibly relocating individual plants to other locations on the site prior to prescribed burn or mechanical chopping activities. Known populations of common wild pine will be surveyed once every five years to monitor population

trends. Common wild pine is designated by FDACS as endangered; it is not listed by FNAI or USFWS.

Curtiss's milkweed (*Asclepias curtissii*)

This endemic perennial forb was recorded at the natural area in 1984 by consultants for TCRPC (TCRPC 1984) and by Barnett (1984), in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), in 1990 by Gaby and Gaby, Inc. (1990), and by ERM staff in 1991, 2002, 2008, 2009 and 2012. All occurrences were in the scrub natural community. Because of the small size and inconspicuous appearance of this plant when not in bloom, individuals in open sandy trails are often the only ones spotted, even though more plants may be present in more vegetated areas. This species also has a long period of dormancy, during which the above-ground portions of the plant are absent. Given these characteristics, it is difficult to estimate the size of the current population on the natural area. This species will be protected by maintaining open sandy habitats through prescribed burns and mechanical chopping activities. Known populations of Curtiss's milkweed will be surveyed annually to monitor population trends. Curtiss's milkweed is designated by FDACS as endangered; it is not listed by FNAI or USFWS.

Cut-throat grass (*Panicum abscissum*)

This perennial grass was recorded at the natural area in the early 1990s by TCRPC staff, in 1998 by IRC (Bradley and Woodmansee 1998), and by ERM in 1996, 2009, 2011 and 2013. Several thousand clumps were relocated from a nearby development site to a 2-acre cut-throat grass restoration area in the drained basin marsh in 1999. These plants survived for a few years post-planting, but then died off. A few thousand naturally-occurring plants were recorded in 2013. This species flowers only after a fire, when mowed or otherwise disturbed. Cut-throat grass is more vigorous when it experiences seasonal flooding and frequent fires (Yahr et al. 2000), but is capable of persisting even when drained and fire-excluded. It will be protected by prescribed burning, mechanical chopping and/or mowing. This species will be surveyed once every two years to monitor population levels. Cut-throat grass is ranked as G3/S3 by FNAI and designated as endangered by FDACS; it is not listed by USFWS.

Giant wild pine (*Tillandsia utriculata*)

This epiphytic bromeliad was recorded at the natural area in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), in 1990 by Gaby and Gaby, Inc. (1990), in 1998 by IRC (Bradley and Woodmansee 1998) and by ERM in 1991, 2003, 2004, 2006, 2008, 2009 and 2011. It is found scattered throughout the natural area and has a highly variable population. Surveys conducted since 2003 have recorded as many as 422 plants and as few as 10 plants. Giant wild pine has been placed on the state's endangered list as a direct result of the feeding activities of an imported bromeliad weevil that result in the eventual death of the plant (Frank 1999). There is no known practical treatment for imported bromeliad weevils. This species also is susceptible to fire. Although individual plants will be killed by prescribed burning, it is expected that the

regenerating trees and shrubs will be recolonized by airborne seeds drifting in from the unburned portions of the site. This species will be protected by having numerous management units, by burning only one unit at a time in order to maintain a seed source on the unburned parts of the site, or possibly relocating individual plants to other locations on the site prior to prescribed burn or mechanical chopping activities. Known populations of giant wild pine will be surveyed once every five years to monitor population trends. Giant wild pine is designated by FDACS as endangered; it is not listed by FNAI or USFWS.

Hand fern (*Ophioglossum palmatum*)

One individual of this epiphytic fern was recorded in 1998 by IRC (Bradley and Woodmansee 1998) growing on a cabbage palm in the west-central portion of the site in the ecotone between the mesic hammock and scrubby flatwoods communities. The species was recorded by ERM in 2000, 2002, 2003 and 2005, but has not been recorded since. The plants may have been lost as a result of the 2004 and 2005 hurricanes. Hand ferns require high humidity and protection from fire. If the species is recorded again on the natural area, the locations of known individual plants will be protected during prescribed burns. This species will be surveyed once every two years to monitor population levels. Hand fern is ranked as G4/S2 by FNAI and designated as endangered by FDACS; it is not listed by USFWS.

Inflated & reflexed wild pine (*Tillandsia balbisiana*)

This epiphytic bromeliad was recorded at the natural area in 1991, 2003, 2005, 2006, 2008, 2009 and 2011 by ERM and in 1998 by IRC (Bradley and Woodmansee 1998). The population is estimated to contain less than 100 plants. This species is adversely affected by the feeding activities of an imported bromeliad weevil that result in the eventual death of the plant (Frank 1999). There is no known practical treatment for imported bromeliad weevils. This species also is susceptible to fire. Although individual plants may be killed by prescribed burning, it is expected that airborne seeds drifting in from the unburned portions of the site will colonize the regenerating trees and shrubs. This species will be protected by having numerous management units, by burning only one unit at a time in order to maintain a seed source on the unburned parts of the site, or possibly relocating individual plants to other locations on the site prior to prescribed burn or mechanical chopping activities. Known populations of inflated & reflexed wild pine will be surveyed once every five years to monitor population trends. Inflated & reflexed wild pine is designated by FDACS as threatened; it is not listed by FNAI or USFWS.

Large-flowered rosemary (*Conradina grandiflora*)

This endemic shrubby mint was recorded at the natural area in 1984 by TCRPC (TCRPC 1984) and by Barnett (1984), in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), in 1990 by Gaby and Gaby, Inc. (1990), in 1998 by IRC (Bradley and Woodmansee 1998), and by ERM in 1990, 1991, 1999, 2002, 2005, 2008 and 2010. Large-flowered rosemary is found in the scrub community in the eastern portion of the site. The population at the natural area is

estimated at less than 100 plants. Large-flowered rosemary will be protected by maintaining a mosaic of seral stages within the scrub community through prescribed burning. Large-flowered rosemary is ranked as G3/S3 by FNAI and designated as threatened by FDACS; it is not listed by USFWS.

Mahogany (*Swietenia mahagoni*)

One individual of this semi-deciduous tree was recorded at the natural area in 2010 by ERM. It was located north of Clint Moore Road near the underpass, and may have been planted. Because mahogany is not a component of the scrub community, no special effort will be made to protect or maintain this tree. It may be adversely affected by prescribed burns conducted to maintain the scrub community. Mahogany is ranked by FNAI as G3G4/S3 and designated by FDACS as threatened; it is not listed by USFWS.

Pine-pink orchid (*Bletia purpurea*)

One individual of this short-lived, terrestrial orchid was recorded at the natural area in 2010 by ERM staff, but that individual is no longer present. This species is sensitive to habitat alteration. If this species is recorded again at the natural area, known populations of this orchid will be surveyed once every five years to monitor population trends. Pine-pink orchid is designated by FDACS as threatened; it is not listed by FNAI or USFWS.

Sand dune spurge (*Chamaesyce cumulicola*)

This endemic herb was recorded at the natural area in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), in 1990 by Gaby and Gaby, Inc. (1990), in 1998 by IRC (Bradley and Woodmansee 1998) and by ERM staff in 1991, 2004, 2005, 2006, 2008, 2010, 2011 and 2013. Most individuals are located in disturbed areas. It will be protected by maintaining a mosaic of seral stages within the scrub community through prescribed burning. Known populations of this herb will be surveyed on an annual basis to monitor population trends. Sand dune spurge is ranked as G2/S2 by FNAI and designated as endangered by FDACS; it is not listed by USFWS.

Scrub pinweed (*Lechea cernua*)

This endemic forb was recorded at the natural area in 1984 by TCRPC (TCRPC 1984) and by Barnett (1984), in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), in 1990 by Gaby and Gaby, Inc. (1990), in 1998 by IRC (Bradley and Woodmansee 1998), and by ERM in 1990, 1991, 2002, 2003, 2005, 2010 and 2013. It is found in the scrub natural community in the northern portion of the site. It will be protected by maintaining a mosaic of seral stages within the scrub community through prescribed burning. Known populations of this species will be surveyed once every five years to monitor population trends. Scrub pinweed is ranked by FNAI as G3/S3 and designated by FDACS as threatened; it is not listed by USFWS.

3.6.2 Animals

Twenty-nine animal species recorded at the natural area have been listed for protection or special management by at least one governmental agency or by FNAI (Table 2). They include 1 arachnid, 1 butterfly, 1 turtle, 1 crocodilian, 2 snakes, 1 lizard, 21 birds and 1 mammal. One federally-listed species, the Florida scrub-jay, was recorded on the site in 1990 and 1993 but has not been recorded since then. In 2013 the closest site on which a scrub-jay was recorded was the Jupiter Ridge Natural Area in Jupiter, approximately 35 miles north of the Yamato Scrub Natural Area.

Listed animal species that utilize the natural area will be protected as components of the natural communities of which they are a part. All listed animal species will be 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 existing nest or rookery, or any nest or rookery that may be discovered in the future, and by the enforcement of anti-poaching regulations. ERM will coordinate with FWC on the management of the site for protection of listed animals. FWC currently is preparing species action plans for individual listed species that will become components of an overall imperiled species management plan.

This section includes a brief description of each listed species, the general location(s) at which it was recorded at the site, any species-specific management/protection strategies that will be used to protect the species, and the ranks and designations assigned to the species. Listed animal species recorded at the natural area are discussed in alphabetical order by common name. Ranks assigned by FNAI are from a June 2013 tracking list (FNAI 2013); designations assigned by FWC are from FWC (2013f); and designations assigned by USFWS are from USFWS (undated). Definitions for the ranks and designations used by these entities are provided in Appendix C.

American alligator (*Alligator mississippiensis*)

This large aquatic reptile was recorded by ERM in the north basin marsh pond at the natural area in 2007 and again in 2009, but has not been seen since that time. The American alligator is primarily a freshwater species, and may be present in any water-retaining habitat, including ponds, canals, lakes, rivers, large streams, borrow pits, and marshes (Bartlett and Bartlett 2011b). 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). American alligator is ranked by FNAI as G5/S4, listed by FWC as federally-designated threatened by similarity of appearance (to the endangered American crocodile), and designated by USFWS as threatened by similarity of appearance.

American redstart (*Setophaga ruticilla*)

This migratory warbler was first recorded at the natural area in 1990 by Gaby and Gaby, Inc. (1990) and was subsequently recorded by ERM staff in 1996, 1999, 2007, 2008, 2011 and 2012. The American redstart forages for flying insects, often taking long flights to capture prey (Cox 1996a). Fall migrants arrive in Florida between late July and early November and spring birds pass through between late March and early June (Maehr and Kale 2005). American redstart is ranked by FNAI as G5/S2; it is not listed by FWC or USFWS.

Bald eagle (*Haliaeetus leucocephalus*)

This very large bird of prey was first recorded on the site in 2002 by ERM staff and was seen again in 2009, but has not been recorded since that time. This species inhabits a variety of natural communities, including 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). Bald eagles in Florida are predominately year-round residents, but winter migrants do occur. Bald eagles feed primarily on fish and water birds, and frequently pirates fish from ospreys (Pranty et al. 2006). This species may use the natural area for foraging purposes. Although the bald eagle is not known to have nested on the natural area, nests are known to occur elsewhere in Palm Beach County. Bald eagles typically nest in pine trees, but may also nest in mangrove trees or cypress; most nests are built more than 50 feet off the ground (Stevenson and Anderson 1994). Bald eagle is ranked by FNAI as G5/S3; it is not listed by USFWS or FWC.

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

This medium-sized wading bird was recorded at the natural area in 2002 by ERM and again in 2009, but has not been recorded since that time. Black-crowned night-heron methodically stalk small fish, amphibians, snakes, and invertebrates in open, shallow freshwater and saltwater marshes and other wetlands, usually at night (Maehr and Kale 2005, Pranty et al. 2006). They sometimes nest in single-species colonies (Below 1996), but typically nest with other wading birds in large colonies (Maehr and Kale 2005). Nesting occurs between December and June in Florida, usually on thick clusters of shrubs and trees that are either over standing water or on islands. There is no wading bird rookery on the natural area. Black-crowned night-heron is ranked by FNAI as G5/S3; it is not listed by FWC or USFWS.

Caspian tern (*Hydroprogne caspia*)

This large, gull-like tern was recorded flying over the natural area twice in 2006 by ERM and once in 2009, but has not been recorded since that time. Because this species feeds entirely on fish, it is vulnerable to chemical contamination in the aquatic and marine/estuarine food chains (Paul 1996). Caspian terns nest on the ground in rookeries on coastal islands, and are not known

to breed in southeastern Florida (Pranty et al. 2006). Caspian tern is ranked by FNAI as G5/S2; it is not listed by FWC or USFWS.

Cassius blue butterfly (*Leptotes cassius theonus*)

This small butterfly was recorded at the natural area by ERM in 2010. Cassius blue butterflies can have at least three generations per year in Florida (Minno et al. 2005). They are locally common in upland areas, including edges of hammocks, thickets, disturbed areas and gardens (Minno et al. 2005). Cassius blue butterfly is listed by FWC as federally-designated threatened by similarity of appearance because of its similarity to the endangered Miami blue butterfly (*Cyclargus thomasi bethunebakeri*) and by USFWS as threatened by similarity of appearance; is not listed by FNAI.

Eastern diamond-backed rattlesnake (*Crotalus adamanteus*)

This large, heavy-bodied, venomous snake was recorded by ERM staff at the natural area in 1990, 1996 and 1997. None have been seen since that time. Although the natural area contains habitat that is suitable for eastern diamond-backed rattlesnakes, this species may no longer be present on the site. The eastern diamond-backed rattlesnake is native to Florida and the southeastern United States. It is a carnivore; its diet is primarily small mammals that range from mice to rabbits (Ashton and Ashton 1988). The eastern diamond-backed rattlesnake uses a wide variety of habitats (Bartlett and Bartlett 2003) and may occasionally be found in gopher tortoise burrows (Ashton and Ashton 2008). This snake will be protected by educating visitors on the ecological value of rattlesnakes. Eastern diamond-backed rattlesnake is ranked by FNAI as G4/S3; it is not listed by FWC or USFWS.

Eastern indigo snake (*Drymarchon corais couperi*)

A shed skin from this large, heavy-bodied snake was found within the scrub community at the natural area in 1984 by Dr. Frederick Cichocki of the College of Boca Raton (now Lynn University). No additional sightings of this snake have been recorded and the species may no longer be present on the site. The eastern indigo snake is a carnivore; its diet includes a variety of reptiles, amphibians, small mammals, and birds (Ashton and Ashton 2008; Bartlett and Bartlett 2003). This species is a wide-ranging, territorial snake that occurs throughout Florida and occasionally uses gopher tortoise burrows (Ashton and Ashton 2008; Bartlett and Bartlett 2003). An adult male indigo snake can utilize ranges in excess of 370 acres (Bartlett and Bartlett 2003). Eastern indigo snake is ranked by FNAI as G3/S3, listed by FWC as federally-designated threatened, and designated by USFWS as threatened.

Florida mouse (*Podomys floridanus*)

This endemic small mammal was recorded at the natural area in 1984 by TCRPC (1984), in 1985 by Richardson (1985) and in 1986 by Richardson et al. (1986), but has not been recorded since then. In February and March 1985, 90 individual mice were captured (Richardson 1985). Sixty Florida mice were trapped in the northern portion of the site in 1986 in an attempt to relocate the population to the southern portion of the site prior to scheduled site development (Richardson et al. 1986). The Florida mouse is considered to be a commensal of the gopher tortoise (FWC 2013b); it makes a shelf or cavity in the wall of the gopher tortoise burrow or a nest chamber in the side of the burrow (Ashton and Ashton 2008).

FWC prepared a draft action plan for this species in 2013 (FWC 2013b) in response to an FWC determination that this species should be removed from the state list of endangered and threatened species. The change will not become effective until after an imperiled species management plan that includes information on this species has been reviewed by the public and approved by FWC. Florida mouse is currently ranked by FNAI as G3/S3 and is listed by FWC as a state species of special concern; it is not listed by USFWS.

Florida sandhill crane (*Grus canadensis pratensis*)

This large, omnivorous wading bird was recorded at the natural area by ERM staff on a single occasion in 2006. The Florida subspecies is nonmigratory (FWC 2013c). Florida sandhill cranes typically nest and feed in wetland habitats such as basin and depression marshes, but they also forage in wet flatwoods and open pastures as well as on golf courses and suburban lawns (Maehr and Kale 2005). This species is not known to nest on the site; if a nesting area is found in the future, it will be protected during management activities, including prescribed burns. Florida sandhill crane is ranked by FNAI as G5T2T3/S2S3 and listed by FWC as state-designated threatened; it is not listed by USFWS.

Florida scrub lizard (*Sceloporus woodi*)

This small endemic lizard was once relatively common at the natural area. It was recorded prior to 1984 by TCRPC (TCRPC 1984) and by Barnett (1984), in 1985 by Richardson (1985), in 1986 by Richardson et al. (1986), in 1991 and 1998 by George Gann of IRC, and by ERM staff in 1990 and 2004. It has not been observed since 2004. Richardson et al. (1986) captured and released 99 scrub lizards during a population survey in 1985. Its habitats are sand pine scrub and other xeric habitats where dry, well-drained, deep sandy soils with open patches of unvegetated sand are present (Jackson 1973a, Fernald 1989). The Florida scrub lizard feeds primarily on ants, adult beetles and orthopterans (Jackson 1973b). Florida scrub lizard is ranked by FNAI as G3/S3; it is not listed by FWC or USFWS.

Gopher tortoise (*Gopherus polyphemus*)

In 1986 Richardson et al. (1986) did a complete survey of the site and adjacent areas that have since been developed and determined that there were 155 active and inactive gopher tortoise burrows present. In 1990 Gaby and Gaby, Inc. (1990) noted that gopher tortoises were still present in the northern area after they were supposedly all trapped and removed to an area south of Clint Moore Road (as a condition for development of the site as the proposed Boca Commerce Center). In 1998 IRC staff observed that gopher tortoises were frequent throughout the open areas of the site, especially the drained basin marsh north of Clint Moore Road (Bradley and Woodmansee 1998).

Based on surveys conducted at the natural area by ERM every two years since 2003, it appears that the gopher tortoise population on the natural area is stable. Two tortoises were relocated to the natural area from the U.S. Foodservice property in August 2008. The estimated size of the population in 2009 was 153 tortoises; in 2011 was 134 tortoises; and in 2013 was 162 tortoises. Because no prescribed burns were conducted since 2003 due to adverse weather conditions, mechanical chopping was initiated in 2011 to reduce the fuel load in Management Unit 6 and create more open space. In April 2012, Management Units 1, 2, 3, 5, and 6 were selectively chopped to reduce fuel loads. This management technique will continue to be used during periods when it is not possible to conduct a prescribed burn. Based on the 2013 survey results and opportunistic observations by ERM staff, it appears that the gopher tortoise population increased in the areas in which the vegetation had been mechanically reduced.

Gopher tortoises are plant eaters; the bulk of their diet consists of grasses and herbaceous plants and they are known to feed on up to 400 species of plants (Ashton and Ashton 2008). They can travel up to two miles from their burrows to feed on seasonal vegetation such as flowers, fruits and leaves from trees, shrubs and vines, deer feeding plots, or ripe orchard fruits on neighboring properties (Ashton and Ashton 2008). They also may eat a variety of other items, such as carrion, small animals, insects and other invertebrates (Ashton and Ashton 2008). Gopher tortoises generally live in burrow clusters or pods (collections of individuals that establish their primary burrows close to each other), dig several burrows per tortoise and move from burrow to burrow on a regular basis (Ashton and Ashton 2008).

The gopher tortoise is considered to be a keystone species in upland communities because of the important role that this species plays in relation to other plants and animals. At least 411 species of vertebrate and invertebrate animals are known to use gopher tortoise burrows (Mushinsky et al. 2006). Tortoises are slow to reach maturity; the average age at first breeding is 15-20 years (Ashton and Ashton 2008). The average clutch size is 5-7 eggs, but the mortality rate for the first two years of life is 96% (Ashton and Ashton 2008). A gopher tortoise may live 60 or more years (Engel et al. 2006).

In Florida, gopher tortoise habitat quality has declined due to fire suppression and a decline in the use of prescribed fire in both natural pine forests and pine plantations. The construction of

roads has led to both direct loss of habitat and mortality due to road kills as well as fragmentation of habitats and separation of tortoise populations (Engel et al. 2006). Mushinsky et al. (2006) estimated that the gopher tortoise population in Florida has declined at least 80% since the 1960s.

The County is currently investigating the possibility of using the natural area as a gopher tortoise recipient site. However, no gopher tortoises will be allowed to be relocated onto the site unless it has been determined from the results of a gopher tortoise survey that the site can support additional tortoises. Any funds associated with the relocation of gopher tortoises to the site will be deposited into the Natural Areas Fund and used to restore, manage, enhance, repopulate or acquire imperiled species habitat and to implement land management plans for sites with such habitats.

Gopher tortoise is ranked by FNAI as G3/S3 and listed by FWC as state-designated threatened; it is listed as a candidate species by USFWS.

Great egret (*Ardea alba*)

This wading bird was recorded in 2000 by ERM feeding in the L-40 Canal. It was recorded by ERM staff again in 2004 and has been observed annually since 2006. Great egrets are stand-and-wait predators and also methodically stalk small fish, amphibians, and invertebrates in open, shallow fresh and saltwater marshes and wetlands, wet or dry pastures, and agricultural drainage ditches (Runde 1996, Pranty et al. 2006). Nesting occurs between January and June with large numbers of other wading birds in thick swamps dominated by low bushes and large trees, and on mangrove-covered coastal islands (Maehr and Kale 2005). No rookeries for this species are known to be present on the natural area. Great egret is ranked by FNAI as G5/S4 by FNAI; it is not listed by FWC or USFWS.

Hairy woodpecker (*Picoides villosus*)

One individual of this nonmigratory bird species was recorded at the natural area prior to 1996, but the name of the observer is not known. Another individual was observed by ERM in 2012. The population of this species is becoming rare to very rare south of Lake Okeechobee (Pranty et al. 2006); it typically is absent from larger suburban and urban areas. This species seems to be dependent on fire-maintained pine forests where it feeds on the larvae of wood-boring beetles that become abundant soon after a pine tree is killed (Pranty et al. 2006). It also may eat other insects, nuts and fruits. Hairy woodpeckers nest in live or dead tree trunks or limbs. The 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. Hairy woodpecker is ranked by FNAI as G5/S3; it is not listed by FWC or USFWS.

Least tern (*Sterna antillarum*)

This species was recorded flying over the site several times in 2006 by ERM, and once in 2012. This migratory species is present in Florida from March through September (Maehr and Kale 2005). It hovers and plunge-dives for small fish and shrimp (Pranty et al. 2006). Nesting occurs throughout Florida from April through August (Maehr and Kale 2005). Least terns historically nested on beaches, dunes, islands, and river shores, but now they nest primarily on human-made habitats such as spoil islands, construction sites, phosphate mines, and gravel rooftops, but only on light-colored substrates (Pranty et al. 2006, Maher and Kale 2005). It is estimated that rooftops now support over 80% of the breeding population (FWC 2013a). No nests have been seen on the natural area. If least terns are observed nesting on the site, the nesting area and any associated brood-rearing area will be protected from human disturbance during the nesting period.

Least tern is ranked by FNAI as G4/S3 and listed by FWC as state-designated threatened; it is not listed by USFWS.

Limpkin (*Aramus guarauna*)

This unusual, heron-like bird was recorded at the natural area by ERM staff in 2010 and again in 2012. Limpkins feed primarily on applesnails of the genus *Pomacea* and freshwater clams (Unionidae), although a variety of other prey is taken, including lizards, frogs, worms, insects, crustaceans, and other snails (Maehr and Kale 2005, Pranty et al. 2006). Plants like common water-hyacinth (*Eichhornia crassipes*) and waterthyme (*Hydrilla verticillata*) crowd out native submerged plants that are major food sources for applesnails, and herbicide spraying to control these nonnative plants negatively impacts snail populations (Bryan 1996). The limpkin will be protected by controlling nonnative aquatic plants with methods that do not negatively affect applesnail populations. The species is not known to nest on the natural area.

FWC prepared a draft species action plan for this species in 2013 (FWC 2013d) in response to an FWC determination that the species be removed from the state list of endangered and threatened animal species. The change will not become effective until after an imperiled species management plan that includes information on this species has been reviewed by the public and approved by FWC. Limpkin is ranked by FNAI as G5/S3 and listed by FWC as a state species of special concern; it is not listed by USFWS.

Little blue heron (*Egretta caerulea*)

This medium-sized wading bird was recorded at the natural area in 2006 by ERM and annually thereafter. Migrant little blue herons move into or through Florida during the winter as evidenced by an increase in their numbers during the nonbreeding season (Rodgers 1996). Little blue herons feed on small fish, amphibians, and invertebrates in both fresh and saltwater systems. Nesting occurs between late February and August in colonies composed only of little

blue herons or mixed colonies with other wading birds, mainly at saltwater sites (Maehr and Kale 2005); it is not known to nest at this site. The population has exhibited a slow but steady decline over the last three generations and is projected to continue to decline at the same rate for the next three generations (FWC 2013e).

FWC prepared a draft species action plan for this species in 2013 (FWC 2013e) in response to an FWC determination that the status of the little blue heron should be changed from species of special concern to state-designated threatened. The change will not become effective until after an imperiled species management plan that will include information on this species has been reviewed by the public and approved by FWC. Little blue heron currently is ranked by FNAI as G5/S4 and listed by FWC as a state species of special concern; it is not listed by USFWS.

Merlin (*Falco columbarius*)

One individual of this small- to medium-sized falcon was recorded at the natural area by ERM staff in 2008; another individual was recorded in 2011. These migratory falcons can be fairly common along the Atlantic coast of Florida from September to April (Pranty et al. 2006). Merlins can be seen in virtually any open habitat, usually near water; they prey chiefly on small birds as large as doves, which they capture by diving down from a perch or by overtaking the prey after a short chase (Pranty et al. 2006). They also may feed on small mammals and insects (Maehr and Kale 2005). Merlin is ranked by FNAI as G5/S2; it is not listed by FWC or USFWS.

Osprey (*Pandion haliaetus*)

This bird of prey has been recorded numerous times since 1990 by ERM along the L-40 and El Rio Canals, and in the interior of the site. Ospreys are widely distributed in Florida (Maehr and Kale 2005). Ospreys feed primarily on fish. Nesting occurs from late spring to early summer (Maehr and Kale 2005). Ospreys use trees, telephone poles, and human-made structures for nesting; they create large stick nests high above the ground that they use for many years. A pair of ospreys has successfully nested at the natural area each nesting season from 2008 to 2013. The ospreys initially nested in a pine snag adjacent to the restored basin marsh, however, the snag fell sometime after completion of the 2010 nesting season. During the 2011, 2012 and 2013 nesting seasons, the ospreys nested in a tree in Management Unit 7, south of Clint Moore Road. Osprey is ranked by FNAI as G5/S3S4 and listed by FWC as a state species of special concern (in Monroe County only); it is not listed by USFWS.

Painted bunting (*Passerina ciris*)

One individual of this colorful migratory songbird was recorded at the natural area in 1990 by Gaby and Gaby, Inc. (1990), and another in 2003 by ERM. Painted buntings feed primarily on seeds, but also eat small fruits and insects. This species frequently overwinters in south and central Florida, but is not found south of Brevard County during the breeding season (Cox 1996b). Painted bunting is ranked by FNAI as G5/S3; it is not listed by FWC or USFWS.

Peregrine falcon (*Falco peregrinus*)

One individual of this migratory raptor was recorded in 1987 by Gaby and Gaby, Inc. (1990). Others were recorded in 2006, 2008, 2010 and 2012 by ERM. Florida represents an important wintering area for this species, especially for the Arctic subspecies (Maehr and Kale 2005). The peregrine falcon is a transient species in Florida and usually inhabits open wetlands (Pranty et al. 2006). In Florida it often is observed feeding on migratory shorebirds on the Atlantic coast and in inland marshes and lakes (Maher and Kale 2005). Peregrine falcon is ranked by FNAI as G4/S2; it is not listed by FWC or USFWS.

Red widow spider (*Latrodectus bishopi*)

In 1986 and 1990 Gaby and Gaby, Inc. (1990) recorded numerous red widow spiders in scrub and scrubby flatwoods in the northern portion of the natural area. The species was recorded by ERM staff in 2000, but has not been recorded at the natural area since that time. This venomous, nocturnal spider is endemic to Florida; it makes its web in saw palmettos, primarily in sand pine scrub and scrubby flatwoods habitats in central and southeast Florida (Carrel 2001, Edwards undated). Red widow spider is ranked by FNAI as G2G3/S2S3; it is not listed by FWC or USFWS.

Roseate spoonbill (*Platalea ajaja*)

This large, colorful wading bird was first recorded at the natural area in 2011 by ERM, but has not been recorded since that time. Mangrove islands and occasionally dredge-spoil islands are the preferred nesting habitat (FWC 2013e). The species is a fairly common permanent resident in the southern half of the Florida peninsula (Pranty et al. 2006). Roseate spoonbills feed on crustaceans, insects, and small fish (Maehr and Kale 2005) and typically feed in small flocks in open, shallow wetlands, mostly at brackish coastal sites. Nesting usually occurs between late February and early March to June in Florida (Sustainable Ecosystems Institute 2007). Nesting usually occurs with other wading birds in large colonies on thick thickets of mangroves; spoonbills construct deep stick nests (Pranty et al. 2006). No wading bird rookery for this species is known to be present on the natural area. The bird seen at the natural area is believed to be part of the post-breeding dispersal.

FWC prepared a draft species action plan for this species in 2013 (FWC 2013e) in response to an FWC determination that the status of the roseate spoonbill should be changed from state species of special concern to state-designated threatened. The change will not become effective until after an imperiled species management plan that includes information on this species has been reviewed by the public and approved by FWC. Roseate spoonbill currently is ranked by FNAI as G5/S2 and listed by FWC as a state species of special concern; it is not listed by USFWS.

Snowy egret (*Egretta thula*)

This wading bird was recorded at the natural area by ERM in 2004, 2008, 2009, 2010 and 2012. The snowy egret is a common and widespread Florida resident that is found in almost any wetland habitat (Pranty et al. 2006). Snowy egrets feed primarily on prawns and small fish in freshwater marshes and swamps; they also feed in estuaries and brackish wetlands. 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 (Maehr and Kale 2005). The species is not known to nest at this natural area.

FWC prepared a draft species action plan for the snowy egret in 2013 (FWC 2013e) in response to an FWC determination that the snowy egret should be removed from the state list of endangered and threatened animal species. The change will not become effective until after an imperiled species management plan that includes information on this species has been reviewed by the public and approved by FWC. Snowy egret currently is ranked by FNAI as G5/S3 and listed by FWC as a state species of special concern; it is not listed by USFWS.

Swallow-tailed kite (*Elanoides forficatus*)

One individual of bird of prey was recorded in 2010 by ERM; it was seen flying over the basin marsh. This species breeds in southeastern United States and winters in South America (FNAI 2001). Nesting and foraging habitats include pine forests and savannas, cypress and cypress-hardwood swamps, hardwood hammocks, mangrove swamps, narrow riparian forests, prairies, and freshwater and brackish marshes (FNAI 2001). Kites require a mosaic of communities, with tall, accessible trees for nesting and open areas for foraging. Swallow-tailed kites are vulnerable to conversion of diverse vegetation mosaics to agricultural monocultures and pine plantations, along with the related loss of nesting trees. The swallow-tailed kite is ranked by FNAI as G5/S2; it is not listed by FWC or USFWS.

Tricolored heron (*Egretta tricolor*)

This long-necked wading bird was recorded at the natural area prior to 1996 by ERM. The species also was recorded at the natural area in 2002, 2004 and from 2007 to 2013. It has been recorded multiple times during the past several years. It is a fairly-common permanent resident in Florida except in the western Panhandle (Pranty et al. 2006). Tricolored herons primarily live in coastal habitats such as estuaries, but also are present in many types of wetlands, including edges of marshes, lakes and ponds, and flooded agricultural fields (Pranty et al. 2006). They feed on small fish. Tricolored herons are colonial nesters. They create bulky platform nests in mangroves or other dense aquatic shrubs or in willow thickets in fresh water or woody thickets on islands or over standing water; eggs are laid from late February through July (Pranty et al. 2006, Maehr and Kale 2005, Hipes et al. 2001). The tricolored heron is not known to nest at the natural area.

FWC prepared a species action plan for the tricolored heron in 2013 (FWC 2013e) in response to an FWC determination that the status of this species should be changed from state species of special concern to state-designated threatened (FWC 2013e). The change will not become effective until after an imperiled species management plan that includes information on this species has been reviewed by the public and approved by FWC. Tricolored heron currently is ranked by FNAI as G5/S4 and listed by FWC as a state species of special concern; it is not listed by USFWS.

White ibis (*Eudocimus albus*)

This wading bird was recorded at the natural area in 2004 by ERM and in nearly every year since then. This species breeds throughout Florida and in coastal areas of the southeastern United States. It is a common to abundant Florida resident, except in the Panhandle. White ibises are gregarious birds that typically feed in flocks on fish, crustaceans and worms in fresh, brackish, and saltwater environments, especially coastal marshes and estuaries; they also feed on insects in fields and lawns (Pranty et al. 2006). Platform nests are created in shrubby vegetation over water or on an island, and eggs are laid from March through May (Maehr and Kale 2005). White ibises nest in large colonies in mangroves, thickets or swamps (Pranty et al. 2006) and are sensitive to human presence at nesting sites. White ibises are nomadic nesters; colonies may vary considerably in size from year to year (Frederick 1996). They are not known to nest at the natural area.

FWC prepared a draft species action plan for the white ibis in 2013 (FWC 2013e) in response to an FWC determination that the white ibis should be removed from the state list of endangered and threatened animal species. The white ibis will not be formally removed from the list until after an imperiled species management plan that contains information on this species has been reviewed by the public and approved by FWC. White ibis currently is ranked by FNAI as G5/S4 and listed by FWC as a state species of special concern; it is not listed by USFWS.

Wood stork (*Mycteria americana*)

This large wading bird was recorded at the natural area in 1996, 2002, 2003 and 2007 to 2013 by ERM. Nesting occurs in large colonies in forested wetlands from November to May (Maehr and Kale 2005), either high in cypress trees or lower in mangroves (Pranty et al. 2006). Freshwater colony sites must remain flooded throughout the nesting period to protect the young against predation and abandonment (USFWS 1997). Wood storks may abandon their nests when disturbed (Ogden 1996). The wood stork is not known to nest at this natural area. Wood storks feed primarily on fish and invertebrates in freshwater swamps and marshes (Pranty et al. 2006, Maehr and Kale 2005). They also may occasionally feed on crustaceans, amphibians, reptiles, mammals, other birds, and arthropods (USFWS 1997). Wood stork is ranked by FNAI as G4/S2, listed by FWC as federally-designated endangered and designated by USFWS as endangered.

Worm-eating warbler (*Helmitheros vermivorum*)

Two individuals of this uncommon migratory warbler were recorded at the natural area in 1990 by Gaby and Gaby, Inc. (1990). It has not been observed at the natural area since that time. This species has rarely been recorded in Florida during the breeding season; all breeding season reports in Florida have been from the western panhandle (Cox 1996c). The worm-eating warbler prefers large forest tracts and may be susceptible to the loss of large contiguous blocks of habitat (Cox 1996c). The worm-eating warbler's diet consists mostly of caterpillars, other insects and spiders (Pranty et al. 2006, Vitz et al. 2013). Worm-eating warbler is ranked by FNAI as G5/S1; it is not listed by FWC or USFWS.

3.7 MINERAL RESOURCES

There are no known commercially viable oil, gas, or phosphate deposits, or any other mineral resources at the natural area. All known mineral resources rights on the state-owned portion of the natural area are owned by the State of Florida; all known mineral resources rights on the city- and county-owned tract are owned jointly by the City and the County.

3.8 UNIQUE NATURAL FEATURES AND OUTSTANDING NATIVE LANDSCAPES

Within the context of Palm Beach County, the Pamlico Dune Ridge within the Yamato Scrub Natural Area should be considered a unique natural feature. Very few areas exist in the county where the Pamlico Dune Ridge can be viewed in a relatively unaltered state. There are no coral reefs, springs, rapids, caverns, sinkholes, or state- or nationally-designated wild and scenic rivers at the natural area. The entire natural area site should be considered an outstanding native landscape containing relatively unaltered flora, fauna and geologic conditions.

3.9 RESOURCES ON THE PROPERTY THAT ARE LISTED IN THE FLORIDA NATURAL AREAS INVENTORY

A letter from FNAI on the resources that FNAI has listed as occurring on this site is provided in Appendix H. Information on all new listed species recorded at the Yamato Scrub Natural Area will be provided to FNAI, using the form that is available on the FNAI web site.

Three intact natural communities present on the natural area have been classified by FNAI as very rare (S3) or imperiled (S2) in Florida (FNAI 2013). One is ranked as very rare (mesic hammock) and two are ranked as imperiled (scrub and scrubby flatwoods).

Seven species of plants at the natural area are listed by FNAI (2013) as very rare (S3) or imperiled (S2) in Florida. Five are classified as very rare (banded airplant, cut-throat grass, large-flowered rosemary, mahogany and scrub pinweed) and two are classified as imperiled (hand fern and sand dune spurge). Five plant species found at the natural area are not listed by

FNAI – Curtiss's milkweed, pine-pink orchid, inflated & reflexed wild pine, common wild pine and giant wild pine.

Twenty-eight species of animals recorded at the natural area are listed by FNAI (2013) as apparently secure (S4), very rare (S3), imperiled (S2) or critically imperiled (S1) in Florida. Twelve are classified as very rare (bald eagle, black-crowned night-heron, eastern diamond-backed rattlesnake, eastern indigo snake, Florida mouse, Florida scrub lizard, gopher tortoise, hairy woodpecker, least tern, limpkin, painted bunting and snowy egret), seven are classified as imperiled (American redstart, Caspian tern, merlin, peregrine falcon, roseate spoonbill, swallow-tailed kite and wood stork), and one is classified as critically imperiled (worm-eating warbler). Two species (Florida sandhill crane and red widow spider) are listed as between very rare and imperiled (S2S3). Five other species are listed as apparently secure (S4) in Florida but possibly rare in portions of their ranges (American alligator, great egret, little blue heron, tricolored heron and white ibis) and one (osprey) is listed as between very rare and apparently secure (S3S4). One animal species recorded at the natural area is not listed by FNAI (Cassius blue butterfly).

3.10 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

FDHR, which maintains the Florida Master Site File, shows three linear resources in the vicinity of the natural area – the L-40 Canal (8PB12923), the El Rio Canal (8PB12918) and the Seaboard Airline Railway (now the CSX Railroad, 8PB12917) (Appendix I). The L-40 Canal runs east-west through a portion of the site, the El Rio Canal lies just west of the northern portion of the site, and the railway lies just east of the central and southern portions of the site. The right of ways for the L-40 Canal and El Rio Canal are managed and maintained by the Lake Worth Drainage District; the former Seaboard Airline Railway (now CSX) property is owned and managed by CSX Transportation. The activities proposed in this management plan will have no effect on these resources.

No other archaeological resources are known to exist within the site. In 2003 Carr et al. (2003) conducted an archaeological survey and assessment of 182 archaeological sites and 41 conservation areas that they termed "archaeological conservation areas" in Palm Beach County. The survey included the portion of the natural area located north of the L-40 Canal. Carr et al. (2003) considered the site to have potential for a prehistoric midden and a historic homestead, but neither was noted as being observed during the site visit by the researchers. A phase one archaeological survey of the portion of the natural area north of Clint Moore Road was conducted by Archaeological and Historical Conservancy, Inc. in September 2005 (Longo 2005). The survey included an archival review, a pedestrian survey and subsurface testing at three target sites (six shovel tests). No archaeological materials were recovered. The consultants stated that there is a low probability that any archaeological sites potentially eligible for listing on the National Register of Historic Places were present north of Clint Moore Road because of the lack of any significant elevated features (Longo 2005). No archaeological or historical sites were documented within a one-mile radius of the study site.

Any ground disturbance of previously undisturbed areas will be coordinated with FDHR and the Palm Beach County archaeologist. If any archaeological or historical sites are discovered in the future, FDHR management procedures (Appendix I) will be followed to protect those sites. If human remains are found, the provisions of Section 872.05, Florida Statutes, will be followed to protect those remains. The County will comply with Chapter 267, Florida Statutes, in its management of any archaeological or historic sites discovered on the natural area. If historic resources are found on the natural area, a historic 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 if anything of historic importance occurred on the property, and to conduct a direct archaeological study if the results of the archival and historical study indicated that an archaeological study would be beneficial. Any archaeological investigations that are proposed for the state-owned portion of the site will require a 1A-32 permit from FDHR prior to their commencement.

4. MANAGEMENT AND RESTORATION ACTIVITIES

Long-term resource management and restoration of the site began with the baseline inventories and assessments of natural communities and listed species described in Chapter 3 (Natural and Cultural Resources). Extensive surveys of this site were conducted by Richardson in 1985, Richardson et al. in 1986 and by Gaby and Gaby, Inc. in 1990. IRC conducted numerous field surveys in 1998 (Bradley and Woodmansee 1998). Numerous plant community, and plant and animal species surveys were conducted by ERM staff in 1990 and between 1996 and 2000. The information collected during these surveys was used as the basis for determining the initial management activities necessary to protect, restore, and preserve the natural resources of the site, and for determining the locations and types of public use facilities for passive recreation that were installed on the site. Additional plant and animal surveys were conducted between 2001 and 2013. Information obtained during these surveys has been included in this updated management plan.

4.1 MANAGEMENT RESPONSIBILITIES

Management activities are primarily the responsibility of the County, with assistance from the City and volunteers from the local community. These activities are coordinated by ERM. An interlocal agreement for the management of the natural area was developed between the County and the City in June 2001. The interlocal agreement was updated in August 2010 (Appendix J). Under the updated Interlocal agreement, the County is responsible for the repair, maintenance and replacement of the natural area fences, gates, signs, trails, management accessways, firebreaks, boardwalk, interpretive facilities, and the parking lot and related facilities, with the exception of facilities that are directly related to the El Rio Trail. The City agreed to assume the primary responsibility for public safety and law enforcement within the natural area. The City is responsible for the daily opening and closing of the gates to the parking lot. City park rangers presently perform this service.

The updated interlocal agreement includes responsibilities related to the use, construction and maintenance of the El Rio Trail (Appendix J). The City is responsible for managing and maintaining the segment of the El Rio Trail located within and immediately adjacent to the natural area. This upkeep includes all maintenance and repair of the El Rio Trail and its associated infrastructure, including the reinforced concrete multiuse path, fencing, gates, signage, bicycle rack, benches and kiosk. The City agreed to pay for, install and maintain (until establishment) native vegetation adjacent to the El Rio Trail that is consistent with the adjacent native vegetation on the natural area. The City must also ensure that public use of the natural area segment of the El Rio Trail does not cause damage to the natural area. ERM will post signs and close the segment of the El Rio Trail located within the natural area during prescribed burns or other land management activities that may affect public safety. The City will post similar signs when operating maintenance vehicles and equipment on the El Rio Trail.

Other county departments also assist with aspects of site management. The County has contracted with the Palm Beach County 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 OHV use and related activities on the natural areas managed by the County and to enforce the provisions of the Natural Areas Ordinance.

The City also agreed to assist the County with volunteer stewardship activities and periodic prescribed burns, subject to the availability of city funds, staff and equipment. Trail maintenance is performed by county staff. The County does not anticipate sharing management of the natural area with any other government agencies.

Since this site does not contain commercially-viable quantities of timber, suitable pasture lands or other commercially-viable resources, there is little interest in the site by private land managers. Additionally, there are very few private conservation land managers in heavily-urbanized southeastern Florida. For these reasons, management will have to be performed by public agencies.

4.2 MANAGEMENT UNITS

The natural area is composed of a mosaic of several historic natural communities that were originally part of a greater regional mosaic of upland and wetland ecosystems. Since the early 1900s, the natural area has been affected by ongoing direct and indirect human disturbances. These disturbances include the creation and maintenance of a regional drainage system and the associated drainage of a large, onsite wetland; creation of an unnatural vegetation community within the drained wetland; deposition and subsequent removal of surplus fill materials; fire exclusion and suppression; construction and use of adjacent paved roads; creation and use of interior dirt trails by OHVs; illegal dumping; isolation of the site from other native lands as lands around the natural area were developed for residential, commercial and industrial purposes; dissemination of nonnative plant species from existing nearby residential, industrial and commercial areas; and construction and maintenance of utility lines.

The successful management of natural communities on isolated, natural preserves such as the Yamato Scrub Natural Area depends to a great extent on the design of the management units. The natural area is currently divided into seven management units, using management accessways, and natural and man-made features as boundaries and firebreaks (Figure 5). 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 24 to 37 acres (Figure 5), and are small enough to allow for safe and practical fire management. In order to facilitate management and/or monitoring activities, a management unit may be subdivided into smaller units that contain distinct natural communities and\or seral stages. Management units also may be subdivided into smaller units to minimize the effect of smoke on adjacent properties during a prescribed burn.

4.3 MANAGEMENT NEEDS AND PROBLEMS

The primary goal of site management is to preserve and, where appropriate, enhance or recreate historic scrub, scrubby flatwoods, mesic flatwoods, mesic hammock, hydric hammock and basin marsh communities, together with their component species, as described in Chapter 2 (Natural and Cultural Resources).

The natural area consists predominantly of fire-maintained ecosystems. Before acquisition by the County, fires had been largely suppressed on the site since the mid-1960s. Restoration of a natural fire regime is necessary to maintain the historic plant communities as well as to ensure the continuance of listed species populations. Fire management is addressed in Section 4.5.1, Fire Management, and in the Fire Management Plan (Appendix K).

The construction of a regional drainage system and adjacent roads also impacted the natural area prior to its acquisition by the County. The construction of drainage canals adjacent to and through the middle of the natural area resulted in a regional lowering of the water table and eliminated all natural wetlands on the site. The lowered water table and corresponding loss of wetland vegetation allowed invasive nonnative and ruderal plants to invade the former wetland areas. Spoil deposition and clearing activities related to the construction and widening of adjacent drainage canals and roads eliminated strips of native upland vegetation; these areas were subsequently invaded by invasive nonnative and ruderal plants. Shortly after acquiring the natural area, the County began a concerted effort to remove and control the existing invasive nonnative plants. As of 2013 the County's efforts have reduced the aerial coverage of nonnative plants to less than 1 percent of the site, however, ongoing nonnative plant control efforts will be required to maintain the site in a healthy vegetative condition. The restoration of areas affected by spoil deposition, road construction, nonnative plant invasions and the lowering of the water table is described in Section 4.5, Restoration and Enhancement Activities.

Surrounding commercial, industrial and residential developments are a perpetual source of new nonnative species invasions. Nonnative plants are present on adjacent properties and some have spread into the site. Nonnative pet animals [e.g., black-hooded parakeet (*Nandayus nenday*), domestic and feral cats, green iguanas (*Iguana iguana*), monk parakeet (*Myopsitta monachus*) and red-masked parakeet (*Aratinga erythrogenys*)] may have escaped, or been intentionally released, from adjacent and nearby developed properties. Management activities necessary to deal with nonnative plants and animals are addressed in Sections 4.5.2, Invasive/Nonnative Plant Control, and 4.5.3, Nonnative Animal Control.

Human-caused impacts from unauthorized activities such as OHV use on the natural area and the painting of graffiti on the walls of the Clint Moore Road tunnel are an ongoing management concern. Unauthorized OHV use has occurred on several occasions since the natural area was acquired by the state, County and City. To minimize future OHV access, a gap in the fence off of Congress Avenue near the railroad tracks was closed, post-and-rail fencing that was knocked down along Clint Moore Road was repaired/replaced, the eastern edge of the El Rio Trail was

fenced and regular patrols by City police and the County's Wildland Task Force were initiated. Fencing has not been installed on the boundaries along the L-40 Canal and the CSX railroad tracks because these areas provide very limited access to the public. If unauthorized OHV traffic increases in the future and it is determined that the offenders are accessing the site from one of these unfenced areas, the County will consider installing fence along one or both of these areas to future restrict access to the natural area.

Listed species may require special management attention to ensure that their populations are maintained. Management and restoration activities necessary to maintain and enhance listed species populations are described in Sections 3.6., Listed Species, and 4.5, Restoration and Enhancement Activities.

4.4 MAINTENANCE

4.4.1 Removal of Debris and Litter

Most of the debris located within the natural area was removed prior to acquisition. Any visible debris that remained within the site following its acquisition was removed by county staff. If additional debris becomes visible after a prescribed burn or other management/restoration activity, it also will be removed in a timely manner, unless such removal would cause undesirable damage to natural communities or listed species. The installation and maintenance of perimeter fencing and management access gates has and will help prevent the dumping of trash and hazardous materials on the site. Periodic site cleanups to remove litter and maintain the restoration areas will be conducted, as necessary, by county staff with the assistance of volunteers.

4.4.2 Trail Maintenance

Periodic trail maintenance will be performed by county staff and community volunteers. All existing trails that are not necessary for site management, and which have not been incorporated as part of a designated hiking trail, will not be maintained to discourage their use by the public. These unused trails will be allowed to revegetate with native vegetation.

4.4.3 Facilities Maintenance

County staff will be responsible for the maintenance of the nature trail, hiking trails, interpretative kiosks, permanent dedication sign and other signage, fences, gates, parking lot, bike rack, portable restroom and management accessways/firebreaks. The City will be responsible for the maintenance of the El Rio Trail and any associated facilities that the City provides, such as benches, signs, kiosk(s), fencing, gates, bicycle rack(s) and pedestrian walk-through structure(s). The City also will be responsible for the maintenance any facilities related to a multiuse trail that has been proposed for the eastern edge of the natural area.

4.4.4 Arthropod Control Plan

The Yamato Scrub Natural Area has been identified by the State, County and City as an environmentally sensitive and biologically highly productive area (Section 388.4111, Florida Statutes). Since the use of chemical arthropod control methods would adversely affect existing fish, wildlife and other natural resources, the natural area has not been included in Palm Beach County's Mosquito Control Division's general work plan. The only form of arthropod control proposed for the site is the maintenance of the deeper water, northern portion of the restored/created basin marsh community. This deeper water area should support enough mosquito fish to provide reasonable, year-round biological control of mosquitoes on the site.

4.5 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. The restoration and enhancement of the natural communities within the natural area has begun. Activities conducted to date include the implementation of an invasive/nonnative plant control program throughout the natural area (see Section 4.5.2, Invasive/Nonnative Plant Control), the exclusion of unauthorized uses, the commencement of a prescribed burn program (see Section 4.5.1, Fire Management), selective planting of native vegetation, excavation of fill from the historic basin marsh area to recreate a portion of this community, and the removal of spoil deposited within the site during the widening and maintenance of the El Rio and L-40 Canals. Environmental restoration projects that have been completed, and those that are still proposed for the site, are described in Section 4.5.4, Restoration and Enhancement Projects.

