A Management Plan for

Little Gator Creek

Wildlife and Environmental Area

2014 - 2024

Pasco County, Florida

Florida Fish and Wildlife Conservation Commission
620 South Meridian Street
Tallahassee, Florida 32399-1600

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FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

MARJORY STONEMAN DOUGLAS BUILDING
3900 COMMONWEALTH BOULEVARD
TALLAHASSEE, FLORIDA 32399-3000

RICK SCOTT
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LT. GOVERNOR

CLIFFORD D. WILSON III
INTERIM SECRETARY

December 2, 2014

Mr. Gary Cochran
Florida Fish and Wildlife Conservation Commission
620 South Meridian Street
Tallahassee, FL 32399-1600

RE: Little Gator Creek Wildlife and Environmental Area - Lease No. 3291

Dear Mr. Cochran:

The Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the Little Gator Creek Wildlife and Environmental Area management plan. The next management plan update is due December 2, 2024.

Approval of this land management plan 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 management 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,

Marianne S. Gengenbach
Office of Environmental Services
Division of State Lands

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A Management Plan
for
Little Gator Creek Wildlife and Environmental Area

Pasco County, Florida

Owned by the Board of Trustees of the Internal Improvement Trust Fund

Managed by the Florida Fish and Wildlife Conservation Commission

May 2014

Thomas H. Eason

Thomas Eason, Division Director
Division of Habitat and Species Conservation

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LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

Lead Agency: Florida Fish and Wildlife Conservation Commission (FWC)
Common Name of Property: Little Gator Creek WEA
Location: Pasco County, Florida
Acreage Total: ~566 acres
Acreage Breakdown:

FNAI Natural Community	Acres*	Percent of Area
Mesic flatwoods	291.0	50.7%
Basin swamp	189.6	33.0%
Hydric hammock	47.2	8.2%
Dome swamp	30.8	5.4%
Clearing/regeneration	5.8	1.0%
Depression marsh	5.1	0.9%
Floodplain swamp	2.4	0.4%
Blackwater stream	1.4	0.2%
Canal/ditch	0.9	0.2%

*GIS-calculated acreage for land cover classification varies slightly from actual total acreage.
Lease/Management Agreement No.: 3291 (Appendix 13.1)
Use: Single X Multiple ____
Management Responsibilities:
Agency FWC
Responsibilities
LEAD, SUBLESSEE (Wildlife and Environmental Area, resource protection, law enforcement)
Designated Land Use: Wildlife and Environmental Area
Sublease (s): None
Encumbrances: None
Type Acquisition: CARL
Unique Features: Natural: Wood stork colony
Archaeological/Historical: Seven archaeological sites documented within LGCWEA.
Management Needs: Maintenance and management of the wood stork colony, habitat restoration and improvement; public access and recreational opportunities; hydrological preservation and restoration; exotic and invasive species maintenance and control; imperiled species habitat maintenance, enhancement, and restoration.
Acquisition Needs/Acreage: 9 acres FWC Additions and Inholdings list.
Surplus Lands/Acreage: None
Public Involvement: Management Advisory Group consensus building meeting and Public Hearing (Appendix 13.2)

DO NOT WRITE BELOW THIS LINE (FOR DIVISION OF STATE LANDS USE ONLY)

ARC Approval Date _____ BTIITF Approval Date: _____
Comments: _____

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Land Management Plan Compliance Checklist

Required for State-owned conservation lands over 160 acres

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	1
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	5
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	5
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	2, 97
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	3, 7, 70
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	42-43
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	62-64
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	10-11
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)	5
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	6-10, 7

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	41
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	38-40
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	41-42, 57-59
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	65
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	61, 65, 407
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	65, 93

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)	39-42
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	94
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	445
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	42, 46-78
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	N/A
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	425
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	5, 42

*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	11
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)	149

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)	11, 136
27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	136
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)	11, 141, 146
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	47, 168
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	168
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	168

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	12-16, 175
33	Insert FNAI based natural community maps when available.	ARC consensus	17
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	9-38
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	9-38
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	37
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	37

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	9-38
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	32-36
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	9-38, 180
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)	46-92
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.	↓	46-92
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.		67-88
42-C.	The associated measurable objectives to achieve the goals.		67-78
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.*		189, 239, 250, 425
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.		90-92, 431
43	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. *See footnote.*	253.034(5)	9-38
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).		46-92
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		74
44-C.	Measurable objectives (see requirement for #42-C).		74
44-D.	Related activities (see requirement for #42-D).		74, 425, 239
44-E.	Budgets (see requirement for #42-E).		90-92, 431
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).	↓	46-92

45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		68-72
45-C.	Measurable objectives (see requirement for #42-C).		68-72
45-D.	Related activities (see requirement for #42-D).		189, 239, 250, 425
45-E.	Budgets (see requirement for #42-E).		90-92, 431
46	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. *See footnote.*	253.034(5)	20, 30
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	440
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).	↓	55-56, 89, 72
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		72
48-C.	Measurable objectives (see requirement for #42-C).		72
48-D.	Related activities (see requirement for #42-D).		55-56, 89, 72
48-E.	Budgets (see requirement for #42-E).		90-92, 431

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	2
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	37
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	16-23, 37
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. *See footnote.*	253.034(5)	37, 59
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).	↓	59, 74, 89
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		74
53-C.	Measurable objectives (see requirement for #42-C).		74

53-D.	Related activities (see requirement for #42-D).		74, 250
53-E.	Budgets (see requirement for #42-E).		90-92, 431

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	37-38, 411
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	37-38, 411
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	37-38
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).	↓	37-38, 74-75
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		74-75
57-C.	Measurable objectives (see requirement for #42-C).		74-75
57-D.	Related activities (see requirement for #42-D).		74-75, 407
57-E.	Budgets (see requirement for #42-E).		90-92, 431

**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)	61, 70
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).	↓	56-59, 61, 70
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		75-76
59-C.	Measurable objectives (see requirement for #42-C).		75-76
59-D.	Related activities (see requirement for #42-D).		75-76
59-E.	Budgets (see requirement for #42-E).		90-92, 431
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	61, 70
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).	↓	56-59
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).		72-73
61-C.	Measurable objectives (see requirement for #42-C).		72-73
61-D.	Related activities (see requirement for #42-D).		72-73
61-E.	Budgets (see requirement for #42-E).		90-92