4.5.1 Fire Management

Four of the site's six natural communities – basin marsh, mesic flatwoods, scrub and scrubby flatwoods - are dependent upon fire for their long-term restoration and maintenance. Given the extensive alterations that have been made to the local landscape, lightning-induced fire cannot be expected to fulfill the fire needs of these fire-maintained communities. In addition, the risk of damage from wildfire is considerable due to the proximity of the natural area to adjoining industrial and commercial properties, I-95, Congress Avenue, Clint Moore Road, a railroad and other forms of development. However, it must be noted that the same adjoining industrial and commercial properties, major roads, railroad and other forms of development that are at risk from wildfires make smoke management concerns the foremost inhibitor to the reintroduction of fire to the natural area. As such, the use of a combination of controlled, prescribed fire, together with the construction of firebreaks, mechanical fuel reduction and other safety precautions, is necessary to fully achieve the stated management objectives.

ERM has assumed the primary responsibility for prescribed burning. Assistance in the form of firefighting staff and equipment, and assistance in obtaining a City burn permit will be requested from the City of Boca Raton's Fire-Rescue Department. Additional assistance may be provided

by FDACS' Florida Forest Service (FFS), FWC; TNC, Palm Beach County Parks and Recreation Department, and trained volunteers. Fire-related safety training will be required of all county staff and others 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 K). Development of the fire management plan has been coordinated with FFS and FWC. This plan is based on the information about natural vegetation communities and listed species contained in the management plan. The fire management plan takes into consideration surrounding land uses, safety issues in the event of a wildfire, and the ecological consequences of specific fire management strategies. The overall goal of the fire management plan is to introduce a fire regime (a repeatable pattern of fire with predictable results) onto the natural area that will sustain the fire-dependent communities on the site. Due to the urban development surrounding Yamato Scrub Natural Area, smoke management concerns dictate extremely narrow weather conditions in which prescribed burning may take place. In the event that particular units are unable to be prescribed burned, mechanical reduction of vegetation may be used as a surrogate for fire. Specific objectives for different areas of the site will depend upon site conditions and other management objectives for that area. The fire management plan includes the following general objectives:

1) To ensure the long-term existence and viability of the natural scrub, scrubby flatwoods, mesic flatwoods and basin marsh communities found on the site, and the listed plant and animal species present in these habitats.

2) To provide viable wildlife habitat for wildlife species that use, or could potentially use, the natural scrub, scrubby flatwoods, mesic flatwoods and basin marsh communities on the site.

3) To control the regrowth and regeneration of invasive and nonnative vegetation following treatment or removal activities, thereby assisting in the restoration of disturbed areas.

4) To reduce the danger of wildfire by reducing the buildup of fuels that has resulted from the infrequent occurrence of fire in recent decades.

To meet these objectives, the fire management plan contains specific tools and management practices designed to minimize adverse impacts to native vegetation and wildlife, while maximizing the beneficial effects of prescribed burns. One of these tools is the use of firebreaks. A network of created management accessways and perimeter firebreaks, and natural, fire-resistant features has been established to provide permanent firebreaks within the site. These management accessways, perimeter firebreaks and natural features serve as the boundaries of the seven management units (Figure 5) and provide vehicular access for conducting the prescribed burns. Some management accessways/firebreaks or portions of management accessways/

firebreaks are used for other management activities, such as nonnative plant control, or as part of the hiking trail system.

Existing trails were used to create the management accessway/firebreak system when possible. New management accessways/firebreaks were constructed as unimproved, natural-surface clearings where existing trails were either not present or not wide enough to meet the goals of the fire management plan. Prior to the construction of a management accessway or firebreak, the area was surveyed to verify that the construction would not adversely impact any listed species. If an adverse impact would occur, the location of the management accessway or firebreak was adjusted to avoid affecting a listed species, or the listed species was relocated elsewhere on the site.

Prior to a prescribed burn, management accessways that will be used as firebreaks will be widened on a case-by-case basis to facilitate safe prescribed burning conditions. These widths can range from 15 to 20 feet when fuels in the unit to be burned are low in height, to widths of up to 50 feet where the unit to be burned is adjacent to homes and other fire-sensitive structures, and/or where high fuel loads are present. Firebreaks which are greater than 20-feet wide may include a combination of areas that have been cleared of vegetation (bare soil), and areas where the vegetation has been mowed or cut/chopped to approximately 6 to 12 inches in height. Areas used as management accessways/firebreaks will be allowed to regenerate to 13 to 15 feet once the burn is concluded. Areas used solely as firebreaks will be allowed to regenerate completely following a prescribed burn.

Prior to burning a unit, the unit will be surveyed for fire-intolerant listed plant species. If necessary, individual plants will be relocated outside the burn area or firebreaks will be established around populations of rare plants. Areas protected by firebreaks for listed species will not be burned until the next scheduled burn. These unburned areas will increase the diversity of the site, and will still be within the normal fire frequency for most of the natural communities if burned at the next scheduled burn. Firebreaks for the protection of listed species will be temporary in nature and will be made by cutting vegetation, not by plowing or disking. A permit will be obtained for the relocation of a listed species when required.

The fire management plan also takes into account the seasonality and frequency of naturally-occurring fires; the burn schedule is designed to approximate the natural incidence of fire in the site's communities. In general, prescribed fires should be conducted during the early part of the growing season, which extends from March to July. Natural lightning-induced fires normally occur during the growing season. The natural incidence of winter fires generally is low. Prescribed winter fires should similarly be rare in occurrence to ensure that fire events are synchronized with the fire-adapted life histories and reproductive cycles of resident species. However, where fire has been suppressed for a long period of time and fuel loads have become heavy, prescribed winter fires may be used to begin restoration of a native fire regime. Winter fires generally are cooler and can reduce accumulations of excess fuel while limiting the undesirable destruction of vegetation. On sites such as the natural area, winter fuel reduction

fires may be more appropriate, at least in the short term. Backing fires, pre-burn mechanical chopping of dense understory vegetation and other techniques will be used, as needed, for prescribed burns in the natural area in order to reduce fire intensity and decrease smoke generation. Although seasonality of fire is important, prescribed burns will be implemented only when weather conditions allow for favorable smoke management because of the highly-restrictive nature of surrounding smoke-sensitive areas.

Prescribed burning in the disturbed natural communities will be complicated by a spotty and uneven distribution of fuels, with much variation in fuel type. The uneven fuel distribution is a result of previous human-caused alterations and fire suppression at this natural area, and is not typical of these communities. Disturbed areas will be burned in the same way as undisturbed habitats, although multiple ignition points may be necessary due to the patchiness of the vegetation.

A total of seven management units have been identified for this site (Figure 5). These units range in size from 24 to 37 acres. All seven of the management units are designated as "burn" units, however, certain portions of Management Units 2 and 3 will not be treated with prescribed fire. These areas include the Knight tract - which contains the parking lot - and areas which include fire-intolerant vegetation communities –disturbed mesic hammock and mesic hammock. The seven management units were designed so that fire would be able to burn through ecotones and move in a more natural, spotty fashion across the landscape. The resulting patchwork of burned and unburned stands within a management unit will produce a mosaic of vegetation at various stages of maturity, thereby maximizing diversity within and among communities. This will provide habitat for individual species that typically use, or may even be restricted to, communities in a particular state of maturity.

The management units are moderate in size, given the safety and logistical constraints affecting this site. Management units must not be so large that control of a prescribed fire and attendant smoke becomes too difficult or uncertain. Depending on the specific conditions and objectives of a burn, a management unit may be further subdivided into smaller subunits for conducting the prescribed burn.

The burn interval for each management unit was chosen based on the predominant natural vegetation community present in that unit. An interval of 15 to 20 years was selected for the five management units (1, 4, 5, 6 and 7) which are dominated by scrub. An interval of 5- to 8-years was selected for Management Unit 2 due to the mesic and scrubby flatwoods that co-dominate the unit; an interval of 8- to 15-years was selected for the fire-maintained communities within Management Unit 3 and due to the scrubby flatwoods and disturbed communities that exists within the unit. Although burn intervals of 2 to 4 years, 5 to 20 years and 5 to 40 years are recommended (FNAI 2010) for mesic flatwoods, oak-dominated scrub and sand pine-dominated scrub communities, respectively, these shorter intervals are not currently attainable due to resource limitations, and site-specific smoke management and safety concerns that severely limit

weather conditions under which prescribed burning may take place. The burn return interval will be shortened if weather conditions, funding opportunities and resources allow.

In the event that particular management units are unable to be prescribed burned, mechanical reduction of vegetation may be used as a surrogate for fire. To date, all mechanical vegetation reduction has been conducted by ERM staff using a piece of heavy equipment called the Magnum Mulcher. This machine is a rubber-tired vehicle with a rotating drum chopping head. The Magnum Mulcher mechanically grinds or shreds vegetation into mulch-sized chips producing minimal soil disturbance in the process. After the chopping in an area is complete, the mulch chips are left in place, to allow for the recycling of nutrients. The presence of the mulch does not appear to significantly inhibit resprouting of native vegetation; staff has observed increased species diversities following mechanical chopping. To help pay for the vegetation reduction, FWC provided $14,968 to ERM as part of its gopher tortoise habitat management assistance funding program.

The prescribed burn program began with a prescribed burn in Management Unit 7 in May 2003. Management Unit 2 was prepared to be burned in 2004. However, numerous smoke-sensitive areas surrounding Management Unit 2 require strict weather parameters in the burn prescription. Several attempts have been made to burn the unit since 2004, only to be stopped due to changing weather conditions and forecasts. Management Unit 2 continues to be part of the current burn plan; it will be burned once the necessary weather conditions, resources and burn permits are in place. Vegetation within Management Unit 6 was mechanically reduced in April 2011 in lieu of burning, due to the high fuel loads and the intense urban development surrounding the unit, which greatly reduced the likelihood of burning the unit. Management Units 1, 2, 3, 5, and 6 were selectively chopped in April 2012, and Units 4 and 7 were selectively chopped in 2013 to reduce fuel loads. Additional chopping was done in a 7-acre subunit of Management Unit 2 in June 2013, and an adjacent portion of Management Unit 3 was mowed, in preparation for a prescribed burn of the subunit. Burning the subunit will produce less smoke over a shorter period of time than would a burn of the entire 33-acre management unit.

All management units within the natural area are scheduled to be burned within the next 16 years. The proposed burn schedule for the natural area is as follows: Unit 2 in 2014, Unit 1 in 2015, Unit 3 in 2020, Unit 2 in 2021, Unit 5 in 2023 and Unit 6 in 2027, Unit 4 in 2028 and Unit 7 in 2029. When the use of prescribed fire is not feasible/permitted, ERM will strive to create a mosaic of natural communities and successional stages through the use of mechanical reduction methods, subject to and contingent upon annual budgetary funding and appropriations by the BCC.

A specific burn plan will be prepared for each management unit prior to conducting a prescribed burn. A summary of key information to assist with development of specific burn plans is provided in Appendix K.

If a wildfire occurs on the site, the appropriate actions will be taken by the authorized fire emergency response agency. Active fire suppression measures will be avoided as much as possible, but will be utilized if deemed necessary by that agency. These suppression measures rely upon the use of heavy machinery and plowlines, and are extremely destructive to vegetation and other natural features. If such measures are undertaken to control a fire, all plowlines will be backfilled after the fire has been extinguished, and disturbed areas will be rehabilitated to the greatest extent possible.

A single small wildfire has occurred on the site since its acquisition by the state, County and City. On July 6, 2010, a small wildfire broke out near the US Foods property. The wildfire consumed few hundred square feet of vegetation before it was extinguished by the Boca Raton Fire Department. It is believed that this may have been the only wildfire to occur on the site since the 1940s (Richardson et al. 1986).

A public education campaign has been developed and implemented 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 communities and industrial and commercial areas. The County will coordinate with the City, Palm Beach County Fire-Rescue, FFS, FDEP, FWC and Florida Department of Transportation (FDOT) prior to conducting a prescribed burn. If requested, county staff will meet with local community groups such as 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.

4.5.2 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. Many of these species have been brought to the site by animals (especially birds) or have spread from adjacent industrial and commercial areas or vegetation piles that were illegally dumped on the site prior to its acquisition. To date, 98 species of nonnative plants have been recorded at the site - 25.1 percent of the 390 plant species recorded (Appendix A). Many of these exhibit invasive tendencies. This percentage is similar to those for other county-managed natural areas. The initial nonnative vegetation removal has been completed, and the site is now in maintenance condition. A management unit is considered to be in a maintenance condition when the coverage of invasive plant species does not exceed 1 percent of the canopy or understory layers within any management year. Most of the nonnative plant species were recorded on the site prior to the implementation of the nonnative vegetation removal program, and many may no longer be present. Additional nonnative plant species may be recorded during land management and monitoring activities; they are expected to continue to colonize the site from surrounding industrial, commercial and residential areas.

Nonnative plant species have caused substantial disturbances at the natural area in the past, especially in the former basin marsh community, along canal and road rights of way, and around the perimeter of the site. Some will continue to pose a serious threat to the natural communities and listed species, and will be a major management concern. However, many of the nonnative plant species at this site are considered to be minor or, at worst, moderate problems. For the most part, these species are present in open, disturbed areas, usually along the perimeter of the site; they normally do not invade or disrupt functioning native plant communities. The control of these species will be given a lower priority. However, if these species exhibit invasive characteristics at the site, they will be given a high priority for control activities. At the present time, rose natalgrass, rosary pea (*Abrus precatorius*) and balsampear (*Momordica charantia*) are considered the highest priority invasive plant species for removal in upland vegetation communities at the natural area; torpedograss and southern cattail are considered the highest priority invasive plant species for removal in the restored basin marsh community.

Thirty-nine (39.8 percent) of the 98 nonnative plant species recorded at the natural area have been designated as either invasive (Category I) or potentially invasive (Category II) nonnative plants by the Florida Exotic Pest Plant Council (FLEPPC 2011). A current copy of FLEPPC's list of invasive exotic plant species, sorted by category, can be found at http://www.fleppc.org/list/list.htm. Ten (10.2 percent) of the nonnative plant species have been designated as noxious weeds by FDACS (FDACS 2006), and seven (7.1 percent) have been designated as either Class I or Class II prohibited aquatic plants (FDACS 2008). All of these species are identified in Appendix A.

Twenty-five species have been designated by FLEPPC as Category I (FLEPPC 2011): Asian sword fern (*Nephrolepis brownii*), Australian-pine, Australian umbrella tree (*Schefflera actinophylla*), Brazilian pepper, caesarweed (*Urena lobata*), carrotwood (*Cupaniopsis anacardioides*), common water-hyacinth, earleaf acacia (*Acacia auriculiformis*), napiergrass (*Pennisetum purpureum*), hydrilla (*Hydrilla verticillata*), Indian laurel, Java plum (*Syzgium cumini*), melaleuca (*Melaleuca quinquenervia*), Old World climbing fern (*Lygodium microphyllum*), rosary pea, rose natalgrass, Santa Maria (*Calophyllum antillanum*), shoebutton (*Ardisia elliptica*), shrubverbena (*Lantana camara*), Sprenger's asparagus-fern (*Asparagus aethiopicus*), Surinam cherry (*Eugenia uniflora*), torpedograss, tuberous sword fern (*Nephrolepis cordifolia*), water-lettuce (*Pistia stratiotes*) and woman's tongue (*Albizzia lebbeck*). Control of these species is the primary focus of the maintenance invasive/nonnative plant control work on the site.

Fourteen of the nonnative species have been designated by FLEPPC as Category II (FLEPPC 2011): alligatorweed (*Alternanthera philoxeroides*), bowstring hemp (*Sansevieria hyacinthoides*), burrnut (*Tribulus cistoides*), castorbean (*Ricinus communis*), Chinese ladder brake (*Pteris vittata*), coconut palm (*Cocos nucifera*), creeping oxeye (*Sphagneticola trilobata*), Durban crowfootgrass (*Dactyloctenium aegyptium*), guineagrass (*Panicum maximum*), life plant (*Kalanchoe pinnata*), orange jessamine (*Murraya paniculata*), oyster-plant (*Tradescantia spathacea*), queen palm (*Syagrus romanzoffiana*) and white leadtree (*Leucaena leucocephala*).

Noxious weeds recorded at the natural area include Australian-pine, Brazilian pepper, carrotwood, coatbuttons, hydrilla, melaleuca, Old World climbing fern, rosary pea, shoebutton and white leadtree (FDACS 2006). FDACS (2008) classifies alligatorweed, Australian-pine, Brazilian pepper, common water-hyacinth, hydrilla and melaleuca as Class I prohibited aquatic plants, and water-lettuce as a Class II prohibited aquatic plant.

In this management plan, the phrase "invasive plant species" includes the plants designated as Category I and Category II by FLEPPC, the plants designated as noxious weeds or Class I or Class II prohibited aquatic plants by FDACS, as well as certain ruderal species (species which are found almost exclusively in disturbed areas) and some native plants. Although invasive nonnative plant species are the traditional targets of eradication activities, invasive native species also can have an adverse impact on fragmented natural vegetation communities. This is especially true of invasive native vines, which, in the absence of fire, often shade out prefered native trees, shrubs and herbs. If this is the case, portions of the site will be treated for invasive native species as needed on a case-by-case basis. Ruderal species usually are not problematic, but in some cases they can slow down or arrest restoration processes. Some nonnative species, such as Madagascar periwinkle (*Catharanthus roseus*), which typically is found on open disturbed sites, do not have the capacity to invade functioning natural communities. They will be controlled through good management practices, such as prescribed burning, and the elimination of unnecessary disturbances, such as OHV traffic.

Control of invasive/nonnative plant species by treatment or removal has been given a high priority in the management of the natural area. The initial multi-phase invasive/nonnative plant control program was begun in 1998 and was completed in 2004. All of the management units are now in maintenance condition. Follow-up treatments for invasive/nonnative vegetation are conducted on an as-needed basis. The natural area has received periodic follow-up treatments since 2004. A $97,751 FDEP Invasive Plant Management Grant was used to cover part of the cost for treatment and removal of nonnative invasive plants.

In this plan, invasive/nonnative plant species have been grouped into five categories – four by their growth habit or form (vines, trees, shrubs and groundcovers) and one by habitat type (aquatic plants). Although this approach is useful for strategic and operational planning purposes, each invasive/nonnative plant species is unique, and control measures may need to be tailored on a species-by-species basis. Management priorities and techniques for each category are described in the following sections.

4.5.2.1 Vines

This category includes nonnative species and aggressive ruderal vines. Vines pose a significant threat to the natural communities on the site because they cover the leaves of shrubs and trees and cause death through reduction of photosynthetic food production. Where possible nonnative vines were eradicated from the natural area. Aggressive native ruderal vines were treated as

invasive species until each management unit reached a maintenance condition. They will be monitored and retreated if they begin to dominate native vegetation. Nonnative vines recorded at the site include balsampear, Old World climbing fern and rosary pea. All of these species have a high priority for removal. Aggressive ruderal vines recorded at the natural area include hairypod cowpea (*Vigna luteola*), love vine (*Cassytha filiformis*), muscadine and white twinevine (*Sarcostemma clausum*).

During invasive vegetation control treatments, most vines were cut at a height of 6 feet and again near ground level if they were growing into canopy trees. The bases of the aggressive vines were either hand-pulled or treated with an appropriate systemic herbicide. The vine stems remaining in the canopy were left to decompose in the trees. Vines growing on shrubs or saplings under 6 feet in height were cut near ground level and removed from the supporting plant. The bases of the vines were hand-pulled or treated with a systemic herbicide. Lateral stems of vines growing along the ground surface were cut, hand-pulled and/or treated with a systemic herbicide. These methods were effective in controlling balsampear, muscadine and rosary pea. Old World climbing fern requires repeated herbicide treatments of the basal rhizome mat before all resprouting ceased and the plant is eradicated. Regular monitoring and treatment of Old World climbing fern will be done to maintain the effectiveness of previous control work.

Muscadine may require initial cutting, pulling and/or herbicide treatments to get this aggressive native vine under control. The prescribed burning program should then keep muscadine within acceptable limits. Love vine, on the other hand, is a parasitic vine and is much more difficult to control. ERM has yet to come up with an effective method to keep it from dominating small patches of scrubby vegetation. Hand pulling is effective for short periods of time, but that method is cost prohibitive, and vine regrowth occurs from small pieces left on the parasitized host plant. Hard freezes appear to knock this species back somewhat, but the effects are only short-term. Hairypod cowpea and white twinevine do not appear to require treatment at this time.

4.5.2.2 Trees

This category includes nonnative woody plants that have a single main stem or multiple main stems and usually grow in the canopy layer. Invasive nonnative trees typically require sunny locations and usually are able to germinate on nutrient-poor soils. They generally grow in disturbed areas and often can fix nitrogen. These species are especially problematic in hammocks, drained wetlands and fire-dependent natural communities. Nonnative trees recorded at the natural area include Australian-pine, Australian umbrella tree, Brazilian pepper, carrotwood, various cultivars of citrus (*Citrus* x *aurantium*), coconut palm, earleaf acacia, Indian laurel, Java plum, loquat (*Eriobotrya japonica*), melaleuca, orange jessamine, queen palm, royal poinciana (*Delonix regia*), Santa Maria, shoebutton, Surinam cherry, weeping fig (*Ficus benjamina*) and white leadtree.

All of these species have high priority for removal. Saplings and adults of these species were controlled with basal treatments of an appropriate systemic herbicide. Seedlings of these species were hand-pulled. Most of the Brazilian pepper trees found on the site were within the basin marsh restoration project area; these trees were mechanically removed, the area was root raked, and the resulting vegetative debris was ground into mulch. In most other locations, Brazilian pepper was treated using a basal bark method and left to decompose in place. Australian-pine, Australian umbrella tree and melaleuca were killed by cutting down the tree and treating the stump with an appropriate herbicide.

4.5.2.3 Shrubs

Invasive/nonnative shrubs are similar to nonnative trees, except that they generally affect a smaller area in the subcanopy and understory. Nonnative shrubs recorded at the natural area include areca palm (*Dypsis lutescens*), caesarweed, cardboard cycad (*Zamia furfuracea*), castorbean, century plant (*Agave angustifolia*), cochineal cactus (*Opuntia cochenillifera*), indoor oak (*Buddleja indica*), Peruvian applecactus (*Cereus repandus*), Peruvian primrosewillow (*Ludwigia peruviana*), shrubverbena, spiked spiralflag (*Costus spicatus*), split-leaf philodendron, (*Philodendron bipinnatifidum*), valamuerto (*Senna pendula* var. *glabrata*) and woman's tongue. Jack-in-the-bush (*Chromolaena odorata*) is a ruderal shrub species that can be invasive. All of these species have a high priority for removal.

Saplings and mature plants were left standing and killed by basal application of an appropriate systemic herbicide. Seedlings were hand-pulled at low densities and spot-treated with herbicides at high densities. Areca palm required cutting down of all stems and repeated treatment of new sprouts with herbicides. Cochineal cactus and Peruvian applecactus were bagged and removed by hand. Split-leaf philodendron was an isolated occurrence of an individual plant, which was removed.

4.5.2.4 Groundcovers

Groundcover plants can be grouped into three general categories – grasses and sedges, perennial forbs, and annual and short-lived forbs. Different control strategies may be used for plants in each of these categories.

Invasive grasses and sedges can become a significant problem in fragmented and fire-maintained communities, where they may invade open spaces and compete with native shrubs and groundcovers. Nonnative grasses and sedges recorded at the natural area include barnyardgrass (*Echinochloa crus-galli*), Bermudagrass (*Cynodon dactylon*), Durban crowfootgrass, fountaingrass (*Pennisetum setaceum*), gophertail lovegrass (*Eragrostis ciliaris*), guineagrass, Indian crabgrass (*Digitaria longiflora*), napiergrass, pangolagrass (*Digitaria eriantha*), rose natalgrass, smutgrass (*Sporobolus indicus*), templegrass (*Zoysia* sp.), torpedograss, tropical signalgrass (*Urochloa distachya*) and vaseygrass (*Paspalum urvillei*). Hurricanegrass

(*Fimbristylis cymosa*), St. Augustinegrass (*Stenotaphrum secundatum*) and southern cattail are invasive native grasses found at the natural area.

Nonnative grasses that presented a problem at the site were controlled by carefully using appropriate herbicides. Torpedograss has been and continues to be a problem in the recreated basin marsh community; it has been/will be controlled by the careful use of systemic herbicides. Torpedo grass is most vulnerable when herbicides are applied to the new growth after a prescribed burn (Bodle and Hanson 2001). Barnyardgrass was a major problem in the basin marsh restoration area. It was treated with careful application of an appropriate herbicide which will be used again if this species becomes a problem in the future. Rose natalgrass was treated by hand-pulling; the seedheads were bagged and removed from the site because this species readily reestablishes from seed. Smutgrass and vaseygrass are clump-forming grasses that were easily treated with an appropriate herbicide. Bermudagrass is a low, rhizomatous species that was treated with careful applications of an appropriate herbicide. Guineagrass is a relatively large grass that posed a serious threat to the natural communities at this site; it was cut at ground level and allowed to resprout; the new growth was then treated with an appropriate herbicide.

Durban crowfootgrass and gophertail lovegrass are relatively ephemeral and are present mostly in disturbed areas; they are not expected to become a problem at this natural area. Hurricanegrass is not common at this site in undisturbed areas; it will be monitored to determine if any control action should be taken in the future. Southern cattail is controlled by foliar sprays during periodic sweeps of the natural area. The remaining nonnative grasses and sedges are low stoloniferous or rhizomatous species that can be treated with careful applications of an appropriate herbicide if they become a problem at the natural area.

Invasive perennial forbs can become a problem in all types of natural communities; they compete directly with native understory forbs. Nonnative perennial forbs recorded at the natural area include Asian sword fern, bowstring hemp, chandelier plant (*Kalanchoe delagoensis*), cheesytoes (*Stylosanthes hamata*), Chinese ladder brake (*Pteris vittata*), creeping oxeye, devil's backbone (*Kalanchoe daigremontiana*), giant goldenrod (*Solidago gigantea*), largeflower Mexican clover (*Richardia grandiflora*), life plant, Mendez's sandmat (*Chamaesyce mendezii*), milk-and-wine lily (*Crinum zeylanicum*), monk orchid (*Oecoclades maculata*), oyster-plant, Sprenger's asparagus-fern, tropical Mexican clover (*Richardia brasiliensis*), tuberous sword fern, and zarzabacoa comun (*Desmodium incanum*). Mexican primrosewillow (*Ludwigia octovalvis*), an invasive ruderal species, also has been recorded at the natural area.

Some of these nonnative forbs can be successfully eliminated with selective herbicide use. Others have thick, succulent leaves that prevent herbicides from adhering or being absorbed, or can resprout from underground rhizomes or vegetative fragments; hand-pulling and removal is the best way to eliminate them from the site. Mexican primrosewillow and milk-and-wine lily have been controlled by hand-pulling during periodic sweeps of the natural area.

In general, annual or short-lived forbs cause only temporary problems and are difficult to eradicate due to high seed production. Most typically grow in disturbed areas and are not considered a major threat to the natural area. Nonnative annual and short-lived forbs recorded at this site include burrnut, coatbuttons (*Tridax procumbens*), common dayflower (*Commelina diffusa*), common sowthistle (*Sonchus oleraceus*), Dixie ticktrefoil (*Desmodium tortuosum*), false moneywort (*Alysicarpus ovalifolius*), flattop mille graines (*Oldenlandia corymbosa*), Florida tasselflower (*Emilia fosbergii*), hairy indigo (*Indigofera hirsuta*), Indian chickweed (*Mollugo verticillata*), lamb's-quarters (*Chenopodium album*), lilac tasselflower (*Emilia sonchifolia*), llima (*Sida cordifolia*), little hogweed (*Portulaca oleracea*), little ironweed (*Cyanthillium cinereum*), Madagascar periwinkle, Mascarene Island leafflower (*Phyllanthus tenellus*), Mexican tea (*Chenopodium ambrosioides*), Pouzolz's bush (*Poulzolzia zeylanica*), rough Mexican clover (*Richardia scabra*), Santa Maria feverfew (*Parthenium hysterophorus*), shrubby false buttonweed (*Spermacoce verticillata*), smooth rattlebox (*Crotalaria pallida* var. *obovata*), spiny amaranth (*Amaranthus spinosus*) and white moneywort (*Alysicarpus vaginalis*). Artillery plant (*Pilea microphylla*) is an invasive native forb. None of these plants are considered to be a problem at the natural area at the present time. All will be monitored to determine if any control actions, such as hand-pulling of individual plants or spot-treatment with an appropriate herbicide, should be taken in the future.

4.5.2.5 Aquatic plants

Invasive/nonnative aquatic plants are those that spend the majority of the growing year either completely submerged in water or growing in standing water, as well as certain invasive/nonnative trees that can tolerate standing water for long periods of time. Many grow and proliferate in such high densities that they crowd out or shade out native aquatic vegetation or have other adverse effects on native plant and animal communities. Four invasive/nonnative aquatic plant species not previously discussed have been recorded at the natural area to date: alligatorweed, common water-hyacinth, hydrilla and water-lettuce. Hydrilla has recently become a problem in the north cell of the recreated basin marsh; it will be treated with an appropriate aquatic herbicide during the 2013-2014 dry season. As it is an extremely difficult plant to control, follow-up treatments are anticipated. Consideration will be given to the use of an appropriate aquatic herbicide to control any of the other species if they become a problem at the natural area.

4.5.3 Nonnative Animal Control

Nonnative animals also can be a problem within sites like the natural area. Populations of nonnative and feral animals will be monitored as part of the systematic and opportunistic wildlife surveys. Targeted surveys for nonnative animals may be undertaken if they are necessary to acquire additional information. Thus far, 4 species of invertebrates - cochineal insect (*Dactylopius* sp.), honeybee (*Apis mellifera*), red imported fire ant (*Solenopsis invicta*) and scarlet skimmer (*Crocothemis servilia*) - and 16 species of vertebrates - African spurred tortoise (*Geochelone sulcata*), black-hooded parakeet, blue tilapia (*Oreochromis aureus*), brown anole

(*Anolis sagrei*), brown basilisk (*Basiliscus vittatus*), butterfly peacock bass (*Cichla ocellaris*), Cuban treefrog (*Osteopilus septentrionalis*), domestic and feral cats, European starling (*Sturnus vulgaris*), green iguana, greenhouse frog (*Eleutherodactylus planirostris*), monk parakeet, nine-banded armadillo (*Dasypus novemcinctus*), red-masked parakeet, rock pigeon (*Columbia livia*) and white-winged dove (*Zenaida asiatica*) - recorded at the natural area are not indigenous to the South Florida mainland.

Although the honeybee is an introduced species, it is beneficial for pollination of native plants and will not be targeted for control. Any Africanized honeybee (*Apis mellifera scutellata*) hives detected within the natural area will be removed.

The cochineal insect, native to Mexico, was first recorded at ports of entry into the United States around 1925; it subsequently was recorded up to 13 times between that year and 1995 (USDA, ARS 2007a). It was not intercepted between 1995 and 2005. This insect lives on species of cactus in the genus *Opuntia,* two of which have been recorded at the natural area - cochineal cactus and pricklypear (*Opuntia humifusa*). Cochineal cactus is a nonnative species that has been removed from the site; pricklypear is a native species. There are no known negative impacts from the presence of this species on the site at present. However, cochineal insects have been used for control of pricklypear in Australia and South Africa (USDA, ARS 2007b), and the species could adversely the pricklypear plants on the site. The scales can be washed off of the plants with a hose with a power nozzle attached or sprayed with Neem oil as a control measure (Cactus Doctor undated).

The red imported fire ant has been recorded in disturbed areas on the site. This aggressive ant causes dramatic reductions in populations of native ants and other insects, and poses a threat to ground-nesting wildlife (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.

The scarlet skimmer is native to Asia and was accidentally introduced to South Florida in 1975 (Dunkle 2000). This species is listed as a nonindigenous animal of interest for Everglades restoration regions by SFWMD (Ferriter et al. 2007). Since there are no known negative impacts of this species on the natural area, control of the scarlet skimmer is not a priority at this time.

The African spurred tortoise is popular in the pet trade, especially with novice reptile owners who purchase hatchlings but do not realize the size and strength of a full-grown adult (Bartlett and Bartlett 2011b). Some of the tortoises escape captivity or are released into the wild and become feral, but the species is not yet known to breed in Florida (Bartlett and Bartlett 2011b). One such specimen was removed from the natural area in 2010 by ERM. African spurred tortoises are known to carry ticks infected with a disease known as heartwater, which can cause considerable mortality in domestic and wild ruminants such as cattle, sheep, goats and deer. As a result, the importation of this species into the state of Florida is regulated under 68-5.001

Florida Administrative Codes. Unless additional individuals of this species are observed at the natural area, this species will not be targeted for control.

The black-hooded parakeet (known in the pet trade as the nanday conure), native to central South America, was first observed in the wild in Florida in 1969 at St. Petersburg (Pranty et al. 2006). The species has been imported in the pet trade for over 100 years (Epps 2007). Pranty et al. (2006) estimated that at least 1,000 individuals occur in the state, mostly along the central Gulf Coast; the species is becoming common in coastal areas of South Florida. In Palm Beach County they have been observed from Boca Raton north to West Palm Beach (Epps 2007). The birds typically are observed in pairs or large flocks; preferred nest sites include dead royal palms and Chinese fan palms (Epps 2007). They also nest in cavities in telephone poles (Pranty et al. 2006). This species feeds on a variety of plant material, including palm fruits, flowers and Australian-pine cones (Pranty et al. 2006). Members of the parrot family are known to carry Newcastle disease which can infect native songbirds and gamebirds, domestic chickens and turkeys, and other nonnative bird species (FWC undated[a]). This species has been recorded at the natural area on several occasions since 2002. Since there are no known negative impacts of this species on the natural area, control of the black-hooded parakeet is not a priority at this time.

The blue tilapia, native to Africa, was brought into Florida in 1961 by the Florida Game and Fresh Water Fish Commission (FGFWFC, now FWC) to investigate its potential as a sport fish and for biological control of nonnative aquatic plants (Hoyer and Canfield 1994). Some of the stocked fish escaped into freshwater systems. The species is now 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]). Although the species is not considered to be a sport fish because it does not take artificial baits, it is caught by urban anglers and taken by bow hunters (FWC undated[b]). Blue tilapia feed primarily on plankton and small organisms living in or on bottom detritus (FWC undated [b]). This species was recorded in the portion of the L-40 Canal that runs through the natural area. At this time there are no known impacts of blue tilapia on the natural area. If this species spreads to the basin marsh community, potential control efforts for this species may be explored in the future.

Meshaka et al. (2004) stated that the brown anole was first reported in the Florida Keys in 1887. It is native to Cuba and the Bahamas, but now occurs throughout all of peninsular Florida and is expanding its range (FWC undated[c]). It is apparently the most abundant anole over much of the southern half of the peninsula (FWC undated[c]). It was first recorded in Palm Beach County in 1941 (FWC undated[c]) after an intentional release in Lake Worth. This prolific species can live in most inland and coastal habitats, including disturbed areas, and is well-adapted to habitats modified by humans (FWC undated[c]), Meshaka et al. 2004). Although its primary diet is insects, the brown anole also eats hatchling green anoles; this predation appears to have caused a rapid decline in the population of the native green anole in Florida (FWC undated[c]), Meshaka et al. 2004). The brown anole is common at the natural area. Potential control efforts for this species will be explored in the future if needed.

The brown basilisk is a gangly, fast-moving lizard native to Latin America that can run on its hind legs, sometimes on the surface of quiet water (Bartlett and Bartlett 2011b). It was first recorded in Florida in 1976 (FWC undated[d], Meshaka et al. 2004). This species is commonly present along canals and pond edges, in agricultural habitats and in low-density suburban areas in most of South Florida; its population is apparently increasing (Bartlett and Bartlett 2011b, FWC undated[d], Meshaka et al. 2004). Although brown basilisks formerly were imported for the pet trade, most of the specimens sold now are captured from feral South Florida populations (Bartlett and Bartlett 2011b, Meshaka et al. 2004). They are primarily carnivorous, consuming mostly invertebrates, but also eat some fruits; they are prey for various species of snakes (Meshaka et al. 2004). The brown basilisk was recorded at the natural area in 2009 by ERM, but has not been recorded since that time. Potential control efforts for this species will be explored in the future if needed.

Butterfly peacock bass (also known as butterfly peacock) have been stocked in various locations in South Florida as a game fish and to control other species of nonnative fish (Shafland 2008). FWC released them in the large coastal canals in southeastern Florida in 1984, and they are now the most popular sportfish in coastal canals (FWC undated[e]). These fisheries provide economic benefits to local economies, and the fish provide a valuable service by controlling overabundant exotic forage fishes through predation (FWC undated[e]). A single peacock bass was recorded in 2010 in the portion of the L-40 Canal that is located within the natural area. At this time there are no known impacts of this species on the natural area. If it spreads to the basin marsh community, potential control efforts for this species may be explored in the future.

The Cuban treefrog, native to Cuba, the Cayman Islands and the Bahamas, was introduced into the Florida Keys in 1928 (FWC undated[f]). It is the largest species of treefrog in Florida (Johnson 2010). Cuban treefrogs are very prolific and breed year-round in South Florida (Johnson 2010, Meshaka et al. 2004). They are present in a variety of natural and human-modified habitats along both the east and west coasts of Florida and in the Florida Keys (Bartlett and Bartlett 2011a, Johnson 2010). This species eats a wide variety of food items, including snails, millipedes, spiders, and a vast array of insects, and is a known predator of native treefrogs (Johnson 2010). It appears to be replacing native treefrogs in urban and suburban areas (Johnson 2010). The species cannot tolerate freezing temperatures, but new animals can quickly repopulate an area (Bartlett and Bartlett 2011a). The Cuban treefrog was recorded at the natural area in 2013. Potential control efforts for this species will be explored in the future if needed.

Domestic and feral cats have been recorded on the site, and may enter the natural area from nearby residential, industrial and commercial areas. Cats are an increasing problem in natural areas in South Florida because of their predation on birds and small animals. FWC has estimated that there are at least 5.3 million cats in Florida that spend some or all of their time outdoors, potentially preying on wildlife, and that at least 2.8 million of those may be feral (FWC 2003). There also is the potential for rabies to spread to feral and domestic cats from infected wildlife. Cats have been recorded on a regular basis at the natural area since 2008. Control of feral and

domestic cats will focus on educating the surrounding community, combined with selective live-trapping, if necessary.

The European starling is native to Europe and northwestern Asia (Johnson and Givens 2012). It was introduced into New York in 1890 and quickly spread across the continent, reaching Florida by 1918 (Pranty et al. 2006). It typically is associated with disturbed sites and urban areas, but also will inhabit natural habitats such as grasslands that meet its needs (Johnson and Givens 2012). It is a cavity nester, and can aggressively displace native species such as wood ducks, bluebirds, purple martins, woodpeckers, sapsuckers and flycatchers from nest holes in trees and human-made structures (Johnson and Givens 2012, Maehr and Kale 2005). Local starling populations increase during the winter, when northern birds migrate into Florida. The species is gregarious, and birds often form large flocks when foraging or traveling (Johnson and Givens 2012). This species was first recorded at the natural area by ERM prior to 2000; it has recently been recorded again in 2012 and 2013. Due to the limited amount of habitat available for cavity-nesters on the site, this species is not expected to have a significant impact on native bird species at the natural area and controlling the population is not feasible.

The green iguana is native to Mexico, Central America, tropical South America and the Lesser Antilles (Meshaka et al. 2004). It was first reported in Florida in 1966 (FWC undated[g], Meshaka et al. 2004). The first observations of the species in Palm Beach County were in 2003 (FWC undated[g]). The species is very popular in the pet trade, and individuals frequently are released or escape (FWC undated[g]). However, most individuals do not survive cold winter temperatures except in southern Florida (Bartlett and Bartlett 2011b). The cold winter of 2009-2010 appears to have reduced the green iguana population in Palm Beach County considerably. Green iguanas live in most habitats, from tree canopies to urban sidewalks and backyards (Bartlett and Bartlett 2011b). They also burrow into canal banks, leading to bank instability and bank erosion (Ferriter et al. 2009). Green iguanas are primarily herbivores; they feed primarily on foliage, flowers, and fruit, but are known to also consume insects, lizards, nestling birds and eggs (Kern 2004). 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 was recorded at the natural area on several occasions between 2006 and 2009, but has not been reported on the site since fall 2009. However, green iguanas have more recently been observed on canal banks adjacent to the natural area and may be recorded at the natural area in the future. Potential control measures will be explored in the future if it is determined that this species is having a negative effect on the natural area.

The greenhouse frog, native to Cuba and the Bahamas, was first recorded in Florida in 1875 and is now present throughout the state in urban yards, woodlands and scrub (Bartlett and Bartlett 2011a, FWC undated[h]). 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 like most amphibians (Bartlett and Bartlett 2011a, FWC undated[h]). They eat ants, beetles, roaches and other invertebrates and probably are preyed upon by Cuban

treefrogs and snakes (FWC undated[h], Meshaka et al. 2004). This species was recorded once on the natural area in the 1990s and again in 2012. No efforts to control this species will be made unless it seems to be impacting native species.

The monk parakeet, native to temperate and subtropical South America, was first recorded nesting in Florida in 1969 (Johnson and Logue 2012). It is now the most widespread and abundant parrot in North America due to accidental and intentional releases (Pranty et al. 2006). Monk parakeets typically build large, communal stick nests in trees, palms or on artificial structures (Johnson and Logue 2012, Pranty et al. 2006). This species feeds on a wide variety of flowers, fruits, seeds, berries and other plant material; it also visits bird feeders (Johnson and Logue 2012, Pranty et al. 2006). This parrot species appears to be remarkably free of Newcastle and other avian diseases (FWC undated[i]). Since the monk parakeet does not appear to adversely affect native plants or animals (Johnson and Logue 2012), it will not be targeted for control.

The nine-banded armadillo is native to the southwestern United States, Mexico, and most of Central and South America (Brown 1997). This nocturnal species was first introduced on the east coast of Florida in the 1920s (FWC undated[j]); it also spread eastward from Texas into the Florida Panhandle (Schaefer and Hostetler 2012). The two populations merged in the 1970s or early 1980s, and this species now occurs in uplands throughout most of Florida (FWC undated[j], Schaefer and Hostetler 2012). Armadillos prefer areas with sandy or loamy soils that are easy to excavate (Schaefer and Hostetler 2012). This species digs multiple burrows that provide homes for many other animals. It feeds primarily on insects and their larvae, but also eats earthworms, scorpions, spiders, snails and small vertebrates and their eggs (Schaefer and Hostetler 2012). The impact of armadillos on native plants and animals is not well-quantified; their harm or benefit is under debate. Armadillos are carriers of diseases such as St. Louis encephalitis, leptospirosis, arboviruses and leprosy (FWC undated[j]). This species has been recorded at the natural area numerous times over the past 20 years. Armadillos do not appear to be having a significant impact on the natural area and will not be targeted for control.

The red-masked parakeet is native to Ecuador and northern Peru (Pranty et al. 2006). It was first recorded in Florida in 1983 and has been observed at various locations in urban and suburban areas in South Florida, especially Fort Lauderdale and Miami, and as far north as Brevard County (Epps 2007, FWC undated[k], Pranty et al. 2006). It is usually observed in mixed flocks with other parakeets (Epps 2007). Red-masked parakeets roost in royal palms and nest in cavities in cypress trees, dead or live royal palms, and dead coconut palms (Epps 2007). They eat fruit, nuts and flowers of both native and nonnative plans (Pranty et al. 2006). Members of the parrot family are known to carry Newcastle disease, which can infect native songbirds and gamebirds, domestic chickens and turkeys, and other nonnative bird species (FWC undated[k]). The red-masked parakeet was first recorded at the natural area prior to 1996, and again in 2011. No efforts to control this species will be made unless it seems to be impacting native species.

Rock pigeons (also known as rock doves), native to Eurasia and Africa, were introduced into the United States in the early 1600s (Pranty et al. 2006). They are the common pigeons found in most urban areas and are bred by pigeon racing enthusiasts (Pranty et al. 2006). This species nests on building roofs and ledges, and under bridges or highway overpasses (Pranty et al. 2006). Rock pigeons are a food source for birds of prey (FWC undated[l]). They carry a variety of diseases that can be transmitted to wildlife as well as to humans and domestic animals (FWC undated[l]). Rock pigeons were first recorded at the natural area prior to 1996 and were recorded again in 2006. Control of rock pigeons in a natural area surrounded by development is not practical. This species does not appear to use the natural area or affect it in any significant way.

The white-winged dove is native to the West Indies, Mexico, Central America and the southwestern United States (FWC undated[m]). Migratory birds are present in central and southern parts of Florida during October and November (FWC undated[m]). Nonmigratory breeding birds are present year-round; these are descendants of either birds from Mexico that were introduced into Miami-Dade County in 1959 or birds that colonized the area from the Caribbean around that time (Maehr and Kale 2005). In the early 1970s FGFWFC intentionally released several hundred white-winged doves into various portions of the state, including as far north as Lake County (Maehr and Kale 2005). The white-winged dove is considered a migratory, upland game bird by USFWS and FWC, and as such, both a Florida hunting license and a Florida migratory bird permit are required to legally hunt this species (Giuliano et al. 2010). White-winged doves feed on seeds, grain, insects and some fruit; they will also visit bird feeders (Pranty et al. 2006). White-winged doves were first recorded at the natural area in 2013. They will not be targeted for control.

4.5.4 Restoration and Enhancement Projects

The restoration and enhancement of the natural communities within the natural area is almost completed. Activities conducted to date include the implementation of an invasive/nonnative plant control program throughout the natural area (see Section 4.5.2, Invasive/Nonnative Plant Control), the commencement of a prescribed burn program (see Section 4.5.1, Fire Management), and the completion of several wetland and upland restoration projects. Restoration and enhancement activities conducted to date have begun to restore/recreate basin marsh, hydric hammock, mesic hammock, mesic flatwoods, scrubby flatwoods and scrub natural communities in terms of biological composition and ecological function. These projects are described in the following sections and the areas that were restored are depicted on Figure 6. One additional upland restoration planting project is proposed for the area east of the El Rio Trail.

From 2007 to 2012 ERM received $33,996 as part of a multi-year grant from USDA, NCRS through its Wildlife Habitat Incentive Program (WHIP). This money was used to install native trees and shrubs in several upland restoration areas, plant native species (predominately herbaceous plants) in the wetland restoration area and control invasive nonnative vegetation.

Although most of the planned restoration and enhancement projects have been completed, it will take several years for the plants to mature and for additional native plants to recruit into the restored and enhanced areas. As a result, it will take many years for the forested transitional and forested upland areas to reach full restoration status.

4.5.4.1 Cut-throat Grass Restoration

A 2-acre cut-throat grass restoration project was conducted by a developer in 1999. The restoration area was located in a portion of the former basin marsh, just west of the US Foods stormwater retention area. Dense Brazilian pepper and common ragweed were removed from the restoration area, the site was scraped down approximately 1 foot to remove partially oxidized muck from the area, and a temporary irrigation system was installed. Several thousand cut-throat grass clumps were brought in from a 1.25-acre site in the Arvida Park of Commerce that was being developed. However, neither the hydrology nor the subsoil in the scraped-down area were favorable for cut-throat grass restoration, and most of the grass clumps died within 2 years. The southern portion of the cut-throat grass restoration area was later incorporated into the recreated basin marsh area; the northern portion was later planted with slash pines and saw palmettos.

4.5.4.2 Parking Lot - Mesic Hammock Restoration

Because the parking lot was constructed in a heavily-disturbed portion of the site, a significant planting effort was needed to restore the area and create an aesthetically-attractive entrance to the natural area. The resulting multi-phased mesic hammock restoration project began in 2003 when 55 cabbage palms were relocated from a nearby road expansion project to the mesic hammock restoration area adjacent to the future parking lot. In January 2006 approximately 800 native trees and shrubs were planted adjacent to the proposed parking lot; temporary irrigation was installed to help get the plants established. Then in April 2006 cabbage palm, Florida privet, live oak, saw palmetto and red bay that were growing in the footprint of the future parking lot were relocated to areas just outside the footprint. Later that year, volunteers began a series of planting projects in which more than 800 native plants (strangler fig, live oak, saw palmetto, wild coffee, Florida privet and sand cordgrass) were installed in the area surrounding the parking lot. Another 100 cabbage palms were relocated from the Loxahatchee Slough Natural Area and planted near the proposed parking lot in March 2007.

In 2007 and 2008 more than 1,700 native trees were planted in disturbed areas around the parking lot, and west and south of the recreated basin marsh. The vast majority of these trees were live oaks, but a few slash pines were also planted. These trees were planted by a contractor working to mitigate for development elsewhere in the county. Temporary drip irrigation was utilized to get the trees established. And finally, volunteers planted 280 dune sunflower plugs in disturbed areas near the parking lot in 2012.

4.5.4.3 Basin Marsh Restoration

The natural community that was most severely affected by human-caused disturbances was the basin marsh. By the early 1990s, all of the site's wetlands had been lost due to a 6- to 6.5-foot drop in the water table. Nearly all of the former basin marsh had become colonized by invasive nonnative, ruderal and upland plant species. The historic extent, drainage and post-drainage condition of the basin marsh are described in Section 1.9, Site History, Section 3.2, Hydrology, and Section 3.3, Natural Communities.

In order for the proposed basin marsh restoration project to succeed, county staff first had to determine the current status of the groundwater table within the natural area. To do this, three groundwater monitoring wells were installed in the western portion of the former basin marsh community in 2000. These wells were monitored on a monthly basis and the information that was collected was used to determine appropriate ground elevations for the two basin marsh ponds.

Prior to the excavation of the basin marsh ponds, all of the existing vegetation (mostly Brazilian pepper and common ragweed) had to be removed from the project site. This included dense areas of Brazilian pepper which was mechanically removed and then root-raked, along with other nonnative and ruderal species. During the vegetation removal process, 55 cabbage palms were transplanted from the central portion of the restoration area to an area just south of the project.

Then from November 2005 to March 2006 approximately 127,000 cubic yards of fill was removed from the natural area. This fill quantity included fill that was excavated from the basin marsh re-creation area, as well as fill from spoil piles that had been placed alongside the L-40 and El Rio Canals (Figure 6). Approximately 65,000 cubic yards of clean sand was hauled to beaches at Singer Island and Lantana to repair damage caused by Hurricane Wilma. The remaining 62,000 cubic yards of fill were trucked to the County's Burt Aaronson South County Regional Park and was used for park development. Ground elevations within the restored basin marsh were lowered from 10 to 11 feet NGVD, to 3 to 7 feet NGVD.

The goal of the basin marsh restoration project was to recreate a seasonal wetland that has a minimum of 12 to 18 inches of standing water during the wet season, and declining water levels during the dry season. There are two ponds in the 6.8-acre wetland: a 2.2-acre deep-water northern pond and a 4.6-acre shallow-water southern pond. Water levels in both ponds typically range from about 4.0 to 7.5 feet NGVD, however, they can go as high as 8.0 feet NGVD in the southern pond and as high as 8.5 feet NGVD in the northern pond. The northern pond retains water throughout the year; the southern pond typically has no surface water for 1 to 2 months at the end of the dry season. This period without surface water prevents the development of a permanent fish population in the southern pond and makes the wetland more conducive to successful amphibian reproduction, which was a major goal of the wetland restoration project.

Because there were no intact herbaceous wetland communities adjacent to the restored basin marsh project site, there was little to no chance that wetland plant species would naturally recruit to the recreated wetland. To increase the chances that wetland plantings would survive in the restored basin marsh, the top approximate 1-foot of soil was removed from the basin marsh project area prior to the removal of approximately 4 to 7 feet of excess fill from the restoration project site. This top soil was stockpiled onsite until the excavation phase was completed. The top soil was then spread over the excavated area to provide some nutrients for future plantings. In addition, 50 cubic yards of soil and plant material were trucked to the site from the Loxahatchee Slough Natural Area to replace exposed organic soils that had oxidized over the years and to introduce seeds of native wetland plant species into the basin marsh restoration area. Major staff and volunteer wetland restoration planting efforts were made from 2006 to 2009; nearly 30,000 plants were installed during that period. Most of the species used were those known to historically occur in the basin marsh area - sawgrass, maidencane, sand cordgrass and *Osmunda* ferns. Additional smaller-scale wetland planting activities were undertaken 2011 to 2013.

4.5.4.4 Spoil Removal

Prior to acquisition of the natural area, large spoil piles were present along the El Rio and L-40 Canal rights of way; these piles were created during the construction and maintenance of the two canals. The spoil piles were covered by invasive nonnative species such as Australian-pine and Brazilian pepper at the time of the site's acquisition. Between November 2005 and March 2006, all of the existing vegetation was removed from the spoil piles and the excess fill was removed from the natural area. The remaining soils were regraded to match, or transition with, natural ground elevations within the adjacent natural communities. The former spoil areas were initially allowed to revegetate naturally, however, only a few native upland species recruited into these upland areas. Later, native plants were installed in the disturbed areas along the canal rights of way to facilitate the restoration of these areas. Additional information about the spoil removal is provided in Section 4.5.4.3, Basin Marsh Restoration, and additional information about subsequent upland plantings is provided in Section 4.5.4.5, Upland Plantings.

4.5.4.5 Upland Plantings

Between March 2006 and June 2007, a number of trees and shrubs were planted in disturbed upland areas around the restored basin marsh. These species included pond apple, saw palmetto, strangler fig and live oak. Approximately 6,000 native plants were installed in disturbed upland areas in 2009 and early 2010. In July 2011 a contractor planted 3,135 plants in disturbed areas in units 2, 3, 4, and 5 as mitigation for a development project elsewhere in the County (Figure 6). In the same year, the strips of disturbed scrub vegetation along both the north and south sides of the L-40 Canal were planted with native scrub species to encourage natural revegetation of those areas (Figure 6).

4.5.4.6 Hydric Hammock Restoration

In July 2011 a contractor working to mitigate for development elsewhere in the county planted live oak, dahoon holly, saw palmetto and American beautyberry in disturbed areas adjacent to the west side of the wetland restoration area and in a small area northeast of the wetland restoration area. Temporary drip irrigation was utilized to get the plants established.

4.5.4.7 Proposed Upland Restoration Project along El Rio Trail

A small-scale upland restoration project is planned for 2014-2015. This project will help restore strips of disturbed mesic hammock, disturbed scrub and disturbed scrubby flatwoods that lie just east of the El Rio Trail (Figure 6). Appropriate native groundcover, grasses and shrubs will be installed to facilitate and supplement the natural recruitment of native vegetation in these areas. Some small trees may be added at a later date, if feasible.

4.6 SOIL AND WATER CONSERVATION

The St. Lucie-Paola-Urban land complex is listed as a sloping soil and has potential for erosion. The Immokalee and Pompano soils are nearly level and have minimal erosion potential. More detailed information on the soils present is provided in Section 3.1, Soils. The locations of the soils on the natural area are shown on Figure 3. In general, soil-disturbing activities have been, and will continue to be avoided, except for the construction, use and maintenance of management accessways, spoil material removal, and restoration and enhancement activities. All areas disturbed prior to acquisition of the natural area are being managed to encourage revegetation by native plant species. Grade changes and bare areas created by construction of public use facilities and trails were stabilized by the use of erosion control fabrics and replanting with native vegetation. Management accessways and firebreaks were located to avoid steep slopes wherever possible, sited to cross the slope at an angle, or located on already-existing sand trails. Because permeability is rapid in most of the sloping soils on the natural area, runoff erosion should not be a problem on the management accessways and firebreaks. If runoff erosion becomes a problem, appropriate measures will be undertaken to stop or control the effects of this erosion. Appropriate silt fencing measures were undertaken for site restoration and facility construction activities with the potential to discharge sediment into surface waters. These measures also will be taken for any future restoration or construction activities on the site. Protection of the only geologic feature within the natural area - the Pamlico dune ridge - will continue to be ensured through the ongoing protection and preservation of this site.

4.7 SECURITY

The City of Boca Raton has the primary responsibility for public safety and law enforcement at the site, per the terms of the interlocal agreement between the City and the County (Appendix J). These responsibilities include routine patrols of the boundaries and the prevention of vandalism, trespass, dumping, and damage to the property and natural resources. There is no on-site

manager or security guard and no on-site staff residence. The County currently has trained three local, volunteer stewards for the site.

The County's Natural Areas Ordinance regulates public use of the natural area (Appendix E). This ordinance provides for passive recreational activities such as hiking, nature study, and photography; for environmental education; and for scientific research. It prohibits destructive uses such as off-road vehicle use, dumping, and poaching of plants and animals. No dogs, cats, or other domestic animals are permitted on the natural area. Chapter 14 of the Code of Ordinances of Boca Raton, Florida also prohibits dumping.

The natural area is open to the public daily from sunrise to sunset. The hours of operation are posted at each entrance. Currently, city park rangers open and close the gates to the parking lot. No vehicles (for example, OHVs or bicycles) are permitted beyond the parking lot, except to perform the maintenance and prescribed burning activities described in this management plan, and except as permitted on the portion of the El Rio Trail that lies within the natural area boundaries.

In the unlikely event that any unforeseen occurrence, either natural or human-caused, severely alters the natural values of the Yamato Scrub Natural Area, ERM staff will assess the nature of the alteration and will take remedial action to secure and/or stabilize the site if necessary. Natural events such as fires, floods and hurricanes may shift the ecology of the site from its present condition and cause damage to human-made structures (such as kiosks, signs and fencing), but in no way would severely limit or eliminate the natural values of the site. The first priority following a natural or human-caused event will be to secure the site with fencing to prevent dumping and vandalism.

The natural area may be closed to public use until the site is stabilized and repairs are made to the structures. The native communities at this site will be managed to naturally regenerate following such an event. The County will inform DSL and the City of the altered condition of the site and future management plans and objectives. If the natural values of the site are severely limited or eliminated, the County, City, and State will discuss future plans for the site. Management practices will be modified to reflect any new conditions at the site, and the management plan will be updated to reflect these changes. All major events affecting the natural communities at the natural area will be discussed in the next annual report to DSL and in the next revision of the management plan.

4.8 STAFFING

Because of the low management needs of the Yamato Scrub Natural Area, the relatively small size of the site and its proximity to developed areas, there is no on-site staffing. ERM has created a roving management team that is responsible for management at this site and other county-managed natural areas. The members of the management team have been trained to conduct all levels of management activities, including invasive vegetation control, prescribed

burning and monitoring. Volunteers from local citizens' organizations, businesses and schools provide additional support where feasible and necessary. Currently, three local volunteers have been trained as site stewards; they periodically visit the site and provide reports on its conditions and any problems noted to ERM's volunteer coordinator and site manager.

4.9 COORDINATION WITH ADJACENT LAND MANAGERS

There are no conservation lands located adjacent to or in the immediate vicinity of the natural area. The County will review any proposed land use changes or development plans for properties adjacent to the natural area to ensure the protection of biological communities and to avoid adverse impacts on listed species, and will work with the City to try to locate any required preserve areas so that they are adjacent to the natural area.

4.10 GREENWAY CONNECTIONS/MANAGEMENT

The 6-mile-long, 12-foot-wide El Rio Trail is the City's first "linear park" designed exclusively for use by bicyclists, skaters and pedestrians. After years of planning and construction, the El Rio Trail in Boca Raton is substantially complete. The trail, which starts at Glades Road east of FAU, is part of a city-wide multi-use trail and bicycle lane system included in the City's 2010 Comprehensive Plan (Appendix L). Phases 1 and 2 of the southern portion of the trail, between Glades Road and Yamato Road, were completed in 2008; this 2.5-mile-long section of the trail connects commercial developments, residential communities, several parks, a Kindergarten to 8th grade school, FAU, the Boca Raton Tri-Rail station and several Palm Tran bus routes. At present, there is no connection across or under the eight-lane Yamato Road for the trail; users wishing to continue using the trail need to travel approximately 1,200 feet west to a signalized intersection at Congress Avenue and Yamato Road, and then east on the opposite side of the road. The construction of an underpass that will go under both the CSX railroad tracks and Yamato Road is part of a FDOT project to modify the Yamato Road/I-95 interchange and create a new interchange at Spanish River Boulevard and I-95. The proposed underpass, which will provide a direct connection between the northern and southern sections of the El Rio Trail, is scheduled for completion in 2016.

Phase 3 of the El Rio Trail, which runs north from Yamato Road to the north side of the L-40 Canal, was completed in 2010; it includes a bicycle/pedestrian bridge over the canal. The northern portion of Phase 3 was constructed on city-owned land adjacent to the city- and county-owned Knight tract.

Construction of Phase 4, the segment extending from the northern end of the L-40 Canal bicycle/pedestrian bridge, north to Congress Avenue, began in November 2011 and was completed in 2012. This segment of the trail is 12 feet wide and was constructed within the natural area, along the disturbed western edge of the state-owned tract. ARC approved an amendment to the original management plan for the natural area to allow construction of the trail

in that location (Appendix M). A pedestrian signal was installed by the City at the north end of the segment to allow trail users to cross four-lane Congress Avenue to access an existing multiuse trail on the west side of Congress Avenue that extends to the City's border with the City of Delray Beach. The City is responsible for the management and maintenance of the El Rio Trail, according to the provisions of the interlocal agreement between the City and the County (Appendix J). The City installed a sidewalk on the north side of Clint Moore Road that provides access from the El Rio Trail to the natural area parking lot for pedestrians and bicyclists.

The City's 2010 Comprehensive Plan indentifies a proposed multi-use trail that, if constructed, would run along the eastern border of the natural area, next to the CSX railroad tracks (Appendix L). The northern end of the proposed trail would connect to the northern terminus of the El Rio Trail near the Boca Raton-Delray Beach city line; the southern end of the proposed trail would connect with the El Rio Trail, just north of Yamato Road. The City will be required to obtain permission from ARC prior to the construction of any portion of the proposed trail within the natural area.

The County will coordinate management of the natural area with the City to ensure that the natural area is managed as part of a linked conservation lands system that provides passive recreational opportunities without significantly impacting the natural resources of these lands.

4.11 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, volunteer work days/environmental educational events are held onsite four or more times a year. Volunteer activities range from trash pickups, to removal of nonnative and invasive plant species, to assisting with environmental restoration projects. A short, site-specific educational presentation is conducted at the beginning of each volunteer work day to give the volunteers a deeper appreciation for the site they are working on. In addition, ERM staff are available to assist the faculty of local schools in developing educational programs for school use of the natural area.

Interpretative exhibits have been prepared and installed in kiosks located adjacent to the parking lot and at the entrance from the El Rio Trail. The kiosk exhibits provide general information about the natural area, its topographic features and aquifer recharge significance, the natural communities and wildlife found on the site, the protection of listed species and their habitats, restoration projects that have been undertaken at the site, ongoing management activities such as prescribed fire, and other interesting information about the site. ERM staff have designed and printed a trail guide for the site; the trail guide is available in brochure boxes attached to the kiosks. The kiosk exhibits and trail guides are updated as appropriate, and the exhibits are periodically changed to provide returning visitors with a more comprehensive view of the natural area.

Volunteer site stewards are recruited and trained by ERM staff. Currently, three stewards visit the natural area at least twice a month and submit a report after each inspection to the volunteer coordinator, who reviews it and forwards it to the site manager.

A half-hour Naturescope program about Yamato Scrub Natural Area was filmed by the County's public access television station (Channel 20) in 2012. The program is shown periodically on the Channel 20. Interested teachers and members of the public may also view the program at their convenience via a link at the bottom of the Yamato Scrub Natural Area webpage: www.pbcgov.com/erm/natural/natural-areas/yamato-scrub/.

The natural areas portion of ERM's website includes links to trail guides, photo albums for most natural areas, current management plans, Naturescope programs (if available for that specific natural area), information on how to obtain a free application for mobile devices, and maps of the County's natural areas. Each natural area map shows the trail system and main public use facilities that are available at that site. The link to the Yamato Scrub Natural Area management plan will be updated after the plan has been reviewed by ARC and approved by FDEP. Information on Yamato Scrub Natural Area can be accessed at: www.pbcgov.com/erm/natural/natural-areas/yamato-scrub/. The natural areas mobile map can be accessed at: www.pbcgov.com/erm/mobile-maps. It is anticipated that FWC will include the Yamato Scrub Natural Area in the South Florida section of the Great Florida Birding and Wildlife Trail (GFBWT) when that section of the GFBWT 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 local institutes of higher learning, botanical gardens, and government agencies to conduct scientific research on a permit basis.

4.12 CLIMATE CHANGE

The preservation, restoration and enhancement of the Yamato Scrub Natural Area will help address climate change in three ways. First, the re-creation of a portion of the former basin marsh will help rebuild some of the carbon stores that were lost from wetland soils when the former basin marsh area was converted to an upland habitat as a result of the lowering of the groundwater table within the natural area. Second, the preservation and enhancement/restoration of native vegetative communities on the site will help reduce greenhouse gases by converting carbon dioxide to oxygen. Third, the restored/enhanced native vegetation communities within the natural area will serve as a refuge for wildlife that may be affected by climate change-induced habitat losses.

5. SITE DEVELOPMENT AND IMPROVEMENT

5.1 PUBLIC USE FACILITIES AND ACCESS

The natural area is a publicly-owned preserve and is operated as a natural resource-based, passive outdoor recreational site. It also is available for environmental education and scientific research. The existing and proposed public uses were carefully chosen, designed and located so as to not have a significant impact on any of the rare and endangered plants, animals, and natural communities found on the natural area. At the same time, these public uses provide for adequate public passive recreational opportunities such as nature appreciation and study, photography and hiking. In addition, a multi-use trail was developed by the City along the northwestern edge of the natural area to allow bicyclists and skaters to enjoy the natural area in a manner that will not jeopardize the site's natural resources. A second multi-use trail has been proposed for the eastern edge of the natural area. If constructed, this trail will be designed, constructed and managed by the City in a manner that will minimize adverse impacts to the natural area.

The natural area is open to the public during daylight hours, unless a special, after-hours use permit has been issued. The hours of operation are/will be posted at each public access point. The City is responsible for the daily opening and closing of the gates to the parking lot.

The major structures and improvements constructed on and proposed for this site are described in the following sections, and the existing public use facilities are shown on Figure 7. The existing structures and improvements have helped the County, City and State achieve their goals of preserving and restoring the natural resources of the natural area, while providing for compatible public uses. The nature trail, El Rio Trail, kiosks, bicycle racks, parking lot, pedestrian bridges and portable toilet comply with Americans with Disabilities Act requirements. The cost to design, permit and construct/install the existing County-managed public use facilities, fencing and signage was approximately $781,200. The cost to construct the portion of the City-managed El Rio Trail that lies within the natural area was $313,600. The County is responsible for maintaining all public use facilities, fencing and signage on the natural area, with the exception of the facilities that are associated with the El Rio Trail. Maintenance of the El Rio Trail, and its amenities, is the responsibility of the City. Maintenance responsibilities are described in an interlocal agreement between the City and the County (Appendix J).

A parking lot was constructed in a highly-disturbed portion of the former basin marsh on the north side of Clint Moore Road (Figure 7). It contains spaces for ten cars, including one accessible space, and two buses. Prior to development of the parking area, the County surveyed this area for listed species and found none. If any listed species had been found, the parking area location would have been adjusted to avoid impacts, or the listed species would have been relocated on the site. Unpaved areas within the limits of the parking lot have been landscaped with native plant species to provide additional wildlife habitat and to enhance the parking lot's appearance. Public access to this parking lot is only from westbound Clint Moore Road. Drivers traveling eastbound on Clint Moore cannot turn directly into the parking lot; they need to

continue eastbound until they can find a safe and appropriate location at which to make a u-turn and then travel back westbound on Clint Moore Road. An entrance sign has been installed next to the parking lot driveway and an entrance gate has been installed across the driveway to control entry to the parking lot.

A kiosk is located on the west side of the parking lot, near the beginning of the nature trail (Figure 7). A bicycle rack was installed near the kiosk in the parking lot to encourage visitors to ride bicycles to the natural area. An accessible, unisex portable toilet is located at the north end of the parking lot (Figure 7). It is mounted on a concrete slab and screened from view by post-and-rail fencing and landscaping. Drinking water is not available at the natural area.

Trash receptacles are not provided at the natural area for several reasons: 1) ERM believes the lack of trash receptacles encourages people to minimize and recycle their trash as much as possible; 2) the use of trash receptacles within natural areas tends draw wildlife into areas where they may come into conflict with, or be fed by, members of the public; 3) some people use the trash receptacles as their personal "dumpsters" - they empty all the trash from their vehicles into the receptacles - which leaves little or no room for other trash; 4) people continue to place trash into and around trash receptacles even after they are full resulting in unsanitary/unsafe conditions for other visitors and wildlife, and trash which is left around full receptacles then blows into the adjacent natural communities; and 5) ERM has found that removal of trash receptacles from County-managed natural areas does not increase the amount of trash/litter that is found on any given site.

Approximately 3.5 miles of designated pedestrian trails and an approximate 0.5-mile-long segment of a 6-mile-long (total-length) designated multi-use trail have been created on the site (Figure 7). Primary access to the pedestrian trails is from the parking lot. An approximately 0.7-mile-long accessible nature trail begins at the kiosk and runs in a northerly direction into the adjacent disturbed and intact mesic hammock communities. The nature trail crosses the L-40 Canal via a 54-foot-long, 5-foot wide (clear-width), wooden pedestrian bridge before passing through portions of the mesic hammock, scrubby flatwoods and mesic flatwoods communities. The trail then heads in an easterly direction, passing through two portions of the disturbed mesic flatwoods community, between the two restored basin marsh ponds and through another portion of the scrubby flatwoods community, before terminating in a small loop in the scrub community. In November 2011 a memorial bench was installed on the west side of the deep-water basin marsh pond to serve as a resting point and wildlife observation area.

The nature trail is made of 4-inch-thick concrete with a non-slip finish and is 5 feet wide to accommodate wheelchairs and other mobility devices. The pedestrian bridge also is 5 feet wide (clear-width), and has appropriate guardrails and handrails. Trail markers are located at various points along the nature trail with station numbers corresponding to descriptive information in the printed trail guide.

A 1-mile-long natural-surfaced, looped hiking trail begins approximately 800 feet from the start of the nature trail (Figure 7). The trail runs north into the scrubby flatwoods, mesic flatwoods and scrub communities; then it loops back to join the nature trail before that trail enters the disturbed mesic flatwoods community. An approximate 0.7-mile, out and back natural-surface hiking trail begins at the east end of the nature trail, runs south, crosses the L-40 Canal via a 54-foot-long, 5-foot-wide (clear width), wooden pedestrian bridge, then passes under Clint Moore Road through a former golf cart underpass, before connecting to a 1.1-mile-long, looped hiking trail that passes through most of the southern portion of the natural area (Figure 7). Portions of the natural-surfaced hiking trails are co-located with management accessways/firebreaks and will be maintained in accordance with the standards set forth for those uses (see Section 5.4, Management Accessways/Firebreaks). The portions of the hiking trails that are not co-located with management accessways/firebreaks will be maintained either by hand at a width of 3 feet or by periodic mowing with a small tractor with a bush hog mower at a width of 6 feet. The hiking trail system is not improved or marked for interpretive purposes. All management accessways/firebreaks also are available for foot traffic, but are not improved or marked for interpretive purposes. Trails were constructed on existing paths and trails, and within disturbed areas whenever feasible. Public use of existing secondary trails leading off designated hiking and multi-use trails, and management accessways/firebreaks will be discouraged by appropriate signage and vegetative barriers, by not maintaining these secondary trails, and by encouraging the regeneration of native vegetation in these trails.

Phase 4 of the El Rio Trail was constructed by the City in 2011-2012 as a 12-foot-wide concrete multi-use trail. An approximate 0.5-mile section of the 6-mile (total length) trail lies within the natural area's boundaries; this portion of the El Rio Trail is designated by the County for use by bicyclists and skaters pursuant to the requirements of the County's Natural Areas Ordinance. A 3-rail, post-and-rail fence was constructed by the City along the eastern edge of the El Rio Trail to keep bicyclists and skaters from entering the main portion of the natural area. A pedestrian maze gate was installed within the fenceline, approximately halfway between the L-40 Canal and Congress Avenue, to allow pedestrians access to the natural area from the El Rio Trail. The pedestrian maze gate connects to a management accessway/firebreak that connects to the northern hiking trail to the north and to the nature trail to the south. An interpretative kiosk, bicycle rack and bench have been installed near the pedestrian gate to help educate El Rio Trail users about the natural area, and to provide bicyclist and skaters with an opportunity to "leave their wheels behind" and enjoy the natural area on foot.

The City has proposed the construction of a new 12-foot-wide, multi-use trail just west of the CSX railroad right of way. If constructed, the northern and southern ends of the proposed trail will connect with the El Rio Trail to create a looped trail. Approximately 0.9 miles of the trail would be located along the eastern edge of the natural area. Those portions of the trail that abut the natural area would need to be fenced to prohibit the "off-trail" use of bicycles and skates in the natural area. Because the new multi-use trail would be constructed in approximately the same location as the existing perimeter firebreak, additional native vegetation may have to be cleared and/or chopped to create a new firebreak west of the new fenceline prior to conducting a

prescribed burn in the adjacent management unit. Although the City holds title to some of the land needed for the proposed trail, additional lands/easements/approvals must be obtained by the City before the trail can be constructed. The City will be required to obtain formal approval from the state to place a portion of the trail along the eastern edge of the natural area.

Pedestrians and bicyclists using the sidewalk along the north side of Clint Moore Road can access the natural area parking lot via an approximately 235-foot-long connecting sidewalk that leads from Clint Moore Road to the bicycle rack and kiosk at the west end of the parking lot. Because some pedestrians access the site near the tunnel that passes under Clint Moore Road pedestrian maze gates have been installed both north and south of the tunnel under Clint Moore Road. A bench and small kiosk may be installed near the northern pedestrian maze gate if this entrance receives sufficient use.

All 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.

5.2 FENCING AND GATES

Six-foot-tall, green-vinyl-coated chain-link fencing has been installed at various locations around the perimeter of the site where the natural area borders unfenced industrial or commercial properties. Post-and-rail fencing has been installed on the portions of the site that border Congress Avenue, Clint Moore Road and NW 6th Avenue, on either side of the Boca Raton Shrine Club property and around the perimeter of the parking lot. Post-and-rail fencing also has been installed by the City on the east side of the El Rio Trail to separate the trail from the rest of the natural area. Fencing was installed within disturbed areas whenever possible, to minimize impacts on intact natural communities. Fencing has not been installed where the natural area borders the L-40 Canal and the CSX railroad tracks. Existing physical barriers, such as steep canal banks and dense vegetation, restrict access to most of these areas, and security problems have been nominal. The County does not plan to install fencing along these boundaries.

A 13-foot aluminum double-swing gate has been installed at the entrance to the parking lot on Clint Moore Road. A management access gate has been installed wherever a management accessway/firebreak connects to a public road and in seven other locations to facilitate access to various portions of the site. Currently, there are twelve management access gates on the natural area – eleven were installed by the County and one was installed by the City for use by the County. Two of the gates that were installed by the County are vinyl-coated chain-link fence gates because the associated fencing is chain-link. Nine steel farm gates have been installed where the associated fencing is post-and-rail. A steel single-swing gate has been installed on the south side of Clint Moore Road in association with a guard rail that was installed by FDOT. All of these gates allow vehicular access to the project site for management purposes.

In June 2013, FPL removed a section of the County's post-and-rail fence adjacent to one of these gates to provide access for the replacement of one of the transformers at the Boca Teeca substation. FPL then installed an 8-foot-wide, steel pipe gate in the opening to facilitate future access to the substation.

5.3 SIGNS

A double-sided entrance sign was installed on Clint Moore Road near the entrance to the parking lot. A smaller entrance sign was installed at the pedestrian maze gate along the El Rio Trail. A sign identifying the site as a natural area was installed on Congress Avenue, and two similar signs were installed on the east side of the site, facing the CSX railroad tracks – one north of Clint Moore Road and one south of Clint Moore Road. A dedication sign was installed on the entrance road to the parking lot; it states that the natural area was acquired for preservation and passive public recreation with funds provided by the County, the City and the CARL Program. A "No Pets Allowed" sign and hours of operation sign are also posted at the entrance to the parking lot.

Regulatory signs have been posted at each corner of the property and every 500 feet along the perimeter of the natural area. The signs state that the Yamato Scrub site is a protected natural area and cite appropriate County and City ordinances. A welcome sign, a "Foot Traffic Only" sign, a "No Bikes Allowed" sign, a "No Trash Area" sign, and a "Wildlands Task Force Patrol Area" sign have been installed next to the kiosk in the parking lot. A welcome sign and hours of operation sign have been installed at the pedestrian entrance along the El Rio Trail, and will be installed at the pedestrian entrance north of Clint Moore Road just north of the tunnel. A "Foot Traffic Only" sign, a "No Bikes Allowed" sign, a "No Trash Area" sign will be installed at both the El Rio Trail entrance and the pedestrian maze gate north of the Clint Moore Road tunnel.

A nature trail guide has been developed. Paper copies of the guide are available in brochure boxes attached to the kiosks, and an electronic copy can be downloaded from ERM's website. Signposts are located at various points along the nature trail, with station numbers corresponding to descriptive information in the trail guide for that trail. Signs have been installed along the management accessway on the west side of the site to notify pedestrians who have entered the site from the El Rio Trail when they are approaching the hiking trail or the nature trail. The City has installed appropriate signage along the El Rio Trail to assist users of that trail.

5.4 MANAGEMENT ACCESSWAYS/FIREBREAKS

Management accessways are primarily used for resource management and on-site monitoring, although portions of these accessways may be incorporated into the hiking trail system. Management accessways provide numerous benefits, including more rapid access in the event of a wildfire, protection of adjacent developed areas from wildfire, and facilitation of the monitoring of dumping and other illegal activities along the natural area's edge. Initially, the management accessways on this site were cleared areas with an unimproved sand/dirt surface that was

approximately 15 to 20 feet wide. Cleared management accessways will be maintained at a standard maintenance width of 13 to 15 feet, except when used as a firebreak. This width will efficiently and effectively provide safe passage for vehicles and equipment. Routine maintenance of the management accessways will be accomplished by periodic mowing. Disking of management accessways will occur only around management units where a prescribed burn is planned in the near future, or where a management accessway borders a developed area and a disked firebreak is needed for safety reasons.

A management accessway/firebreak system has been established between each of the seven management units on the natural area. The management accessways/firebreaks were located as much as possible on existing paths, trails, and disturbed areas on the site. Prior to construction, all management accessway/firebreak locations were surveyed for listed species. If listed species were likely to be impacted by the management accessway/firebreak construction, the accessways/firebreaks were rerouted wherever possible, or the listed species were relocated elsewhere on the site. Additional firebreaks may be established within management units to separate fire-intolerant natural communities from adjacent burn areas, or to create smaller burn units.

5.5 OTHER STRUCTURES AND IMPROVEMENTS

No structures or improvements are planned for the site other than those described in Section 5.1.

5.6 PRIORITY SCHEDULE FOR MANAGEMENT AND RESTORATION ACTIVITIES

The initial development of the natural area has been completed. Site development activities, initial invasive/nonnative vegetation removal, one fuel reduction burn, mechanical chopping of several management units to reduce fuel loads, a basin marsh restoration project and numerous restoration planting projects have been completed as shown in Chapter 14, Chronology of Major Events. Fencing, signs and gates were purchased and installed and management accessways/firebreaks were cleared. A fire management plan was prepared, and a prescribed burn program initiated. A nature trail, two hiking trails, a multi-use trail and a parking lot have been constructed; and two bicycle racks, two kiosks with interpretive displays and brochure boxes, and a portable unisex toilet have been installed.

Management of this site has now shifted into the maintenance mode. The structural elements are replaced when needed due to age or damage. A priority schedule for the ongoing work is provided in Table 3.

Work will begin in 2022 on the next update of the management plan. The updated plan will be due to FDEP in 2023 for review by ARC.

6. ANNUAL MAINTENANCE AND OPERATING COSTS

The primary funding source for site development was the $100 million Palm Beach County Environmentally Sensitive Lands Bond Referendum approved by the voters on March 12, 1991. The County has the primary responsibility for site development, management and maintenance, with assistance from the City as described in the interlocal agreement between the City and the County (Appendix J). The City has the primary responsibility for public safety and law enforcement within the natural area. The City also will continue to assist the County with volunteer activities and management activities such as removal of nonnative vegetation, removal of trash and debris collected during volunteer activities, and prescribed burns, subject to the availability of city funds, staff and equipment. Staffing for habitat management and facility maintenance will be accomplished by existing city and county personnel, with assistance from community volunteers.

The County's initial capital costs for nonnative vegetation removal, wildfire mitigation, and site security and development totaled $1,040,754. These expenditures included both mechanical and manual nonnative vegetation removal; clearing of management accessways/firebreaks; one fuel reduction burn; mechanical chopping of several management units to reduce fuel loads; installation of fencing, signs and gates; and construction of a parking lot with an interpretive kiosk, bicycle rack and portable toilet, a nature trail, two hiking trails and two pedestrian bridges. A portion of these capital costs were paid by grants: a $97,751 FDEP Invasive Plant Management Grant was used to cover part of the cost for treatment and removal of nonnative invasive plants; a multi-year grant from USDA, NRCS provided $33,996 for wildlife habitat improvement; and a grant from FWC provided $14,968 for improvement of gopher tortoise habitat.

As of August 2013, over $700,000 of environmental restoration work had been completed at the natural area. However, "out-of-pocket" costs to ERM totaled only $86,148. Environmental restoration costs related to the basin marsh excavation project, removal of excess fill adjacent to the El Rio and L-40 canal rights of way, and wetland and upland plantings were minimized by charging other county projects for clean fill that was excavated from the natural area; using a portion of the NRCS grant to purchase plant material; allowing offsite developments to install mitigation plantings at the natural area to help offset the cost of restoration plant materials, installation and watering; and through the use of volunteers to help install, maintain and irrigate county purchased native plants.

Annual maintenance and operation expenses for the next 10 years are estimated to be $273,073 (Table 4). Costs of management will continue to be minimized through the cooperation of local citizens' and nonprofit organizations, businesses, schools, and individual volunteers and by coordinating the management of natural areas on a countywide basis. It is recognized by both the County and the City that the management of the natural area will require more than volunteer assistance. Some activities, such as prescribed burning and mechanical fuel reduction, herbicide application, operation of chain saws, and other hazardous or extremely technical operations, are

not suited to volunteers. The County will provide such services, or assistance from contractors will be obtained where necessary. Maintenance of public use facilities, implementation and maintenance of restoration projects, and planned management activities on the natural area are subject to and contingent upon annual budgetary funding and appropriations by the BCC.

The County has established a Natural Areas Stewardship Endowment Fund. Funds received from restricted gifts and other sources are invested, and the interest earned is used to provide operating funds for management of county-owned and county-leased natural areas. The County also may apply for funds available from the Pollution Control Recovery Trust Fund administered by FDEP. In addition, funds are available as provided in Article 14, Chapter C (Vegetation Preservation and Protection) of the Palm Beach County Unified Land Development Code. Fees collected from violations of the provisions of this section will be deposited into the Natural Areas Fund, and can be used for the management of lands acquired or leased by the County as natural areas. Monies from the sale of development rights on lands purchased by the County as natural areas, as well as monies received from leases of county-owned land in the Agricultural Reserve, also are potential sources of funds for management purposes. Even with these possible funding sources, the County recognizes the need for additional management funds. ERM will investigate all possible local, state, or federal sources of land management funds. The County will not apply for funds from any grant program whose requirements conflict with the terms of the lease agreement. Any fee received by ERM from any public or private entity for projects to offset adverse impacts to imperiled species or their habitats will be deposited into the Natural Areas Fund and used to restore, manage, enhance, repopulate or acquire imperiled species habitat and to implement land management plans for sites with such habitats.

7. MONITORING AND REPORTING

The public uses permitted on the site by Palm Beach County were carefully chosen and designed so as to not have a significant impact on any of the rare and endangered plants, animals, and natural communities found on the natural area. No specific carrying capacity has been determined for this natural area. The site is managed specifically to promote natural resource values. In general, the size of the parking lot and restricted public access points are the limiting factors in controlling public usage. No OHVs, domestic animals or pets are allowed past the parking lot, so impacts from these sources are minimal. Bicycles are allowed only in the parking lot and on the El Rio Trail. Except for management purposes and the El Rio Trail, all human traffic within the natural area is by foot. As of May 2013, there were 10 active geocaches on the site. This recreational activity does not appear to be having any effects on the natural area. The effects of human impacts on the site will be determined through implementation of the monitoring program described in the following section.

A hydrological monitoring program was initiated in December 2000; a biological monitoring program was initiated in 2002. The purpose of these two monitoring programs is to determine whether the stated management and restoration objectives for natural vegetation communities and listed species are being achieved. Results of the monitoring program have been/will be used to evaluate the success of prescribed fires and/or mechanical vegetation reduction activities, nonnative plant treatments, and other restoration and management efforts at the natural area. The monitoring program and management practices will be adjusted if an analysis of the monitoring data indicates that management objectives are not being met. If an analysis of monitoring data indicates that public uses are having a negative impact on vegetation and/or wildlife populations, a carrying capacity or additional use restrictions may need to be established for the site.

A series of monitoring protocols has been developed to ensure consistency in monitoring activities on all natural areas managed by ERM. Copies of these protocols are available upon request. The types of monitoring conducted on the natural area are summarized in the following paragraphs. Monitoring data will be used as the basis for future revisions of the management plan.

7.1 PHOTOMONITORING

The primary objective of photomonitoring is to obtain a qualitative, long-term visual record of changes in vegetative composition and/or condition over time, including the effects of planned management and restoration activities. Photomonitoring also may be used on a short-term basis to document changes in vegetation coverage which are related to specific restoration or management activities, such as the mechanical removal of nonnative vegetation, ditch filling/plugging, recontouring of areas which have been mined or filled and prescribed fire; or to document changes related to natural events, such as wildfires and tropical storms/hurricanes.

Photomonitoring began in November 2002 and is performed annually during the month of November. Eleven permanent photomonitoring stations have been established in areas where planned management or restoration activities have occurred, or are anticipated to occur, and in areas in which natural vegetation succession of management interest is expected to occur. The location of each permanent monitoring station was recorded with a global positioning system (GPS) receiver which uses satellite signals to determine the longitude and latitude of a particular spot to an accuracy that can be within one meter. The location of each station also has been clearly described on a photomonitoring form, along with any additional reference points (such as trees, structures, or other unique features) used for easier location of the station.

One set of color images is taken at each photomonitoring station during each monitoring phase. These images are then combined into a panoramic photograph, using digital imaging software, and stored electronically with the name of the site, the management unit number and the station number. Each panoramic photograph is centered on a predetermined and repeatable compass heading. When a management unit is burned, changes in vegetation are measured with photos taken pre-burn, immediately post-burn, and at 3, 6 and 12 months post-burn. A reference collection of all images taken is maintained by ERM.

7.2 VEGETATION MONITORING

If vegetation monitoring is required by the conditions of a future permit, grant or any other agreement, a point intercept transect monitoring method will be used, subject to approval by the overseeing agency or organization. Permanent point intercept transects will be established to monitor changes in vegetation. Transects will be surveyed twice a year, once in the dry season and once in the wet season. Data will be recorded for three strata (canopy, shrub, and herbaceous) at predetermined intervals along each transect. If an analysis of the transect data indicates that negative natural community changes are occurring, additional transects may be established in the affected management unit to determine if the changes are localized or widespread.

Any plant species recorded at the site that is listed as endangered or threatened by USFWS, is listed as endangered by FDACS, or is assigned a state rank of S1, S2 or S3 by FNAI will be surveyed annually or biennially in order to track population trends. Additional surveys may be conducted if it is determined that such surveys are necessary to document changing site conditions or the effects of significant events or land management activities, such as prescribed burns. If the population of a species is too large to practically count all individuals, a representative portion of the population will be surveyed. Locations of individual plants or groups of plants will be mapped with a GPS receiver. A species-specific monitoring plan may be developed for an endangered plant species when more intense monitoring is needed due to regulatory requirements or management information needs, or because the species is highly endangered or suspected to be declining.

Species listed as threatened by FDACS that have a widespread distribution or species that are commercially available will be monitored at least once every 5 years to determine if those species are still present on the natural area. Special surveys with specific objectives may be conducted as needed to document changing site conditions, the effects of a land management activity such as a prescribed burn, or the impacts of a significant natural event such as a hurricane, wildfire, pest, disease or invasive species.

7.3 WILDLIFE MONITORING

Migratory bird surveys covering the site as a whole were performed on a biannual basis from November 2002 to May 2006. Since October 2006, migratory bird surveys have been performed on a biannual basis at four permanent line transects (one each in the scrub, mesic flatwoods, basin marsh and canal natural communities) and one permanent point count station (in the mesic hammock community). Nonmigratory wildlife surveys have been conducted at these same stations on an annual basis since June 2009. Migratory bird surveys and nonmigratory wildlife surveys will be continued on a biannual and annual basis, respectively. Data collected during these surveys will be used to determine what effect, if any, public recreational uses, and management and restoration activities have on resident and migratory wildlife populations at the natural area.

Migratory bird surveys are conducted biannually when migratory bird species are expected to be present – September through October and February through May. Nonmigratory wildlife surveys are conducted annually from June through August. Surveys occur in the morning, beginning as soon as it is light enough to see a distance of at least 200 meters (approximately 660 feet) and ending no later than four hours after official sunrise. All surveys are conducted in a manner that is largely repeatable in order to obtain information that can be compared from year to year. Survey information includes qualitative and quantitative observations of animals, tracks, burrows/nests, or other signs. Opportunistic wildlife surveys are conducted during other monitoring events and routine site maintenance activities. Special care will be taken to record all sightings of imperiled species, including those species identified as "focus species" by FWC.

Any animal species recorded at the site that is listed as endangered, threatened, or of special concern by USFWS or FWC, or is tracked by FNAI, will be recorded as being present on the site. A species-specific monitoring plan may be developed for any endangered animal species that is recorded as breeding on the site, if deemed necessary/feasible by the site manager. At present ERM conducts regularly-scheduled species-specific monitoring at the natural area for one species – gopher tortoise. Gopher tortoise monitoring is conducted biennially from March through October. The survey methodology used at the natural area follows the protocol described in Appendix 4 of the FWC Gopher Tortoise Permitting Guidelines (FWC 2008).

7.4 HYDROLOGICAL MONITORING

Three groundwater monitoring wells were installed in the north-central portion of the site in October 2000 to measure existing groundwater levels in preparation for the basin marsh restoration project. Concurrently, a single staff gauge was installed adjacent to the L-40 Canal to measure water levels within the canal. The exact locations of these wells and staff gauge were determined with a GPS receiver at the time of installation. The three groundwater monitoring wells and staff gauge were monitored on a monthly basis starting in December 2000. The northernmost well was removed in January 2006 because it was located within the footprint of the basin marsh restoration area. The two remaining wells were monitored on a monthly basis until September 2011 when it was determined that the restored basin marsh was functioning as designed. These last two wells are still in place, however, and could be reactivated if onsite conditions warrant increased hydrological monitoring efforts. Water levels at the L-40 Canal staff gauge continue to be monitored monthly.

In September 2006, a few months following completion of the basin marsh excavation, two permanent hydrological stations (combination of a staff gauge and well) were installed to measure water levels within the restored basin marsh community. One hydrological monitoring station was installed in the northern, deeper portion of the restored basin marsh; the other was installed in the southern, shallower portion of the restored basin marsh. The exact location of each hydrological monitoring station was determined with a GPS receiver at the time of installation. Readings from the hydrological monitoring stations are recorded monthly. Readings are plotted against rainfall data obtained from SFWMD at the S-40 station on the C-15 Canal, which is 1 mile northeast of the natural area. The data are used to determine the relationship between rainfall and surface water levels. Readings also will be analyzed to help determine the success of the basin marsh restoration project.

Surface water quality testing requires expensive laboratory analysis of samples, and is not needed at this site because the natural area does not receive any significant surface runoff from adjacent developed properties. Surface water quality tests will be conducted only if site observations or other data indicate that impacts to water quality may have occurred.

7.5 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 changes in rainfall patterns and/or vegetation communities are noted over time, staff will attempt to mitigate for these changes if possible. If the changes cannot be mitigated for, county staff will modify its management practices to provide the highest quality vegetation communities practicable under the new climate conditions.

7.6 ANNUAL REPORT

ERM will prepare an Annual Site Evaluation (ASE) report, or annual stewardship report, each year in July. A copy of the ASE will be submitted to DSL. Each ASE will include information related to structural improvements, natural events, management activities and restoration activities which occurred during the prior year, as well as the degree of success of any management and restoration activities relative to the stated management goals for the site. The ASE will include a description of any changes to the monitoring plan that occurred during the prior year, as well as recommendations for future management actions for the natural area. A general review of management efforts related to natural vegetation communities and the status of listed species also will be completed at the end of each management year and included in the ASE.

The ASE also will be the vehicle through which detailed information on the management of the natural area will be shared with other ERM staff, including any new or current employee who may be assigned as the site manager. ASEs will provide information that will be used in conjunction with data stored in the NRS portion of ERM's Environmental Enterprise Database to allow staff biologists, ecologists and engineers to analyze and evaluate the success of staff management activities on the natural area over a period of years. ASEs will provide the basis for trend analysis of site data that will be performed at least every five years by staff.

Information on all listed species described in the management plan and all new listed species observed on the Yamato Scrub 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.

8. COMPLIANCE WITH STATE AND LOCAL GOVERNMENT PLANS

The public uses proposed by Palm Beach County were carefully chosen and designed so as to not have a significant impact on any of the rare and endangered plants, animals, or natural communities found on the Yamato Scrub Natural Area. At the same time, these public uses will provide for adequate public passive recreational opportunities such as nature appreciation and study, photography and hiking. The facilities also are available for environmental education, and have been constructed in a manner sensitive to aesthetic considerations. The County believes that these public uses comply with the 1981 Conceptual State Lands Management Plan, particularly the provisions regarding balanced public utilization.

This management plan was submitted to the City of Boca Raton for review and comment. The City has provided a letter confirming that this management plan is in compliance with the City's Comprehensive Plan (Appendix N).

9. GLOSSARY

Access road – a road that provides public access to a natural area, but not within it

All-terrain vehicle – any motorized off-highway vehicle 50 inches or less in width, having a dry weight of 900 pounds or less, designed to travel on three or more low-pressure tires, having a seat designed to be straddled by the operator and handlebars for steering control, and intended for use by a single operator with no passenger

Burn unit - an area of predetermined size and shape that remains fixed for monitoring purposes throughout a course of fire management

Canoe/kayak trail - a marked route along a river or canal or across a lake, wetland or other body of water for people traveling by kayak or canoe

Canopy - the uppermost layer of vegetation in a forest or woodland

Commensal species – a species that obtains food or another benefit from association with another species, sometimes called the host, which is neither benefitted nor harmed by the relationship

Corridor - a route that permits the direct travel or spread of animals or plants from one area or region to another, either by the gradual spread of a population of a species along the route or by actual movement of animals, seeds, pollen, spores, or microbes

Density - the number of individual plants or animals per unit of habitable area

Diversity - the number of species that live together in an ecosystem; a measure of the variety of species in an ecosystem that takes into account the relative abundance of each species

Dominant - a species that is most characteristic of an ecological community and usually influences the presence, abundance and type of other species that live there; in the case of a plant, typically the largest plant species or the one with the greatest areal coverage; in the case of an animal, generally the top predator or the most abundant or widespread species; also used for the characteristic soil type in an area, which influences the hydrology and plant communities found in the area

Ecological restoration – the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed – an intentional activity that initiates or accelerates ecosystem recovery with respect to its health (functional processes), integrity (species composition and community structure), and sustainability (resistance to disturbance and resilience)

Ecosystem – a natural assemblage of living organisms (plants, animals, microorganisms, etc.) and nonliving components (soil, water, air, etc.) that functions as a dynamic whole through organized energy flows

Ecosystem management – an integrated, flexible approach to the management of Florida's biological and physical environments, conducted through the use of tools such as planning, land acquisition, environmental education, regulation, and pollution prevention, that is designed to maintain, protect and improve the state's natural, managed, and human communities

Ecotone - a zone of transition between two adjacent ecosystems that has characteristics of both

Endemic - a species or other biological grouping with a distribution restricted to a particular region or locality

Enhancement - an action taken to introduce, reintroduce or restore vegetation and associated animals into an area where the native ecosystem has been disturbed

Equestrian trail – an unpaved trail, typically with a natural soil base and directional signage only, that is designated for use by persons riding on horseback

Extirpated – a species or other taxonomic group that no longer exists in the wild in some specified area where it once lived, but exists elsewhere in the wild

Feral - an animal that has reverted to a wild or untamed state from a domesticated state

Firebreak - a strip of land where the vegetation has been cut or removed to stop the spread of a fire; it typically does not exceed 15 feet in width and may be used as a management access area and/or a hiking trail

Fire regime - a prevailing condition in which ecosystems have evolved under periodic exposure to natural fires such that the vegetative communities have adapted to, are dependent upon, and are reproductively enhanced by this exposure

Footpath - a narrow trail with a natural soil base that is intended for foot traffic only and does not have interpretive signage

Forb - a broad-leaved herbaceous plant that is not a grass, sedge or rush

Habitat - the area or type of environment in which a specific kind of organism normally lives

Hiking trail - an unpaved footpath with directional signage only; may be combined with a management accessway and/or firebreak

Hydroperiod - the average length of time that soil is saturated during a given year

Hydric - relating to, characterized by or requiring an abundance of moisture

Inbreeding depression - a state in which a geographically isolated population becomes vulnerable to extirpation and weakened genetically due to the breeding of related individuals and the accumulation of deleterious recessive genes

Kiosk - a small structure used to shelter informational displays

Listed species - a species that is considered to be endangered or threatened with extinction, or a species of special concern, or a species that has been designated in some way by a jurisdictional governmental agency or nonprofit environmental organization as meriting special protection or consideration

Management accessway - an unimproved, single-lane dirt or sand access route that provides access for management purposes into and through a natural area; it does not exceed 15 feet in width and may be used as a firebreak and/or hiking trail

Management unit - an area of predetermined size and shape that remains fixed for monitoring purposes throughout a course of management

Mesic - relating to, characterized by or requiring a moderate amount of moisture

Mitigation - an action taken to lessen the severity or intensity of a human impact on a native ecosystem or to offset the impact, either on the site where the impact occurs or at another location

Mosaic - a pattern of vegetation in which two or more different plant communities are interspersed in patches

Multi-use trail – a trail designated for use by two or more user groups, such as hikers, bikers, and equestrians; it may contain two or more single-use treads of different widths and surface materials; also known as a shared-use trail

Natural area – land that is especially dedicated to the protection and maintenance of biological diversity and is specifically managed to preserve, restore and maintain ecological communities, including rare plants and animals; in Palm Beach County, all public lands containing native ecosystems that are under the control of or assigned to ERM for management, maintenance and operation

Nature trail - a hard-surfaced, accessible walking trail with interpretive signage

Off-highway vehicle – any all-terrain vehicle, or any two-wheeled motorized vehicle with a seat or saddle, that is used off of paved or hard-surfaced roads and highways and is not registered and licensed for highway use, or a four-wheel drive vehicle licensed for highway use that is capable of being driven off-highway

Outstanding Florida Water - a water body designated by the State of Florida Environmental Regulation Commission as worthy of special protection because of its natural attributes

Passive recreation - any recreational activity which has minimal or no impact on natural resources or ecosystems, such as trail-walking, photography, and plant and wildlife observation

Physiographic region - a region delineated by a specific topography

Pyric community - a community resulting from, induced by, or associated with burning

Relict population – a remnant population of a species that once was widespread

Restoration - the process of repairing damage caused by human activity or a natural disaster to the diversity and dynamics of a native system

Rookery – the breeding ground or area of certain birds or other animals, such as penguins or seals

Ruderal - a species that generally is considered to be native, but often grows in disturbed areas

Saltwater intrusion - the introduction of saltwater into a previously fresh water aquifer as a consequence of disturbance of the water pressure in the aquifer; saltwater intrusion often is associated with excessive pumping of wells

Seed rain – a sudden dispersal of seeds, which can be triggered by fire or another extreme environmental event

Seral stage - any stage in the sequential development of an ecosystem as it progresses from a disturbed, unvegetated state to a climax plant community

Serotinous – cones that remain closed and on a tree, or a plant that retains its seeds in pods long after maturity, until the heat from a fire or some other event causes the seeds to be released

Soil phase - a subdivision of a soil type that deviates from the typical character of the soil type

10. ACRONYMS

ADA - Americans with Disabilities Act
AIWW – Atlantic Intracoastal Waterway
ARC - Acquisition and Restoration Council
ATV – all-terrain vehicle
BCC – Palm Beach County Board of County Commissioners
BIPM – Bureau of Invasive Plant Management
BLM – U.S. Department of the Interior, Bureau of Land Management
CARL - Conservation and Recreation Lands
CFR – Code of Federal Regulations
CLASC - Palm Beach County Conservation Land Acquisition Selection Committee
CLPO – Palm Beach County Conservation Lands Protection Ordinance
DRI – development of regional impact
DSL - Florida Department of Environmental Protection, Division of State Lands
E&PW – Palm Beach County Department of Engineering and Public Works
ERM - Palm Beach County Department of Environmental Resources Management
ERP – environmental resource permit
ESLAAC – Palm Beach County Environmentally Sensitive Lands Acquisition Advisory Committee
ESLASC – Palm Beach County Environmentally Sensitive Lands Acquisition Selection Committee
EAA – Everglades Agricultural Area
FAC – Florida Administrative Code
FAU – Florida Atlantic University
FCT – Florida Communities Trust
FDACS - Florida Department of Agriculture and Consumer Services
FDCA – Florida Department of Community Affairs
FDEP - Florida Department of Environmental Protection
FDHR - Florida Department of State, Division of Historical Resources
FDOT – Florida Department of Transportation
FEC – Florida East Coast Railway
FFS - Florida Forest Service
FGFWFC – Florida Game and Fresh Water Fish Commission
FGTC - Florida Greenways and Trails Council
FIND - Florida Inland Navigation District
FLEPPC - Florida Exotic Pest Plant Council
FNAI - Florida Natural Areas Inventory
FPL- Florida Power & Light Company
FPSF – First Park South Florida
FRP – Florida Research Park
FS – Florida Statutes
FTA – Florida Trail Association

FWC - Florida Fish and Wildlife Conservation Commission
GFBWT – Great Florida Birding and Wildlife Trail
GIS – geographic information system
GPS - global positioning system
IC – incident commander
IRC – Institute for Regional Conservation
ITID - Indian Trail Improvement District
ITWCD – Indian Trail Water Control District
JDSP – Jonathan Dickinson State Park
JID - Jupiter Inlet District
LAAC – Land Acquisition Advisory Council
LAMAC – Land Acquisition and Management Advisory Council
LOST – Lake Okeechobee Scenic Trail
LRD – Loxahatchee River District
LRPI – Loxahatchee River Preservation Initiative
LWDD – Lake Worth Drainage District
MPO – Palm Beach Metropolitan Planning Organization
NAMAC - Palm Beach County Natural Areas Management Advisory Committee
NAO – Palm Beach County Natural Areas Ordinance
NAVD – North American Vertical Datum
NCGAA – North County General Aviation Airport
NENA – Northeast Everglades Natural Area
NETA – Northeast Everglades Trail Association
NGVD - National Geodetic Vertical Datum
NMFS – U.S. Department of Commerce, National Marine Fisheries Service
NPBCID – Northern Palm Beach County Improvement District
NPBCWCD – Northern Palm Beach County Water Control District
NRCS – United States Department of Agriculture, Natural Resources Conservation Service
OGT – Florida Department of Environmental Protection, Office of Greenways and Trails
OHV – off-highway vehicle
OTL – Ocean to Lake Trail
PBPC – Palm Beach Park of Commerce
PBSO - Palm Beach County Sheriff's Office
PBSWCD – Palm Beach Soil & Water Conservation District
SCS – United States Department of Agriculture, Soil Conservation Service
SFWMD - South Florida Water Management District
SIRWCD – South Indian River Water Control District
SOR – Save Our Rivers
SWA – Solid Waste Authority of Palm Beach County
TCF – The Conservation Fund
TCRPC – Treasure Coast Regional Planning Council
TDR – transfer of development rights
TIITF – Trustees of the Internal Improvement Trust Fund

TNC – The Nature Conservancy
ULDC – Unified Land Development Code
USACE – United States Army Corps of Engineers
USCGS – United States Coast and Geodetic Survey
USDA – United States Department of Agriculture
USFWS - United States Department of Commerce, Fish and Wildlife Service
USGS – United States Geological Survey
WCA – Water Catchment Area
WCI – Watermark Communities, Inc.
WEA – wildlife and environmental area
WHIP – Wildlife Habitat Incentives Program
WMA – wildlife management area

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12. FIGURES

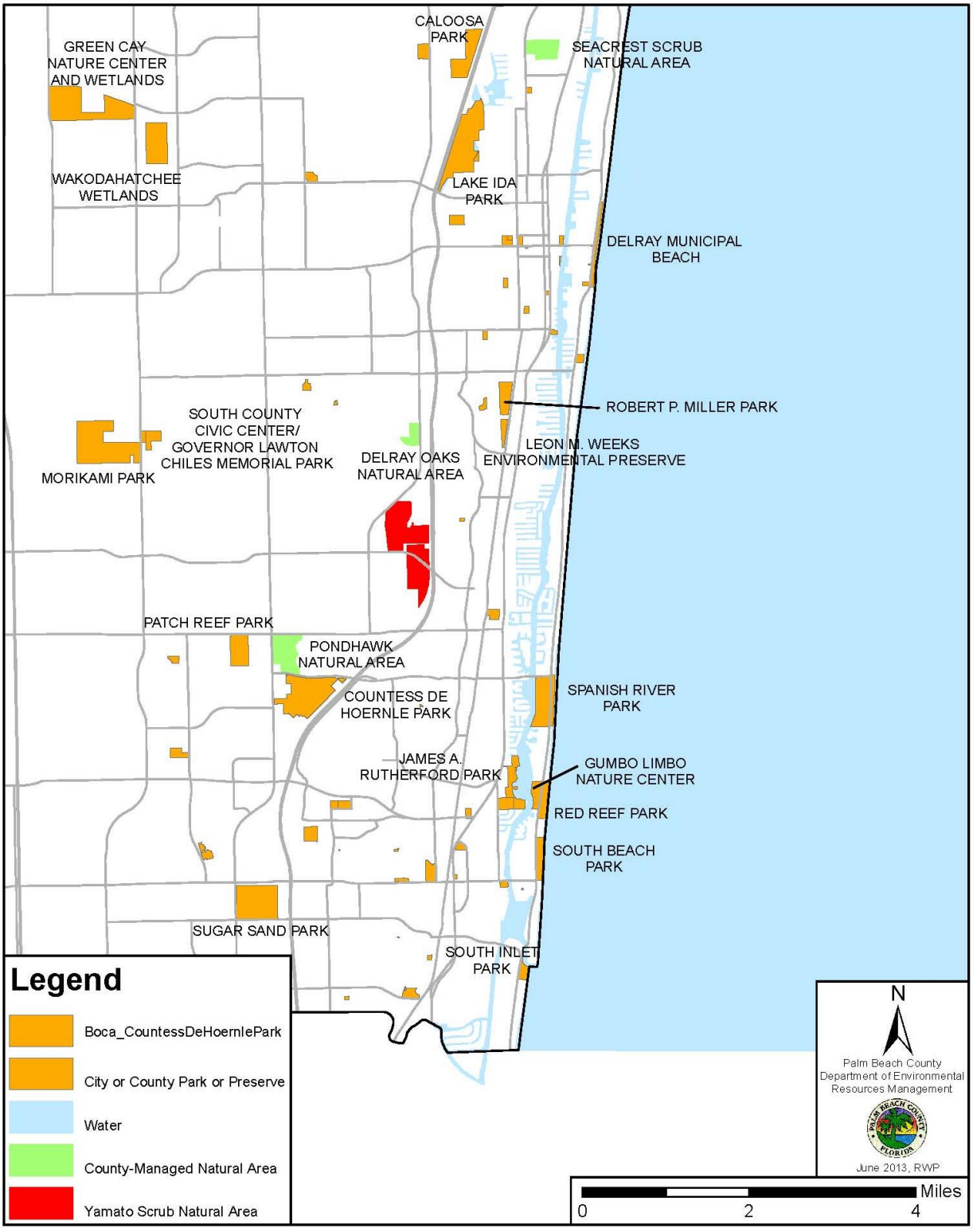


Figure 1. Yamato Scrub Natural Area Location Map

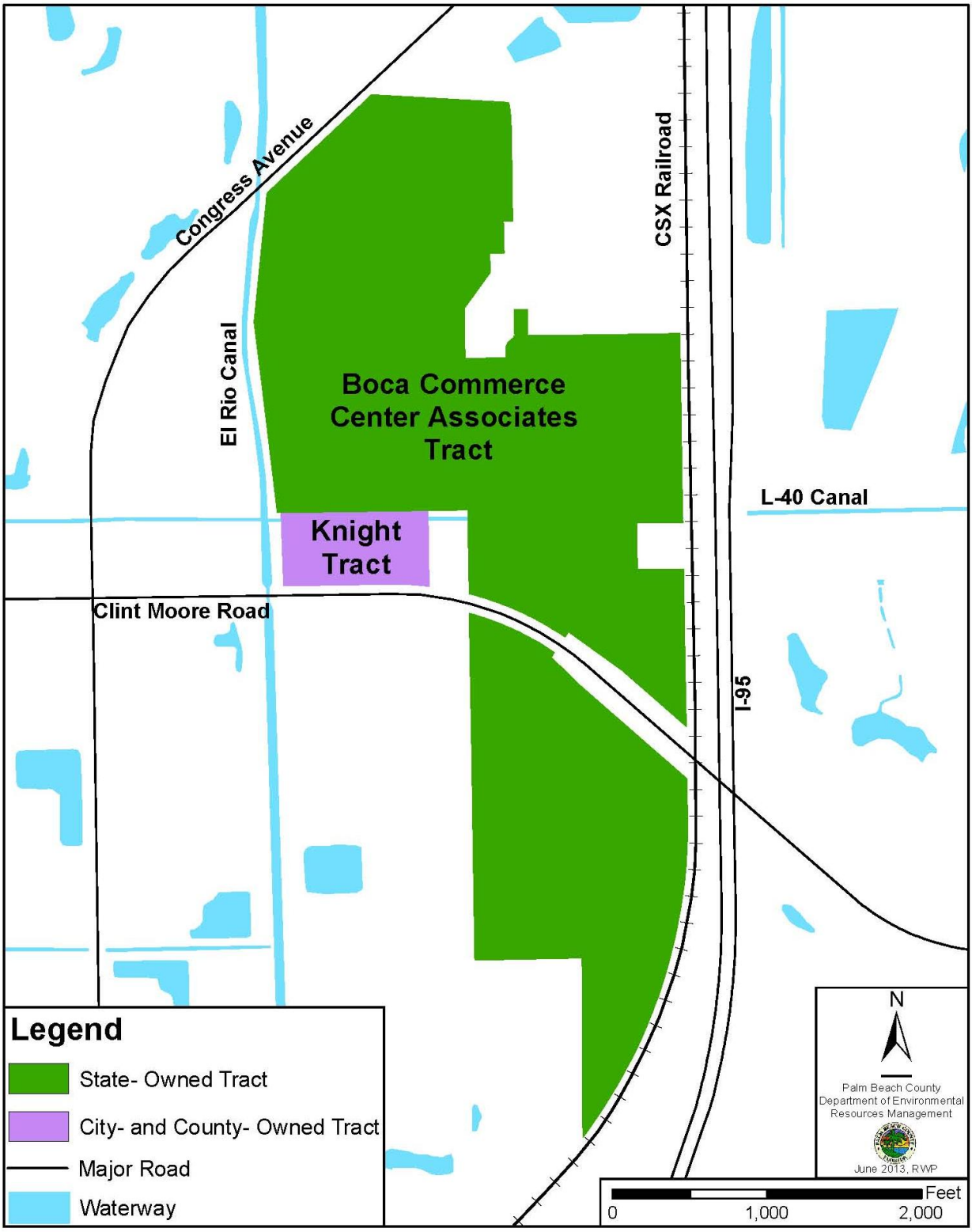


Figure 2. Yamato Scrub Natural Area Ownership Map

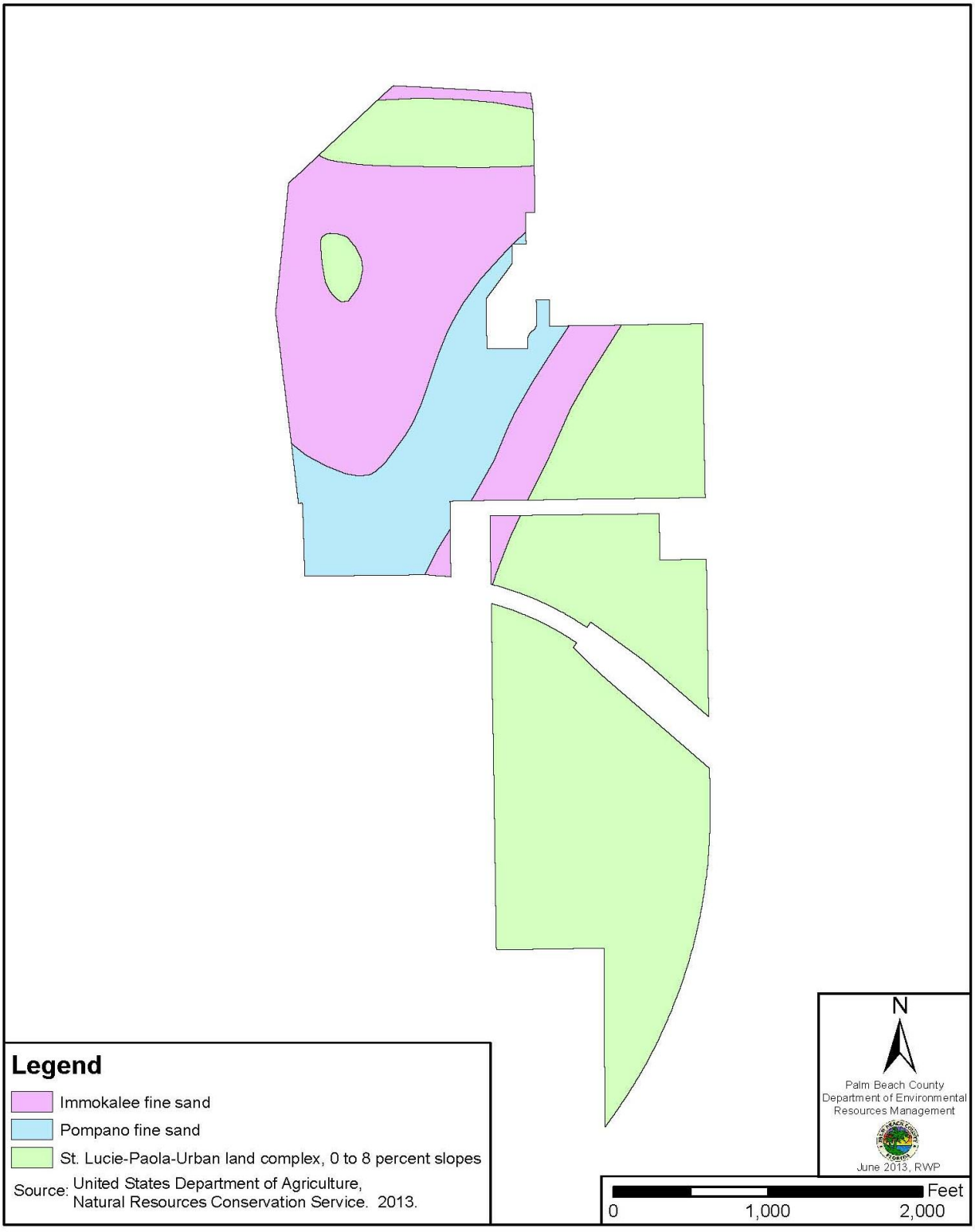


Figure 3. Yamato Scrub Natural Area Soils Map

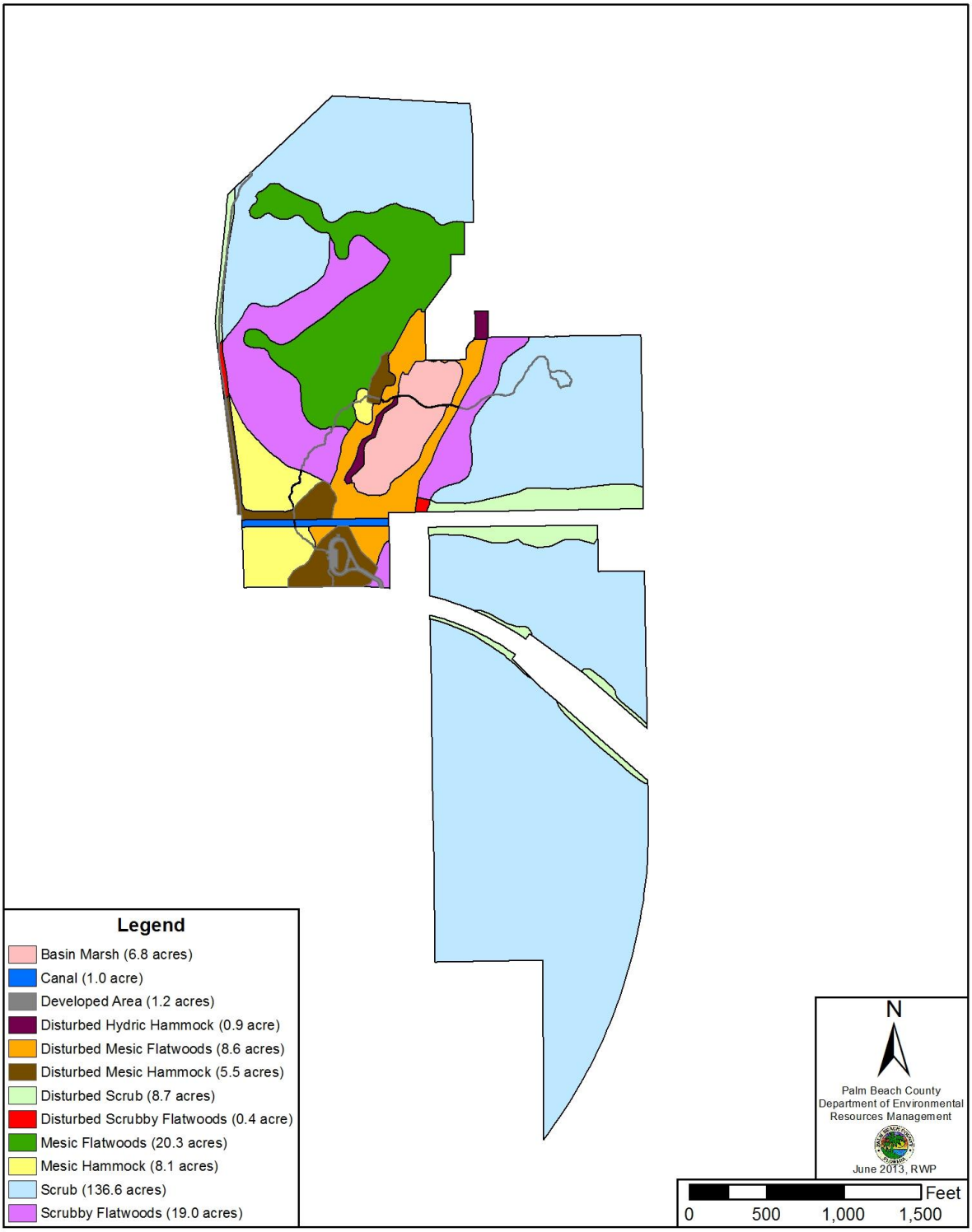


Figure 4. Yamato Scrub Natural Area Vegetation Communities Map

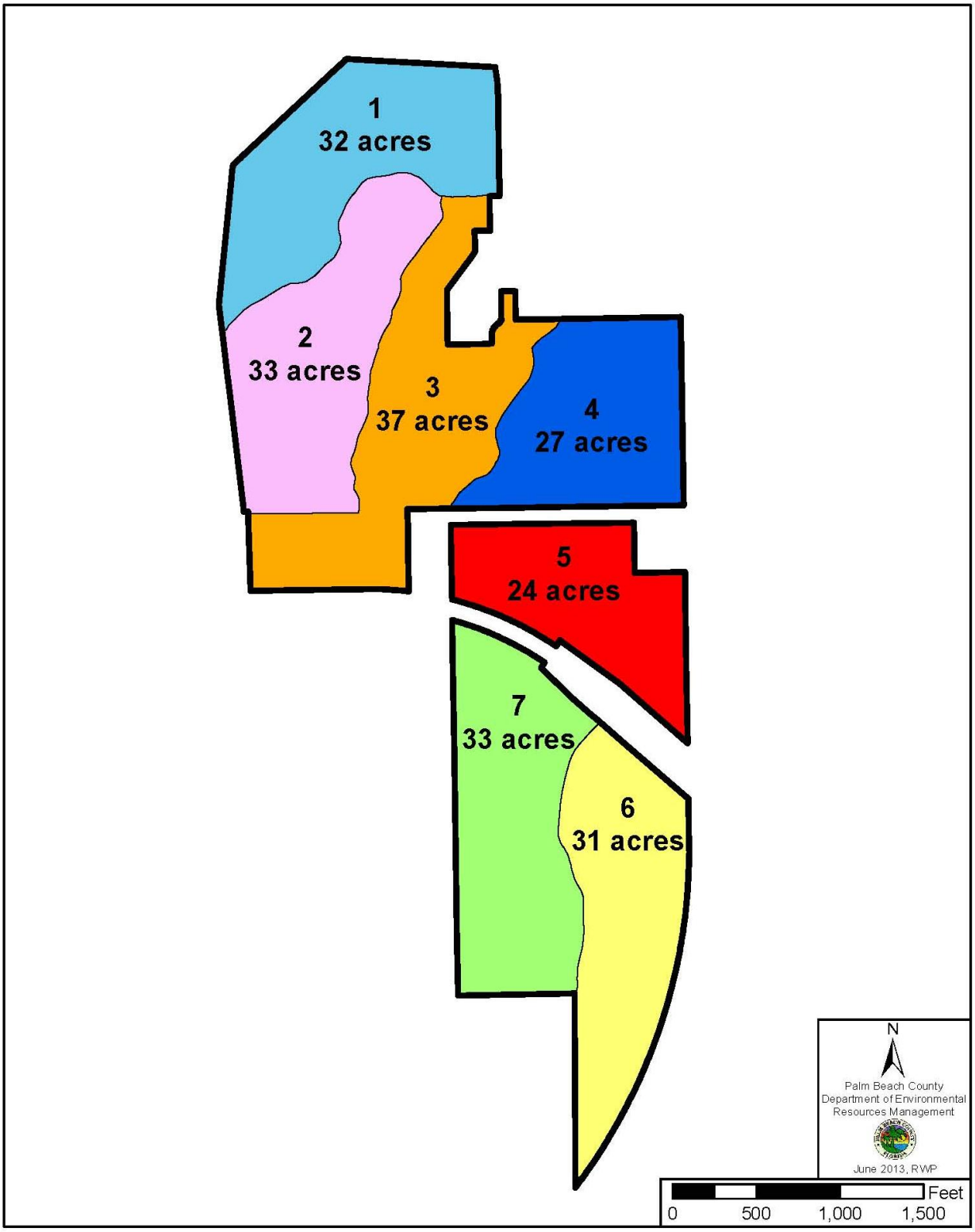


Figure 5. Yamato Scrub Natural Area Management Units Map

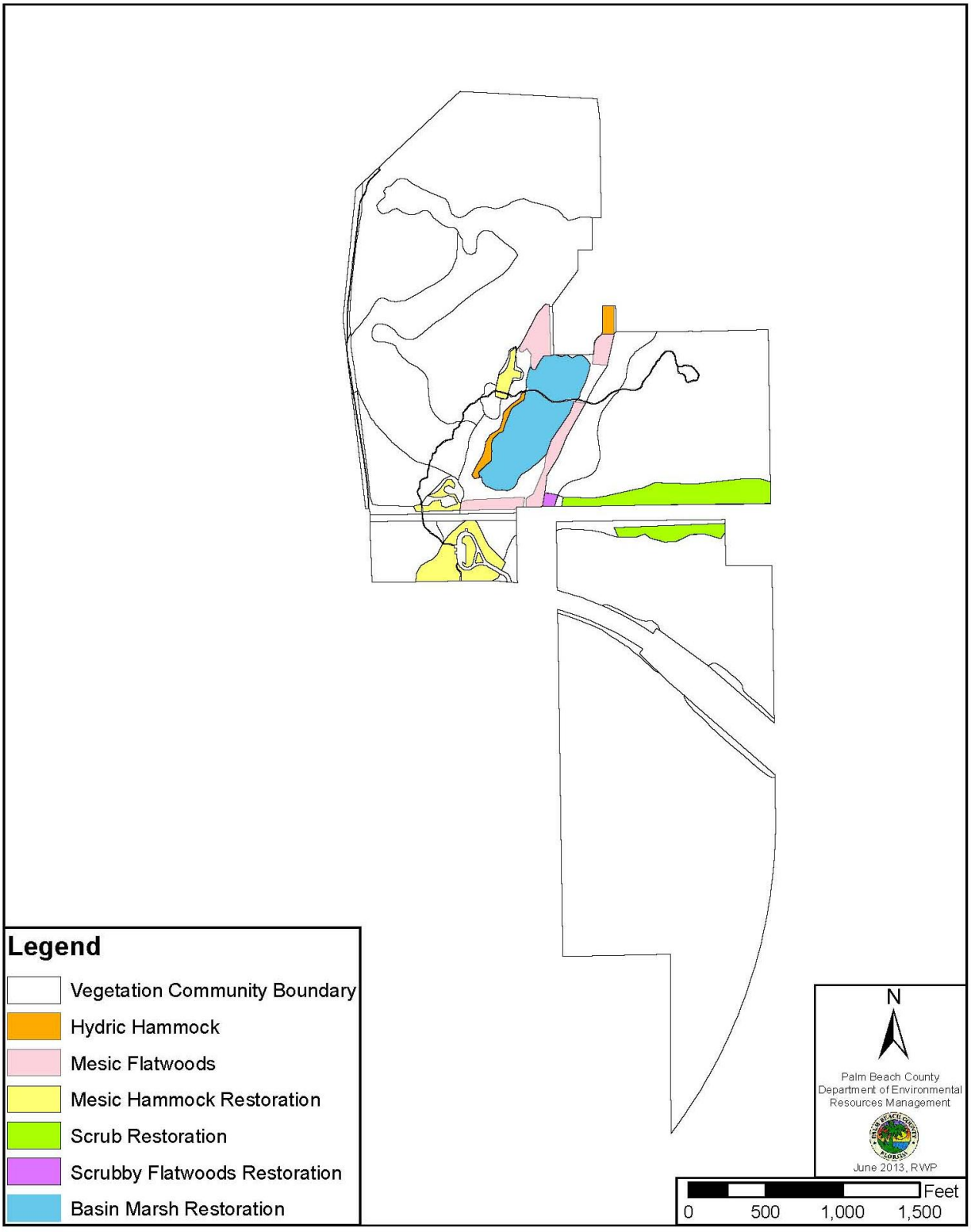


Figure 6. Yamato Scrub Natural Area Restoration Map

Figure 7. Yamato Scrub Natural Area Public Use Facilities Map

13. TABLES

Table 1. Listed Plant Species Recorded at the Yamato Scrub Natural Area

SCIENTIFIC NAME	COMMON NAME	STATUS/RANK DESIGNATIONS		
		USFWS	FDACS	FNAI
Asclepias curtissii	Curtiss's milkweed	N	E	N
Bletia purpurea	Pine-pink orchid	N	T	N
Chamaesyce cumulicola	Sand dune spurge	N	E	G2/S2
Conradina grandiflora	Large-flowered rosemary	N	T	G3/S3
Lechea cernua	Scrub pinweed	N	T	G3/S3
Ophioglossum palmatum	Hand fern	N	E	G4/S2
Panicum abscissum	Cut-throat grass	N	E	G3/S3
Swietenia mahagoni	Mahogany	N	T	G3G4/S3
Tillandsia balbisiana	Inflated & reflexed wild pine	N	T	N
Tillandsia fasciculata	Common wild pine	N	E	N
Tillandsia flexuosa	Banded airplant	N	T	G5/S3
Tillandsia utriculata	Giant wild pine	N	E	N

CE = Commercially exploited
E = Endangered
FDACS = Florida Department of Agriculture and Consumer Services
FNAI = Florida Natural Areas Inventory
N = Not listed
T = Threatened
USFWS = United States Fish and Wildlife Service

Occurrences determined from field surveys by Farnsworth (1988) and Gann (1998) and from data collected by ERM (1992-2013). Listings by FDACS are from Chapter 5B-40 of the Rules of the Department of Agriculture and Consumer Service, Division of Plant Industry (FDACS 2004); listings by FNAI are from FNAI (2013); listings by USFWS are from USFWS (undated). Listing categories are defined in Appendix C.

Table 2. Listed Animal Species Recorded at the Yamato Scrub Natural Area

		STATUS/RANK DESIGNATIONS		
SCIENTIFIC NAME	COMMON NAME	USFWS	FWC	FNAI
Alligator mississippiensis	American alligator	T(S/A)	FT(S/A)	G5/S4
Aramus guarauna	Limpkin	N	SSC*	G5/S3
Ardea alba	Great egret	N	N	G5/S4
Crotalus adamanteus	Eastern diamond-backed rattlesnake	N	N	G4/S3
Drymarchon corais couperi	Eastern indigo snake	T	FT	G3/S3
Egretta caerulea	Little blue heron	N	SSC**	G5/S4
Egretta thula	Snowy egret	N	SSC*	G5/S3
Egretta tricolor	Tricolored heron	N	SSC**	G5/S4
Elanoides forficatus	Swallow-tailed kite	N	N	G5/S2
Eudocimus albus	White ibis	N	SSC*	G5/S4
Falco columbarius	Merlin	N	N	G5/S2
Falco peregrinus	Peregrine falcon	N	N	G4/S2
Gopherus polyphemus	Gopher tortoise	C	ST	G3/S3
Grus canadensis pratensis	Florida sandhill crane	N	ST	G5T2T3/S2S3
Haliaeetus leucocephalus	Bald eagle	N	N	G5/S3
Helmintheros vermivorum	Worm-eating warbler	N	N	G5/S1
Hydroprogne caspia	Caspian tern	N	N	G5/S2
Latrodectus bishopi	Red widow spider	N	N	G2G3/S2S3
Leptotes cassius theonus	Cassius blue butterfly	T(S/A)	FT(S/A)	N
Mycteria americana	Wood stork	E	FE	G4/S2
Nycticorax nycticorax	Black-crowned night-heron	N	N	G5/S3
Pandion haliaetus	Osprey	N	SSC***	G5/S3S4
Passerina ciris	Painted bunting	N	N	G5/S3
Picoides villosus	Hairy woodpecker	N	N	G5/S3
Platalea ajaja	Roseate spoonbill	N	SSC**	G5/S2
Podomys floridanus	Florida mouse	N	SSC*	G3/S3
Sceloporus woodi	Florida scrub lizard	N	N	G3/S3
Setophaga ruticilla	American redstart	N	N	G5/S2
Sterna antillarum	Least tern	N	ST	G4/S3

Table 2. Listed Animal Species Recorded at the Yamato Scrub Natural Area (concluded)

C = Candidate species
E = Endangered
FE = Federally-designated Endangered
FT = Federally-designated Threatened
FT(S/A) = Federally-designated Threatened due to Similarity of Appearance
FWC = Florida Fish and Wildlife Conservation Commission
FNAI = Florida Natural Areas Inventory
N = Not listed
SSC = State Species of Special Concern
ST = State-designated Threatened
T = Threatened
T(S/A) = Threatened due to Similarity of Appearance
USFWS = United States Fish and Wildlife Service

*FWC has approved a staff recommendation that these species be removed from the list of endangered and threatened species in Florida. A species will not be formally removed from the list until after an imperiled species management plan that includes that species has been reviewed by the public and approved by FWC. Species designated by USFWS as endangered or threatened are considered by FWC to be endangered or threatened species in Florida; there is no separate state category for endangered species. There is a separate state category for species considered to be threatened within Florida. There will be no category for species of special concern within Florida after all of the current species of special concern have either been listed as state-designated threatened or removed from the list.

**FWC has approved a staff recommendation to change the status of these species from state species of special concern to state-designated threatened. The change will not become effective until after an imperiled species management plan that includes that species has been reviewed by the public and approved by FWC.

*** Currently only the Monroe County population of this species is listed as a state species of special concern. FWC staff has recommended that populations of nonmigratory ospreys in nearby counties also should be given this designation until addition information such as genetic analysis becomes available to determine the relationships between these populations. If they are considered to be one population, it would be termed the southern coastal osprey population. The expansion of the designation to the other populations will not become effective until after an imperiled species management plan that includes that species has been reviewed by the public and approved by FWC.

Occurrences determined from field surveys by Farnsworth (1988) and from data collected by ERM (1992-2013). Listings by USFWS are from USFWS (undated); listings by FWC are from FWC (2013f); listings by FNAI are from FNAI (2013). Listing categories are defined in Appendix C.

Table 3. Priority Schedule for Management Activities

ACTIVITY	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Update management plan	X									X	X
NAMAC review of revised management plan	X										X
Public hearing on revised management plan	X										X
County Commission approval of revised management plan	X										X
ARC review and approval of revised management plan	X	X									
Install remaining signage along El Rio Trail	X										
Install plants in disturbed area along El Rio Trail		X	X								
Prescribed burn or mechanical fuel reduction - Unit 2		X							X		
Prescribed burn or mechanical fuel reduction - Unit 1			X								
Prescribed burn or mechanical fuel reduction - Unit 3								X			
Prescribed burn or mechanical fuel reduction - Unit 5											X
Conduct monitoring activities	X	X	X	X	X	X	X	X	X	X	X
Conduct maintenance invasive/nonnative plant control activities	X	X	X	X	X	X	X	X	X	X	X
Conduct regular facilities maintenance/mowing	X	X	X	X	X	X	X	X	X	X	X
Coordinate volunteer work day – cleanup of site	X	X	X	X	X	X	X	X	X	X	X

Table 4. Estimated Annual Maintenance and Operation Costs

Site Management and Maintenance	
Opening and closing of entrance gate (daily @ $10/day)	$3,650*
Prescribed habitat burns or mechanical fuel reduction (personnel and equipment – $27,000/burn or reduction, 5 burns in 11-year period) = $12,273/year	$12,273**
Mowing and maintenance of management accessways/hiking trails (3 times/year @ $351/time)	$1,053**
Maintenance of public use facilities, including parking lot, nature trail and bridges an average of 3 times/month (12 months @ $1,100/month)	$13,200**
Fenceline maintenance (3 times/year @ $351/time)	$1,053**
Site management – monitoring program, management plan updates, annual reports, listed species protection, volunteer coordination and supervision, educational materials, intergovernmental coordination	$100,370**
Maintenance nonnative plant control (217 acres @ $440/acre/year)	$95,480***
Portable toilet rental and servicing ($125/month x 12 months)	$1,500***
Repair/replacement due to damage/vandalism (0.005% of structural facilities cost of $479,744)	$2,399***
Subtotal – present annual cost	*$230,978*
Capital Facilities Maintenance and Replacement	
Removal and replacement of facilities with 10- and 20-year expected life (facilities with 10-year expected life, including trail markers, all signs, restriping of parking lot, post-and-rail fencing and pedestrian maze gates; facilities with 20-year expected life, including bicycle rack, bollards, all metal gates, chain-link fencing, kiosk, detectable warning surfaces and wheelstops)	$293,044***
Estimated annual cost over 10 years @ 4% interest rate	$36,132***
Removal and replacement of facilities with 10- and 30-year expected life (facilities with 30-year expected life = decking and handrails on pedestrian bridges, and milling and resurfacing of parking lot and entrance road)	$81,017***
Estimated annual cost over 20 years @ 4% interest rate	$5,963***
Subtotal – estimated annual capital replacement costs	*$42,095****
TOTAL ANNUAL COST (in 2013 dollars)	**$273,073**

*To be performed by City of Boca Raton park rangers

**To be performed by existing Palm Beach County personnel

***To be paid for with interest from Natural Areas Stewardship Endowment Fund

NOTE: All facilities and activities listed are subject to annual budgetary funding and appropriations by the Palm Beach County Board of County Commissioners

14. CHRONOLOGY OF MAJOR EVENTS
Yamato Scrub Natural Area
1993-2013

1993

February — County and City signed interlocal agreement for acquisition and management of Knight Investments, Inc. tract

1994

February — Knight Investments, Inc. tract purchased jointly by City and County for $1,452,500; City contributed $958,650, County contributed $493,850

1995

Settlement agreement approved for acquisition of Boca Commerce Center tract for $17,500,000 – State share (33.1 percent) - $5,800,000; County share (45.5 percent) - $7,956,000; City share (21.4 percent) - $3,744,000; County and City also paid ad valorem assessments of $1,714,876.13 – County share (2/3) - $1,143,250.75, City share (1/3) - $571,625.38

1996

No significant events

1997

February — Boca Commerce Center tract purchased by State, County and City for $17,500,000

March — First volunteer event held

1998

February — State leased 206.74 acres to County for management purposes for 50 years

August — City passed ordinances to change the Future Land Use designation to Conservation and the zoning designation to Public Lands

December — 200 cabbage palms inadvertently installed on natural area instead of on nearby Delray Oaks Natural Area; contractor was required to relocate 36 palms that had been placed in area approved for parking lot

1999

	2-acre portion of site cleared of Brazilian pepper and ragweed, graded and later planted with cut-throat grass relocated from a nearby site undergoing development; survivability rate low because grade may have been too high; eventually all relocated plants died
January	148 cabbage palms relocated onto Knight tract from nearby site undergoing development; six months later only 70 percent were still alive due to extreme drought conditions
June	First annual biological monitoring report provided to DSL; 23 acres of invasive nonnative plants eradicated from site to date

2000

December	Three groundwater monitoring wells installed
	Joint public hearing held on initial management plan with NAMAC and City of Boca Raton Parks and Recreation and Environmental Advisory Boards

2001

June	Interlocal agreement executed between County and City for management of site; BCC approved initial management plan
October	DSL approved initial management plan

2002

February	Fuel loads in 75 percent of Unit 7 mechanically reduced in preparation for prescribed burn
May	Construction of management accessways completed; 16 Indian laurel trees removed from northeastern portion of site along NW 6th Avenue
June	Annual and biannual listed species surveys initiated
September	Treatment of remaining nonnative plant species initiated with hand crews
November	Photomonitoring stations established

December	Mechanical removal of Brazilian pepper from basin marsh restoration area, weeping fig trees from northeastern part of site, using a portion of a $97,750 grant from FDEP
	First site steward trained

2003

March	Australian-pine and Brazilian pepper on spoil piles by canals mechanically removed, using remaining part of FDEP grant funds
May	Unit 7 prescribed burned (approximately 34 acres)
June	55 cabbage palms relocated from nearby road expansion project area to areas surrounding the planned parking lot

2004

January	Initial vegetation treatment program completed and site determined to be at maintenance level (nonnative species covering less than 1 percent of site)
September	Hurricanes Francis and Jeanne had little effect on the natural area
October	Boy Scout troop cleared one mile of hiking trail in northern portion of site

2005

	Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted
June	Volunteers cleared one mile of hiking trail in southern portion of site
October	Hurricane Wilma toppled or broke the tops of many sand pines leaving a more open canopy and large amounts of wood debris within the natural area
November	55 cabbage palms relocated from central part of basin marsh restoration area to perimeter of restoration project area, including a portion of the hydric hammock restoration area
	Fill removal began as part of basin marsh restoration and spoil deposition area restoration projects

2006

	Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted
January	Northernmost groundwater monitoring well removed because it was within basin marsh restoration project area
	Approximately 500 native trees and shrubs planted in parking lot area; temporary irrigation was installed
March	Total of 127,000 cubic yards of sand removed from site as part of basin marsh, scrub and scrubby flatwoods restoration projects; 65,000 cubic yards trucked to beaches in Lantana and on Singer Island for beach renourishment; remaining 62,000 cubic yards trucked to Burt Aaronson South County Regional Park to be used as fill for park development
	50 cubic yards of soil and plant material trucked to site from Loxahatchee Slough Natural Area; spread over basin marsh restoration area to introduce seeds of native wetland plant species
	Two additional hydrological monitoring stations installed – one in northern part of basin marsh and one in southern part
April	Cabbage palm, Florida privet, live oak, saw palmetto and red bay relocated from footprint of parking lot area to areas just outside the parking lot footprint
May	Construction of parking lot, accessible nature trail, interpretive kiosk and signage initiated
	OHVs accessing eastern portion of site near railroad tracks; City police and Sheriff's Office Wildland Task Force patrols increased in response
June	Approximately 2,000 maidencane cuttings planted along edge of restored basin marsh

2007

	ERM staff and volunteers installed more than 800 native plants in parking lot area; more than 8,000 native plants installed in and around restored basin marsh (July 2006 to June 2007)

Continued access by OHVs through a gap in the fence off of Congress Avenue and from the railroad tracks on the east side of the site; post-and-rail fence along north side of Clint Moore Road knocked down twice during past year; minor damage to vegetation and temporary irrigation system for basin marsh restoration project; regular patrols started by City police and Wildland Task Force

Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted

January — Construction of parking lot, accessible trail, interpretive kiosk and associated signage completed

March — Temporary irrigation system extended from parking lot to basin marsh area and drip irrigation installed to water new plantings; 100 cabbage palms relocated from Loxahatchee Slough Natural Area and planted in parking lot area

October — Grand opening celebration held on October 10; natural area receives a lot of visitors as evidenced by reports from site stewards and ERM staff

Three tours of site given by staff to public on October 27

November — After reports from site stewards of bicycle riders and dog walkers on site, a "No Pets" and "Foot Traffic Only" sign was installed to remind visitors that bicycles and pets were not allowed; no reports of these unauthorized activities were received after installation of the signs

USDA, NRCS approved multi-year grant for habitat improvement; $33,996 received over several years

2008

Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted

Volunteers, ERM staff and contractors installed more than 10,000 native plants in and around the restored basin marsh and parking lot (July 2007 to June 2008)

February — ERM agreed to accept up to nine gopher tortoises from U.S. Foodservice facility expansion area to be relocated to natural area; U.S. Foodservice provided $18,000 to County as payment for relocation

May — Driver crashed car through fence parallel to Congress Ave. on western border of Unit 1; fence repaired within one week by staff

August — 50 tree-spaded 90-inch plugs of scrub material moved from U.S. Foodservice (now US Foods) expansion construction area to south side of Management Unit 4 (August to September 2008)

Two gopher tortoises relocated onto natural area from U.S. Foodservice property

September — Pair of least grebes nested and raised young in north part of restored basin marsh; first sighting of species in Florida since 1988; many birdwatchers from around the country visited site to observe the grebes

November — Construction activities associated with expansion of U.S. Foodservice facility caused collapse of 225 feet of 6-foot-high chain-link fence and excavation of 76 square feet of management accessway; ERM issued notice of violation to U.S. Foodservice that required U.S. Foodservice to repair all damages and pay for restoration of the area

2009

Volunteers and ERM staff planted over 10,000 native plants within and adjacent to the basin marsh restoration area (July 2008 to June 2009)

Several sweeps of basin marsh restoration area for nonnative vegetation during year

Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted

May — City began construction of Phase 3 of El Rio Trail on city-owned property along El Rio Canal adjacent to Knight tract

Wetlands Task Force deputies arrested drivers of two four-wheel trucks who entered the natural area via adjacent canal banks

ERM staff led guided tours of site for FAU Environment and Society class, and 2009 Florida Exotic Pest Plant Council Symposium

June — Two dirt bikers cited by Wildlands Task Force deputies for violation of Natural Areas Ordinance

September — Magnum Mulcher used to chop high fuel levels around perimeter of Management Unit 2

December FDEP approval of management plan modification to include portion of El Rio Trail on western edge of state-owned tract

2010

Volunteers and ERM staff installed more than 6,000 native plants, including over 700 trees and shrubs, in disturbed upland areas along canal rights of way and in the disturbed mesic flatwoods community adjacent to the basin marsh July 2009 to June 2010

Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted

March Phase 3 of El Rio Trail (Yamato Road to L-40 Canal) completed and opened to the public

July City approved new interlocal agreement between County and City for management of natural area and El Rio Trail

August BCC approved new interlocal agreement for management of natural area and El Rio Trail

October One African spurred tortoise removed from site

November FWC approved grant application for $15,000 for gopher tortoise habitat improvement management activities, including prescribed burning; and/or mechanical fuel reduction; activities to be conducted between December 2010 and May 2011 (due to mechanical equipment problems, only $4,968 actually was spent)

2011

Seven feral cats removed from natural area by ERM staff and U.S. Department of Agriculture (July 2010 to June 2011)

Problem with illegal parking, litter and removal of "No Parking" signs along 6th Ave.; resolved with assistance of Boca Commerce Center management and ticketing of illegally-parked tractor-trailer trucks by Wildlands Task Force

Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted

Volunteers and ERM staff planted more than 1,800 native plants in upland portions of the site, including the spoil restoration areas (July 2010 to June 2011)

March — Sheriff's Office Graffiti Task Force painted over graffiti in tunnel under Clint Moore Road; new graffiti appeared soon after painting was completed

April — Vegetation in Unit 6 selectively chopped with Magnum Mulcher to reduce fuel loads and improve habitat; activity funded by grant from FWC

June — No standing water in north cell of restored basin marsh due to drought

July — Contractor planted 3,135 trees and shrubs in disturbed scrub, disturbed scrubby flatwoods, disturbed mesic flatwoods and disturbed mesic hammock areas in former spoil deposition areas along L-40 Canal as mitigation for a development project elsewhere in the county

September — FWC approved $10,000 grant for gopher tortoise habitat management

Two of five hydrological stations were eliminated adjacent to the basin marsh restoration project; stations were no longer needed as the restoration project has been completed for several years

Sheriff's Office Graffiti Task Force painted over new graffiti in tunnel under Clint Moore Road

October — Naturescope program filmed on site by County's television station

FPL lock near northwest corner of Management Unit 5 was found smashed and the gate was wide open; ERM staff secured gate and arranged with FPL to have lock replaced

November — City began construction of last phase of El Rio Trail (L-40 Canal to Congress Avenue) along the western edge of the natural area

Memorial bench installed on west side of deep-water basin marsh

2012

Management Unit 2 was prepared for a prescribed burn, but weather conditions did not meet prescription requirements and no burn was conducted

Volunteers planted 30 native shrubs in disturbed mesic flatwoods community

April Vegetation in Management Units 1, 2, 3, 5 and 6 selectively chopped to reduce fuel loads and mimic effects of fire; work paid for by FWC grant

October Phase 4 of El Rio Trail completed and opened to the public; pedestrian walk-through gate installed through post-and-rail fence along eastern edge of El Rio Trail; OHV activity reduced by installation of fence along eastern edge of trail

2013

Volunteers and county staff planted 1,150 native seedlings in and around the basin marsh restoration and 250 native seedlings in the northern hydric hammock restoration area (July 2012 to June 2013)

April Unresponsive man found lying in tunnel; Boca Raton Fire Rescue responded to emergency call by ERM staff

May Dedication sign replaced

Use of irrigation to water restoration plantings was discontinued

June FPL removed section of post-and-rail fence to provide access for replacement of a transformer at Boca Teeca substation, then installed an 8-foot-wide, steel pipe gate to facilitate future access

Gate near the tunnel replaced

Vegetation in a 6-acre subunit in the eastern portion of Management Unit 2 was chopped in preparation for a prescribed burn of that subunit, and vegetation in an adjacent portion of Management Unit 3 was mowed; potential burn area reduced from 33 to 7 acres to facilitate a prescribed burn on the natural area

August Review of revised management plan by NAMAC

November Open house and public hearing on revised management plan

December Approval of revised management plan by BCC

2014

April Approval of revised management plan by ARC

APPENDIX A

PLANT SPECIES RECORDED AT THE YAMATO SCRUB NATURAL AREA

APPENDIX A

PLANT SPECIES RECORDED AT THE YAMATO SCRUB NATURAL AREA
Updated 07/18/13

Scientific Name	Common Name
*Abrus precatorius** NX (I)	Rosary pea
*Acacia auriculiformis** (I)	Earleaf acacia
Acrostichum danaeifolium	Giant leather fern
*Agave angustifolia**	Century plant
*Albizia lebbeck** (I)	Woman's tongue
*Alternanthera philoxeroides** (PAP1) (II)	Alligatorweed
*Alysicarpus ovalifolius**	False moneywort
*Alysicarpus vaginalis**	White moneywort
*Amaranthus spinosus**	Spiny amaranth
Ambrosia artemisiifolia	Common ragweed
Ammannia latifolia	Toothcups
Ampelopsis arborea	Peppervine
Amphicarpum muhlenbergianum	Blue maidencane
Andropogon glomeratus	Bushy bluestem
Andropogon longiberbis	Hairy bluestem
Andropogon ternarius	Splitbeard bluestem
Andropogon virginicus	Broomsedge bluestem
Annona glabra	Pond apple
*Ardisia elliptica** NX (I)	Shoebutton
Ardisia escallonioides	Marlberry
Aristida gyrans	Corkscrew threeawn
Aristida patula	Tall threeawn
Aristida purpurascens	Arrowfeather threeawn
Aristida sp.	Threeawn
Aristida spiciformis	Bottlebrush threeawn
Aristida stricta var. *beyrichiana*	Wiregrass
Asclepias curtissii	Curtiss's milkweed
Asimina reticulata	Netted pawpaw
*Asparagus aethiopicus** (I)	Sprenger's asparagus-fern
Azolla filiculoides	American waterfern
Baccharis glomeruliflora	Silverling
Baccharis halimifolia	Groundsel tree
Bacopa monnieri	Herb-of-grace
Bejaria racemosa	Tarflower
Bidens alba	Beggarticks
Blechnum serrulatum	Swamp fern
Bletia purpurea	Pine-pink orchid
Boehmeria cylindrica	False nettle
Buchnera americana	American bluehearts

*Buddleja indica**	Indoor oak
Bulbostylis ciliatifolia	Capillary hairsedge
Bursera simaruba	Gumbo limbo
Callicarpa americana	American beautyberry
Callisia ornata	Florida scrub roseling
*Calophyllum antillanum** (I)	Santa Maria
Campyloneurum phyllitidis	Long strap fern
Carphephorus corymbosus	Florida paintbrush
Cassytha filiformis	Love vine
*Casuarina equisetifolia** NX (PAP1) (I)	Australian-pine
*Catharanthus roseus**	Madagascar periwinkle
Cenchrus spinifex	Coastal sandbur
Centella asiatica	Spadeleaf
Ceratiola ericoides	Florida rosemary
Ceratophyllum demersum	Coontail
*Cereus repandus**	Peruvian applecactus
Chamaecrista fasciculata	Partridge pea
Chamaecrista nictitans	Sensitive pea
Chamaesyce bombensis	Dixie sandmat
Chamaesyce cumulicola	Sand dune spurge
Chamaesyce hirta	Pillpod sandmat
Chamaesyce hypericifolia	Graceful sandmat
Chamaesyce hyssopifolia	Hyssopleaf sandmat
Chamaesyce maculata	Spotted sandmat
*Chamaesyce mendezii**	Mendez's sandmat
Chamaesyce ophthalmica	Florida hammock sandmat
Chamaesyce thymifolia	Gulf sandmat
Chara sp.	Muskgrass
*Chenopodium album**	Lamb's-quarters
*Chenopodium ambrosioides**	Mexican tea
Chromolaena odorata	Jack-in-the-bush
Chrysobalanus icaco	Coco plum
Chrysopsis scabrella	Coastalplain goldenaster
Cirsium nuttallii	Nuttall's thistle
Cissus verticillata	Possum grape
Citrus x *aurantium**	Grapefruit, sour orange, sweet orange
Cladina evansii	Powder-puff lichen
Cladina subtenuis	Dixie reindeer lichen
Cladium jamaicense	Jamaica swamp sawgrass
Cladonia leporina	Jester lichen
Cnidoscolus stimulosus	Tread-softly
Coccoloba diversifolia	Pigeon plum
*Cocos nucifera**(II)	Coconut palm
*Commelina diffusa**	Common dayflower
Commelina erecta	Whitemouth dayflower
Conoclinium coelestinum	Blue mistflower

Conradina grandiflora	Large-flowered rosemary
Conyza canadensis	Canadian horseweed
*Costus spicatus**	Spiked spiralflag
*Crinum zeylanicum**	Milk-and-wine lily
Crotalaria pallida var. *obovata**	Smooth rattlebox
Crotalaria pumila	Low rattlebox
Crotalaria rotundifolia	Rabbitbells
Croton glandulosus	Vente conmigo
*Cupaniopsis anacardioides** NX (I)	Carrotwood
Cuscuta exaltata	Tall dodder
*Cyanthillium cinereum**	Little ironweed
Cynanchum scoparium	Leafless swallowwort
*Cynodon dactylon**	Bermudagrass
Cyperus compressus	Poorland flatsedge
Cyperus croceus	Baldwin's flatsedge
Cyperus ligularis	Swamp flatsedge
Cyperus odoratus	Fragrant flatsedge
Cyperus ovatus	Pinebarren flatsedge
Cyperus polystachyos	Manyspike flatsedge
Cyperus surinamensis	Tropical flatsedge
Cyperus virens	Green flatsedge
*Dactyloctenium aegyptium** (II)	Durban crowfootgrass
Dalea feayi	Feay's prairieclover
*Delonix regia**	Royal poinciana
*Desmodium incanum**	Zarzabacoa comun
Desmodium lineatum	Sand ticktrefoil
*Desmodium tortuosum**	Dixie ticktrefoil
Dichanthelium aciculare	Needleleaf witchgrass
Dichanthelium ensifolium	Cypress witchgrass
Dichanthelium portoricense	Hemlock witchgrass
Dichanthelium strigosum	Roughhair witchgrass
Digitaria ciliaris	Southern crabgrass
*Digitaria eriantha**	Pangolagrass
Digitaria insularis	Sourgrass
*Digitaria longiflora**	Indian crabgrass
Diodia teres	Poor Joe
Diodia virginiana	Virginia buttonweed
Diospyros virginiana	Common persimmon
*Dypsis lutescens**	Areca palm
*Echinochloa crus-galli**	Barnyardgrass
Echinochloa walteri	Coast cockspur
Eclipta prostrata	False daisy
*Eichhornia crassipes** (PAP1) (I)	Common water-hyacinth
Eleocharis baldwinii	Baldwin's spikerush
Eleocharis cellulosa	Gulf coast spikerush
Eleocharis interstincta	Knotted spikerush

*Emilia fosbergii**	Florida tassleflower
*Emilia sonchifolia**	Lilac tassleflower
*Eragrostis ciliaris**	Gophertail lovegrass
Erechtites hieraciifolius	Fireweed
Erigeron quercifolius	Oakleaf fleabane
*Eriobotrya japonica**	Loquat
Eryngium aromaticum	Fragrant eryngo
*Eugenia uniflora** (I)	Surinam cherry
Eupatorium capillifolium	Dogfennel
Euphorbia polyphylla	Lesser Florida spurge
Eustachys glauca	Saltmarsh fingergrass
Eustachys petraea	Pinewoods fingergrass
Euthamia caroliniana	Slender flattop goldenrod
Ficus aurea	Strangler fig
*Ficus benjamina**	Weeping fig
*Ficus microcarpa** (I)	Indian laurel
Fimbristylis cymosa	Hurricanegrass
Forestiera segregata	Florida swampprivet
Froelichia floridana	Cottonweed
Fuirena scirpoidea	Southern umbrellasedge
Galactia regularis	Downy milkpea
Galactia volubilis	Eastern milkpea
Galium hispidulum	Coastal bedstraw
Galium tinctorium	Stiff marsh bedstraw
Gamochaeta antillana	Caribbean purple everlasting
Gaura angustifolia	Southern beeblossom
Helianthemum corymbosum	Pinebarren frostweed
Helianthemum nashii	Florida scrub frostweed
Helianthus debilis	East coast dune sunflower
Heliotropium polyphyllum	Pineland heliotrope
Heterotheca subaxillaris	Camphorweed
Houstonia procumbens	Innocence
*Hydrilla verticillata** NX (PAP1) (I)	Hydrilla
Hydrocotyle sp.	Marshpennywort
Hymenocallis latifolia	Perfumed spiderlily
Hypericum tetrapetalum	Fourpetal St. John's-wort
Hypoxis juncea	Fringed yellow stargrass
Ilex cassine	Dahoon
Ilex glabra	Gallberry
*Indigofera hirsuta**	Hairy indigo
Ipomoea indica	Oceanblue morning-glory
Ipomoea pes-caprae subsp. *brasilienis*	Railroad vine
Iresine diffusa	Juba's bush
Juncus marginatus	Grassleaf rush
Juncus polycephalos	Manyhead rush
*Kalanchoe daigremontiana**	Devil's backbone

*Kalanchoe delagoensis**	Chandelier plant
*Kalanchoe pinnata** (II)	Life plant
Kosteletzkya pentacarpos	Virginia saltmarsh mallow
Lactuca graminifolia	Grassleaf lettuce
*Lantana camara** (I)	Shrubverbena
Lantana involucrata	Buttonsage
Lechea cernua	Scrub pinweed
Lechea deckertii	Deckert's pinweed
Lechea torreyi	Piedmont pinweed
Lemna valdiviana	Valdivia duckweed
Lepidium virginicum	Virginia pepperweed
*Leucaena leucocephala** NX (II)	White leadtree
Liatris tenuifolia	Shortleaf gayfeather
Licania michauxii	Gopher apple
Linaria canadensis	Canadian toadflax
Linaria floridana	Apalachicola toadflax
Ludwigia octovalvis	Mexican primrosewillow
*Ludwigia peruviana**	Peruvian primrosewillow
Ludwigia repens	Creeping primrosewillow
Lupinus diffusus	Skyblue lupine
*Lygodium microphyllum** NX (I)	Old World climbing fern
Lyonia fruticosa	Coastalplain staggerbush
Lyonia lucida	Fetterbush
Lythrum alatum	Winged loosestrife
*Melaleuca quinquenervia** NX (PAP1) (I)	Melaleuca
*Melinis repens** (I)	Rose natalgrass
Melothria pendula	Creeping cucumber
Micranthemum glomeratum	Manatee mudflower
Micranthemum umbros	Shade mudflower
Mikania cordifolia	Florida Keys hempvine
Mikania scandens	Climbing hempvine
*Mollugo verticillata**	Indian chickweed
*Momordica charantia**	Balsampear
Monotropa uniflora	Indianpipe
*Murraya paniculata** (II)	Orange jessamine
Myrica cerifera	Wax myrtle
Myrsine cubana	Myrsine
*Nephrolepis brownii** (I)	Asian sword fern
*Nephrolepis cordifolia** (I)	Tuberous sword fern
Neptunia pubescens	Tropical puff
*Oeceoclades maculata**	Monk orchid
*Oldenlandia corymbosa**	Flattop mille graines
Oldenlandia uniflora	Clustered mille graines
Ophioglossum palmatum	Hand fern
*Opuntia cochenillifera**	Cochineal cactus
Opuntia humifusa	Pricklypear

Oxalis corniculata	Common yellow woodsorrel
Palafoxia feayi	Feay's palafox
Palafoxia integrifolia	Coastalplain palafox
Panicum abscissum	Cut-throat grass
Panicum dichotomiflorum	Fall panicgrass
Panicum hemitomon	Maidencane
*Panicum maximum** (II)	Guineagrass
*Panicum repens** (I)	Torpedograss
Panicum virgatum	Switchgrass
Parietaria floridana	Florida pellitory
Paronychia americana	American nailwort
*Parthenium hysterophorus**	Santa Maria feverfew
Parthenocissus quinquefolia	Virginia creeper
Paspalum boscianum	Bull crowngrass
Paspalum setaceum	Thin paspalum
*Paspalum urvillei**	Vaseygrass
Passiflora incarnata	Purple passionflower
Passiflora suberosa	Corkystem passionflower
Pectis glaucescens	Sanddune cinchweed
*Pennisetum purpureum** (I)	Napiergrass
*Pennisetum setaceum**	Fountaingrass
Persea borbonia var. *humilis*	Silk bay
*Philodendron bipinnatifidum**	Split-leaf philodendron
Phlebodium aureum	Golden polypody
Phyla nodiflora	Turkey tangle fogfruit
Phyllanthus abnormis	Drummond's leafflower
*Phyllanthus tenellus**	Mascarene Island leafflower
Physalis angulata	Cutleaf groundcherry
Physalis pubescens	Husk tomato
Physalis walteri	Walter's groundcherry
Phytolacca americana	American pokeweed
Pilea microphylla	Artillery plant
Piloblephis rigida	Wild pennyroyal
Pinus clausa	Sand pine
Pinus elliottii	Slash pine
Piriqueta cistoides subsp. *caroliniana*	Pitted stripeseed
Pisonia aculeata	Devil's claws
*Pistia stratiotes** (PAP2) (I)	Water-lettuce
Pityopsis graminifolia	Narrowleaf silkgrass
Pleopeltis polypodioides var. *michauxiana*	Resurrection fern
Pluchea baccharis	Rosy camphorweed
Pluchea foetida	Stinking camphorweed
Pluchea odorata	Sweetscent
Poinsettia cyathophora	Paintedleaf
Polanisia tenuifolia	Slendlerleaf clammyweed
Polygala incarnata	Procession flower

Polygala lutea	Orange milkwort
Polygala violacea	Showy milkwort
Polygonella ciliata	Hairy jointweed
Polygonella gracilis	Tall jointweed
Polygonella polygama	October flower
Polygonella robusta	Largeflower jointweed
Polygonum hydropiperoides	Mild waterpepper
Polypremum procumbens	Rustweed
Pontederia cordata	Pickerelweed
*Portulaca oleracea**	Little hogweed
Portulaca pilosa	Pink purslane
*Pouzolzia zeylanica**	Pouzolz's bush
Pseudognaphalium obtusifolium	Rabbit tobacco
Psilotum nudum	Whisk-fern
Psychotria nervosa	Wild coffee
Pteridium aquilinum	Bracken
*Pteris vittata** (II)	Chinese ladder brake
Pterocaulon pycnostachyum	Blackroot
Ptilimnium capillaceum	Mock bishopsweed
Quercus chapmanii	Chapman's oak
Quercus geminata	Sand live oak
Quercus laurifolia	Laurel oak
Quercus minima	Dwarf live oak
Quercus myrtifolia	Myrtle oak
Quercus virginiana	Live oak
Rhexia mariana	Pale meadowbeauty
Rhynchospora colorata	Starrush whitetop
Rhynchospora megalocarpa	Sandyfield beaksedge
Rhynchospora microcarpa	Southern beaksedge
*Richardia brasiliensis**	Tropical Mexican clover
*Richardia grandiflora**	Largeflower Mexican clover
*Richardia scabra**	Rough Mexican clover
*Ricinus communis** (II)	Castorbean
Rivina humilis	Rougeplant
Sabal etonia	Scrub palmetto
Sabal palmetto	Cabbage palm
Sacciolepis striata	American cupscale
Sagittaria lancifolia	Bulltongue arrowhead
Sagittaria latifolia	Broadleaf arrowhead
Salix caroliniana	Coastalplain willow
Sambucus nigra subsp. *canadensis*	Elderberry
*Sansevieria hyacinthoides** (II)	Bowstring hemp
Sarcostemma clausum	White twinevine
*Schefflera actinophylla** (I)	Australian umbrella tree
*Schinus terebinthifolius** NX (PAP1) (I)	Brazilian pepper
Schizachyrium scoparium	Little bluestem

Schoenoplectus tabernaemontani	Softstem bulrush
Scleria ciliata	Fringed nutrush
Scleria triglomerata	Tall nutgrass
Scoparia dulcis	Sweetbroom
Selaginella arenicola	Sand spike-moss
Senna pendula var. *glabrata**	Valamuerto
Serenoa repens	Saw palmetto
Sesbania vesicaria	Bladderpod
Setaria corrugata	Coastal foxtail
Setaria parviflora	Knotroot foxtail
Seymeria pectinata	Piedmont blacksenna
*Sida cordifolia**	Llima
Sida rhombifolia	Indian hemp
Sida ulmifolia	Common fanpetals
Sideroxylon reclinatum	Florida bully
Sideroxylon tenax	Tough bully
Sisyrinchium xerophyllum	Jeweled blue-eyed grass
Smilax auriculata	Earleaf greenbrier
Smilax bona-nox	Saw greenbrier
Solanum americanum	American black nightshade
Solidago fistulosa	Pinebarren goldenrod
*Solidago gigantea**	Giant goldenrod
Solidago odora var. *chapmanii*	Chapman's goldenrod
Solidago sempervirens	Seaside goldenrod
Solidago stricta	Wand goldenrod
*Sonchus oleraceus**	Common sowthistle
Sorghastrum secundum	Lopsided Indiangrass
Spartina bakeri	Sand cordgrass
Spermacoce prostrata	Prostrate false buttonweed
Spermacoce remota	Woodland false buttonweed
*Spermacoce verticillata**	Shrubby false buttonweed
*Sphagneticola trilobata** (II)	Creeping oxeye
*Sporobolus indicus**	Smutgrass
Stenotaphrum secundatum	St. Augustinegrass
Stillingia sylvatica	Queensdelight
Stipulicida setacea	Pineland scalypink
*Stylosanthes hamata**	Cheesytoes
Swietenia mahagoni	Mahogany
*Syagrus romanzoffiana** (II)	Queen palm
Symphyotrichum bahamense	Bahaman aster
Symphyotrichum dumosum	Rice button aster
*Syzygium cumini** (I)	Java plum
Thelypteris kunthii	Southern shield fern
Tillandsia balbisiana	Inflated & reflexed wild pine
Tillandsia fasciculata	Common wild pine
Tillandsia flexuosa	Banded airplant

Tillandsia paucifolia	Potbelly airplant
Tillandsia recurvata	Ballmoss
Tillandsia setacea	Southern needleleaf
Tillandsia sp.	Airplant
Tillandsia usneoides	Spanish moss
Tillandsia utriculata	Giant wild pine
Toxicodendron radicans	Eastern poison ivy
*Tradescantia spathacea** (II)	Oyster-plant
Trema micrantha	Nettletree
*Tribulus cistoides** (II)	Burrnut
Trichostema dichotomum	Forked bluecurls
Trichostema setaceum	Narrowleaf bluecurls
*Tridax procumbens** NX	Coatbuttons
Triplasis purpurea	Purple sandgrass
Typha domingensis	Southern cattail
*Urena lobata** (I)	Caesarweed
*Urochloa distachya**	Tropical signalgrass
Vaccinium myrsinites	Shiny blueberry
Verbesina virginica	White crownbeard
Vigna luteola	Hairypod cowpea
Vitis cinerea var. *floridana*	Florida grape
Vitis rotundifolia	Muscadine
Vitis shuttleworthii	Calloose grape
Vittaria lineata	Shoestring fern
Waltheria indica	Sleepy morning
Ximenia americana	Hog plum
Yucca aloifolia	Spanish bayonet
*Zamia furfuracea**	Cardboard cycad
Zoysia sp.*	Templegrass

NOTES:

* = Nonnative species

NX = Species is on the federal and state noxious weed lists

PAP1 = Species designated as Class 1 Prohibited Aquatic Plant by FDACS (2008)

PAP2 = Species designated as Class 2 Prohibited Aquatic Plant by FDACS (2008)

(I) = Exotic species designated as Category I (most invasive) by FLEPPC (FLEPPC 2011)

(II) = Exotic species designated as Category II (potentially invasive) by FLEPPC (FLEPPC 2011)

Scientific and common names of species generally follow Rule 5B-40.005 and Rule 5B-57.007, Florida Administrative Code; FNAI 2013; Wunderlin and Hansen (2008); NatureServe (2012); and ITIS (2013).

APPENDIX B

ANIMAL SPECIES RECORDED AT THE YAMATO SCRUB NATURAL AREA

APPENDIX B

ANIMAL SPECIES RECORDED AT THE YAMATO SCRUB NATURAL AREA
Updated 05/30/13

Scientific Name	Common Name
CHELICERATA	
Arachnida (Spiders, Scorpions and Harvestmen)	
Araneae	
Eriophora ravilla	Tropical orbweavear
Gasteracantha cancriformis	Spinybacked orbweaver
Latrodectus bishopi	Red widow spider
Nephila clavipes	Golden silk orbweaver
MANDIBULATA	
Insecta (Insects)	
Odonata	
Anax junius	Common *g*reen darner
Brachymesia gravida	Four-spotted pennant
Celithemis eponina	Halloween pennant
Coryphaeschna ingens	Regal darner
*Crocothemis servilia**	Scarlet skimmer
Enallagma pollutum	Florida bluet
Erythemis attala	Black pondhawk
Erythemis plebeja	Pin-tailed pondhawk
Erythemis simplicicollis	Eastern pondhawk
Erythemis vesiculosa	Great pondhawk
Erythrodiplax minuscula	Little blue dragonlet
Erythrodiplax umbrata	Band-winged dragonlet
Ischnura ramburii	Rambur's forktail
Libellula auripennis	Golden-winged skimmer
Micrathyria aequalis	Spot-tailed dasher
Orthemis ferruginea	Roseate skimmer
Pachydiplax longipennis	Blue dasher
Pantala flavescens	Wandering glider
Perithemis tenera	Eastern amberwing
Tramea carolina	Carolina saddlebags

Tramea lacerata	Black saddlebags
Tramea onusta	Red saddlebags
Triacanthagyna trifida	Phantom darner
Orthoptera	
Arphia granulata	Southern yellow-winged grasshopper
Gryllus sp.	Cricket
Schistocerca americana	American bird grasshopper
Schistocerca damnifica	Mischievous bird grasshopper
Dictyoptera	
Stagmomantis carolina	Praying mantis
Mallophaga	
Trichodectes otomaculatus	Raccoon chewing louse
Homoptera	
Dactylopius sp.*	Cochineal insect
Tibicen sp.	Cicada
Neuroptera	
Chrysoperla sp.	Green lacewing
Myrmeleon sp.	Antlion
Coleoptera	
Coccinellidae (Family)	Ladybird beetle
Strategus antaeus	Ox beetle
Diptera	
Aedes sp.	Mosquito
Chrysops sp.	Deer fly
Plecia nearctica	Love bug
Tabanus sp.	Horse fly
Lepidoptera	
Agraulis vanillae	Gulf fritillary
Anartia jatrophae	White peacock
Danaus gilippus	Queen
Danaus plexippus	Monarch
Dryas iulia	Julia
Heliconius charithonia	Zebra
Hemileuca maia	Buckmoth
Junonia coenia	Common buckeye

Leptotes cassius theonus	Cassius blue butterfly
Limenitis archippus	Viceroy
Papilio cresphontes	Giant swallowtail
Papilio polyxenes	Black swallowtail
Phoebis philea	Orange-barred sulphur
Phoebis sennae	Cloudless sulphur
Pyrgus communis	Common checkered-skipper
Pyrisitia lisa	Little yellow
Siproeta stelenes	Malachite
Urbanus proteus	Long-tailed skipper
Vanessa atalanta	Red admiral

Hymenoptera

*Apis mellifera**	Honeybee
Bombus pensylvanicus	Bumble bee
Dasymutilla occidentalis	Velvet ant
Pogonomyrmex sp.	Harvester ant
Polistes sp.	Paper wasp
Solenopsis geminata	Fire ant
*Solenopsis invicta**	Red imported fire ant

CRANIATA

Amphibia (Amphibians)

Acris gryllus	Southern cricket frog
Anaxyrus terrestris	Southern toad
*Eleutherodactylus planirostris**	Greenhouse frog
Gastrophryne carolinensis	Eastern narrow-mouthed toad
Hyla cinerea	Green treefrog
Hyla gratiosa	Barking treefrog
Hyla squirella	Squirrel treefrog
Lithobates sphenocephalus	Southern leopard frog
*Osteopilus septentrionalis**	Cuban treefrog

Actinopterygii (Fishes)

*Cichla ocellaris**	Butterfly peacock bass
Gambusia holbrooki	Eastern mosquitofish
Lepisosteus platyrhincus	Florida gar
*Oreochromis aureus**	Blue tilapia

Chelonia (Turtles)

Apalone ferox	Florida softshell
*Geochelone sulcata**	African spurred tortoise

Gopherus polyphemus	Gopher tortoise
Pseudemys nelsoni	Florida red-bellied cooter
Pseudemys peninsularis	Peninsula cooter
Terrapene carolina	Eastern box turtle

Crocodylia (Crocodilians)

Alligator mississippiensis	American alligator

Reptilia (Snakes and Lizards)

Anolis carolinensis	Green anole
*Anolis sagrei**	Brown anole
Aspidoscelis sexlineata	Six-lined racerunner
*Basiliscus vittatus**	Brown basilisk
Coluber constrictor	Racer
Crotalus adamanteus	Eastern diamond-backed rattlesnake
Drymarchon corais couperi	Eastern indigo snake
*Iguana iguana**	Green iguana
Masticophis flagellum	Coachwhip
Micrurus fulvius	Harlequin coralsnake
Opheodrys aestivus	Rough greensnake
Pantherophis alleghaniensis	Eastern ratsnake
Pantherophis guttatus	Red cornsnake
Plestiodon inexpectatus	Southeastern five-lined skink
Sceloporus woodi	Florida scrub lizard
Scincella lateralis	Ground skink
Thamnophis sauritus	Eastern ribbonsnake

Aves (Birds)

Anseriformes

Anas clypeata	Northern shoveler
Anas crecca	Green-winged teal
Anas discors	Blue-winged teal
Anas fulvigula	Mottled duck
Anas platyrhynchos	Mallard
Aythya collaris	Ring-necked duck
Chen caerulescens	Snow goose

Galliformes

Colinus virginianus	Northern bobwhite

Podicipediformes

Podilymbus podiceps	Pied-billed grebe

Ciconiiformes	
Mycteria americana	Wood stork
Suliformes	
Anhinga anhinga	Anhinga
Phalacrocorax auritus	Double-crested cormorant
Pelecaniformes	
Ardea alba	Great egret
Ardea herodias	Great blue heron
Botaurus lentiginosus	American bittern
Bubulcus ibis	Cattle egret
Butorides virescens	Green heron
Egretta caerulea	Little blue heron
Egretta thula	Snowy egret
Egretta tricolor	Tricolored heron
Eudocimus albus	White ibis
Nycticorax nycticorax	Black-crowned night-heron
Platalea ajaja	Roseate spoonbill
Plegadis falcinellus	Glossy ibis
Tachybaptus dominicus	Least grebe
Accipitriformes	
Accipiter cooperii	Cooper's hawk
Accipiter striatus	Sharp-shinned hawk
Buteo jamaicensis	Red-tailed hawk
Buteo lineatus	Red-shouldered hawk
Buteo platypterus	Broad-winged hawk
Cathartes aura	Turkey vulture
Coragyps atratus	Black vulture
Elanoides forficatus	Swallow-tailed kite
Haliaeetus leucocephalus	Bald eagle
Pandion haliaetus	Osprey
Gruiformes	
Aramus guarauna	Limpkin
Fulica americana	American coot
Gallinula galeata	Common gallinule
Grus canadensis pratensis	Florida sandhill crane
Porzana carolina	Sora

Charadriiformes	
Actitis macularius	Spotted sandpiper
Calidris minutilla	Least sandpiper
Charadrius semipalmatus	Semipalmated sandpiper
Charadrius vociferus	Killdeer
Gallinago delicata	Wilson's snipe
Himantopus mexicanus	Black-necked stilt
Hydroprogne caspia	Caspian tern
Leucophaeus atricilla	Laughing gull
Sterna antillarum	Least tern
Tringa flavipes	Lesser yellowlegs
Tringa melanoleuca	Greater yellowlegs
Tringa seimipalmata	Willet
Tringa solitaria	Solitary sandpiper
Columbiformes	
*Columba livia**	Rock pigeon
Columbina passerina	Common ground-dove
Zenaida macroura	Mourning dove
Cuculiformes	
Coccyzus americanus	Yellow-billed cuckoo
Strigiformes	
Bubo virginianus	Great horned owl
Caprimulgiformes	
Caprimulgus carolinensis	Chuck-will's-widow
Chordeiles minor	Common nighthawk
Apodiformes	
Chaetura pelagica	Chimney swift
Coraciiformes	
Megaceryle alcyon	Belted kingfisher
Piciformes	
Colaptes auratus	Northern flicker
Melanerpes carolinus	Red-bellied woodpecker
Picoides pubescens	Downy woodpecker
Picoides villosus	Hairy woodpecker
Sphyrapicus varius	Yellow-bellied sapsucker

Falconiformes

Falco columbarius	Merlin
Falco peregrinus	Peregrine falcon
Falco sparverius	American kestrel

Psittaciformes

*Aratinga erythrogenys**	Red-masked parakeet
*Myiopsitta monachus**	Monk parakeet
*Nandayus nenday**	Black-hooded parakeet

Passeriformes

Agelaius phoeniceus	Red-winged blackbird
Aphelocoma coerulescens	Florida scrub-jay
Cardinalis cardinalis	Northern cardinal
Catharus fuscescens	Veery
Corvus brachyrhynchos	American crow
Corvus ossifragus	Fish crow
Cyanocitta cristata	Blue jay
Dumetella carolinensis	Gray catbird
Geothlypis trichas	Common yellowthroat
Helmitheros vermivorum	Worm-eating warbler
Hirundo rustica	Barn swallow
Lanius ludovicianus	Loggerhead shrike
Mimus polyglottos	Northern mockingbird
Mniotilta varia	Black-and-white warbler
Myiarchus crinitus	Great crested flycatcher
Oreothylpis peregrina	Tennessee warbler
Oreothylpis ruficapilla	Nashville warbler
Parkesia noveboracensis	Northern waterthrush
Passerculus sandwichensis	Savannah sparrow
Passerina caerulea	Blue grosbeak
Passerina ciris	Painted bunting
Passerina cyanea	Indigo bunting
Pipilo erythrophthalmus	Eastern towhee
Piranga olivacea	Scarlet tanager
Piranga rubra	Summer tanager
Polioptila caerulea	Blue-gray gnatcatcher
Progne subis	Purple martin
Quiscalus major	Boat-tailed grackle
Quiscalus quiscula	Common grackle
Regulus calendula	Ruby-crowned kinglet
Sayornis phoebe	Eastern phoebe

Seiurus aurocapilla	Ovenbird
Setophaga americana	Northern parula
Setophaga caerulescens	Black-throated blue warbler
Setophaga coronata	Yellow-rumped warbler
Setophaga discolor	Prairie warbler
Setophaga dominica	Yellow-throated warbler
Setophaga palmarum	Palm warbler
Setophaga pinus	Pine warbler
Setophaga ruticilla	American redstart
Setophaga striata	Blackpoll warbler
Setophaga tigrina	Cape May warbler
Stelgidopteryx serripennis	Northern rough-winged swallow
*Sturnus vulgaris**	European starling
Tachycineta bicolor	Tree swallow
Thryothorus ludovicianus	Carolina wren
Toxostoma rufum	Brown thrasher
Trogolodytes aedon	House wren
Turdus migratorius	American robin
Vermivora cyanoptera	Blue-winged warbler
Vireo flavifrons	Yellow-throated vireo
Vireo griseus	White-eyed vireo
Vireo solitarius	Blue-headed vireo

Mammalia (Mammals)

*Dasypus novemcinctus**	Nine-banded armadillo
Didelphis virginiana	Virginia opossum
*Felis catus**	Domestic cat
Peromyscus gossypinus	Cotton deermouse
Podomys floridanus	Florida mouse
Procyon lotor	Raccoon
Scalopus aquaticus	Eastern mole
Sciurus carolinensis	Eastern gray squirrel
Sigmodon hispidus	Hispid cotton rat
Spilogale putorius	Eastern spotted skunk
Sylvilagus floridanus	Eastern cottontail
Urocyon cinereoargenteus	Gray fox

* = Nonnative species

NOTE: Scientific and common names of species generally follow FWC (2013), FNAI (2013f), NatureServe (2012), ITIS (2013), or Arnett (2000)

APPENDIX C

DEFINITIONS OF DESIGNATIONS AND RANKS FOR LISTED SPECIES AND NATURAL COMMUNITIES

APPENDIX C

DEFINITIONS OF DESIGNATIONS AND RANKS FOR LISTED SPECIES AND NATURAL COMMUNITIES

United States Fish and Wildlife Service (USFWS) - Wildlife and Plants

Species listed in the Code of Federal Regulations (CFR) and protected under the provisions of the Endangered Species Act of 1973 (16 USC 1531-1543, as amended); animals are listed in 50 CFR 17-11 and plants are listed in 50 CFR 17-12; definitions are from 16 USC 1532, 36 CFR 219.36 and 50 CFR 17.50.

Endangered (E)	Any species which is in danger of extinction through all or a portion of its range other than a species of the Class Insecta determined by the Secretary [of the Interior] to constitute a pest whose protection under the provisions of this chapter would present an overwhelming and overriding risk to man
Threatened (T)	Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range
Candidate (C)	Species identified by the United States Fish and Wildlife Service (USFW) or the National Marine Fisheries Service (NFMS), which are considered to be candidates for listing under the Endangered Species Act as published in the *Federal Register*.

If a species is not endangered or threatened, but it closely resembles an endangered or threatened species, such species may be treated as endangered or threatened if the Director of USFWS makes a determination that the species shall appear in the list in 50 CFR 17.11 (wildlife) or the list in 50 CFR 17.12 (plants) and that the notation (S/A) shall appear in the status column following the letter "E" for endangered or the letter "T" for threatened, due to its similarity of appearance to an endangered or threatened species – for example, E (S/A) or T (S/A).

Florida Fish and Wildlife Conservation Commission (FWC) - Animals

Species listed in Chapter 68A-27 of the Florida Administrative Code (F.A.C.) as Florida Endangered and Threatened Species and protected under that chapter and the Endangered and Threatened Species Act, Section 372.072, Florida Statutes (F.S.); definitions are from Chapter 68A-27.

Federally-designated Endangered and Threatened Species	Species of fish or wild animal life, subspecies or isolated populations of species or subspecies, whether vertebrate or invertebrate, that are native to Florida and are classified as Endangered or Threatened under Commission rule by virtue of designation by the United States

(FE) and (FT)	Departments of Interior or Commerce as endangered or threatened under the Federal Endangered Species Act, 16 U.S.C. § 1531 et seq. and rules thereto.
State-designated Threatened Species (ST)	As designated by the Commission, species of fish or wild animal life, subspecies, or isolated population of a species or subspecies, whether vertebrate or invertebrate, that are native to Florida and are classified as Threatened as determined by paragraph (a), (b), (c), (d), or (e) [in subsequent part of definition] in accordance with Rule 68A-27.0012., F.A.C. The designation of a species as threatened shall include all subspecies unless stated otherwise in Commission rule.
Species of Special Concern (SSC)	Per Rule 68A-27.005: During the moratorium period created in subsection 68A-27.0012(4), F.A.C.: Management plans will be developed for the species listed in this rule and the species will be evaluated under the listing criteria in subsection 68A-27.001(3), F.A.C. for listing as a State-designated Threatened species. If the Commission determines that the species warrants listing as a State-designated Threatened species, final Commission action on the listing shall include removing reference to the species from this rule. If the species evaluation demonstrates the species does not quality for listing as a State-designated Threatened species, the Commission will remove the species from this rule upon completion of a management plan. After a biological status review is conducted and a management plan is approved, the Commission will decide whether a species should remain listed when the species is determined to be data deficient pursuant to the Guidelines for Using the IUCN Red List Categories and Criteria.
Candidate Species	A species of fish or wild animal life, subspecies, or isolated populations of species or subspecies, whether invertebrate or vertebrate, that the Commission has determined warrants listing as a State-designated Threatened Species in accordance with Rule 68A-27.0012, F.A.C., and is awaiting final Commission action to be added to the list of Florida Endangered and Threatened Species in Rule 68A-27.003, F.A.C.

Florida Department of Agriculture and Consumer Affairs (FDACS) - Plants

Species listed in Chapter 5B-40 of the Rules of FDACS, Division of Plant Industry and protected under the Preservation of Native Flora of Florida Act (Section 581.185, F.S.); definitions are from that Act

Endangered (E)	Species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes

	of a decline in the number of plants continue, and includes all species determined to be endangered species or threatened species pursuant to the federal Endangered Species Act of 1973, as amended. Pub. L. No. 93-205 (87 Stat. 884).
Threatened (T)	Species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.
Commercially Exploited (CE)	Species native to the state which are subject to being removed in significant numbers from native habitats in the state and sold or transported for sale.

Florida Natural Areas Inventory (FNAI) - Plants, Animals and Natural Communities

FNAI ranks indicate the global (G) or state (S) status of a species or a natural community. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Rank definitions are from FNAI (2013).

FNAI Global Rank Definitions

G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

G2 Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

G3 Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

G4 Apparently secure globally (may be rare in parts of range).

G5 Demonstrably secure globally.

GH Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).

GX Believed to be extinct throughout range.

GXC Extirpated from the wild but still known from captivity or cultivation.

G#? Tentative rank (e.g., G2?).

G#G# Range of rank; insufficient data to assign specific global rank (e.g., G2G3).

G#T# Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have the same definition as above (e.g., G3T1).

G#Q Rank of questionable species – ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).

G#T#Q Same as above, but validity as subspecies or variety is questioned.

GU Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).

GNA Ranking is not applicable because the element is not a suitable target for conservation (e.g., a hybrid species).

GNR Element not yet ranked (temporary).

GNRTNR Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI State Rank Definitions

S1 Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.

S2 Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.

S3 Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

S4 Apparently secure in Florida (may be rare in parts of range).

S5 Demonstrably secure in Florida.

SH Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).

SX Believed to be extirpated throughout Florida.

SU Unrankable; due to a lack of information no rank or range can be assigned.

SNA State ranking is not applicable because the element is not a suitable target for conservation (e.g., a hybrid species).

SNR Element not yet ranked (temporary).

APPENDIX D

LEGAL DESCRIPTION

APPENDIX D

LEGAL DESCRIPTION OF YAMATO SCRUB NATURAL AREA

PROPERTIES LEASED FROM THE STATE OF FLORIDA

206.74-Acre Boca Commerce Center Tract

PARCEL 1:

A PARCEL OF LAND LYING IN SECTION 6, TOWNSHIP 47 SOUTH, RANGE 43 EAST, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE NORTHEAST CORNER OF SAID SECTION 6;

THENCE S 89° 54’ 06” W ALONG THE NORTH LINE OF SAID SECTION 6 A DISTANCE OF 614.51 FEET TO THE WEST RIGHT-OF-WAY LINE OF THE SEABOARD COASTLINE RAILROAD;

THENCE S 00° 10’ 37” E ALONG THE SAID WEST RIGHT-OF-WAY LINE A DISTANCE OF 1759.10 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF CLINT MOORE ROAD, AS RECORDED IN PLAT BOOK 4, PAGE 240 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA AND THE POINT OF BEGINNING;

THENCE CONTINUE S 00° 10’ 37” E ALONG THE LAST DESCRIBED COURSE, A DISTANCE OF 241.74 FEET TO THE POINT OF CURVATURE OF A CIRCULAR CURVE CONCAVE TO THE WEST;

THENCE SOUTHERLY AND WESTERLY ALONG THE ARC OF SAID CURVE, ALONG SAID WESTERLY RIGHT-OF-WAY LINE, HAVING A RADIUS OF 3365.62 FEET, HAVING A CENTRAL ANGLE OF 37° 54’ 31”, AN ARC DISTANCE OF 2226.80 FEET;

THENCE N 00° 25’ 10” E A DISTANCE OF 1155.17 FEET;

THENCE S 89° 49’ 16” W A DISTANCE OF 696.92 FEET;

THENCE N 00° 09’ 05” W A DISTANCE OF 2247.67 FEET TO A POINT ON THE ARC OF A CIRCULAR CURVE CONCAVE TO THE SOUTH, WHOSE RADIUS POINT BEARS S 16° 02’ 55” W FROM THE LAST DESCRIBED POINT, SAID POINT ALSO BEING ON THE SAID SOUTHERLY RIGHT-OF-WAY LINE OF CLINT MOORE ROAD;

THENCE EASTERLY AND SOUTHERLY ALONG THE ARC OF SAID CURVE, HAVING A RADIUS OF 1849.86 FEET, A CENTRAL ANGLE OF 18° 54’ 24”, AN ARC DISTANCE OF 610.42 FEET;

THENCE S 34° 57’ 19” W, RADIAL TO THE LAST DESCRIBED CURVE, A DISTANCE OF 38.38 FEET;

THENCE S 45° 01’ 58” E A DISTANCE OF 247.52 FEET;

THENCE S 48° 15’ 37” E A DISTANCE OF 932.56 FEET TO THE POINT OF BEGIINNING; (THE LAST FOUR DESCRIBED COURSES BEING COINCIDENT WITH THE SAID SOUTHERLY RIGHT-OF-WAY OF CLINT MOORE ROAD).

PARCEL 2:

A PORTION OF SECTION 6, TOWNSHIP 47 SOUTH, RANGE 43 EAST, PALM BEACH COUNTY, FLORIDA AND A PORTION OF SECTION 31, TOWNSHIP 46 SOUTH, RANGE 43 EAST, PALM BEACH COUNTY, FLORIDA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 6;

THENCE S 89° 54’ 06” W, ALONG THE NORTH LINE OF SAID SECTION 6, A DISTANCE OF 614.51 FEET TO THE POINT OF BEGINNING, SAID POINT BEING ON THE WEST RIGHT-OF-WAY LINE OF THE SEABOARD COASTLINE RAILROAD;

THENCE S 00° 10’ 37” E, ALONG SAID RIGHT-OF-WAY A DISTANCE OF 100.00 FEET;

THENCE S 89° 54’ 06” W, PARALLEL WITH AND 100.00 FEET SOUTH OF, AS MEASURED AT RIGHT ANGLES TO THE NORTH LINE OF SAID SECTION 6, A DISTANCE OF 300.00 FEET;

THENCE S 00° 10’ 37” E, A DISTANCE OF 300 FEET;

THENCE N 89° 54’ 06” E, A DISTANCE OF 300 FEET TO THE SAID WEST RIGHT-OF-WAY LINE OF THE SEABOARD COASTLINE RAILROAD;

THENCE S 00° 10’ 37” E, ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 1023.13 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF CLINT MOORE ROAD AS RECORDED IN ROAD PLAT BOOK 4, PAGE 240 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA;

THENCE N 48° 15’ 37” W A DISTANCE OF 552.03 FEET;

THENCE N 53° 15’ 52” W A DISTANCE OF 428.49 FEET;

THENCE S 34° 57’ 19” W A DISTANCE OF 41.71 FEET TO A POINT ON THE ARC OF A CIRCULAR CURVE CONCAVE TO THE SOUTHWEST, WHOSE RADIUS POINT BEARS S 34 57 19” W, FROM THE LAST DESCRIBED POINT;

THENCE NORTHERLY AND WESTERLY ALONG THE ARC OF SAID CURVE, HAVING A RADIUS OF 1969.86 FEET; A CENTRAL ANGLE OF 19° 55’ 05”, AN ARC DISTANCE OF 684.79 FEET (THE LAST FOUR DESCRIBED COURSES BEING COINCIDENT WITH SAID NORTHERLY RIGHT-OF-WAY LINE OF CLINT MOORE ROAD);

THENCE N 00° 09’ 05” W A DISTANCE OF 543.21 FEET TO A POINT ON THE NORTH LINE OF SAID SECTION 6;

THENCE S 89° 54’ 06” W ALONG SAID SECTION LINE A DISTANCE OF 669.43 FEET TO THE NORTH ONE-QUARTER CORNER OF SECTION 6;

THENCE CONTINUE S 89° 54’ 06” W ALONG THE LAST DESCRIBED COURSE, A DISTANCE OF 606.10 FEET TO THE EAST TOP BANK OF THE L.W.D.D. E-4 CANAL AS LAID OUT AND IN USE;

THENCE N 03° 39’ 32” W A DISTANCE OF 228.12 FEET;

THENCE N 08° 11’ 09” W A DISTANCE OF 812.33 FEET;

THENCE N 01° 38’ 02” E A DISTANCE OF 287.91 FEET;

THENCE N 07° 29’ 43” E A DISTANCE OF 740.15 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF CONGRESS AVENUE, AS RECORDED IN ROAD PLAT BOOK 4, PAGE 143, OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA, (THE LAST FOUR DESCRIBED COURSES BEING COINCIDENT WITH THE EAST TOP BANK OF L.W.D.D. E-4 CANAL);

THENCE N 47° 33’ 13” E ALONG SAID EASTERLY RIGHT-OF-WAY, A DISTANCE OF 2229.65 FEET TO THE POINT OF CURVATURE OF A CIRCULAR CURVE CONCAVE TO THE NORTHWEST;

THENCE NORTHERLY, ALONG SAID RIGHT-OF-WAY LINE OF CONGRESS AVENUE, ALONG THE ARC OF SAID CURVE HAVING A RADIUS OF 1969.86 FEET, A CENTRAL ANGLE OF 13° 51’ 51”, AN ARC DISTANCE OF 476.66 FEET;

THENCE S 89° 56’ 10” E A DISTANCE OF 727.76 FEET TO THE AFORESAID WEST RIGHT-OF-WAY LINE OF THE SEABOARD COASTLINE RAILROAD;

THENCE S 00° 10’ 37” E ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 3913.66 FEET TO THE POINT OF BEGINNING.

LESS AND EXCEPT THE FOLLOWING DESCRIBED PROPERTY:

A) ALL OF BOCA COMMERCE CENTER PHASE I, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 46, PAGE 44 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

B) ALL OF THAT PORTION OF SECTION 31, TOWNSHIP 46 SOUTH, RANGE 43 EAST, PALM BEACH COUNTY, FLORIDA, LYING NORTHEASTERLY AND EASTERLY OF THE WESTERLY RIGHT-OF-WAY LINE OF N.W. 6TH AVENUE, BOCA COMMERCE CENTER PHASE I, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 46, PAGE 44 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

C) ALL THAT PORTION OF SECTION 31, TOWNSHIP 46 SOUTH, RANGE 43 EAST, PALM BEACH COUNTY, FLORIDA, LYING EASTERLY OF THE WESTERLY RIGHT-OF-WAY LINE OF N.W. 6TH AVENUE, BOCA COMMERCE CENTER PHASE 2, ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 60, PAGE 27, OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

D) ALL OF "KRAFT FOODSERVICE, INC. DISTRIBUTION FACILITY" ACCORDING TO THE PLAT THEREOF, AS RECORDED IN PLAT BOOK 75, PAGES 182 AND 183 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

E) A PARCEL OF LAND LYING IN SECTION 31, TOWNSHIP 46 SOUTH, RANGE 43 EAST, PALM BEACH COUNTY, FLORIDA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT THE SOUTHEAST CORNER OF SAID SECTION 31:

THENCE S 89° 54' 06" W ALONG THE SOUTH LINE OF SAID SECTION 31, A DISTANCE OF 614.51 FEET TO A POINT ON THE SAID WEST RIGHT-OF-WAY LINE OF THE SEABOARD COASTLINE RAILROAD;

THENCE N 00° 10' 37" W, ALONG SAID RIGHT-OF-WAY, A DISTANCE OF 3913.66 FEET;

THENCE N 89° 56' 10" W, A DISTANCE OF 727.76 FEET TO A POINT ON THE ARC OF A CIRCULAR CURVE CONCAVE TO THE NORTHWEST WHOSE RADIUS POINT BEARS N 56° 18' 38" W FROM THE LAST DESCRIBED POINT, SAID POINT BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF CONGRESS AVENUE, AS RECORDED IN PLAT BOOK 4, PAGE 143 OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA;

THENCE SOUTHERLY AND WESTERLY ALONG SAID RIGHT-OF-WAY LINE, ALONG THE ARC OF SAID CURVE, HAVING A RADIUS OF 1969.86 FEET, A CENTRAL ANGLE OF 13° 51' 51", AN ARC DISTANCE OF 476.66 FEET TO THE POINT OF TANGENCY;

THENCE S 47° 33’ 13” W ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 568.55 FEET TO THE POINT OF BEGINNING;

THENCE S 42° 26’ 47” E ALONG THE SOUTHWESTERLY LINE OF “TRACT B-B” OF THE PLAT OF BOCA COMMERCE CENTER PHASE I AS RECORDED IN PLAT BOOK 46, PAGES 44 THROUGH 46 INCLUSIVE OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA, A DISTANCE OF 65.00 FEET;

THENCE N 47° 33’ 13” E ALONG THE SOUTHEASTERLY LINE OF SAID TRACT “B-B” A DISTANCE OF 55.00 FEET TO THE WESTERLY RIGHT-OF-WAY OF N.W. 6TH AVENUE AS SHOWN ON SAID PLAT;

THENCE S 42° 26’ 47” E ALONG SAID RIGHT-OF-WAY A DISTANCE OF 98.00 FEET TO THE POINT OF CURVATURE OF A CIRCULAR CURVE CONCAVE TO THE SOUTHWEST;

THENCE SOUTHERLY AND SOUTHEASTERLY ALONG SAID RIGHT-OF-WAY, ALONG THE ARC OF SAID CURVE HAVING A RADIUS OF 907.00 FEET, A CENTRAL ANGLE OF 32° 04’ 12”, AN ARC DISTANCE OF 507.67 FEET TO A POINT ON A NON-TANGENT LINE;

THENCE N 86° 10’ 31” W A DISTANCE OF 892.00 FEET, TO A POINT ON THE SAID EASTERLY RIGHT-OF-WAY LINE OF CONGRESS AVENUE;

THENCE N 47° 33’ 13” E ALONG SAID EAST RIGHT-OF-WAY LINE, A DISTANCE OF 700.00 FEET TO THE POINT OF BEGINNING.

F) A PARCEL OF LAND, BEING THE NORTH 100.00 FEET OF SECTION 6, TOWNSHIP 47 SOUTH, RANGE 43 EAST, PALM BEACH COUNTY, FLORIDA; LESS AND EXCEPT THE WEST 2054.69 FEET OF SAID NORTH 100.00 FEET OF SECTION 6, ALSO, LESS AND EXCEPT THE EAST 614.51 FEET OF SAID NORTH 100.00 FEET OF SECTION 6.

G) THAT PORTION OF SECTION 31, TOWNSHIP 47 SOUTH, RANGE 43 EAST, PALM BEACH COUNTY, FLORIDA, BEING THE EASTERLY 40.00 FEET OF THE FOLLOWING DESCRIBED PARCEL:

COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 31;

THENCE N 89° 54’ 06” E, ALONG THE SOUTH LINE OF SAID SECTION 31, A DISTANCE OF 2,062.14 FEET TO THE POINT OF BEGINNING;

THENCE N 03° 39’ 32” W, A DISTANCE OF 225.07 FEET;

THENCE N 08° 11’ 09” W, A DISTANCE OF 813.72 FEET;

THENCE N 01° 38’ 02” E, A DISTANCE OF 292.02 FEET;

THENCE N° 07’ 29 43” E, A DISTANCE OF 706.01 FEET TO A POINT ON THE SOUTH RIGHT-OF-WAY LINE OF CONGRESS AVENUE (120 FEET IN WIDTH);

THENCE N 47° 33’ 13” E, ALONG THE SOUTH RIGHT-OF-WAY LINE OF CONGRESS AVENUE, A DISTANCE OF 108.77 FEET;

THENCE S 07° 29’ 43” W, A DISTANCE OF 785.67 FEET;

THENCE S 01° 38’ 02” W, A DISTANCE OF 282.43 FEET;

THENCE S 08° 11’ 09” E, A DISTANCE OF 810.47 FEET;

THENCE S 03° 39’ 32” E, A DISTANCE OF 232.19 FEET TO A POINT ON THE SOUTH LINE OF SAID SECTION 31;

THENCE S 89° 54’ 06” W, ALONG SAID SOUTH SECTION LINE, A DISTANCE OF 70.14 FEET TO THE POINT OF BEGINNING.

PROPERTIES NOT SUBJECT TO LEASE

10-Acre Knight Investments, Inc. Tract

ALL OF PARCEL 2, “CONGRESS CORPORATE CENTRE”, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK 55, AT PAGE 123, OF THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

SAID LANDS LYING IN THE CITY OF BOCA RATON, PALM BEACH COUNTY, FLORIDA, AND CONTAINING 10.378 ACRES, MORE OR LESS

APPENDIX E

PALM BEACH COUNTY NATURAL AREAS ORDINANCE

ARTICLE XI. - NATURAL AREAS [72]

[72] **Editor's note—** Ord. No. 94-13, adopted June 21, 1994, effective June 27, 1994, amended this Code by adding provisions designated by the editor as ch. 11, art. XI, §§ 11-251—11-272.

Sec. 11-251. - Short title; applicability.

(a) This article shall be known as the "Palm Beach County Natural Areas Ordinance."

(b) The recitations set forth in the "WHEREAS" paragraphs included in Ordinance No. 94-13 are incorporated by reference herein as findings of fact upon which this article is based.

(c) All provisions of this article shall be effective within the unincorporated and incorporated areas of the county and shall set restrictions, constraints, and requirements to protect and preserve county-managed natural areas.

(d) This article shall be liberally construed to effect the purposes set forth herein.

(Ord. No. 94-13, § 1, 6-21-94)

Sec. 11-252. - Authority.

This article is adopted under the authority of chapter 125, Florida Statutes.

(Ord. No. 94-13, § 2, 6-21-94)

Sec. 11-253. - Purpose.

The purpose of this article is to preserve and protect in perpetuity county-managed natural areas by regulating public uses of these lands.

(Ord. No. 94-13, § 3, 6-21-94)

Sec. 11-254. - Definitions.

The following terms when used in this article shall have the meanings ascribed to them in this section:

Department means the department of environmental resources management.

Natural area means all public lands containing high-quality native ecosystems that are under the control of or assigned to the department for management, maintenance, and operation.

Natural areas property means all structures, facilities, plants, and animals contained within a natural area.

Parking area means a specially designed and publicly designated area set aside for the standing or temporary stationing of vehicles.

Permit means a document or certificate provided by the county administrator or his designee granting permission to conduct or take part in a specific activity at a specific location.

Vehicle means any wheeled conveyance for transportation of persons or materials whether:

(1) Powered or drawn by motor such as an automobile, truck, motorcycle, scooter, or minibike.

(2) Animal-drawn such as a carriage, wagon, or cart.

(3) Self-propelled such as a bicycle.

Watercraft means any boat, kayak, canoe, raft, houseboat, barge, vessel, ship or any other floating device capable of transporting humans or objects over water.

(Ord. No. 94-13, § 4, 6-21-94)

Sec. 11-255. - Scope.

This article applies only to county-owned or county-controlled natural areas and natural areas property that is assigned to the department of environmental resources management for management, maintenance and operation. Department staff and other authorized persons working under staff supervision shall be exempt from the provisions of this article when performing activities related to management plans.

(Ord. No. 94-13, § 5, 6-21-94)

Sec. 11-256. - Buildings and other property.

(a) No person shall willfully mark, deface or damage in any way, or displace, remove or tamper with, any natural area building, fence, educational or informational structure, walkway, bridge, bench, railing, public utility, paving or paving material, or part or appurtenance thereof, natural area sign, notice or

placard, monument, stake, post, or other boundary marker, or other structure or equipment, facility or natural area property or appurtenance that is located on a natural area.

(b) No person shall dig, move, or remove from any natural area any sand, soil, rocks, stones, trees, shrubs, or plants, fallen timber, or other wood or materials, or make any excavation by tool, equipment, blasting or other means.

(Ord. No. 94-13, § 6, 6-21-94)

Sec. 11-257. - Plant and wildlife protection and preservation.

(a) Within any natural area, no person shall cut, carve, or damage the bark, or break off limbs or branches or mutilate in any way, or pick the flowers or seeds, of any tree or plant, or shrub, nor shall any person dig in or disturb grassy areas, or transplant or remove any tree or plant or part thereof, or in any other way damage or impair the natural beauty or usefulness of any natural area, nor shall any person deposit any debris or material on or about any tree or plant.

(b) Within any natural area, no person shall molest, harm, frighten, kill, trap, hunt, chase, shoot, throw objects at, harass, feed, or otherwise inhibit the natural movements and habits of any invertebrate, mammal, amphibian, reptile, fish or bird. No person shall remove or have in his or her possession the young of any wild animal, or the eggs or nests of any amphibian, reptile, fish, bird or invertebrate. The provisions of this section applying to fishes are not applicable in designated fishing areas.

(c) In order to prevent disruption of natural ecosystems and the spread of disease, no person shall introduce, plant, or release any plant or animal into any natural area.

(Ord. No. 94-13, § 7, 6-21-94)

Editor's note— As originally promulgated, Ord. No. 94-13 contained no § 8.

Sec. 11-258. - Reserved.

Sec. 11-259. - Fires.

No person shall build or attempt to build, light, or cause to be lighted any fire or fires within any natural area unless given permission under a written permit from the county administrator or his designee. No person shall drop, throw, or otherwise deposit lighted matches, burning cigarettes or cigars, tobacco paper, or other flammable materials within any natural area or on any county highway, road or street abutting or contiguous thereto.

(Ord. No. 94-13, § 9, 6-21-94)

Sec. 11-260. - Boating.

(a) All provisions of F.S. Ch. 327 shall apply to county-managed natural area waters.

(b) No person shall launch or operate any watercraft upon any watercourse, lagoon, lake, canal, pond, marsh, wet prairie or slough within a natural area except at such places that are designated for such use by the board of county commissioners or the county administrator or his designee.

(c) No person shall operate, moor, or anchor any watercraft within the waters of any natural area in a manner that results in damage or harm to the vegetation, wildlife or shoreline.

(Ord. No. 94-13, § 10, 6-21-94)

Sec. 11-261. - Fishing.

Except where specifically designated, fishing, or the buying or selling of fish caught in any natural area waters, is prohibited in all natural areas.

(Ord. No. 94-13, § 11, 6-21-94)

Sec. 11-262. - Prohibited activities.

The following are prohibited in county-managed natural areas:

(a) Hunting, trapping, or the possession of any kind of trapping device. Licensed hunters and trappers authorized by the county administrator or his designee to remove nuisance and exotic animals are exempt from this prohibition, as are licensed hunters authorized by the county administrator or his designee to reduce excessive populations of animals causing environmental damage in a natural area.

(b) All activities that are potentially inimical to wildlife and dangerous to human safety by persons other than authorized law enforcement personnel and persons authorized to remove nuisance and exotic animals.

(c) The sale, purchase, consumption, or possession of alcoholic beverages as defined in F.S. § 561.01(4).

(d) Use, discharge or possession of fireworks, explosives, or substances that could be combined into an explosive mixture.

(e) Domestic animals and pets.

(f) Placement of beehives or other apicultural practices.

(g) Cultivation of plants.

(h) Vehicle repair.

(i) Use of airboats.

(j) Loud, unnecessary noise that disturbs wildlife and produces physical discomfort or annoyance to other people.

(k) Possession and release of inflated balloons.

(Ord. No. 94-13, § 12, 6-21-94; Ord. No. 2011-021, § 1, 9-13-11)

Sec. 11-263. - Activities requiring a special permit.

The following activities may be allowed only if a written permit is obtained from the county administrator or his authorized designee. Written terms and conditions shall accompany each permit, and a fee will be charged as set by resolution of the board of county commissioners. The decision on whether or not to issue a permit will be based on the potential for damage to the natural resources of the site, the carrying capacity for that particular use, and any conflicts with a previously issued permit for the same

use. The activities requiring a special permit are:

(a) Camping.

(b) Erection of temporary or permanent structures.

(c) Horseback riding.

(d) Public demonstrations and gatherings.

(f) Collection of plant and animal specimens and use of watercraft in wetlands for scientific research.

(g) After-hours and night-time use of natural areas.

(Ord. No. 94-13, § 13, 6-21-94)

Sec. 11-264. - Merchandising, advertising and signs.

(a) No person shall expose or offer for sale, rent or trade any article or thing, or station or place any stand, cart, or vehicle for the transportation, sale or display of any article, merchandise, or other item within the limits of any natural area.

(b) No person shall use the natural area roadways or paths, or enter any natural area, for the purpose of announcing, displaying, advertising or calling attention to any person, political party, religious institution, or meetings or assemblies thereof, or for the purpose of demonstrating, advertising or calling attention to any article or service for sale or for hire; nor shall any signs, slogans, loudspeakers or advertising display be used for such purposes unless a written permit allows such activity.

(c) No person shall display, distribute, post, paste, glue, tack, or otherwise fix any handbill, pamphlet, circular, sign, placard or any other printed matter containing advertising within any natural area or upon any natural area tree, fence or other structure.

(Ord. No. 94-13, § 14, 6-21-94)

Sec. 11-265. - Pollution of waters.

No person shall throw, discharge, or otherwise place or cause to be placed in the waters of any pond, lake, canal, slough, marsh, wet prairie, lagoon, or any other body of water or wetland in any natural area, any substance, matter, object or item which will or may result in pollution of those waters.

(Ord. No. 94-13, § 15, 6-21-94)

Sec. 11-266. - Refuse and trash.

No person shall take into, dump or deposit on land of, or leave in, any natural area or county road abutting such natural area, bottles, broken glass, ashes, paper, boxes, cans, dirt, construction or agricultural debris, rubbish, waste, garbage, refuse, or any other solid or liquid discard. Such discard shall be placed in the proper receptacles where provided on a natural area. Where receptacles are not provided, all such discard shall be carried away from the natural area and properly disposed of by the person responsible for its presence.

(Ord. No. 94-13, § 16, 6-21-94)

Sec. 11-267. - Public utilities.

No entity shall be allowed to place any new public service utility into, upon, or across natural area lands except by prior written permit from the county administrator or his designee.

(Ord. No. 94-13, § 17, 6-21-94)

Sec. 11-268. - Closing of natural areas.

(a) Each natural area managed by the county shall be open to the public at hours and days that are determined to be appropriate and adopted as part of the management plan for that natural area. These hours shall be posted at each natural area.

(b) The county administrator or his designee may declare any section of a natural area closed to the public, either temporarily or at regularly stated intervals, in order to protect natural resource protection, public safety, health and/or welfare.

(c) No person shall remain in any natural area during the hours that the natural area is closed, unless he or she has a permit.

(Ord. No. 94-13, § 18, 6-21-94)

Sec. 11-269. - Vehicles.

(a) All state vehicle laws and county traffic regulations shall be applicable in all natural areas. Municipal traffic ordinances shall be applicable in those natural areas located within municipalities.

(b) No person shall drive, operate, or propel any vehicle outside the boundaries of designated paved or improved natural area access roads or driveways unless specifically authorized by the county administrator or his designee.

(c) No person shall park any vehicle on a natural area at any place other than a designated parking area without prior authorization from the county administrator or his designee. No person shall park any vehicle in a manner that blocks or impedes access to a parking area or access road. No vehicle shall be left in a parking area or access road. No vehicle shall be left in a parking area overnight without prior authorization by the county administrator or his designee.

(Ord. No. 94-13, § 19, 6-21-94)

Sec. 11-270. - Enforcement.

(a) It shall be the duty and responsibility of law enforcement officials to, within their jurisdiction, enforce all state laws, municipal ordinances, county ordinances, and county traffic regulations within and adjacent to the limits of all natural areas maintained and operated by the department.

(b) It shall be unlawful for any person to do any act forbidden, or fail to perform any act required, by this article or for any person to fail to comply with any lawful and reasonable order given by law enforcement officers or authorized department officials. It shall be the duty and responsibility of law enforcement officers and authorized department officials to enforce all natural areas rules.

(Ord. No. 94-13, § 20, 6-21-94)

Sec. 11-271. - Penalties.

(a) The violation of any provision of this article shall be enforced by the Groundwater Natural Resource Protection Board (GNRPB) pursuant to the procedures and penalties of F.S. Ch. 162, Local Government Code Enforcement Boards, and Article 10 of the County Unified Land Development Code, all as may be amended or recodified from time to time.

(b) The violation of any provision of this article may also be enforced pursuant to the procedures and penalties of F.S. Ch. 162, Supplemental County or Municipal Code or Ordinance Enforcement Procedures, and shall be punishable by a fine not to exceed five hundred dollars ($500.00).

(c) The violation of any provision of this article may also be enforced pursuant to F.S. § 125.69 and shall be punishable by a fine not to exceed five hundred dollars ($500.00), or by imprisonment in the county jail not to exceed sixty (60) days, or by both such fine and imprisonment, or by such other penalty as may hereafter be provided in F.S. § 125.69.

(d) In addition to the sanctions contained herein, the county may take any other appropriate legal action to enforce the provisions of this Code, including, but not limited to, cease and desist orders, instituting civil action, and requesting temporary and permanent injunctions.

(e) It is the purpose of this article to provide additional, cumulative remedies.

(f) Each violation of this Code shall constitute a separate offense and be punishable as such.

(g) The board of county commissioners by resolution may establish fines to be imposed for violation of this article.

(h) All monies collected as a result of violations of this article shall be deposited in the county natural areas fund.

(Ord. No. 94-13, § 21, 6-21-94; Ord. No. 2011-021, § 2, 9-13-11)

Sec. 11-272. - Municipal ordinances and land development regulations.

This article does not supersede any municipal ordinance or land development regulation.

(Ord. No. 94-13, § 23, 6-21-94)

Secs. 11-273—11-290. - Reserved.

APPENDIX F

NATURAL AREAS MANAGEMENT ADVISORY COMMITTEE MEMBERS AND AFFILIATIONS

NATURAL AREAS MANAGEMENT ADVISORY COMMITTEE

SEAT NUMBER	REQUIRMENT	MEMBER	AFFILIATION	TERM EXPIRATION DATE
Seat 1	Person with Experience in Management of Natural Areas	Stephen P. Coughlin	South Florida Water Management District	9-30-2014
Seat 2	Biological Scientist	Richard Moyroud	Mesozoic Landscapes, Inc.	9-30-2014
Seat 3	Professional Educator with Knowledge of South Florida Ecosystems	Kristi L. Moyer	Pine Jog Environmental Education Center/Florida Atlantic University	9-30-2015
Seat 4	Representative of Municipal Government Parks and Recreation Program	Russ Ruskay	Town of Jupiter	9-30-2016
Seat 5	Staff Member of Palm Beach County Parks and Recreation Department	Eric Call	Palm Beach County Parks & Recreation Dept.	9-30-2015
Seat 6	Citizen with Interest in Preservation and Conservation of Natural Areas	Evelyn Parkes-Brier	Evelyn Figueroa-Parkes, CPA	9-30-2015
Seat 7	Citizen with Interest in Preservation and Conservation of Natural Areas	Allen Trefry	Retired	9-30-2016

APPENDIX G

PUBLIC HEARING NOTICE AND PUBLIC COMMENT SUMMARY

NATURAL AREAS MANAGEMENT ADVISORY COMMITTEE
PUBLIC HEARING
FOR THE
DRAFT UPDATED YAMATO SCRUB MANAGEMENT PLAN
November 14, 2913
6:35 p.m. – 7:07 p.m.

Natural Areas Management Advisory Committee (NAMAC) members present:

- Eric Call
- Steve Coughlin

Palm Beach County Department of Environmental Resources Management (ERM) staff present:

- Barry Smith, Environmental Director, Natural Resources Stewardship Division
- David Gillings, Environmental Manager, Natural Resources Stewardship Division
- Barry Jennings, Environmental Program Supervisor, Resources Maintenance Section
- Sandra Mann, Environmental Program Supervisor, Planning Section
- Lee Lietzke, Environmental Analyst, Site Manager for Yamato Scrub Natural Area

NAMAC Vice-Chair, Eric Call, called the draft updated Yamato Scrub Management Plan Public Hearing to order at 6:35 pm. He welcomed everyone then outlined the procedures for public participation. Mr. Call noted that written comments on the draft updated management plan will be accepted for one week (until November 21st).

Overview of Draft Management Plan by ERM Staff: Sandra Mann explained that a few sections of the draft plan were revised between the time the draft management plans were placed at the main City and County libraries and November 6th. Ms. Mann indicated that copies of the changes are available on the table. The copies that are currently at the libraries and online at the ERM web site are the most current version. Ms. Mann then provided a brief overview of the Yamato Scrub Natural Area, the existing and proposed public uses and public use facilities, and the restoration activities. [Note: Printouts of the management plan figures were available for public viewing at an open house held prior to the public hearing. Copies of the draft updated management plan also were available for public viewing at the open house.]

Public Comments on the draft Management Plan: Only one member of the public attended the public hearing. He did not submit a speaker card or a written comment card, but provided verbal comments about trash left at the natural area by other users. He asked if a trash receptacle could be installed at the trailhead so that people would not place their empty water bottles and other trash in the brochure box.

Barry Jennings and Barry Smith explained that we have removed most of the trash receptacles from our natural areas due to issues with wildlife getting into the trash and issues with people

using the receptacles to clean out their cars. We typically have less trash left at sites which do not have a trash receptacle. (Follow up: staff will consider whether the existing signage is sufficient to notify visitors to the natural area that the site is designated as a "carry in, carry out" site.)

Steve Coughlin inquired about the difficulty of conducting prescribed burns on the site. Barry Smith responded that surrounding roadways and development make conditions very restrictive for conducting prescribed burns. Because of this, ERM staff has used mechanical vegetation reduction methods extensively to reduce fuel loads on the site. Barry Jennings stated that ERM is very cautious in determining if conditions are suitable for prescribed fire and has safely conducted over 100 prescribed burns on its sites.

Closing committee comments:

Both Mr. Call and Mr. Coughlin complimented staff on how well they manage and maintain the natural area. They also expressed appreciation for having a nature oasis in such a highly urbanized environment.

If no additional changes to the plan are requested by NAMAC on November 22nd, staff will ask that NAMAC vote to send the plan to the Palm Beach County Board of County Commissioners (Board) with a recommendation that the Board approve the draft plan on December 17. 2013. If the management plan is approved by the Board, it will be sent to Florida Department of Environmental Protection for review by staff and related agencies. Once any changes have been made as a result of this review, it will then be sent to the states' Acquisition and Restoration Council for final comments and approval. The goal is to submit the draft updated management plan to the state by the end of the year.

The meeting was adjourned at 7:07 p.m.

The Palm Beach Post
REAL NEWS STARTS HERE
Palm Beach Daily News

NOTICE OF PUBLIC HEARING
The Palm Beach County Natural Areas Management Advisory Committee will hold an open house/public hearing on the 10-year updated draft management plan (draft plan) for the County-managed Yamato Scrub Natural Area on November 14, 2013, in the Community Room East at the Boca Raton Main Library, 400 NW Second Avenue, Boca Raton. FL. The open house will be from 5:00 pm to 5:30 pm. The public hearing will start at 6:30 pm. The purpose is to allow public comment on the draft plan. The draft plan is available for public inspection at the Boca Raton Main Library; the Palm Beach County Main Library, 3650 Summit Blvd., West Palm Beach, FL; and online at http://www.co.palm-beach.fl.us/erm/natural/natural-areas/management-plans.htm. For more information, please contact Dave Gillings at 561-233-2400.
PALM BEACH COUNTY
NATURAL AREAS MANAGEMENT
ADVISORY COMMITTEE
By:
Environmental Resources Management
PUB: The Palm Beach Post
10-27/ 2013 #139707

Signed Rosemary Hindmarch

Sworn to and subscribed before 11/04/2013.
Who is personally known to me.

DORIS S. FOSTER
Notary Public - State of Florida
My Comm. Expires May 26, 2016
Commission # EE 166026
Bonded Through National Notary Assn.

PBC BOCC ERM

PROOF OF PUBLICATION

STATE OF FLORIDA
COUNTY OF PALM BEACH

Before the undersigned authority personally appeared Rosemary Hindmarch, who on oath says that she is Call Center Legal Advertising Representative of The Palm Beach Post, a daily and Sunday newspaper, published at West Palm Beach in Palm Beach County, Florida; that the attached copy of advertising for a Notice

was published in said newspaper on
10/27/2013 and ended 10/27/2013

Affiant further says that the said The Post is a newspaper published at West Palm Beach, in said Palm Beach County, Florida, and that the said newspaper has heretofore been continuously published in said Palm Beach County, Florida, daily and Sunday and has been entered as second class mail matter at the post office in West Palm Beach, in said Palm Beach County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she/he has neither paid nor promised any person, firm or corporation any discount rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper. Also published in Martin and St. Lucie Counties.

PUBLIC HEARING
Ad ID: 299146
Ad Cost: 113.52

Excerpt from the PBC Board of County Commissioners' meeting minutes of October 1, 2013:

8.A. ADMINISTRATION COMMENTS

8.A.3. DISCUSSED: Yamato Scrub Natural Area Management Plan

County Administrator Robert Weisman stated that he would read a notice on behalf of Environmental Resource Management and the State. He said that:

- Environmental Resource Management has prepared a ten-year update to the Management Plan for the 217-acre Yamato Scrub Natural Area in Boca Raton, and has scheduled a public hearing on the plan.

- The State of Florida, which owns most of the site, leases its property to the County for management purposes.

- The Florida Statutes require that a public hearing on a Management Plan be conducted by an advisory group in the County in which the site is located; and,

- The public hearing should be announced in a meeting of the local governing board, and recorded in the minutes of that meeting.

Mr. Weisman read the following announcement:

> "An open house for the draft revised Yamato Scrub Natural Area Management Plan will be held by the Palm Beach County Natural Area's Management Advisory Committee on November 14, 2013, from 5:00 p.m. to 5:30 p.m. in the Community Room east of the Boca Raton Main Library, 400 Northwest Second Avenue, Boca Raton, followed by a public hearing at 6:30 p.m. Copies of the draft updated plan will be available for public inspection 30 days prior to the hearing at the Boca Raton Main Library, and the Palm Beach County Main Library, as well as on the Environmental Resources Management Department section of the County's Web site."

Mayor Abrams said that concern was raised about the prescribed burn program.

MINUTES OF THE REGULAR MEETING
CITY COUNCIL
CITY OF BOCA RATON, FLORIDA
Wednesday, November 13, 2013
6: 00 PM

The Regular Meeting of the City Council of the City of Boca Raton, Florida was called to order by Mayor Susan Whelchel at 5:59 PM.

1. INVOCATION:

Council Member Scott offered the invocation.

2. PLEDGE OF ALLEGIANCE TO THE FLAG:

3. ROLL CALL:

Mayor Susan Whelchel
Deputy Mayor Susan Haynie
Council Member Anthony Majhess
Council Member Michael Mullaugh
Council Member Constance Scott

4. AMENDMENTS TO THE AGENDA:

Mayor Whelchel informed the Council that item 11.A., Resolution No. 97-2013, was withdrawn by the petitioner and that item 12. B., Ordinance No. 5260, would also be removed from the agenda.

Motion was made by Deputy Mayor Susan Haynie, seconded by Council Member Constance Scott, to amend the agenda, deleting items 11.A. and 12.B. Motion carried unanimously on a voice vote.

5. MINUTES:

A. Minutes of the Workshop Meeting of October 21, 2013
Minutes

B. Minutes of the Regular Meeting of October 22, 2013
Minutes

Motion was made by Deputy Mayor Susan Haynie, seconded by Council Member Constance Scott, to approve the minutes as presented. Motion carried unanimously on a voice vote.

6. PROCLAMATIONS/PRESENTATIONS:

Mayor Whelchel joined Garden Club members Carol Rice and Carol Brown for presentation of the 2013 Boca Raton Garden Club ornament.

7. BOARD APPOINTMENTS:

A. Affordable Housing Advisory Committee
Vacancy Sheet

There were no applicants.

18 CITY MANAGER RECOMMENDATIONS AND REPORTS:

A. Announcement Regarding the Public Hearing for the Yamato Scrub Natural Area Management Plan

The City Manager made the required announcement.

19. CITY ATTORNEY REPORTS:

The City Attorney had no report.

20. MAYOR AND COUNCIL MEMBER REPORTS:

Council Member Mullaugh thanked all the organizations and businesses that helped make possible the gala honoring local Marines at no cost to the service men and women.

Deputy Mayor Haynie thanked all parties involved in reaching an agreement on the Tesla issue. She also shared information regarding funding for railroad quiet zone infrastructure and improvements at Airport Road. She then highlighted numerous recent events in the City.

Council Member Scott commented on the recent Arbor Day celebration and reminded the public of leash laws.

Mayor Whelchel noted that the Council had set a goal relating to educating the public and promoting transparency.

21. ADJOURNMENT:

The meeting was adjourned without objection at approximately 7:47 pm.

Susan Whelchel, Mayor

ATTEST:

Susan S. Saxton, City Clerk

APPENDIX H

FLORIDA NATURAL AREAS INVENTORY REPORT

Plants and Lichens

Scientific name: *Chamaesyce cumulicola*

Common name: Sand-dune Spurge **Grank/Srank/Fed/State:** G2/S2/N/LE

Natural communities in which species may be found: scrub, maritime hammock, beach dune, coastal strand

Habitat comments: Coastal scrub and stabilized dunes.

Element occurrence #: 6 **EO_ID:** 13234 **Last observed:** 1998 **Status on site:** Likely

Directions: 1998: Yamato, north and south sides of Clint-Moore Road (UNDGAN01FLUS). 1978-11-09: Scrub north side of Clint-Moore Road, on dirt track, ca 0.5 miles east of Congress Avenue, just west of bridge (PNDAUS01FLUS).

Element occurrence data: 1998: More than 20 plants in flower and fruit widely scattered over linear strips totaling several acres (UNDGAN01FLUS). 1997: mats of *Chamaesyce cumulicola* were observed in sandy, open margins of Yamato Scrub between the fence and the oak scrub. Populations in the interior have likely disappeared due to dense re-growth of oak scrub following a prescribed fire in 1989 (PNDCHA05FLUS). 1978-11-09: flowering and fruiting on 9 Nov. 1978 (PNDAUS01FLUS).

Management comments: The scrub needs a very hot fire to kill oaks and create patches of open sand for scrub species such as *Chamaesyce* and *Conradina grandiflora*. A prescribed burn in 1989 killed sand pine and encouraged dense sprouting of oaks, which have shaded out herb layer.

General description: 1998: Disturbed, open sandy areas in ecotone between drained basin marsh and scrubby flatwoods, and along railroad tracks, vegetation is sparse, mostly weedy and ruderal grasses and herbs (UNDGAN01FLUS). 1978-11-09: Coastal scrub with scattered sand pine emergent above dense layer of scrub oaks (PNDAUS01FLUS).

Scientific name: *Conradina grandiflora*

Common name: Large-flowered Rosemary **Grank/Srank/Fed/State:** G3/S3/N/LT

Natural communities in which species may be found: scrub, coastal strand

Habitat comments: Sandy flats or sandhills, mostly with sand pine; vicinity of ancient dunes of shores; mostly near coast.

Element occurrence #: 19 **EO_ID:** 21745 **Last observed:** 1999 **Status on site:** Likely

Directions: 1998-12-17: West side of I-95 and north and south of Clint Moore Road (PNDSCH03FLUS). 1979-02-26: Yamato Scrub, Boca Raton; on edges of scrub (U81ROB03FLUS).

Element occurrence data: 1999: 200+ plants in flower and fruit over a 15 acre area (U99FAR01FLUS). **1998-12-17**: Rare; plants appear healthy; few in flower (PNDSCH03FLUS). **1979-02-26**: Rare on edges of scrub (U81ROB03FLUS).

Management comments: Prescribed burning needed; exotic plants require immediate attention (PNDPRI03FLUS).

General description: 1999: Florida scrub-sand pine canopy, scrub oak understory, mostly lichens ground layer, large-flowered rosemary is usually found in more open areas, edges of roads and railroad, on old jeep trails or burn area boundaries (U99FAR01FLUS). **1979-02-26**: sand pine scrub (U81ROB03FLUS)

Scientific name: *Lechea cernua*

Common name: Nodding Pinweed **Grank/Srank/Fed/State:** G3/S3/N/LT

Natural communities in which species may be found: scrub

Habitat comments: Lechea cernua is always found in deep sands, usually ancient dunes, on which the most common forest is a mixture of evergreen scrub oaks. It may be found under mature scattered pine or oak, but is more frequently in sandy openings along with species of Andropogon, Aristida, dryland species of Rhynchospora such as R. megalocarpa, and Cyperus (Kral 1983).

Element occurrence #: 179 **EO_ID:** 30601 **Last observed:** 1998 **Status on site:** Documented

Directions: 1998: roughly 1.5 miles northwest of Boca Raton, 0.5 miles east of the Congress Ave./Clint-Moore Street intersection. Clint-Moore Street and Canal L-40 bisect this Natural Area. The Lechea population was found in the northern half about 0.1 miles southeast of Congress Avenue (U98GAN01FLUS).

Element occurrence data: 1998: 20 plants in various stages of flowering, fruiting and dormancy along an old sand jeep trail (U98GAN01FLUS).

Management comments: 1998: Prescribed fire. Only two 10 acre burns in 1986 are known to have occurred at this site (U98GAN01FLUS).

General description: 1998: Old sand jeep trail through sand pine scrub, sparse groundcover vegetation consists of scrub pioneer species such as nailwort, *Stipulicida*, Piedmont blacksenna, pinebarren flatsedge plus root sprouts from adjacent scrub oaks. Jeep trail is becoming more over grown (U98GAN01FLUS).

Scientific name: *Ophioglossum palmatum*

Common name: Hand Fern **Grank/Srank/Fed/State:** G4/S2/N/LE

Ophioglossum palmatum (cont.), # 46

Natural communities in which species may be found: strand swamp, hydric hammock;
Habitat comments: Epiphytic on persistent leaf bases of Sabal palmetto in moist hammocks. The fern's rhizome is embedded in the detritus that collects within these persistent petiole bases (Kral 1983).

Element occurrence #: 46 **EO_ID:** 30604 **Last observed:** 2000 **Status on site:** Documented

Directions: 2000: 0.5 miles east of the Congress Ave./Clint-Moore Road intersection, north side of Clint-Moore Road, in the southwest portion of the northern half of Yamato Scrub Natural Area (U00FAR01FLUS).
Element occurrence data: 2000: 1 plant fruiting; growing on cabbage palm (U00FAR01FLUS).
Management comments:
General description: 2000: growing on cabbage palm in the ecotone between prairie hammock and scrubby flatwoods. Flat topography. Dominant canopy plants are cabbage palm, live oak and slash pine, dominant understory plants are saw palmetto, scrub oaks, and wild coffee (U00FAR01FLUS).

Scientific name: *Panicum abscissum*

Common name: Cutthroat Grass **Grank/Srank/Fed/State:** G3/S3/N/LE

Natural communities in which species may be found: seepage slope, wet flatwoods, depression marsh;
Habitat comments: Grows only on moisture-receiving seepy slopes on the sandy eastern and western slopes of the Lake Wales Ridge, Florida. It may occur on small isolated slopes which receive moisture from a scrub site at higher elevation, around small seasonal ponds in scrubby flatwoods, and around depression marshes and ponds in wet flatwoods. It is frequently found in pure stands with an open slash pine overstory. Two other grass species may occur with cutthroat grass: creeping bluestem (Schizachyrium stoloniferum) and chalky bluestem (Andropogon capillipes).

Element occurrence #: 17 **EO_ID:** 12204 **Last observed:** 1996 **Status on site:** Documented

Directions: 2005-10-05: Yamato Scrub Natural Area, between Congress Blvd. and I-95 and north of Clint Moore Road (PNDJEN03FLUS).
Element occurrence data: 1996: 5000+ plants over a 12 acre area. Some plants flowering and fruiting (U96FAR01FLUS).
Management comments:
General description: 1996: Mesic flatwoods dominated by slash pine qand low saw palmetto. Cutthroat grass occurs in small glades and as a thin groundcover under saw palmetto. Areas where cutthroat occurs were formerly seasonal wet depressions prior to drainage. Disturbances include ORV trails, perimeter clearing and dumping, lowering of ground water table. Two 10-acre prescribed burns in 1986, otherwise no confirmed fires since the 1950's (U96FAR01FLUS). **1989**: in temporary pond (drainage affected by canals).

Spiders

Scientific name: *Latrodectus bishopi*

Common name: Red Widow Spider **Grank/Srank/Fed/State:** G2G3/S2S3/N/N

Natural communities in which species may be found: scrub;
Habitat comments: Restricted to sand pine scrub; almost always makes its web in scrub palmettoes (SABAL ETONIA and SERENOA REPENS). The web is made by rolling a palmetto frond into a cone and tying it with silk.

Element occurrence #: 5 **EO_ID:** 30599 **Last observed:** 1990 **Status on site:** Likely

Directions: 1986: Yamato Scrub Natural Area, roughly 1.6 miles northwest of Boca Raton, boardered on the east by I-95, roughly 0.5 miles east of Congress Avenue/Clint-Moore Road intersection and portion of site north of Clint-Moore Road (U00GAB01FLUS).
Element occurrence data: 1986: 5 adults with egg cases; population estimated to be 100; resting webs also found in scrub oaks, fetterbush, gallberry and sand pine (U00GAB01FLUS).
Management comments:
General description: 1986: Scrub and scrubby flatwoods - low open areas dominated by saw palmetto (U00GAB01FLUS).

Reptiles

Scientific name: *Crotalus adamanteus*

Common name: Eastern Diamondback Rattlesnake **Grank/Srank/Fed/State:** G4/S3/N/N

Natural communities in which species may be found: seepage slope, dome swamp, wet flatwoods, wet prairie, strand swamp, slough, hydric hammock, floodplain forest, floodplain swamp, baygall, bottomland forest, marl prairie, bog, depression marsh, basin marsh, freshwater tidal swamp, basin swamp, swale, coastal interdunal swale; mesic flatwoods, upland hardwood forest, upland glade, upland mixed forest, rockland hammock, slope forest, scrub, scrubby flatwoods, xeric hammock, pine rockland, coastal berm, maritime

Crotalus adamanteus (cont.), # 298

hammock, upland pine forest, prairie hammock, beach dune, coastal strand, sandhill, shell mound, sinkhole, dry prairie, coastal rock barren, coastal grassland;

Habitat comments: Habitats include pine and wiregrass flatwoods, pine-palmetto flatwoods, longleaf pine-turkey oak hills, rosemary scrub, mesophytic and coastal maritime hammocks, xeric hammocks, barrier islands and coastal scrub habitats, vicinity of wet savannas, wet prairies (during dry periods), mixed pine-hardwood successional woodland, and abandoned farms and fields (especially near pine-dominated habitats), particularly areas with abundant cover (Mount 1975, Dundee and Rossman 1989, Palmer and braswell 1995, Tennant 1997, Ernst and Ernst 2003, Campbell and Lamar 2004). This snake usually does not occupy marshes or swamps but may pass through these habitats or occupy their edges. Large tracts of habitat are most suitable. Eastern diamondbacks are basically terrestrial and rarely climb into vegetation. Shelters include stump holes, burrows of other animals, brush piles, or similar sites. Stumpholes in shortleaf/loblolly pine oldfield successional forest are utilized more frequently than burrows of the gopher tortoise (Means, unpublished manuscript). Eastern diamondbacks can tolerate temporary inundation of their overwintering burrows (Means 1982, unpublished manuscript). According to Ernst (1992), most young are born in retreats such as gopher tortoise burrows or hollow logs.

Element occurrence #: 298 **EO_ID:** 30600 **Last observed:** 1986 **Status on site:** Likely

Directions: 1986: roughly 1.5 miles northwest of Boca Raton, 0.5 miles east of the Congress Ave./Clint-Moore Street intersection. Clint-Moore Street and Canal L-40 bisect this Natural Area. The rattlesnake was found on the north half of the property, north of Clint-Moore Street/Canal L-40 (U86FAR02FLUS).

Element occurrence data: 1986: 1 mature adult seen resting in a trash pile; estimated population of 2-3 (U86FAR02FLUS).

Management comments:

General description: 1986: Low oak scrub next to mesic flatwoods; dominant species - scrub oaks, saw palmetto, slash pines (U86FAR02FLUS).

Scientific name: *Drymarchon couperi*

Common name: Eastern Indigo Snake **Grank/Srank/Fed/State:** G3/S3/LT/FT

Natural communities in which species may be found: estuarine tidal swamp; wet flatwoods, hydric hammock; mesic flatwoods, rockland hammock, scrub, scrubby flatwoods, upland pine forest, sandhill;

Habitat comments: Habitat includes sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass; flatwoods; most types of hammocks; coastal scrub; dry glades; palmetto flats; prairie; brushy riparian and canal corridors; and wet fields (Matthews and Moseley 1990, Tennant 1997, Ernst and Ernst 2003). Occupied sites are often near wetlands and frequently are in association with gopher tortoise burrows. Pineland habitat is maintained by periodic fires. Viable populations of this species require relatively large tracts of suitable habitat. Refuges include tortoise burrows, stump holes, land crab burrows, armadillo burrows, or similar sites. Eggs may be laid in gopher (*Geomys*) burrows (Ashton and Ashton 1981). See USFWS (1998) for further information.

Element occurrence #: 19 **EO_ID:** 19024 **Last observed:** 1984 **Status on site:** Likely

Directions: 1984: Yamato Scrub: 1.6 miles northwest of Boca Raton, west side I-95, bisected by canal L-40 and Clint-Moore Road (U84TCP02FLUS)

Element occurrence data: 1984: shed skin of an adult found; population estimated at 2-3 (U84ClC01FLUS, U84TCR02FLUS)

Management comments: 1984: Dense sand pine scrub needs to be thinned (U84TCR02FLUS).

General description: 1984: Sand pine scrub (southernmost on Atlantic Coast), some dense; relatively undeveloped; some oak scrub (U84TCP02FLUS).

Scientific name: *Gopherus polyphemus*

Common name: Gopher Tortoise **Grank/Srank/Fed/State:** G3/S3/N/ST

Natural communities in which species may be found: scrub, scrubby flatwoods, xeric hammock, coastal strand, sandhill;

Habitat comments: Commonly occupies habitats with a well-drained sandy substrate, ample herbaceous vegetation for food, and sunlit areas for nesting (Hallinan 1923, Landers 1980, Landers et al. 1980, Diemer 1989). These habitat types include sandhill (pine-turkey oak), sand pine scrub, xeric hammock, pine flatwoods, dry prairie, coastal grasslands and dunes, and mixed hardwood-pine communities (Landers and Speake 1980, Auffenberg and Franz 1982, Kushlan and Mazzotti 1984, Diemer 1986, 1992a). Prefers open habitats that support a wide variety of herbaceous ground cover vegetation for forage; usually abandons densely canopied areas and frequently can be found in disturbed habitats such as roadsides, fence-rows, old fields, and the edges of overgrown (unburned) uplands (see Diemer 1989, Stewart et al. 1993, Breininger et al. 1994). Upland habitats with extensive canopies reduce the amount of direct sunlight on the ground which may hamper tortoises from reaching minimum thermal requirements for normal daily activities. Also, excessive shade decreases herbaceous vegetation essential for growth, development, and reproduction (Mushinsky and McCoy 1994).

Temporarily abandons marginal habitats during periods of drought; increasing habitat isolation eventually may result in marginal habitats being completely abandoned (Matthews and Moseley 1990). In Georgia, adults congregated on droughty sites in early spring, and many moved to more mesic soils for autumn-winter (McRae et al. 1981).

Densities of gopher tortoises are known to be relatively high in sandhill communities, however, high densities may not be indicative of a

Gopherus polyphemus (cont.), # 1180

healthy population (Mushinsky and McCoy 1994). Mushinsky and McCoy (1994) reported that high densities of some tortoise populations may be the result of tortoises confined to a true or "habitat" island. Tortoises in this situation are unable to move freely to new locations as the quality of the habitat degenerates. More research is needed on the demography of tortoises in confined areas. Gopher tortoises are highly fossorial and construct extensive burrow systems. They spend much of the time underground. See ecology section for further information on burrows.

Eggs are deposited in a typical flask-shaped nest cavity excavated by the hindlimbs of the female to a depth of about 10-15 cm. Nests may be located in any open sunny area near the burrow of the female, but most often, nests are placed in the spoil mound immediately outside the female's burrow (e.g., Hallinan 1923, Allen and Neil 1951, Arata 1958, Mount 1975, Landers et al. 1980, Butler and Hull 1996).

Element occurrence #: 1180 **EO_ID:** 30597 **Last observed:** 1998-12-17 **Status on site:** Likely

Directions: Yamato Scrub Natural Area (YSNA), ca. 1.6 miles northwest of Boca Raton. 1998-12-17: YSNA, west side of railroad, ca. 1500 feet south of Clint Moore Road (PNDPRI03FLUS). 1986: YSNA, bordered on east by railroad and I-95, bisected by Clint-Moore Road, roughly 0.5 mile east of Congress Avenue/Clint-Moore Road intersection (U86FAR01FLUS).

Element occurrence data: Need update. 1998-12-17: species rare, 3 active burrows observed (PNDPRI03FLUS). 1986: up to 155 active and inactive, mostly adult, burrows recorded, concentrated mostly in areas of 1986 burns, now dispersed around site (U86FAR01FLUS). U84TCP02FLUS reports species as present. Barnett (in U84TCP02FLUS) says species occurs throughout most of Yamato Scrub in natural and altered habitats

Management comments: 1998-12-17: dense sand pine scrub needs to be burned or thinned soon for species to persist (PNDPRI03FLUS).

General description: 1998-12-17: dense sand pine scrub (southernmost on Atlantic coast); relatively undeveloped; some oak scrub; (PNDSCH03FLUS, U84TCP02FLUS). 1986: open, sandy edges of scrub and scrubby flatwoods next to railroad tracks, canal banks, and old jeep trails; also sandy edges of drained basin marsh; dominant vegetation is weedy with ruderal grasses and herbs (U86FAR01FLUS).

Scientific name: *Sceloporus woodi*

Common name: Florida Scrub Lizard **Grank/Srank/Fed/State:** G3/S3/N/N

Natural communities in which species may be found: scrub, sandhill;

Habitat comments: This lizard is largely restricted to evergreen oak scrub and young sand pine scrub with ample open space; it is less common in the ecotone between scrub and sandhills, sandhills surrounded by scrub, scrubby flatwoods, and citrus groves. It prefers sites with open sandy areas (for nesting, basking, and foraging) in close proximity to mature trees (*Pinus* or *Quercus*) that can provide shade and perch sites. Development of a closed canopy (e.g., in the absence of fire) results in increasingly unsuitable habitat. It never occurs in nonxeric sites. The species is mostly terrestrial but commonly perches low on tree trunks. See DeMarco (1992) for further information. Eggs are laid in soil (e.g., *Geomys* and tortoise mounds) (Ashton and Ashton 1985).

See Tiebout and Anderson (2001) for information on habitat selection by captive lizards.

Element occurrence #: 349 **EO_ID:** 30598 **Last observed:** 1991 **Status on site:** Likely

Directions: 1985: Yamato Scrub Natural Area, roughly 1.6 miles northwest of Boca Raton, bordered on the east by I-95, bisected by Clint-Moore Road, roughly 0.5 miles east of Congress Avenue/Clint-Moore Road intersection (U98GAN01FLUS). 1984: YAMATO SCRUB. NW BOCA RATON, W SIDE I-95, BISECTED BY CANAL L-40 (U84TCR02FLUS).

Element occurrence data: 1985: 99 young and adults captured; population estimated at 200 (U98GAN01FLUS). 1984: U84TCR02FLUS REPORTS SPECIES AS PRESENT. BARNETT (IN U84TCR02FLUS) SAYS SPECIES OCCURS THROUGHOUT MOST OF YAMATO SCRUB (U84TCR02FLUS).

Management comments: 2005-09-27: Update data. Prescribed burns (PNDDAV04FLUS). 1984: DENSE SAND PINE SCRUB NEEDS THINNED (U84TCP02FLUS).

General description: 1985: mostly edges and old jeep trails and firebreaks; dominant species are sand pine, scrub oaks, saw plametto, rusty lyonia (U98GAN01FLUS). 1984: SAND PINE SCRUB (SOUTHERNMOST ON ATLANTIC COAST), SOME DENSE; RELATIVELY UNDEVELOPED; SOME OAK SCRUB (U84TCP02FLUS).

Birds

Scientific name: *Passerina ciris*

Common name: Painted Bunting **Grank/Srank/Fed/State:** G5/S3/N/N

Natural communities in which species may be found: depression marsh, basin marsh, floodplain marsh;

Habitat comments: In general, few data exist on habitat requirements and they are not well quantified (Lowther et al. 1999). Partly open situations with scattered brush and trees, riparian thickets and brush, weedy and shrubby areas, woodland edges, yards and gardens in the southern U.S. Nests in bush or vine tangle, usually 1-2 meters up; sometimes in tree in thick Spanish moss at greater height (Harrison

Passerina ciris (cont.), # 1

1978). Western breeding populations use semi-open country with scattered trees and shrubs, riparian areas, abandoned farmland and other early successional stages (Parmalee 1959, AOU 1998).
In the Ouachitas of southwestern Arkansas, common in areas with a patchy mixture of open pasture and well-developed fencerows where farms are still small and family-run (J. Neal, pers. comm.). In southwest Missouri, 18 of 19 measured territories included predominantly old field vegetation (82 percent), with the remainder woodland (18 percent). Vegetative characteristics, however, varied widely between territories suggesting that a broad range of conditions are tolerated (Norris 1982, Norris and Elder 1982).
The southeastern coastal population uses a variety of habitats for breeding (Lanyon and Thompson 1986, Cox 1996, Meyers et al. 1999). While Meyers et al. (1999) found nesting success to be similar in beach shrub-scrub, managed pine-oak forest, and old growth oak forest, some forest-nesting individuals traveled up to 800 meters to feed in grassy or marshy openings, while shrub-scrub birds remained in core areas. Lanyon and Thompson (1986) determined that salt marsh/forest edge territories were preferred over interior forest, and concluded they were of higher quality.
Territory sizes measured include 1.13 hectares for one in Oklahoma (Parmalee 1959) and an average of 3.15 hectares on the edge of the range in Missouri (range 0.64-6.66 hectares, n = 19; Norris 1982, Norris and Elder 1982). Territories tend to be larger when there are no other territories adjoining (Norris 1982, Norris and Elder 1982), and smaller in high-quality habitat where territories are contiguous (Finke 1979, Lanyon and Thompson 1986). Males tend to return to nesting sites used in previous year (Lanyon and Thompson 1986).

Element occurrence #: 1 **EO_ID:** 30595 **Last observed:** 1990-WI **Status on site:** Likely

Directions: 1990-Winter: Yamato Scrub Natural Area, roughly 1.6 miles northwest of Boca Raton, bordered on the east by I-95, bisected by Clint-Moore Road, roughly 0.5 miles east of Congress Avenue/Clint-Moore Road intersection (U90GAB01FLUS).
Element occurrence data: 1990-Winter: 1 to 2, up to 6 migrating or overwintering adults (U90GAB01FLUS).
Management comments: 1990-Winter: Keep OVR trail users on the trail. Prohibit "cross-country" travel by motorized vehicles (U90GAB01FLUS).
General description: 1990-Winter: Open brushy areas of scrub, scrubby flatwoods, and mesic flatwoods communities dominated by scrub oak and saw palmetto (U90GAB01FLUS).

Mammals

Scientific name: *Podomys floridanus*

Common name: Florida Mouse **Grank/Srank/Fed/State:** G3/S3/N/SSC

Natural communities in which species may be found: scrub, scrubby flatwoods, sandhill;
Habitat comments: This mouse is restricted to fire-maintained, xeric, upland vegetation occurring on deep, well-drained sandy soils, including sand pine scrub, coastal scrub, scrubby flatwoods, longleaf pine-turkey oak (sandhill), south Florida slash pine-turkey oak (southern ridge sandhill), upland hammock, live oak (xeric) hammock, and drier pine flatwoods (Layne 1992). Transients sometimes are found in other habitats. The major habitats are the scrub and sandhill associations, with scrub being the primary habitat. Populations tend to be larger in sand pine scrub than they are in longleaf pine-turkey oak habitats (Layne 1978), apparently due to the greater acorn production in the former (Layne 1992). Populations decline as habitat becomes less openly vegetated, shadier, and more mesic. Habitats that support good populations of the Florida scrub jay indicate high quality *Podomys* habitat (Layne 1992). *Podomys* is generally a ground dweller. When inactive, it occupies underground burrows, often made within those of gopher tortoises. In south-central Florida, burrows were exclusively within gopher tortoise burrows (both active and inactive); within a period of 2-19 days, individuals used up to several different locations within a single burrow and used 1-3 different tortoise burrows (Layne and Jackson 1994). Young are born in nests in underground burrows.

Element occurrence #: 8 **EO_ID:** 14565 **Last observed:** 1986 **Status on site:** Likely

Directions: 1984: Yamato scrub, northwest of Boca Raton, west side I-95, bisected by Canal L-40 (currently- Clint-Moore Road) (U84TCP02FLUS).
Element occurrence data: 1986: 60 mice trapped on a portion of the site; estimated population size = 275 (U86RIC01FLUS). 1984: species is present (U84TCP02FLUS).
Management comments: 1984: Dense sand pine scrub needs to be thinned (U84TCP02FLUS).
General description: 1984: Sand pine scrub (southern most on Atlantic Coast), some dense; relatively undeveloped; some oak scrub (U84TCR02FLUS).

Natural Communities

Scientific name: *Scrub*

Common name: **Grank/Srank/Fed/State:** G2/S2/N/N

Natural communities in which species may be found: NA
Habitat comments: NA

Scrub (cont.), # 1036

Element occurrence #: 1036 **EO_ID:** 29235 **Last observed:** 2004-09-21 **Status on site:** Documented

Directions: 2004-09-21: Palm Beach County; Boca Raton; from US-1 in Boca Raton, head west on Yamato Rd. (SR-794) for .4 mile to Clint Moore Rd.; turn right and head north for .5 mile; Clint Moore Rd. bends to the west; EO is .7 mile from this bend, past the I-95 overpass (PNDTAN01FLUS).

Element occurrence data: 2004-09-21: Dense oak scrub (PNDTAN01FLUS).

Management comments:

General description: 2004-09-21: Dense oak scrub, borderline xeric hammock; south of Clint Moore Rd. has recently been burned and the composition is diferent, more open (PNDTAN01FLUS).

Element occurrence #: 4 **EO_ID:** 15151 **Last observed:** 1998-12-17 **Status on site:** Documented

Directions: 1998-12-17: Yamato scrub; Boca Raton, west side of I-95 and north and south of Clint Moore Road (PNDSCH03FLUS).

Element occurrence data: 1998-12-17: canopy: scattered large old Pinus clausa (up to 20 inches DBH), many dying and falling down; dense shrub layer dominated by silver *Serenoa repens* (5-10 ft tall) and *Quercus geminata, Quercus chapmanii*, and *Quercus myrtifolia* (10-15 ft); sparse ground cover; rare species restricted to edges because of dense shrubs; exotic *Schinus terebinthifolius* abundant along Clint Moore Road (PNDSCH03FLUS, PNDPRI03FLUS).

Management comments: Prescribed burn or mechanical thinning needed; Removal of exotic plants along Clint Moore Road and railroad (PNDPRI03FLUS).

General description: 1998-12-17: mature dense sand pine scrub on St. Lucie Sand; divided by paved Clint Moore Road; Fenced off to prevent vehicle access; still "maintains much of the original diversity" (PNDSCH03FLUS, PNDAUS01FLUS).

Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global element rank is based on an element's worldwide status; the state element rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
G#? = Tentative rank (e.g., G2?)
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3)
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
GNA = Ranking is not applicable because element is not a suitable target for conservation (e.g. as for hybrid species)
GNR = Not yet ranked (temporary)
GNRTNR = Neither the full species nor the taxonomic subgroup has yet been ranked (temporary)
GX = Believed to be extinct throughout range
GXC = Extirpated from the wild but still known from captivity/cultivation
GU = Unrankable. Due to lack of information, no rank or range can be assigned (e.g., GUT2).

FNAI STATE ELEMENT RANK

Definition parallels global element rank: substitute "S" for "G", and "in Florida" for "globally" in above global rank definitions.

FEDERAL LEGAL STATUS (U. S. Fish and Wildlife Service- USFWS)

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency. Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species which is in danger of extinction throughout all or a significant portion of its range.
LE,XN = A non-essential experimental population of a species otherwise Listed as an Endangered Species.
PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
LT = Listed as Threatened Species. Defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
LT,PDL = Species currently listed Threatened but has been proposed for delisting.
LT,PE = Species currently listed Threatened but has been proposed for a change to Endangered.
LE,PT = Species currently listed Endangered but has been proposed for a change to Threatened.
PT = Proposed for listing as Threatened Species.
C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants, Category 1. Federal agencies

have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
SAT = Threatened due to similarity of appearance to a threatened species.
SC = Species of concern. Species is not currently listed but is of management concern to USFWS.
N = Not currently listed, nor currently being considered for addition to the List of Endangered and Threatened Wildlife and Plants.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

ANIMALS: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by the Florida Fish and Wildlife Conservation Commission (FFWCC), 1 Aug 1997 , and subsequent updates.

FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
F(XN) = Federal listed as an experimental population in Florida
FT(S/A) = Federal Threatened due to similarity of appearance
ST = Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future. ST* for *Ursus americanus floridanus* (Florida black bear) indicates that this status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. ST* for *Neovison vison* pop.1 (Southern mink, South Florida population) indicates that this status applies to the Everglades population only.
SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. SSC* indicates that a species has SSC status only in selected portions of its range in Florida. SSC* for *Pandion haliaetus* (Osprey) indicates that this status applies in Monroe county only.
N = Not currently listed, nor currently being considered for listing.

PLANTS (Florida Department of Agriculture and Consumer Services- FDACS) Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://doacs.state.fl.us/pi/images/rule05b.pdf

LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.
PE = Proposed by the FDACS for listing as Endangered Plants.
LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered. LT* indicates that a species has LT status only in selected portions of its range in Florida.
PT = Proposed by the FDACS for listing as Threatened Plants.
N = Not currently listed, nor currently being considered for listing.

APPENDIX I

FLORIDA DEPARTMENT OF STATE, DIVISION OF HISTORICAL RESOURCES DOCUMENTS

FLORIDA DEPARTMENT of STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

Ms. Sandy Mann
Palm Beach County
Department of Environmental Resource Management
2300 N. Jog Road, 4th Floor
West Palm Beach, Florida 33411-2743

March 27, 2014

RE: DHR Project No. 2014-0856 / Received by DHR: March 10, 2014
Request for Land Management Plan Information for Yamato Scrub Natural Area
Palm Beach County

Dear Ms. Mann:

In accordance with this agency's responsibilities under Section 267.061 and 253.034, *Florida Statutes,* we reviewed the information in the Florida Master Site File to determine whether any historic properties are recorded in the referenced management area, and also to determine the potential for such resources which are presently unrecorded to be located within it.

Our review indicates that the Seaboard Airline Railway (8PB12917), the Lateral Canal L-40 (8PB12923), and the El Rio Canal (8PB12918), run through the subject tract.

Based on available information, it is the opinion of this agency that there is a low probability of significant, unrecorded sites being located in this tract. However, since the county has its own professional archaeologist on staff, it may be beneficial to have him investigate portions of the property that have not been subjected to a professional archaeological survey. In addition, should fortuitous finds occur within this parcel, our agency should be immediately notified. Ground disturbing activities in the immediate vicinity of artifact finds should also be halted until the area can be investigated.

We enclosed for your use a copy of Management Procedures for Archaeological and Historic Sites and Properties on State-Owned or Controlled Properties (revised March 2013). This document should be referenced where appropriate in your land management plan, and attached to it.

Division of Historical Resources
R.A. Gray Building • 500 South Bronough Street• Tallahassee, Florida 32399
850.245.6300 • 850.245.6436 (Fax) flheritage.com
Promoting Florida's History and Culture VivaFlorida.org

If you have any questions, please contact Deena Woodward, Community Assistance Consultant, by email at *Deena.Woodward@dos.myflorida.com*, or by telephone at 850.245.6333 or 800.847.7278.

Sincerely

Robert F. Bendus, Director
Division of Historical Resources
& State Historic Preservation Officer

Enclosure

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties
(revised March 2013)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, '*Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state."*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:
http://www.flheritage.com/preservation/compliance/guidelines.cfm

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at:
http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf .

* * *

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward
Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

Phone: (850) 245-6425

Toll Free: (800) 847-7278
Fax: (850) 245-6435

APPENDIX J

INTERLOCAL AGREEMENT

ARC 4/11/14

R2010 1288

INTERLOCAL AGREEMENT
BETWEEN
THE CITY OF BOCA RATON
AND
PALM BEACH COUNTY
FOR
MANAGEMENT OF THE YAMATO SCRUB NATURAL AREA

THIS INTERLOCAL AGREEMENT (this "Agreement") is made and entered into on this _____ day of AUG 17 2010, 2010, by and between the **CITY OF BOCA RATON**, a Florida municipal corporation (the "City"), and **PALM BEACH COUNTY**, a political subdivision of the State of Florida (the "County"), each one constituting a public agency as defined in Part I of Chapter 163, Florida Statutes (herein after referred to collectively as "the Parties").

WITNESSETH:

WHEREAS, the Florida Interlocal Cooperation Act of 1969 (Section 163.01, Florida Statutes) allows governmental units to enter into intergovernmental agreements to make the most efficient use of their powers by enabling them to cooperate with each other on a basis of mutual advantage; and

WHEREAS, on March 12, 1991, the voters of Palm Beach County approved a $100 million bond referendum for the acquisition of environmentally sensitive lands within the County; and

WHEREAS, on October 12, 1991 the voters of the City of Boca Raton approved a $12 million bond referendum for the acquisition of environmentally sensitive lands within the City; and

WHEREAS, certain environmentally-sensitive real property known as the Yamato Scrub Natural Area (the "Natural Area"), more particularly described in **Exhibit "A"** attached hereto and made a part hereof, is located within the corporate limits of the City of Boca Raton and this property was designated by both the County and the City as one of the high-priority sites to be acquired with funds from their respective bond referendums; and

WHEREAS, in 1991 the County and the City submitted a partnership grant application to the Board of Trustees of the Internal Improvement Trust Fund's ("BTIITF") State Conservation and Recreational Lands ("CARL") program to receive matching funds to acquire various properties then known as the Yamato Scrub, including the 10-acre Knight Investments, Inc. tract and the 206.7-acre Boca Commerce Center tract, for use as a natural area; and

WHEREAS, on February 2, 1993, the County and the City entered into an Interlocal Agreement (R93-185D) with the intent of jointly acquiring the Knight Investments, Inc. tract; and

WHEREAS, on March 1, 1994, the City and the County purchased the Knight Investments, Inc. tract; and

WHEREAS, the County and the City hold joint title to the Knight Investments, Inc. tract, with the County holding a one-third undivided interest in the tract and the City holding a two-thirds undivided interest in the tract; and

WHEREAS, on February 27, 1997, the State, County and City jointly purchased the Boca Commerce Center tract ("State-Owned Tract"), with the State holding sole title to the tract; and

WHEREAS, on February 24, 1998, the County entered into a Lease Agreement (No. 4176, R97-2143D; **Exhibit "B"**) with the State of Florida (the "Lease Agreement") to manage the State-Owned Tract of the Natural Area for a term of 50 years; and

WHEREAS, on June 5, 2001, the County and the City entered into an Interlocal Agreement (R2001-0878) for the County to manage the Natural Area with the assistance of the City, which superseded the Interlocal Agreement previously entered into by the County and the City on February 2, 1993; and

WHEREAS, on October 6, 2001, the Florida Department of Environmental Protection approved a management plan prepared by the County for the Natural Area (the "Management Plan); and

WHEREAS, the City has changed the future land use and zoning designations for the Natural Area to Conservation; and

WHEREAS, the Natural Area is of significant environmental and educational value to the City and the County, and it is in the best interests of the residents and citizens of the City, the County and the State to have the Natural Area managed by the County in cooperation with the City in order to preserve the site in its natural state with intact native Florida ecosystems for future generations; and

WHEREAS, the Parties intend to make the most efficient use of their powers by cooperatively managing the Natural Area in its natural condition for environmental purposes; and

WHEREAS, on December 14, 2009 the Florida Department of Environmental Protection approved an amendment to the Management Plan for the Natural Area (**Exhibit "C"**) to allow the construction by the City of a segment of the El Rio Shared-Use Trail (the "Trail") within the State-Owned Tract of the Natural Area to provide recreational opportunities and access to the Natural Area; and

WHEREAS, the City has obtained funding for the construction of the segment of the Trail within the Natural Area, which is more particularly depicted/described in **Exhibit "D"**, and

WHEREAS, the City and the County wish to enter into this Interlocal Agreement (the "Agreement") to establish use, management, and maintenance responsibilities for the Natural Area, including the segment of the Trail to be constructed therein; and

WHEREAS, the County's Lease Agreement with the State requires that the Management Plan be updated periodically, and the County will soon prepare an update to the Natural Area's Management Plan that was approved by the State on October 6, 2001; and

WHEREAS, this Agreement will become part of the updated Management Plan for the Natural Area; and

WHEREAS, the Parties desire to herein set forth their mutual understanding and agreement with respect to the use and management of the Natural Area; and

WHEREAS, this Agreement shall supersede in all respects that Interlocal Agreement previously entered into between the County and the City on June 5, 2001 (R-2001-0878).

NOW, THEREFORE, for and in consideration of the mutual covenants and promises contained herein and of other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

SECTION 1. RECITALS; AUTHORITY TO ENTER INTO AGREEMENT.

1.1 **Recitals.** The Parties hereto acknowledge and agree that the Recitals set forth above are true and correct, and are incorporated into this Agreement as if fully set forth herein.

1.2 **Authority.** The Parties are authorized to enter into this Agreement pursuant to Section 163.01, Florida Statutes (2009), known as the "Florida Interlocal Cooperation Act of 1969."

SECTION 2. INTENT. The County, the City, and the State cooperated in the purchase of the properties comprising the Natural Area, and the State has leased the State-Owned Tract to the County for management, with the intent of perpetually preserving, restoring and maintaining the Natural Area in its natural condition for environmental purposes. The Parties desire to set forth their mutual understanding and agreement with respect to the Parties' responsibilities to manage the Natural Area. The parties wish to set forth their intent that the Natural Area shall be perpetually maintained in its natural condition for environmental purposes and for the public's enjoyment of its environmental benefits and beauty and managed in a manner that protects ecosystems and populations of listed species that exist in Palm Beach County and preserves the

existing biological communities of the Natural Area in their natural state as examples of high-quality scrub, scrubby flatwood, pine flatwood, prairie hammock, and wetland ecosystems in Palm Beach County.

SECTION 3. TITLE. This Agreement does not alter or affect the City's, County's or State's ownership or title to property.

SECTION 4. USE OF PROPERTY. The County and the City acknowledge that the Natural Area possesses environmental value of great importance to the City and County and to the residents of and visitors to the City of Boca Raton and Palm Beach County. In order to protect the environmental value of the Natural Area, the Parties agree that the use of the Natural Area shall be perpetually restricted to environmental preservation, protection, restoration, and maintenance and to passive recreation, environmental education, and scientific research for City and County residents and visitors. The Parties agree to use their best efforts to prevent the unauthorized use of the Natural Area, any use not compatible with the management of the site as a natural area or nature preserve, or any use not provided for in the Management Plan as it may be amended.

SECTION 5. PUBLIC ACCESS; COUNTY AND CITY IMPROVEMENTS. The Parties agree that the Natural Area shall be open during daylight hours so that members of the public may have access to the Natural Area in order to observe, appreciate, and behold its environmental value. In order to provide such access, the County has designed and constructed, and shall maintain, repair and replace, a parking area and a system of accessible trails and hiking trails on portions of the Natural Area at the County's cost and expense, and the City has designed and constructed a segment of the Trail adjacent to the Knight tract and a sidewalk along the north side of Congress Avenue at the City's cost and expense. The City will design, construct and maintain a segment of the Trail on the western boundary of the State-Owned Tract as depicted in **Exhibit "D"** at the City's cost and expense.

SECTION 6. MANAGEMENT PLAN. The County shall be responsible for the preparation of an update to the Management Plan every ten years, or as required by Chapter 253.034(5), Florida Statutes. Any update to the Management Plan shall meet all requirements of the Lease Agreement attached as **Exhibit "B"**, all future amendments thereto, and applicable state statutes. The County shall provide a draft of any update to the Management Plan to the City for review and comment prior to presentation at a meeting of the County's Natural Areas Management Advisory Committee ("NAMAC"). The Parties acknowledge that any update to the Management Plan shall be subject to approval by the State of Florida or its delegate such as the BTIITF Acquisition and Restoration Council ("ARC"), the Palm Beach County Board of County Commissioners and the Boca Raton City Council.

SECTION 7. PROPERTY MANAGEMENT RESPONSIBILITIES.

7.1 Joint Responsibilities.

7.1.1 The County agrees that, in cooperation with the City, it will manage the Natural Area for habitat preservation and passive recreation, keeping the property in its natural state, except for the development and maintenance of fences, firebreaks, management accessways, public access trails, the Trail, and other public use facilities and ongoing management activities appropriate for a nature preserve, as provided for and described in the Management Plan. Long-term management of the Natural Area shall be in accordance with the Management Plan and shall include, but not be limited to, controlling nonnative and invasive vegetation, controlling nonnative and nuisance animals that adversely impact the site, monitoring listed plant and animal species, and restoring disturbed habitats through wetland and upland restoration activities and a prescribed burn program.

7.1.2 Both Parties will provide professional services, equipment, materials and supplies for ongoing site-specific management of the Natural Area, subject to annual appropriations by the County's Board of County Commissioners and the City's Council, and the Parties' ability to provide personnel time and expense. The Parties, separately or jointly, may apply for any state or federal funds available for management purposes and may minimize management costs through the involvement of volunteers.

7.1.3 Although the City is solely responsible for designing and constructing the segment of the Trail on the State-Owned Tract leased by the County, the County may jointly oversee the construction by the City and/or its contractors within the State-Owned Tract to assure that all terms of the Lease Agreement are followed. The City shall obtain County approval of the proposed location for the Trail to ensure that any listed species present are protected in place by marking or cordoning off areas containing listed species or relocating such species if necessary. The Parties agree that public use of the segment of the Trail that will lie within the Natural Area and the segment adjacent to the Natural Area south of the L-40 Canal and north of Clint Moore Road shall be restricted to the period between sunrise and sunset; therefore, no lighting shall be installed along those segments. The responsibilities of the County and the City related to the construction, management, and use of the Trail segment on the Natural Area and any physical improvements such as security and public information facilities shall be included in the next scheduled update of the Management Plan.

7.1.4 The County and the City shall ensure the safety of the public on the Trail when operating maintenance vehicles or equipment on the Trail and when conducting any prescribed burn on the Natural Area. When operating maintenance vehicles or equipment on the Trail, segments within or adjacent to the Natural Area each party shall post a caution sign at each point where the Trail enters or exits the Natural Area, to inform path users that maintenance work is in progress. Each Party shall operate maintenance vehicles and equipment on the Trail in a safe and careful manner. When conducting a prescribed burn on the Natural Area, the County and the City shall ensure that the Natural Area itself, the segment of the Trail in the

Natural Area and the segment of the Trail that lies adjacent to the Natural Area, as appropriate, are closed to public use and that appropriate warning signs are posted at each point where the Trail enters or exits the Natural Area, at the main entrance to the Natural Area, and at any public access points on the boundary of the Natural Area.

7.1.5 The Parties shall identify the Natural Area as being publicly-owned and operated as a nature preserve and a passive, natural resource-based public outdoor recreational site in all signs, literature and advertising. Both Parties shall encourage students, residents and visitors to use the Natural Area for educational and passive recreational purposes.

7.2 Responsibilities of the County.

7.2.1 The County shall comply with all requirements of the Lease Agreement, as amended, and all future amendments thereto in its management of the Natural Area.

7.2.2 The County has erected, and agrees to maintain, signs and/or monuments identifying the Natural Area as being open to the public, as having been purchased with funds from the State, County and City, and as being managed by the County, with the cooperation of the City.

7.2.3 The County has constructed, and shall repair, maintain and replace as needed, fencing, gates and signs to discourage unauthorized activities, such as the dumping of trash, off-road vehicle usage, and trespassing during hours that the Natural Area is closed to the public. The County shall maintain these fences, gates and signs, except for any fencing and gates that are the responsibility of the City as specified in Section 7.3 of this Agreement.

7.2.4 The County has constructed certain physical improvements within the Natural Area, including a parking lot, hiking and interpretive trails, educational displays (kiosks and informational signs), and a bicycle rack, and shall repair, maintain and replace such physical improvements with the exception of the Trail and physical improvements that are the responsibility of the City as specified in Section 7.3 of this Agreement. Prior to construction of any additional public use facilities or replacement of the existing facilities, the County shall seek approval from the City Council, as required by the City Code.

7.2.5 The County shall include in the next scheduled revision of the Management Plan a provision that the Trail segment to be constructed by the City within the Natural Area be designated as a paved natural area access road under the provisions of the Natural Areas Ordinance.

7.2.6 The County shall prepare and maintain kiosk displays, trail guides, fact sheets, brochures and other educational materials describing the natural resources, uses, and joint management of the Natural Area.

7.2.7 The County will coordinate the management of the Natural Area and all other natural areas acquired or managed by the County on a countywide basis to protect native ecosystems and populations of listed species throughout the county.

7.2.8 The County agrees to identify a County employee as a contact person to interact with the City in planning for and managing the Natural Area.

7.2.9 The County agrees to identify a County employee as the public contact person to coordinate group usage, scientific research and other activities that may require a special permit, and to answer public inquiries about the Natural Area.

7.3 Responsibilities of the City.

7.3.1 The City agrees to assume primary responsibility, with assistance from the Palm Beach County Sheriff's Department, for public safety and law enforcement on the Natural Area in order to help prevent vandalism, vehicular trespass, dumping, and damage to the Natural Area and its resources, and any other violation of the Natural Areas Ordinance.

7.3.2 The City agrees to assume sole responsibility for the daily opening and closing of any gates intended to provide public vehicular access to the Natural Area parking area. This responsibility may be delegated to a local resident or stewardship group if approved in writing by both the County and the City.

7.3.3 The City agrees to construct, manage and maintain the segment of the Trail located within and immediately adjacent to the western boundary of the Natural Area as depicted in **Exhibit "D"** during the term of this Agreement. This segment of the Trail shall be made of reinforced concrete, which shall be designed to support fully-loaded brush trucks for prescribed burns and other land management equipment up to a weight of 46,700 lbs. The City shall perform all maintenance and repair of the Trail and any physical improvements such as fencing, signage, or kiosks that the City provides in conjunction with the Trail. The City shall manage the public use of the Trail to prevent any damage to the Natural Area. The City agrees that the County shall be allowed to operate maintenance vehicles on the Trail as necessary to conduct management activities on the Natural Area.

7.3.4 The City agrees to pay for, install and, until establishment, maintain native vegetation adjacent to the Trail that is consistent with the adjacent native vegetation on the Natural Area, benches for seating for users of the Trail, and a temporary irrigation system to ensure the success of the plantings. The City shall obtain the County's written approval of the list of species to be planted prior to planting.

7.3.5 The City agrees to pay for, install and maintain three-rail post-and-rail fencing along the east side of the Trail to prevent unauthorized entrance to the Natural Area, trail signage, benches for seating, a walk-through structure at a designated pedestrian access point, an

educational kiosk, a bicycle rack near the management access gate on the east side of the Trail, and several farm-type gates for maintenance access at locations to be determined by the County. The pedestrian access point will be separate from and independent of the management access gate.

7.3.6 The City agrees to designate public uses of the Trail in order to ensure that it may be safely shared and enjoyed by different user groups and that the Natural Area is protected from damage. Such uses shall be consistent with the provisions of the Natural Areas Ordinance.

7.3.7 Subject to the availability of staff and equipment, and annual appropriations by the City's Council, the City agrees to assist the County in the management of the Natural Area by performing tasks including, but not limited to, assistance with volunteer stewardship activities and periodic prescribed burns.

7.3.8 The City agrees that it shall comply with the terms of the Lease Agreement attached as **Exhibit "B"** and any amendments thereto to the extent that its duties and obligations under this Agreement involve the real property identified in **Exhibit "B"**, and to refrain from taking any action that interferes with or prevents the County from performing its obligations under the Lease Agreement.

7.3.9 The City agrees to expeditiously review any draft revisions to the Management Plan, to provide any comments to the County within a reasonable time frame provided by the County, and to comply with the Management Plan and any amendments thereto. The City agrees to refrain from taking any action that interferes with or prevents the County from performing its obligations under the Management Plan and any amendments thereto.

7.3.10 The City agrees to expeditiously review, through appropriate City departments and boards, any engineering design or other plans or applications that include the Natural Area and that require approval by the City. The City further agrees to waive any municipal fees, assessments, or permit fees applicable to the Natural Area due to the construction, use or maintenance of public facilities.

7.3.11 In reviewing any proposed changes to, uses of, or activities on, real property immediately adjacent to the Natural Area, the City agrees to consider the protection of the biological communities within the Natural Area and the potential for adverse impacts to the species present.

7.3.12 The City agrees to identify a City employee as the contact person to interact with the County in planning for and managing the Natural Area.

SECTION 8. GENERAL PROVISIONS.

8.1 Notices. All notices, consent, approvals and other communications that may be or are required to be given by either the City or the County under this Agreement shall be properly given only if made in writing and delivered by (i) hand delivery, (ii) certified or registered mail, postage prepaid, return receipt requested, or (iii) facsimile with confirmation of receipt, and addressed to the County or City and their respective attorneys, as follows:

County:

Palm Beach County
Department of Environmental Resources Management
Attention: Director
2300 North Jog Road, 4th Floor
West Palm Beach, Florida 33411-2743
Telephone: (561) 233-2400
Facsimile: (561) 233-2414

With copy to:

Palm Beach County Attorney's Office
Attention: Attorney for Environmental Resources Management
301 N. Olive Avenue, Suite 601
West Palm Beach, Florida 33401
Telephone: (561) 355-2225
Facsimile: (561) 355-4398

City:

City of Boca Raton
Attention: City Manager and City Attorney
201 W. Palmetto Park Road
Boca Raton, Florida 33432-3795
Telephone: (561) 393-7703
Facsimile: (561) 367-7014

Such notices shall be deemed received: (1) if delivered by hand, on the date of delivery; (2) if sent by certified or registered mail, on the date it is received as evidenced by signature on the return receipt; or (3) if by facsimile, on the date of delivery as shown on the delivery confirmation receipt, unless such date is a weekend or holiday, in which case the facsimile shall be deemed received upon the next business day following delivery. The refusal to accept delivery shall constitute acceptance and, in such event, the date of delivery shall be the date on which delivery was refused. Any change of address or facsimile number must be made by written notice to the other Party, and such change shall be effective five (5) days following

receipt of such written notice by the other Party. If written notice, consent, approval or other communication is made as provided herein, then in the event that such notice is returned to the sender by the U.S. Postal System because of insufficient address or another reason other than refusal to accept, such notice shall be deemed to have been received by the Party to whom it was addressed on the date that such was initially placed in the U.S. Postal System by the sender.

8.2 **Default; Termination; Remedies.** Notwithstanding any other provisions of this Agreement to the contrary, the County and the City covenant and agree for themselves, their successors and assigns, that neither the County or the City will, whether by action or inaction, permit or allow the breach or violation of the provisions of this Agreement. In the event the County or City breaches or violates the provisions of this Agreement, the nonbreaching Party shall provide the breaching Party with written notice specifying the nature of the breach or violation ("Default Notice"). Following receipt of the Default Notice, the breaching Party shall diligently commence and proceed to cure such breach within thirty (30) days following receipt of the Default Notice; provided, however, if the breach or violation is of a nature that it cannot be cured within thirty (30) days, both Parties may agree that the breaching Party shall be entitled to additional reasonable time, as agreed to in writing by the nonbreaching Party, to cure the breach or violation. It is expressly provided that upon either Party's breach or violation of any of the provisions of this Agreement that extends beyond the cure period as set forth herein, the nonbreaching Party is entitled to enforce the terms and conditions set forth herein by any action available at law or in equity including, but not limited to, an action for an injunction as well as availing itself of all other legal and equitable remedies including, but not limited to, and action for money damages, or both. Either Party may terminate this Agreement for convenience if at least one hundred eight (180) days' prior written notice is provided to the other Party and the Parties mutually agree to such termination.

8.3 **Term.** This Agreement shall become effective upon execution by both Parties and shall remain in effect for a period of thirty-eight (38) years, unless sooner terminated pursuant to the terms of this Agreement. This Agreement shall expire on February 23, 2048, unless extended by an amendment executed by the Parties hereto.

8.4 **Governing Law; Venue.** This Agreement shall be governed by and construed under the laws of the State of Florida. Venue for any lawsuit filed in connection with this Agreement shall be in Palm Beach County, Florida.

8.5 **Interpretation.** The titles, captions and paragraph headings are inserted for convenience only and are in no way intended to interpret, define, limit or expand the scope or content of this Agreement or any provision hereto. This Agreement shall be construed without regard to any presumption or other rule requiring construction against the Party causing this Agreement to be drafted. In the event that any provision of this Agreement conflicts or appears to conflict, this Agreement and all exhibits and documents specifically incorporated herein by reference, shall be interpreted as a whole to resolve the inconsistency.

8.6 Nonwaiver. No waiver by the City or County of any provision herein shall be deemed to have been made unless expressed in writing and signed by such Party. No delay or omission in the exercise of any right or remedy accruing to the City or County upon any breach under this Agreement shall impair such right to remedy or be construed as a waiver of any such breach theretofore or thereafter occurring. The waiver by the City or County of any breach of any provision, covenant or condition herein stated shall not be deemed to be a waiver of any other breach, or of a subsequent breach of the same or any other provision, covenant or condition herein contained.

8.7 Severability. This Agreement is intended to be performed in accordance with, and only to the extent permitted by, applicable law. If any provision of this Agreement or the application thereof to any Party or circumstance shall, for any reason and to any extent, be invalid or unenforceable, but the extent of the invalidity or unenforceability does not destroy the basis of the agreement between the Parties as contained herein, the remainder of this Agreement shall be enforced to the greatest extent permitted by law.

8.8 Exhibits; Incorporation by Reference. The Exhibits attached to this Agreement are incorporated herein in full by this reference. The Management Plan for the Yamato Scrub approved by the State on October 6, 2001, as amended by the State on December 14, 2009, is incorporated herein in full by reference.

8.9 No Personal Liability of City or County. The City and the County agree that no individual county commissioner, council member, board member, administrative official, employee or representative of the City or County shall have any personal liability under this Agreement or under any document executed in connection with the transactions contemplated by this Agreement.

8.10 WAIVER OF TRIAL BY JURY. THE CITY AND COUNTY HEREBY IRREVOCABLY AND UNCONDITIONALLY WAIVE ANY AND ALL RIGHTS TO TRIAL BY JURY IN ANY ACTION, SUIT OR COUNTERCLAIM ARISING IN CONNECTION WITH, OUT OF, OR OTHERWISE RELATING TO THIS AGREEMENT AND ANY OTHER DOCUMENT OR INSTRUMENT NOW OR HEREAFTER EXECUTED AND DELIVERED IN CONNECTION HEREWITH.

8.11 Police/Regulatory Powers. The County and the City cannot, and hereby specifically do not, waive or relinquish any of either Party's regulatory approval or enforcement rights or obligations relating to regulations of general applicability governing the Natural Area, any improvements thereon, or any operations at the Natural Area. Nothing in this Agreement shall be deemed to create an affirmative duty of either the County or the City to abrogate its sovereign right to exercise its police powers and governmental powers by approving, disapproving or taking any other action in accordance with its zoning and land use codes, administrative codes, ordinances, or rules and regulations. In addition, nothing herein shall be considered zoning by contract.

8.12 Recording. The Parties agree that this Agreement shall be recorded in the Public Records of Palm Beach County at the County's cost and expense.

8.13 Liability. Each Party shall be liable for its own actions and negligence and, to the extent permitted by law, the County shall indemnify, defend and hold harmless the City against all actions, claims or damages arising out of the County's negligence in connection with this Agreement and any amendment hereto, and the City shall indemnify, defend and hold harmless the County against all actions, claims or damages arising out of the City's negligence in connection with this Agreement and any amendment hereto. The foregoing indemnification shall not constitute a waiver of sovereign immunity beyond the limits set forth in Section 768.28, Florida Statutes, nor shall the same be construed to constitute agreement by either Party for such other Party's negligent, willful or intentional acts or omissions.

8.14 Insurance. Without waiving the right to sovereign immunity as provided by Section 768.28, Florida Statutes, the County and the City acknowledge to be insured or self-insured for General Liability and Automobile Liability under Florida sovereign immunity statutes with coverage limits of $100,000 Per Person and $200,000 Per Occurrence; or such monetary waiver limits that may change and be set forth by the Legislature. In the event the County or City maintains third-party Commercial General Liability and Business Auto Liability in lieu of exclusive reliance on self-insurance under Section 768.28, Florida Statutes, the County and City shall agree to maintain said insurance policies at limits not less than $500,000 combined single limit for bodily injury or property damage. The County and the City agree to maintain or to be insured for Worker's Compensation & Employer's Liability insurance in accordance with Chapter 440, Florida Statutes. When requested, either Party shall provide an affidavit or Certificate of Insurance evidencing insurance, self-insurance and/or sovereign immunity status, which the other Party agrees to recognize as acceptable for the above-mentioned coverages. Compliance with the foregoing requirements shall not relieve the County or the City of its liability and obligations under this Agreement or any amendments hereto. The Parties further agree that nothing contained herein shall be construed or interpreted as: (1) denying to either Party any remedy or defense available to such Party under the Laws of the State of Florida or any political subdivision thereof; (2) the consent of the State of Florida, the Parties, or their agents and agencies to be sued; or (3) a waiver of sovereign immunity of the State of Florida or its agents and agencies or any political subdivisions thereof beyond the waiver provided in Section 768.28, Florida Statutes.

8.15 Enforcement Costs. Any costs or expenses (including reasonable attorney's fees) associated with the enforcement of the terms and/or conditions of this Agreement shall be borne by the respective Parties, provided, however, that this clause pertains only to the Parties to this Agreement.

8.16 Remedies. No remedy herein conferred upon any Party is intended to be exclusive of any other remedy, and each and every such remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing at law or in equity

or by statute or otherwise. No single or partial exercise by any Party of any right, power, or remedy hereunder shall preclude any other or further exercise thereof.

8.17 Records. The Parties shall maintain, in accordance with generally-accepted governmental auditing standards, all financial and nonfinancial records and reports directly or indirectly related to the negotiation or performance of this Agreement, including supporting documentation for any service rates, expenses, research or reports, for five (5) years. The Parties shall have the right to examine, in accordance with generally-accepted governmental auditing standards, all records directly or indirectly related to this Agreement. In the event that the Parties should become involved in a legal dispute with a third party arising from performance under this Agreement, the Parties shall extend the period of maintenance for all records relating to the Agreement until the final disposition of the legal dispute, and all such records shall be made readily available to the Parties.

8.18 Public Access to Records. The Parties shall allow public access to all documents and materials related to this Agreement in accordance with Chapter 119, Florida Statutes, and related statutes. Should either Party assert any exemption to the requirements of Chapter 119 and related statutes, the burden of establishing such exemption, by way of injunctive relief or other relief provided by law, shall be upon the Party asserting the exemption.

8.19 Public Entity Crime. The Parties acknowledge and agree that neither Party, nor any of its suppliers, subcontractors, or consultants who shall perform work pursuant to this Agreement, has been convicted of a public entity crime or that a period of time longer than thirty-six (36) months has passed since such person was placed on the convicted vendor list. This Agreement shall be subject to termination if either Party fails to comply with the mandates of Section 287.133, Florida Statutes.

8.20 Compliance with Laws. The Parties and their employees, subcontractors, or assigns, if any, shall comply with all applicable federal, state, and local laws and regulations relating to performance of this Agreement.

8.21 Nondiscrimination. No Party hereto shall discriminate against any individual because of that individual's race, color, religion, sex, national origin, age, disability, gender identity or expression, or marital status with respect to any activity occurring pursuant to this Agreement.

8.22 Assignment. This Agreement shall not be assigned in whole or in part without the prior written consent of both Parties. Any assignment made in whole or in part without the prior written consent of the other Party hereto shall be void and without legal effect.

8.23 Relationship of the Parties. Neither Party shall be considered an employee or agent of the other Party. Nothing in this Agreement shall be construed to establish any relationship other than that of independent contractor between the Parties and their respective employees, agents, subcontractors, or assigns during or after the performance of this

Agreement. Both Parties are free to enter into contracts with other parties for similar services. Notwithstanding any provision of this Agreement to the contrary, the County assumes no duty to supervise the City in its performance of this Agreement, and the City shall remain solely liable for compliance with all safety requirements and for the safety of any employees or agents of the City during the performance of this Agreement.

8.24 **Funding Contingency.** The obligations and duties set forth in this Agreement are contingent upon the availability of funding appropriated by the County's Board of County Commissioners and the City's Council, and this Agreement does not obligate future appropriations for the obligations and duties created herein.

8.25 **Survival.** The provisions of paragraphs 8.10, 8.15, 8.17, and 8.18 shall survive the expiration or termination of this Agreement. In addition, any covenants, provisions, or conditions set forth in this Agreement that bind the Parties after the expiration or termination of this Agreement shall survive the expiration or termination of this Agreement.

8.26 **Beneficiaries of Agreement.** It is the intent and understanding that this Agreement is solely for the benefit of the County and the City. No person or entity other than the City or the County shall have any rights or privileges under this Agreement in any capacity whatsoever, either as a third-party beneficiary or otherwise.

8.27 **Entire Agreement; Amendment.** This Agreement, which includes all Exhibits annexed hereto and all documents specifically incorporated by reference, contains the final, complete and entire Agreement of the Parties hereto with respect to the matters contained herein, and no prior agreement or understanding pertaining to any of the matters connected with this transaction shall be effective for any purpose. This Agreement may only be amended by an agreement in writing signed by the Parties hereto.

(Remainder of this page intentionally left blank)

IN WITNESS WHEREOF, the City and County have caused this Agreement to be executed as of the day and year first above written.

CITY:

ATTEST:

BY: Susan D. Haylon
City Clerk

DATE: July 14, 2010

(Municipal Seal)

CITY OF BOCA RATON, FLORIDA,
a Florida Municipal Corporation

BY: Susan Whelchel
Mayor

DATE: July 14, 2010

Approved as to legal form
And sufficiency:

BY: Diana M
City Attorney

DATE: July 14, 2010

R2010 1288

COUNTY:

Date of Execution by County:

AUG 17 2010, 2010

ATTEST:
SHARON R. BOCK
CLERK AND COMPTROLLER

BY: _____
Deputy Clerk

(SEAL)

PALM BEACH COUNTY, a Political Subdivision of the State of Florida

BY: _____
Burt Aaronson, Chair
Steven L. Abrams

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:

BY: _____
Assistant County Attorney

APPROVED AS TO TERMS AND CONDITIONS:

BY: _____
Richard E. Walesky, Director
Environmental Resources Management

EXHIBIT "A"

Legal Description of Natural Area Property

Knight Investments, Inc. Tract

EXHIBIT A

Legal Description of

The Property

All of Parcel 2 of the Plat of Congress Corporate Center as recorded in Plat Book 56, Page 123 of the public records of Palm Beach County, Florida.

AC1/14

Exhibit "A"

Real Property Legal Description

PARCEL 1:

A parcel of land lying in Section 6, Township 47 South, Range 43 East, more particularly described as follows;

COMMENCE at the Northeast corner of said Section 6;

THENCE S 89° 54' 06" W along the North line of said Section 6 a distance of 614.51 feet to the West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E along the said West right-of-way line a distance of 1759.10 feet to a point on the Southerly right-of-way line of Clint Moore Road, as recorded in Plat Book 4, Page 240 of the Public Records of Palm Beach County, Florida and the POINT OF BEGINNING;

THENCE continue S 00° 10' 37" E along the last described course, a distance of 241.74 feet to the point of curvature of a circular curve concave to the West;

THENCE Southerly and Westerly along the arc of said curve, along said Westerly right-of-way line, having a radius of 3365.62 feet, having a central angle of 37° 54' 31", an arc distance of 2226.80 feet;

THENCE N 00° 25' 10" E a distance of 1155.17 feet;

THENCE S 89° 49' 16" W a distance of 696.92 feet;

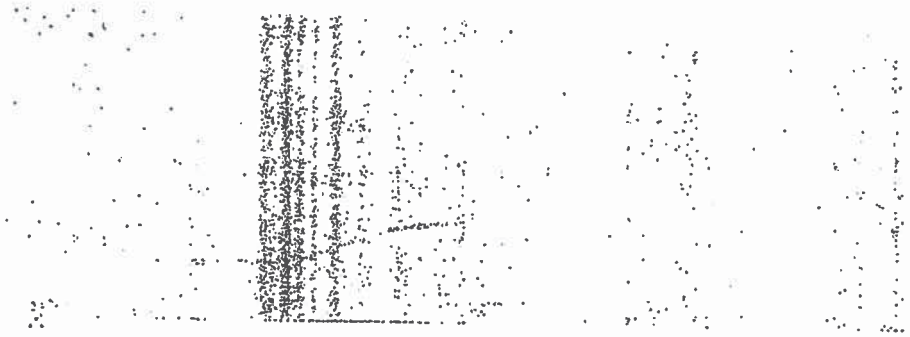
THENCE N 00° 09' 05" W a distance of 2247.67 feet to a point on the arc of a circular curve concave to the South, whose radius point bears S 16° 02' 55" W from the last described point, said point also being on the said Southerly right-of-way line of Clint Moore Road;

THENCE Easterly and Southerly along the arc of said curve, having a radius of 1649.86 feet, a central angle of 18° 54' 24", an arc distance of 610.42 feet;

THENCE S 34° 57' 19" W, radial to the last described curve, a distance of 38.38 feet;

THENCE S 45° 01' 58" E a distance of 247.52 feet;

THENCE S 48° 15' 37" E a distance of 932.56 feet to the POINT OF BEGINNING; (the last four described courses being coincident with the said Southerly right-of-way of Clint Moore Road).



PARCEL 2: OR 9674 Pg 818

A portion of Section 6, Township 47 South, Range 43 East, Palm Beach County, Florida and a portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, more particularly described as follows:

COMMENCING at the Northeast corner of said Section 6;

THENCE S 89° 54' 06" W, along the North line of said Section 6, a distance of 614.51 feet to the POINT OF BEGINNING, said point being on the West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E, along said right-of-way a distance of 100.00 feet;

THENCE S 89° 54' 06" W, parallel with and 100.00 feet South of, as measured at right angles to the North line of said Section 6, a distance of 300.00 feet;

THENCE S 00° 10' 37" E, a distance of 300 feet;

THENCE N 89° 54' 06" E, a distance of 300 feet to the said West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E, along said right-of-way, a distance of 1023.13 feet to a point on the Northerly right-of-way line of Clint Moore Road as recorded in Road Plat Book 4, Page 240 of the Public Records of Palm Beach County, Florida;

THENCE N 48° 15' 37" W a distance of 552.03 feet;

THENCE N 53° 15' 52" W a distance of 428.49 feet;

THENCE S 34° 57' 19" W a distance of 41.71 feet to a point on the arc of a circular curve concave to the Southwest, whose radius point bears S 34° 57' 19" W, from the last described point;

THENCE Northerly and Westerly along the arc of said curve, having a radius of 1969.86 feet; a central angle of 19° 55' 05", an arc distance of 684.79 feet (the last four described courses being coincident with said Northerly right-of-way line of Clint Moore Road);

THENCE N 00° 09' 05" W a distance of 543.21 feet to a point on the North line of said Section 6;

THENCE S 89° 54' 06" W along said Section line a distance of 669.43 feet to the North One-Quarter (N 1/4) corner of Section 6;

THENCE continue S 89° 54' 06" W along the last described course, a distance of 606.10 feet to the East top of bank of the L.W.D.D. E-4 Canal as laid out and in use;

THENCE N 03° 39' 32" W a distance of 228.12 feet;

THENCE N 08° 11' 09" W a distance of 812.33 feet;

THENCE N 01° 30' 02" E a distance of 287.91 feet;

THENCE N 07° 29' 43" E a distance of 740.15 feet to a point on the Easterly right-of-way line of Congress Avenue, as recorded in Road Plat Book 4, Page 143, of the Public Records of Palm Beach County, Florida, (the last four described courses being coincident with the east top of bank of L.W.D.D. E-4 Canal);

THENCE N 47° 33' 13" E along said Easterly right-of-way, a distance of 2229.65 feet to the point of curvature of a circular curve concave to the Northwest;

THENCE Northerly, along said right-of-way line of Congress Avenue, along the arc of said curve having a radius of 1969.06 feet, a central angle of 13° 51' 51", an arc distance of 476.66 feet;

THENCE S 89° 56' 10" E a distance of 727.76 feet to the aforesaid West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E along said right-of-way, a distance of 3913.66 feet to the POINT OF BEGINNING.

LESS AND EXCEPTING THE FOLLOWING DESCRIBED PROPERTY:

A) All of BOCA COMMERCE CENTER PHASE I, according to the Plat thereof, as recorded in Plat Book 46, Page 44 of the Public Records of Palm Beach County, Florida.

B) All of that portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, lying Northeasterly and Easterly of the Westerly right-of-way line of N.W. 6th Avenue, BOCA COMMERCE CENTER PHASE I, according to the Plat thereof, as Recorded in Plat Book 46, Page 44 of the Public Records of Palm Beach County, Florida.

C) All that portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, lying Easterly of the Westerly right-of-way line of N.W. 6th Avenue, BOCA COMMERCE CENTER PHASE 2, according to the Plat thereof, as Recorded in Plat Book 60, Page 27, of the Public Records of Palm Beach County, Florida.

D) All of "KRAFT FOODSERVICE, INC. DISTRIBUTION FACILITY" according to the Plat thereof, as Recorded in Plat Book 75, Pages 182 and 183 of the Public Records of Palm Beach County, Florida.

E) A parcel of land lying in Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, more particularly described as follows:

COMMENCE at the Southeast corner of said Section 31;

THENCE S 89° 54' 06" W along the South line of said Section 31, a distance of 614.51 feet to a point on the said West right-of-way line of the SEABOARD COASTLINE RAILROAD;

THENCE N 00° 10' 37" W, along said right-of-way, a distance of 3913.66 feet;

THENCE N 89° 56' 10" W, a distance of 727.76 feet to a point on the arc of a circular curve

concave to the Northwest whose radius point bears N 56° 18' 38" W from the last described point, said point being on the Easterly right-of-way line of Congress Avenue, as Recorded in Plat Book 4, Page 143 of the Public Records of Palm Beach County, Florida.

THENCE Southerly and Westerly along said right-of-way line, along the arc of said curve, having a radius of 1969.86 feet, a central angle of 13° 51' 51", an arc distance of 476.66 feet to the point of tangency;

THENCE S 47° 33' 13" W along said right-a-way line, a distance of 568.55 feet to the POINT OF BEGINNING;

THENCE S 42° 26' 47" E along the Southwesterly line of "Tract B-B" of the plat of Boca Commerce Center Phase I as Recorded in Plat Book 46, Pages 44 through 46 inclusive of the Public Records of Palm Beach County, Florida, a distance of 65.00 feet;

THENCE N 47° 33' 13" E along the Southeasterly line of said "Tract B-B" a distance of 55.00 feet to the Westerly right-of-way of N.W. 6th Avenue as shown on said plat;

THENCE S 42° 26' 47" E along said right-of-way a distance of 98.00 feet to the point of curvature of a circular curve concave to the Southwest;

THENCE Southerly and Southeasterly along said right-of-way, along the arc of said curve having a radius of 907.00 feet, a central angle of 32° 04' 12", an arc distance of 507.67 feet to a point on a non-tangent line;

THENCE N 86° 10' 31" W a distance of 892.00 feet, to a point on the said Easterly right-of-way line of Congress Avenue;

THENCE N 47° 33' 13" E along said East right-of-way line, a distance of 700.00 feet to the POINT OF BEGINNING;

F) A parcel of land, being the North 100.00 feet of Section 6, Township 47 South, Range 43 East, Palm Beach County, Florida; less and except the West 2054.69 feet of said North 100.00 feet of Section 6, also, less and except the East 614.51 feet of said North 100.00 feet of Section 6.

G) That portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, being the Easterly 40 feet of the following described parcel:

COMMENCING at the Southwest corner of said Section 31;

THENCE N 89° 54' 06" E along the South line of said Section 31, a distance of 2,062.14 feet to the POINT OF BEGINNING;

THENCE N 03° 39' 32" W a distance of 225.07 feet;

THENCE N 08° 11' 09" W a distance of 813.72 feet;

THENCE N 01° 38' 02" E a distance of 292.02 feet;

THENCE N 07° 29' 43" E a distance of 706.01 feet to a point on the South right-of-way line of Congress Avenue (120-feet in width);

THENCE N 47° 33' 13" E along the South right-of-way line of Congress Avenue a distance of 108.77 feet;

THENCE S 07° 29' 43" W a distance of 785.67 feet;

THENCE S 01° 38' 02" W a distance of 282.43 feet;

THENCE S 08° 11' 09" E a distance of 810.47 feet;

THENCE S 03° 39' 32" E a distance of 232.19 feet to a point on the South line of said Section 31;

THENCE S 89° 54' 06" W along said South Section line a distance of 70.14 feet to the POINT OF BEGINNING;

EXHIBIT "B"

Lease Agreement

OAL2

BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND OF THE
STATE OF FLORIDA

LEASE AGREEMENT

YAMATO SCRUB

Lease No. 4176

THIS LEASE AGREEMENT, made and entered into this 24th day of Febauary 1998, by and between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA hereinafter referred to as "LESSOR," and PALM BEACH COUNTY, FLORIDA, hereinafter referred to as "LESSEE."

LESSOR, for and in consideration of mutual covenants and agreements hereinafter contained, does hereby lease to said LESSEE, the lands described in paragraph 2 below, together with the improvements thereon, and subject to the following terms and conditions:

1. DELEGATIONS OF AUTHORITY: LESSOR'S responsibilities and obligations herein shall be exercised by the Division of State Lands, Department of Environmental Protection.

2. DESCRIPTION OF PREMISES: The property subject to this lease, is situated in the County of Palm Beach, State of Florida and is more particularly described in Exhibit "A" attached hereto and hereinafter called the "leased premises".

3. TERM: The term of this lease shall be for a period of 50 years commencing on Febauary 24, 1998 and ending on Febauary 23, 2048 unless sooner terminated pursuant to the provisions of this lease.

4. PURPOSE: LESSEE shall manage the leased premises only for the conservation and protection of natural and historical resources and for resource based public outdoor activities and education which are compatible with the conservation and protection of these public lands, as set forth in subsection 259.032(11), Florida Statutes, along with other related uses

necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 8 of this lease.

5. QUIET ENJOYMENT AND RIGHT OF USE: LESSEE shall have the right of ingress and egress to, from and upon the leased premises for all purposes necessary to the full quiet enjoyment by said LESSEE of the rights conveyed herein.

6. UNAUTHORIZED USE: LESSEE shall, through its agents and employees, prevent the unauthorized use of the leased premises or any use thereof not in conformity with this lease.

7. ASSIGNMENT: This lease shall not be assigned in whole or in part without the prior written consent of LESSOR, which consent shall not be unreasonably withheld. Any assignment made either in whole or in part without the prior written consent of LESSOR shall be void and without legal effect.

8. MANAGEMENT PLAN: LESSEE shall prepare and submit a Management Plan for the leased premises in accordance with subsection 18-2.021(4), Florida Administrative Code, within twelve months of the effective date of this lease. The Management Plan shall be submitted to LESSOR for approval through the Division of State Lands, Department of Environmental Protection. The leased premises shall not be developed or physically altered in any way other than what is necessary for security and maintenance of the leased premises without the prior written approval of LESSOR until the Management Plan is approved. LESSEE shall provide LESSOR with an opportunity to participate in all phases of preparing and developing the Management Plan for the leased premises. The Management Plan shall be submitted to LESSOR in draft form for review and comments within ten months of the effective date of this lease. LESSEE shall give LESSOR reasonable notice of the application for and receipt of any state, federal or local permits as well as any public hearings or meetings relating to the development or use of the leased premises. LESSEE shall not proceed with development of said

leased premises including, but not limited to, funding, permit applications, design or building contracts until the Management Plan required herein has been submitted and approved. Any financial commitments made by LESSEE which are not in compliance with the terms of this lease shall be done at LESSEE'S own risk. The Management Plan shall emphasize the original management concept as approved by LESSOR at the time of acquisition which established the primary public purpose for which the leased premises were acquired. The approved Management Plan shall provide the basic guidance for all management activities and shall be reviewed jointly by LESSEE and LESSOR at least every five years. LESSEE shall not use or alter the leased premises except as provided for in the approved Management Plan without the prior written approval of LESSOR. The Management Plan prepared under this lease shall identify management strategies for exotic species, if present. The introduction of exotic species is prohibited, except when specifically authorized by the approved Management Plan.

9. EASEMENTS: All easements including, but not limited to, utility easements are expressly prohibited without the prior written approval of LESSOR. Any easement not approved in writing by LESSOR shall be void and without legal effect.

10. SUBLEASES: This lease is for the purposes specified herein and subleases of any nature are prohibited without the prior written approval of LESSOR, which approval shall not be unreasonably withheld. Any sublease not approved in writing by LESSOR shall be void and without legal effect.

11. RIGHT OF INSPECTION: LESSOR or its duly authorized agents, representatives or employees shall have the right to reasonably inspect the leased premises and the works and operations of LESSEE in any matter pertaining to this lease.

12. PLACEMENT AND REMOVAL OF IMPROVEMENTS: All buildings, structures and improvements shall be constructed in accordance

with plans that are in accordance with the approved Management Plan or shall require the prior written approval of LESSOR as to purpose, location and design which approval shall not be unreasonably withheld. Further, no trees, other than non-native species, shall be removed or major land alterations done without the prior written approval of LESSOR. Removable equipment and removable improvements placed on the leased premises by LESSEE which do not become a permanent part of the leased premises will remain the property of LESSEE and may be removed by LESSEE before or upon termination of this lease.

13. INSURANCE REQUIREMENTS: During the term of this lease LESSEE shall procure and maintain policies of fire, extended risk, and liability insurance coverage. The extended risk and fire insurance coverage shall be in an amount equal to the full insurable replacement value of any improvements or fixtures located on the leased premises. The liability insurance coverage shall be in amounts not less than $100,000 per person and $200,000 per incident or occurrence for personal injury, death, and property damage on the leased premises. Such policies of insurance shall name LESSOR, the State of Florida and LESSEE as co-insureds. LESSEE shall submit written evidence of having procured all insurance policies required herein prior to the effective date of this lease and shall submit annually thereafter, written evidence of maintaining such insurance to the Bureau of Land Management Services, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000. LESSEE shall purchase all policies of insurance from a financially-responsible insurer duly authorized to do business in the State of Florida. Any certificate of self-insurance shall be issued or approved by the Insurance Commissioner, State of Florida. The certificate of self-insurance shall provide for casualty and liability coverage. LESSEE shall immediately notify LESSOR and

the insurer of any erection or removal of any building or other improvement on the leased premises and any changes affecting the value of any improvements and shall request the insurer to make adequate changes in the coverage to reflect the changes in value. LESSEE shall be financially responsible for any loss due to failure to obtain adequate insurance coverage, and the failure to maintain such policies or certificate in the amounts set forth shall constitute a breach of this lease.

14. LIABILITY: Each party is responsible for all personal injury and property damage attributable to the negligent acts or omissions of that party and the officers, employees and agents thereof. Nothing herein shall be construed as an indemnity or a waiver of sovereign immunity enjoyed by any party hereto, as provided in Section 768.28, Florida Statutes, as amended from time to time, or any other law providing limitations on claims.

15. PAYMENT OF TAXES AND ASSESSMENTS: LESSEE shall assume full responsibility for and shall pay all taxes, assessments, liens or other similar liabilities that accrue to the leased premises or to the improvements thereon arising after this lease commences including any and all ad valorem taxes and drainage and special assessments or personal property taxes of every kind and all construction or materialman's liens which may be hereafter lawfully assessed and levied against the leased premises subsequent to the effective date of this lease. In no event shall the LESSEE be held liable for such liabilities which arose prior to the effective date of this lease.

16. NO WAIVER OF BREACH: The failure of LESSOR to insist in any one or more instances upon strict performance of any one or more of the covenants, terms and conditions of this lease shall not be construed as a waiver of such covenants, terms or conditions, but the same shall continue in full force and effect, and no waiver of LESSOR of any of the provisions hereof shall in any event be

deemed to have been made unless the waiver is set forth in writing, signed by LESSOR.

17. TIME: Time is expressly declared to be of the essence of this lease.

18. NON-DISCRIMINATION: LESSEE shall not discriminate against any individual because of that individual's race, color, religion, sex, national origin, age, handicap, or marital status with respect to any activity occurring within the leased premises or upon lands adjacent to and used as an adjunct of the leased premises.

19. UTILITY FEES: LESSEE shall be responsible for the payment of all charges for the furnishing of gas, electricity, water and other public utilities to the leased premises and for having the utilities turned off when the leased premises are surrendered.

20. MINERAL RIGHTS: This lease does not cover petroleum or petroleum products or minerals and does not give the right to LESSEE to drill for or develop the same.

21. RIGHT OF AUDIT: LESSEE shall make available to LESSOR all financial and other records relating to this lease, and LESSOR shall have the right to audit such records at any reasonable time during the term of this lease. This right shall be continuous until this lease expires or is terminated. This lease may be terminated by LESSOR should LESSEE fail to allow public access to all documents, papers, letters or other materials made or received in conjunction with this lease, pursuant to the provisions of Chapter 119, Florida Statutes.

22. CONDITION OF PREMISES: LESSOR assumes no liability or obligation to LESSEE with reference to the conditions of the leased premises. The leased premises herein are leased by LESSOR to LESSEE in an "as is" condition, with LESSOR assuming no responsibility for the care, repair, maintenance or improvement of the leased premises for the benefit of LESSEE.

23. COMPLIANCE WITH LAWS: LESSEE agrees that this lease is contingent upon and subject to LESSEE obtaining all applicable permits and complying with all applicable permits, regulations, ordinances, rules, and laws of the State of Florida or the United States or of any political subdivision or agency of either.

24. NOTICE: All notices given under this lease shall be in writing and shall be served by certified mail including, but not limited to, notice of any violation served pursuant to Section 253.04, Florida Statutes, to the last address of the party to whom notice is to be given, as designated by such party in writing. LESSOR and LESSEE hereby designate their address as follows:

LESSOR: Department of Environmental Protection
Division of State Lands
Bureau of Land Management Services, M.S. 130
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

LESSEE: Palm Beach County Board of County Commissioners
Department of Environmental Resources Management
3323 Belvedere Road, BLDG. 502
West Palm Beach, Florida 33406

25. BREACH OF COVENANTS, TERMS, OR CONDITIONS: Should LESSEE breach any of the covenants, terms, or conditions of this lease, LESSOR shall give written notice to LESSEE to remedy such breach within sixty days of such notice. In the event LESSEE fails to remedy the breach to the satisfaction of LESSOR within sixty days of receipt of written notice, LESSOR may either terminate this lease and recover from LESSEE all damages LESSOR may incur by reason of the breach including, but not limited to, the cost of recovering the leased premises and attorneys' fees or maintain this lease in full force and effect and exercise all rights and remedies herein conferred upon LESSOR.

26. DAMAGE TO THE PREMISES: (a) LESSEE shall not do, or suffer to be done, in, on or upon the leased premises or as affecting said leased premises or adjacent properties, any act which may result in damage or depreciation of value to the leased premises

or adjacent properties, or any part thereof. (b) LESSEE shall not generate, store, produce, place, treat, release or discharge any contaminants, pollutants, or pollution, including, but not limited to, hazardous or toxic substances, chemicals or other agents on, into, or from the leased premises or any adjacent lands or waters in any manner not permitted by law. For the purposes of this lease, "hazardous substances" shall mean and include those elements or compounds defined in 42 USC Section 9601 or which are contained in the list of hazardous substances adopted by the United States Environmental Protection Agency (EPA) and the list of toxic pollutants designated by the United States Congress or the EPA or defined by any other federal, state or local statute, law, ordinance, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning any hazardous, toxic or dangerous waste, substance, material, pollutant or contaminant. "Pollutants" and "pollution" shall mean those products or substances defined in Chapters 376 and 403, Florida Statutes, and the rules promulgated thereunder, all as amended or updated from time to time. In the event of LESSEE's failure to comply with this paragraph, LESSEE shall, at its sole cost and expense, promptly commence and diligently pursue any legally required closure, investigation, assessment, cleanup, decontamination, remediation, restoration and monitoring of (1) the leased premises, and (2) all off-site ground and surface waters and lands affected by LESSEE's such failure to comply, as may be necessary to bring the leased premises and affected off-site waters and lands into full compliance with all applicable federal, state or local statutes, laws, ordinances, codes, rules, regulations, orders and decrees, and to restore the damaged property to the condition existing immediately prior to the occurrence which caused the damage. LESSEE'S obligations set forth in this paragraph shall survive the termination or

expiration of this lease. This paragraph shall not be construed as a limitation upon LESSEE'S obligations as set forth in paragraph 14 of this lease, nor upon any other obligations or responsibilities of LESSEE as set forth herein. Nothing herein shall relieve LESSEE of any responsibility or liability prescribed by law for fines, penalties and damages levied by governmental agencies, and the cost of cleaning up any contamination caused directly or indirectly by LESSEE'S activities or facilities. Upon discovery of a release of a hazardous substance or pollutant, or any other violation of local, state or federal law, ordinance, code, rule, regulation, order or decree relating to the generation, storage, production, placement, treatment, release or discharge of any contaminant, LESSEE shall report such violation to all applicable governmental agencies having jurisdiction, and to LESSOR, all within the reporting periods of the applicable governmental agencies. This paragraph shall not be deemed to apply to any conditions existing prior to the effective date of this lease.

27. ENVIRONMENTAL AUDIT: At LESSOR'S discretion, LESSEE shall provide LESSOR with a current Phase I environmental site assessment conducted in accordance with the Department of Environmental Protection, Division of State Land's standards prior to termination of this lease, and if necessary a Phase II environmental site assessment.

28. SURRENDER OF PREMISES: Upon termination or expiration of this lease, LESSEE shall surrender the leased premises to LESSOR. In the event no further use of the leased premises or any part thereof is needed, LESSEE shall give written notification to the Bureau of Land Management Services, Division of State Lands, Department of Environmental Protection, Mail Station 130, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000, at least six months prior to the release of any or all of the leased premises. Notification shall include a legal description, this

lease number, and an explanation of the release. The release shall only be valid if approved by LESSOR through the execution of a release of lease instrument with the same formality as this lease. Upon release of all or any part of the leased premises or upon termination or expiration of this lease, all permanent/capital improvements, including both physical structures and modifications to the leased premises, shall become the property of LESSOR, unless LESSOR gives written notice to LESSEE to remove any or all such improvements at the expense of LESSEE. The decision to retain any improvements upon termination of this lease shall be at LESSOR'S sole discretion. Prior to surrender of all or any part of the leased premises a representative of the Division of State Lands, Department of Environmental Protection, shall perform an on-site inspection and the keys to any building on the leased premises shall be turned over to the Division.

29. BEST MANAGEMENT PRACTICES: LESSEE shall implement applicable Best Management Practices for all activities conducted under this lease in compliance with Paragraph 18-2.018(2)(h), Florida Administrative Code, which have been selected, developed, or approved by LESSOR, LESSEE or other land managing agencies for the protection and enhancement of the leased premises.

30. PUBLIC LANDS ARTHROPOD CONTROL PLAN: LESSEE shall identify and subsequently designate to the respective arthropod control district or districts within one year of the effective date of this lease all of the environmentally sensitive and biologically highly productive lands contained within the leased premises, in accordance with Section 388.4111, Florida Statutes and Chapter 5E-13, Florida Administrative Code, for the purpose of obtaining a public lands arthropod control plan for such lands.

31. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the leased premises is held by LESSOR. LESSEE shall not do or permit anything to be done which purports to create a lien or

encumbrance of any nature against the real property contained in the leased premises including, but not limited to, mortgages or construction liens against the leased premises or against any interest of LESSOR therein.

32. PARTIAL INVALIDITY: If any term, covenant, condition or provision of this lease shall be ruled by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

33. ARCHAEOLOGICAL AND HISTORIC SITES: Execution of this lease in no way affects any of the parties' obligations pursuant to Chapter 267, Florida Statutes. The collection of artifacts or the disturbance of archaeological and historic sites on state-owned lands is prohibited unless prior authorization has been obtained from the Department of State, Division of Historical Resources. The Management Plan prepared pursuant to Chapters 18-2 and 18-4, Florida Administrative Code, shall be reviewed by the Division of Historical Resources to insure that adequate measures have been planned to locate, identify, protect and preserve the archaeological and historic sites and properties on the leased premises.

34. SOVEREIGNTY SUBMERGED LANDS: This lease does not authorize the use of any lands located waterward of the mean or ordinary high water line of any lake, river, stream, creek, bay, estuary, or other water body or the waters or the air space thereabove.

35. ENTIRE UNDERSTANDING: This lease sets forth the entire understanding between the parties and shall only be amended with the prior written approval of LESSOR.

36. MAINTENANCE OF IMPROVEMENTS: LESSEE shall maintain the real property contained within the leased premises and the improvements located thereon, in a state of good condition, working order and repair including, but not limited to, keeping the leased premises free of trash or litter, meeting all building

and safety codes for the location situated, maintaining the planned improvements as set forth in the approved Management Plan and maintaining any and all existing roads, canals, ditches, culverts, risers and the like in as good condition as the same may be on the effective date of this lease, reasonable wear and tear excepted; provided, however, that any removal, closure, etc, of the above improvements shall be acceptable when the proposed activity is consistent with the goals of conservation, protection, enhancement, or safety of the natural and historical resources within the leased premises and with the approved Management Plan.

37 GOVERNING LAW: This lease shall be governed by and interpreted according to the laws of the State of Florida.

38. SIGNS: LESSEE shall ensure that the area is identified as being publicly owned and operated as a public facility in all signs, literature and advertising. If federal grants or funds are used by LESSEE for any project on the leased premises LESSEE shall erect signs identifying the leased premises as a federally assisted project.

39. SECTION CAPTIONS: Articles, subsections and other captions contained in this lease are for reference purposes only and are in no way intended to describe, interpret, define or limit the scope, extent or intent of this lease or any provisions thereof.

40. ADMINISTRATIVE FEE: LESSEE shall pay LESSOR an annual administrative fee of $300. The initial annual administrative fee shall be payable within thirty days from the date of execution of this lease agreement and shall be prorated based on the number of months or fraction thereof remaining in the fiscal year of execution. For purposes of this lease agreement, the fiscal year shall be the period extending from July 1 to June 30. Each annual payment thereafter shall be due and payable on July 1 of each subsequent year.

IN WITNESS WHEREOF, the parties have caused this lease to be executed on the day and year first above written.

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

Witness

By: _____ (SEAL)
CHIEF, BUREAU OF LAND MANAGEMENT SERVICES, DIVISION OF STATE LANDS, DEPARTMENT OF ENVIRONMENTAL PROTECTION

Print/Type Witness Name

Witness

"LESSOR"

Print/Type Witness Name

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 24th day of February 1998, by Daniel T. Crabb, as Chief, Bureau of Land Management Services, Division of State Lands, Department of Environmental Protection, as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, who is personally known to me.

Notary Public, State of Florida

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
PATRICIA TOLODAY
COMMISSION NUMBER
CC545665
MY COMMISSION EXPIRES
APR. 18,2000

Print/Type Notary Name

Commission Number:

Commission Expires:

Approved as to Form and Legality

By: _____
DEP Attorney

R97 2143D DEC 16 1997

PALM BEACH COUNTY, FLORIDA,
BY ITS BOARD OF COUNTY
COMMISSIONERS

Karen Claerbout
Witness

Karen Claerbout
Print/Type Witness Name

Joan Haverly
Witness

Joan Haverly
Print/Type Witness Name

By: _____
Burt Aaronson

Title: Chairman

DOROTHY H. WILKEN, CLERK
Board of County Commissioners
By Carla Zafra
DEPUTY CLERK

"LESSEE"

"OFFICIAL SEAL"

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY

By: _____
County Attorney

ATTEST:

By: _____
Print/Type Name

Title: _____

STATE OF FLORIDA
COUNTY OF PALM BEACH

The foregoing instrument was acknowledged before me this 16th day of December 1997, by Burt Aaronson, as Board of County Commissioners of Palm Beach County, Florida, who is personally known to me.

_____
Notary Public, State of Florida

(SEAL)

VILLA OSWALT
COMMISSION # CC 364437
EXPIRES MAY 6, 1998
BONDED THRU
ATLANTIC BONDING CO., INC

_____
Type Notary Name

Commission Number:

Commission Expires:

THIS INSTRUMENT PREPARED BY:

Jeffrey Watkin
Thomson Murraro Razook & Hart, P.A.
One Southeast Third Avenue
17th Floor
Miami, Florida 33131

Tim + Beasley
J 6013 NW 23rd
BR 33456

FEB-27-1997 11:25am 97-071028
ORB 9674 Ps 814
Con 17,500,000.00 Doc

WARRANTY DEED

THIS INDENTURE, made as of this 27 day of February, 1997 by Boca Commerce Center Associates, a Florida general partnership ("Grantor"), whose address is 551 N.W. 77th Street, Boca Raton, Florida 33487, in favor of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida ("Grantee"), whose address is c/o Florida Department of Environmental Protection, Division of State Lands, 3900 Commonwealth Boulevard, Mail Station 115, Tallahassee, Florida 32399-3000.

NOW THEREFORE, Grantor, for and in consideration of Ten Dollars and other good and valuable consideration paid to Grantor by Grantee, the receipt and sufficiency of which are hereby acknowledged, hereby grants, bargains and sells to Grantee, its successors and assigns, all of its right, title and interest in and to the real property situated in Palm Beach County, Florida more particularly described on Exhibit "A" attached hereto, SUBJECT TO easements, restrictions, limitations and conditions of record, if any now existing, but any such interests that may have been terminated are not hereby re-imposed.

Grantor covenants it has good right and lawful authority to sell and convey the Property, and hereby fully warrants the title to the Property and will defend the same against the lawful claims of all persons whomsoever.

The benefits and obligations hereunder shall inure to and be binding upon the successors and assigns of the respective parties hereto.

THIS CONVEYANCE IS EXEMPT FROM FLORIDA DOCUMENTARY STAMP TAX PURSUANT TO THE UNITED STATES BANKRUPTCY CODE 11 U.S.C. §1146(C) AND FLORIDA ADMINISTRATIVE CODE §12B-4.054(31.). ACCORDINGLY, NO DOCUMENTARY STAMP TAX IS DUE AT THE TIME OF THE RECORDING OF THIS DEED IN THE PUBLIC RECORDS OF PALM BEACH COUNTY, FLORIDA.

IN WITNESS WHEREOF, Grantor has caused these presents to be executed in its name, by its duly authorized general partners as of the day and year first above written.

Witnesses:

Boca Commerce Center Associates

By: Boca-K Associates, Ltd., General Partner

By: Koad, Inc., General Partner

By: Frank Egger - Vice-President

Name:

STATE OF FLORIDA)
)
COUNTY OF DADE)

The foregoing instrument was acknowledged before me this 19th day of February, 1997, by Frank Egger, as Vice-President of Koad, Inc., a Florida corporation, as general partner of Boca-K Associates, Ltd, a Florida limited partnership, as a general partner of Boca Commerce Center Associates, a Florida general partnership, on behalf of the corporation and as an act of the partnerships. He ✓ (a) is personally known to me, or ____ (b) has produced _____ as identification.

My commission expires:

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
ANA COSCULLUELA
COMMISSION NUMBER
CC314628
MY COMMISSION EXP.
SEPT 24,1997

Notary Public - State of Florida

Name:

[Seal]

APPROVED AS TO FORM AND LEGALITY
By:
DEP Attorney
Date: 9-16-97

Witnesses:

Name:

Name:

Boca Commerce Center Associates

By: Bocacos Inc., General Partner

By:
Hannjorg Hereth - President

STATE OF FLORIDA)
)
COUNTY OF DADE)

The foregoing instrument was acknowledged before me this 19th day of February, 1997, by Hannjorg Hereth, as President of Bocacos Inc., a Delaware corporation, as a general partner of Boca Commerce Center Associates, a Florida general partnership, on behalf of the corporation and as an act of the partnership. He ✓ (a) is personally known to me, or ____ (b) has produced _____ as identification.

My commission expires:

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
ANA COSCULLUELA
COMMISSION NUMBER
CC314628
MY COMMISSION EXP.
SEPT 24,1997

Notary Public - State of Florida

[Seal]

Exhibit "A"

Real Property Legal Description

PARCEL 1:

A parcel of land lying in Section 6, Township 47 South, Range 43 East, more particularly described as follows:

COMMENCE at the Northeast corner of said Section 6;

THENCE S 89° 54' 06" W along the North line of said Section 6 a distance of 614.51 feet to the West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E along the said West right-of-way line a distance of 1759.10 feet to a point on the Southerly right-of-way line of Clint Moore Road, as recorded in Plat Book 4, Page 240 of the Public Records of Palm Beach County, Florida and the POINT OF BEGINNING;

THENCE continue S 00° 10' 37" E along the last described course, a distance of 241.74 feet to the point of curvature of a circular curve concave to the West;

THENCE Southerly and Westerly along the arc of said curve, along said Westerly right-of-way line, having a radius of 3365.62 feet, having a central angle of 37° 54' 31", an arc distance of 2226.80 feet;

THENCE N 00° 25' 10" E a distance of 1155.17 feet;

THENCE S 89° 49' 15" W a distance of 696.92 feet;

THENCE N 00° 09' 05" W a distance of 2247.67 feet to a point on the arc of a circular curve concave to the South, whose radius point bears S 16° 02' 55" W from the last described point, said point also being on the said Southerly right-of-way line of Clint Moore Road;

THENCE Easterly and Southerly along the arc of said curve, having a radius of 1849.86 feet, a central angle of 18° 54' 24", an arc distance of 610.42 feet;

THENCE S 34° 57' 19" W, radial to the last described curve, a distance of 38.38 feet;

THENCE S 45° 01' 58" E a distance of 247.52 feet;

THENCE S 48° 15' 37" E a distance of 932.56 feet to the POINT OF BEGINNING; (the last four described courses being coincident with the said Southerly right-of-way of Clint Moore Road).

PARCEL 2:

A portion of Section 6, Township 47 South, Range 43 East, Palm Beach County, Florida and a portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, more particularly described as follows:

COMMENCING at the Northeast corner of said Section 6;

THENCE S 89° 54' 06" W, along the North line of said Section 6, a distance of 614.51 feet to the POINT OF BEGINNING, said point being on the West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E, along said right-of-way a distance of 100.00 feet;

THENCE S 89° 54' 06" W, parallel with and 100.00 feet South of, as measured at right angles to the North line of said Section 6, a distance of 300.00 feet;

THENCE S 00° 10' 37" E, a distance of 300 feet;

THENCE N 89° 54' 06" E, a distance of 300 feet to the said West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E, along said right-of-way, a distance of 1023.13 feet to a point on the Northerly right-of-way line of Clint Moore Road as recorded in Road Plat Book 4, Page 240 of the Public Records of Palm Beach County, Florida;

THENCE N 48° 15' 37" W a distance of 552.03 feet;

THENCE N 53° 15' 52" W a distance of 428.49 feet;

THENCE S 34° 57' 19" W a distance of 41.71 feet to a point on the arc of a circular curve concave to the Southwest, whose radius point bears S 34° 57' 19" W, from the last described point;

THENCE Northerly and Westerly along the arc of said curve, having a radius of 1969.86 feet; a central angle of 19° 55' 05", an arc distance of 684.79 feet (the last four described courses being coincident with said Northerly right-of-way line of Clint Moore Road);

THENCE N 00° 09' 05" W a distance of 543.21 feet to a point on the North line of said Section 6;

THENCE S 89° 54' 06" W along said Section line a distance of 669.43 feet to the North One-Quarter (N 1/4) corner of Section 6;

THENCE continue S 89° 54' 06" W along the last described course, a distance of 606.10 feet to the East top of bank of the L.W.D.D. E-4 Canal as laid out and in use;

THENCE N 03° 39' 32" W a distance of 228.12 feet;

THENCE N 08° 11' 09" W a distance of 812.33 feet;

THENCE N 01° 38' 02" E a distance of 287.91 feet;

THENCE N 07° 29' 43" E a distance of 740.15 feet to a point on the Easterly right-of-way line of Congress Avenue, as recorded in Road Plat Book 4, Page 143, of the Public Records of Palm Beach County, Florida, (the last four described courses being coincident with the east top of bank of L.W.D.D. E-4 Canal);

THENCE N 47° 33' 13" E along said Easterly right-of-way, a distance of 2229.65 feet to the point of curvature of a circular curve concave to the Northwest;

THENCE Northerly, along said right-of-way line of Congress Avenue, along the arc of said curve having a radius of 1969.86 feet, a central angle of 13° 51' 51", an arc distance of 476.66 feet;

THENCE S 89° 56' 10" E a distance of 727.76 feet to the aforesaid West right-of-way line of the Seaboard Coastline Railroad;

THENCE S 00° 10' 37" E along said right-of-way, a distance of 3913.66 feet to the POINT OF BEGINNING.

LESS AND EXCEPTING THE FOLLOWING DESCRIBED PROPERTY:

A) All of BOCA COMMERCE CENTER PHASE I, according to the Plat thereof, as recorded in Plat Book 46, Page 44 of the Public Records of Palm Beach County, Florida.

B) All of that portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, lying Northeasterly and Easterly of the Westerly right-of-way line of N.W. 6th Avenue, BOCA COMMERCE CENTER PHASE I, according to the Plat thereof, as Recorded in Plat Book 46, Page 44 of the Public Records of Palm Beach County, Florida.

C) All that portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, lying Easterly of the Westerly right-of-way line of N.W. 6th Avenue, BOCA COMMERCE CENTER PHASE 2, according to the Plat thereof, as Recorded in Plat Book 60, Page 27, of the Public Records of Palm Beach County, Florida.

D) All of "KRAFT FOODSERVICE, INC. DISTRIBUTION FACILITY" according to the Plat thereof, as Recorded in Plat Book 75, Pages 182 and 183 of the Public Records of Palm Beach County, Florida.

E) A parcel of land lying in Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, more particularly described as follows:

COMMENCE at the Southeast corner of said Section 31;

THENCE S 89° 54' 06" W along the South line of said Section 31, a distance of 614.51 feet to a point on the said West right-of-way line of the SEABOARD COASTLINE RAILROAD;

THENCE N 00° 10' 37" W, along said right-of-way, a distance of 3913.66 feet;

THENCE N 89° 56' 10" W, a distance of 727.76 feet to a point on the arc of a circular curve

concave to the Northwest whose radius point bears N 56° 18' 38" W from the last described point, said point being on the Easterly right-of-way line of Congress Avenue, as Recorded in Plat Book 4, Page 143 of the Public Records of Palm Beach County, Florida.

THENCE Southerly and Westerly along said right-of-way line, along the arc of said curve, having a radius of 1969.86 feet, a central angle of 13° 51' 51", an arc distance of 476.66 feet to the point of tangency;

THENCE S 47° 33' 13" W along said right-a-way line, a distance of 568.55 feet to the POINT OF BEGINNING;

THENCE S 42° 26' 47" E along the Southwesterly line of "Tract B-B" of the plat of Boca Commerce Center Phase I as Recorded in Plat Book 46, Pages 44 through 46 inclusive of the Public Records of Palm Beach County, Florida, a distance of 65.00 feet;

THENCE N 47° 33' 13" E along the Southeasterly line of said "Tract B-B" a distance of 55.00 feet to the Westerly right-of-way of N.W. 6th Avenue as shown on said plat;

THENCE S 42° 26' 47" E along said right-of-way a distance of 98.00 feet to the point of curvature of a circular curve concave to the Southwest;

THENCE Southerly and Southeasterly along said right-of-way, along the arc of said curve having a radius of 907.00 feet, a central angle of 32° 04' 12", an arc distance of 507.67 feet to a point on a non-tangent line;

THENCE N 86° 10' 31" W a distance of 892.00 feet, to a point on the said Easterly right-of-way line of Congress Avenue;

THENCE N 47° 33' 13" E along said East right-of-way line, a distance of 700.00 feet to the POINT OF BEGINNING;

F) A parcel of land, being the North 100.00 feet of Section 6, Township 47 South, Range 43 East, Palm Beach County, Florida; less and except the West 2054.69 feet of said North 100.00 feet of Section 6, also, less and except the East 614.51 feet of said North 100.00 feet of Section 6.

G) That portion of Section 31, Township 46 South, Range 43 East, Palm Beach County, Florida, being the Easterly 40 feet of the following described parcel:

COMMENCING at the Southwest corner of said Section 31;

THENCE N 89° 54' 06" E along the South line of said Section 31, a distance of 2,062.14 feet to the POINT OF BEGINNING;

THENCE N 03° 39' 32" W a distance of 225.07 feet;

THENCE N 08° 11' 09" W a distance of 813.72 feet;

THENCE N 01° 38' 02" E a distance of 292.02 feet;

THENCE N 07° 29' 43" E a distance of 706.01 feet to a point on the South right-of-way line of Congress Avenue (120-feet in width);

THENCE N 47° 33' 13" E along the South right-of-way line of Congress Avenue a distance of 108.77 feet;

THENCE S 07° 29' 43" W a distance of 785.67 feet;

THENCE S 01° 38' 02" W a distance of 282.43 feet;

THENCE S 08° 11' 09" E a distance of 810.47 feet;

THENCE S 03° 39' 32" E a distance of 232.19 feet to a point on the South line of said Section 31;

THENCE S 89° 54' 06" W along said South Section line a distance of 70.14 feet to the POINT OF BEGINNING;

EXHIBIT "C"

State Approval Letter for El Rio Shared-Use Trail Segment

Florida Department of
Environmental Protection
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

ENV. RES. MGMT.
Env. Enh. & Restoration
Natural Resources Stewardship
Resources Protection
Mosquito Control
Finance & Support Services
Director
Deputy Director
Other

December 14, 2009

Mr. Richard E. Walesky, Director
Environmental Resources Management
2300 North Jog Road
West Palm Beach, Fl. 33411-2743

RE: Yamato Scrub Natural Area Management Plan Amendment. Lease Number 4176

Dear Mr. Walesky:

The Division of State Lands (DSL), Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approves the Yamato Scrub Natural Area management plan amendment for the multiuse pathway as submitted in November of 2009.

Approval of this management plan amendment does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

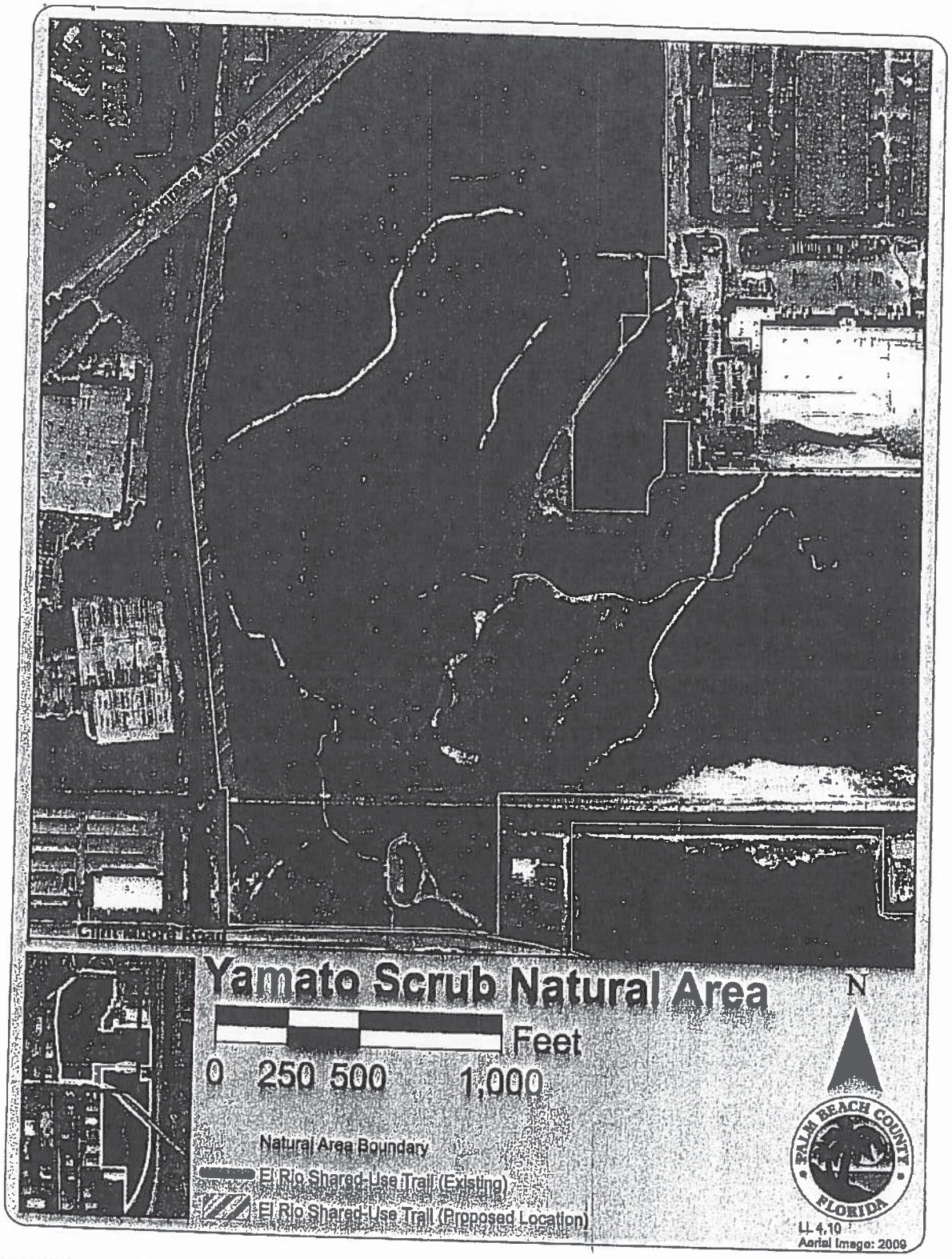
Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

RECEIVED
DEC 18 2009
ENVIRONMENTAL RESOURCES MANAGEMENT

"More Protection, Less Process"
www.dep.state.fl.us

EXHIBIT "D"

Description of El Rio Shared-Use Trail Segment



STATE OF FLORIDA, COUNTY OF PALM BEACH
I, SHARON R. BOCK, Clerk and Comptroller
certify this to be a true and correct copy of the original
filed in my office on August 17, 2010
dated at West Palm Beach, FL on 9/14/10
By: Diane Brown
Deputy Clerk

ARC 4/11/14

APPENDIX K

FIRE MANAGEMENT PLAN

APPENDIX K

FIRE MANAGEMENT PLAN FOR YAMATO SCRUB

This plan contains generalized procedures that will apply to all burns conducted on the Yamato Scrub Natural Area. Specific information for each burn management unit will be gathered and reviewed prior to preparing the prescribed burn plan for each unit. A prescribed burn plan will not be finalized until a few days before a unit is planned to be burned in order to incorporate the current conditions on that unit. Therefore, specific prescribed burn plans will not be included in this fire management plan. Prescribed burn units are delineated by management units; the locations of individual management units can be seen on Figure 5 of the natural area's management plan. Additional information on fire management can be found in Section 4.5.1 of the management plan.

G.1 GOALS

The goals of the burn program at the Yamato Scrub Natural Area are to reintroduce fire to the scrub, scrubby flatwoods, mesic flatwoods and basin marsh habitats at a frequency and intensity that will maintain these habitats in their various seral stages within the natural area. The fires are to be allowed to burn in a natural "patchy" fashion to most closely mimic natural fire patterns. The resulting patchwork of burned and unburned stands within a management unit will produce a mosaic of vegetation at various stages of maturity, thereby maximizing diversity within and among communities. This will provide habitat for individual species which typically use, or may even be restricted to, communities in a particular state of maturity. Additional goals to be achieved by the reintroduction of fire include: 1) providing viable wildlife habitat and ensuring the long-term existence of listed plants and animals that utilize the Yamato Scrub Natural Area; 2) assisting in the control of invasive non-native vegetation; and 3) reducing fuel loads that could lead to catastrophic wildfires. Individual goals for the success of each burn are established as part of the burn prescription and will generally include a desired percentage of consumption of ground cover and understory, and a percentage of acceptable crown scorch and consumption.

G.2 GENERAL PROCEDURES

The Incident Command System will be used on prescribed burns. This system enables communications to be guided through a chain-of-command process and permits the prescribed burn to be conducted in an organized manner. This system is used by Boca Raton Fire Rescue, Palm Beach County Fire-Rescue and the Florida Department of Agriculture and Consumer Services' Florida Forest Service (FFS), which enables these agencies to be easily brought into the prescribed burn operation when their assistance is requested.

G.2.1 Personnel

The Palm Beach County Department of Environmental Resources Management (ERM) will provide the personnel necessary to conduct prescribed burns. Additional personnel assistance may be sought from the Boca Raton Fire Rescue, Palm Beach County Fire-Rescue, Palm Beach County Parks and Recreation Department, and FFS. Each burn team will be headed by an Incident Commander (IC), who will conduct the prescribed burn. The IC must have received certification to conduct prescribed burns from FFS. The Fire Management Coordinator (FMC) will prepare the prescribed burn plan, conduct pre-burn coordination with other agencies and homeowners' groups, make crew assignments and coordinate communications. The IC will obtain a burn permit, oversee the burn, and make final decisions and adjustments during the burn.

The other positions on the burn crew may include division supervisor, ignition crew, safety officer, weather officer, information officer, holding crew, and spotters. The division supervisor is in charge of directing crews under his or her command in accordance with instructions from the IC, reporting all changes in burn or crew status to the IC, and has overall responsibility for the geographical area or role the division controls. The safety officer briefs the burn team on safety hazards and precautions, monitors the safety conditions throughout the burn, and reports any potentially hazardous conditions and injuries to the IC. The weather officer monitors weather conditions, records periodic weather observations, and makes periodic weather status reports to the IC. The holding crew drives and operates mechanized equipment such as a truck- or tractor-mounted water tank and pump. Spotters monitor the prescribed burn to see that it remains within management unit boundaries, and otherwise assist the division supervisor. The information officer coordinates with media representatives.

G.2.2 Equipment

ERM will provide the equipment resources necessary to conduct prescribed burns. Additional equipment resources may be sought from Boca Raton Fire Rescue, Palm Beach County Fire-Rescue, Palm Beach County Parks and Recreation Department and FFS. All burn crew members shall wear Nomex fire-resistant outer clothing, leather lace-up boots with non-slip soles, leather gloves, a plastic firefighter's helmet, eye protection, an emergency fire shelter, and personal drinking water. Round-point shovels, fire rakes, and fire flaps will be available for crew members' use. Other hand tools available to the burn crew will be drip torches for igniting the fire and a belt weather kit for weather monitoring. All crew members have been issued radios for communication during burns. Crew members assigned to work together may use one radio due to feedback issues when multiple radios are used in close proximity. A first-aid kit and other safety equipment shall be kept in each crew vehicle.

Mobile equipment such as 4-wheel-drive pickup trucks (equipped with water tanks, pumps, and hoses) and all-terrain vehicles will be used, as well as other fire-suppression equipment such as tractor-mounted plow units, pumper trucks, and engines that may be supplied by FFS, Palm

Beach County Parks and Recreation Department, Boca Raton Fire Rescue and Palm Beach County Fire-Rescue. FFS personnel with tractor-mounted plows and pumper trucks are stationed at the Loxahatchee Work Center on "D" Road in Loxahatchee Groves. They will be notified of any prescribed burn so that they can respond if more aggressive fire suppression measures are necessary.

G.2.3 Pre-burn Checklist

- Prepare specific burn prescription plan for each management unit
- Establish perimeter firebreaks
- Inspect management unit to identify potentially hazardous areas or species protection needs
- Assemble and inspect necessary equipment
- Make burn crew assignments
- Prepare maps and materials for pre-burn briefing
- Notify local agencies and officials and arrange for backup assistance
- Notify adjacent landowners and residents
- Monitor weather forecasts as the proposed burn day approaches
- Contact local law-enforcement authorities for assistance in directing traffic, if necessary

G.2.4 Burn Day Checklist

- Obtain burn authorization from FFS
- Mobilize burn crew and equipment
- Notify adjacent landowners and others who have requested prior notification of the burn
- Post burn notices on site and on adjacent highways and other roads, as needed
- Obtain spot weather forecast for management unit and other information necessary to determine that burn parameters will comply with prescription
- Coordinate on-site advance notice of burn with Palm Beach County Sheriff's Office; request deputies to use their vehicle-mounted megaphones to notify visitors of the need to leave the site because of the pending burn
- Conduct pre-burn safety and ignition plan briefing for burn team
- Monitor weather forecasts and record on-site weather data
- Conduct test burn
- Conduct main burn if prescription conditions are met
- Mop-up and extinguish hot spots

G.2.5 Post-burn Checklist

- Monitor burn for rekindling of fire
- Remove burn notice signs
- Conduct post-burn review and burn crew input session
- Evaluate burn for success in meeting environmental objectives

- Evaluate burn plan and burn crew for areas of improvement
- Continue to evaluate burn at regular intervals
- Respond to follow-up contacts/requests for news media information

G.2.6 Forms

Standardized burn prescription forms are used as the basis of the burn prescription. Examples of the various forms used are attached as Exhibit 1. Other forms that may be used may vary slightly in design, but in general deal with incident objectives, organizational structure of the burn team, and a medical plan for the burn. Examples are supplied as Exhibits 2, 3, and 4, respectively.

G.3 FIRE MANAGEMENT PRESCRIPTION PREPARATION

Prior to conducting a prescribed burn within the Yamato Scrub Natural Area management units, a prescription for the burn will be developed. This prescription is a carefully prepared document that provides the strategy for introducing fire to the natural area in the safest manner possible. Preparation of the fire prescription for each burn involves the consideration of several factors, which may include, but are not limited to:

- Size and location of the management unit
- Boundaries of the management unit
- Topography and soils of the management unit
- Habitat type, density, and crown height
- Fuel load
- Presence of listed plant and animal species
- Smoke-sensitive areas (e.g., hospitals, schools, nursing homes, highways and roads, and other areas as determined by following the guidance for smoke management published in A Guide for Prescribed Fire in Southern Forests, pages 29-32, a publication of the National Wildfire Coordinating Group, February 1989)
- Dispersion Index
- Drought Index
- Temperature
- Wind speed
- Relative humidity
- Fine fuel moisture
- Staffing and equipment availability
- Time to complete the burn
- Specific objectives of the burn

PALM BEACH COUNTY
DEPARTMENT OF ENVIRONMENTAL RESOURCES MANAGEMENT

BURN UNIT#	**QUAD NAME**:	**SECTION**	**TOWNSHIP**	**RANGE**	**BURN UNIT SIZE (ac)**:
DATE PREPARED:	**NWS LATITUDE**:		**NWS LONGITUDE**:		**AUTHORIZATION #**
	FFS LATITUDE:		**FFS LONGITUDE**:		**NWS FWF ZONE:**
PRESCRIPTION BY:		**ADDRESS & PHONE**: 2300 N. Jog Rd; WPB, FL 561-233-2400			
CERTIFIED BURNER:					

A. PREVIOUS BURNS	**Date**:	**Fire Type**:	**Results**:
B. STAND DESCRIPTION –			
1. Overstory Type:	**Fuel Model**:	**Density**:	**Height to Crown**:
2. Understory Type:	**Understory Height:**	**Overstory Percent Cover:**	
3. Dead Fuel Type:	**Stand Age**:	**Estimated Tons per Acre:**	
4. Soil Type and Topography			
C. PURPOSE(S) OF BURN:			
D. SPECIFIC OBJECTIVES:			

E. PRE-BURN FACTORS	
1. Passed Smoke Screening Test?	
2. Special Precautions:	
3. Notification List:	
4. Applicable Regulations:	
5. Smoke-Sensitive Areas & Critical Targets (see map):	
6. # of Crew Needed:	**7. Equipment Needed:**

F. WEATHER FACTORS	**Desired Range**	**Predicted**	**Actual**
1. 20' Wind Speed (mph)			
2. Wind Direction			
3. Minimum Mixing Height (feet)			
4. Dispersion Index			
5. Minimum Relative Humidity (%)			
6. Maximum Temperature (F)			
7. Fine Fuel Moisture (%)			
8. Days Since ½" Rain			
9. County Average Drought Index			

G. FIRE BEHAVIOR	**Desired Range**	**Actual Range**
1. Firing Methods		
2. Months to Burn		
3. Time to Begin Ignition		
4. # of Hours to Complete		
5. Average Flame Lengths (feet)		
6. Rate of Spread (feet/hour)		
7. Fire Line Intensity (btu)		

H. POST BURN EVALUATIONS	**Immediately After Burn**	**Future**
1. Objectives Met?		**Date:**
2. Escapes (indicate on map)		**Insect or Disease Damage:**
3. Spotting		
4. Smoke Problems		
5. % Understory Veg Consumed		
6. % Crown Scorch		
Live Crown Consumed		**Tree Mortality:**
8. Adverse Publicity		
9. Remarks		

I. SIGNATURE OF CERTIFIED BURNER AND DATE:

INCIDENT OBJECTIVES ICS 202	1. INCIDENT NAME	2. DATE PREPARED
3. **OPERATIONAL PERIOD** (DATE/TIME)		
4. **OBJECTIVES** 1)		
2)		
3)		
5. **Command Structure**		
6. **Communications**		
7. **CONTINGENCY:**		
8. **MOP-UP:**		

9. GENERAL SAFETY MESSAGES 1) Watch for heat exhaustion; drink plenty of fluids.		
2) Know your safety zones and escape routes, refer to the map.		
3) Do not alter burn techniques/strategies without direction from the IC.		
202 ICS	7. PREPARED BY:	8. APPROVED BY (INCIDENT COMMANDER)

EXHIBIT 3

MEDICAL PLAN

Yamato Scrub Natural Area

This medivac protocol will be used in the event an injury occurs during a prescribed burn on Yamato Scrub Natural Area.

Boca Raton Fire Rescue (BRFR) will provide medical staff to act as the medical unit and provide first responder medical assistance if assisting with the burn.

1. Report injuries to the IC via command organizational structure.

2. First burn team member to assist will insure injured is in a safe location.

3. Personnel on scene to provide first aid.

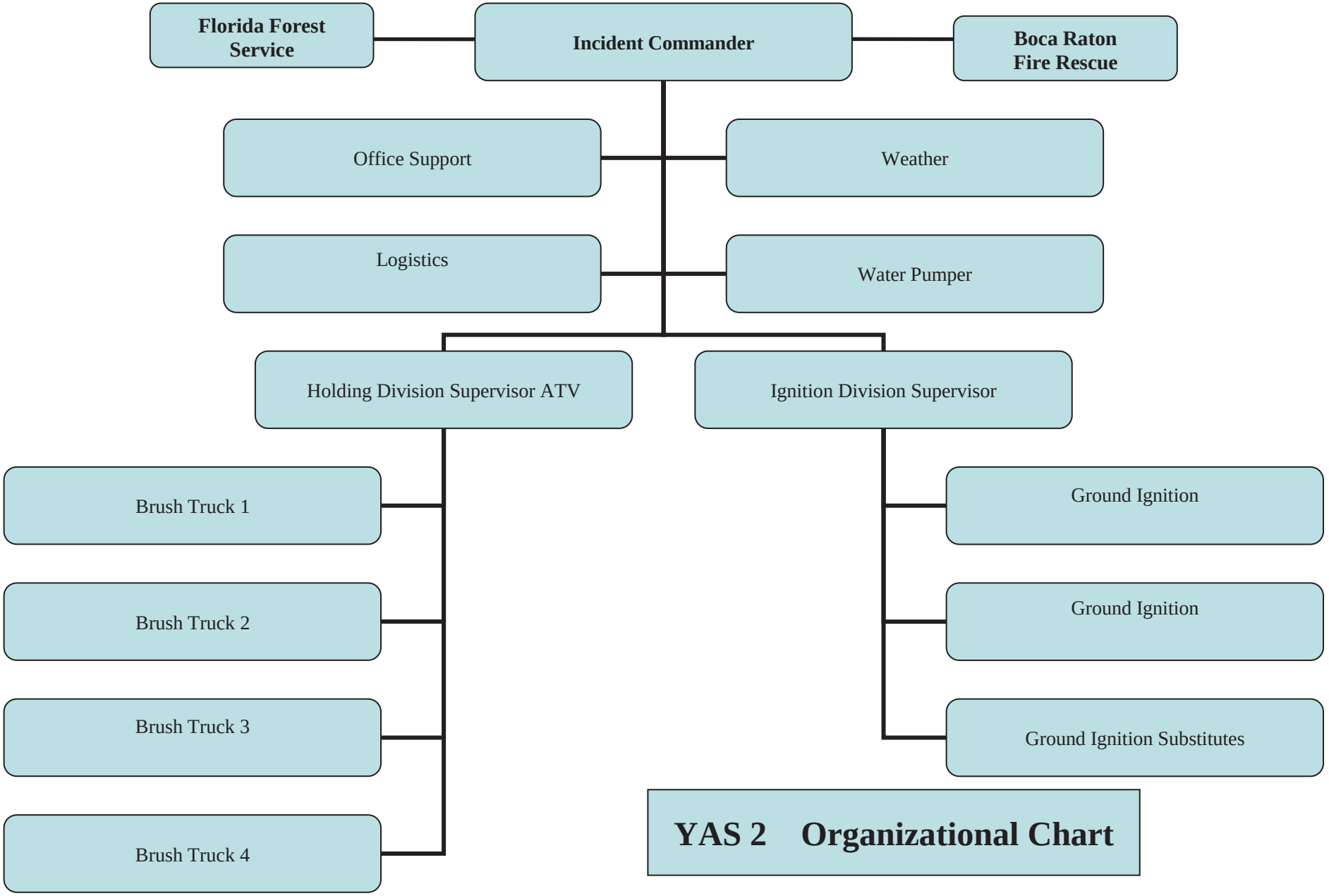
4. IC to determine status of injured.

5. If IC determines the injured requires medical assistance, BR Fire Rescue shall respond. If BRFR is not assisting with the burn, they will be advised what type of vehicle will be needed to get to injured (4-wheel drive, etc.), and what vehicle(s) we have available should they need help getting to the injured.

6. If the condition of the injured requires transport to a hospital by helicopter, Fire Rescue on the scene will make the request.

7. If the IC determines that the injured will only need transport to an emergency room by our personnel then transportation will be decided by the IC at that time. The injured will be taken to the Delray Community Hospital Emergency Room.

8. If the injury does not require emergency room treatment, then worker's compensation procedures will be followed; that is, the injured will be taken to the Occupational Health Clinic, and a Supervisors Incident Report must be filled out by the employee's immediate supervisor.

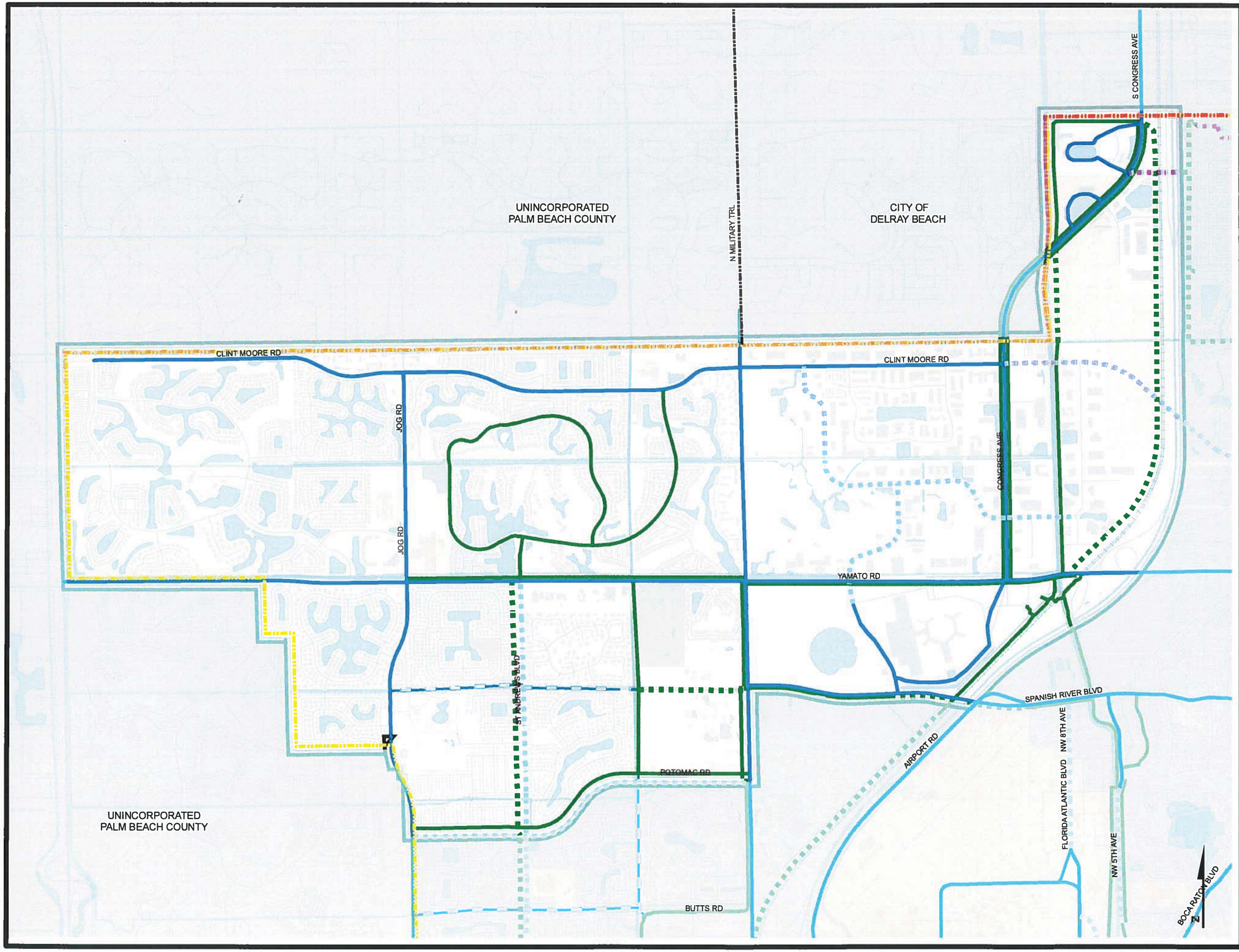


YAS 2 Organizational Chart

APPENDIX L

BOCA RATON BICYCLE SUITABILITY MAP – NORTHWEST PLANNING AREA

ARC 4/11/14



CITY OF BOCA RATON
DEVELOPMENT SERVICES

2010 COMPREHENSIVE PLAN

LEGEND

- City Limits
- Planning Area

Multi-use Trails
- Exisiting
- Proposed
- Potential

Bike Lanes
- Existing
- Proposed

Map Features
- Park
- Preserves
- Schools

Miles
0 0.25 0.5

Map: Bicycle Network
Date: 03/18/10
Data Source: Dev Ser GIS

NORTHWEST PLANNING AREA BICYCLE NETWORK

L-1

ARC 4/11/14

APPENDIX M

APPROVAL OF EL RIO TRAIL ON STATE-OWNED PORTION OF NATURAL AREA

Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

December 14, 2009

Mr. Richard E. Walesky, Director
Environmental Resources Management
2300 North Jog Road
West Palm Beach, Fl. 33411-2743

RE: Yamato Scrub Natural Area Management Plan Amendment. Lease Number 4176

Dear Mr. Walesky:

The Division of State Lands (DSL), Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approves the Yamato Scrub Natural Area management plan amendment for the multiuse pathway as submitted in November of 2009.

Approval of this management plan amendment does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

APPENDIX N

LETTER OF COMPLIANCE WITH LOCAL GOVERNMENT COMPREHENSIVE PLAN

City of Boca Raton

CITY HALL • 201 WEST PALMETTO PARK ROAD • BOCA RATON, FLORIDA 33432-3795 • PHONE: (561) 393-7700
(FOR HEARING IMPAIRED) TDD: (561) 367-7046
SUNCOM: (561) 922-7700
INTERNET: www.ci.boca-raton.fl.us

December 13, 2013

Mr. Robert Robbins, Director
Palm Beach County
Department of Environmental Resources Management
2300 N. Jog Road, 4th Floor
West Palm Beach, Florida 33411-2743

Re: Updated Yamato Scrub Natural Area Management Plan
Compliance with City of Boca Raton's Comprehensive Plan

Dear Mr. Robbins:

Thank you for the opportunity to review the various drafts to the updated management plan for the Yamato Scrub Natural Area. It is our determination that the plan is consistent with the Goals, Objectives and Policies of the City of Boca Raton's adopted Comprehensive Plan.

Sincerely,

Leif J. Ahnell, C.P.A., C.G.F.O.
City Manager

Q:\Admin-DoNotPurge\2013-2014Correspondence\DeputyDirector\Misc\YamatoScrub-DraftCompPlanComplianceLetter.doc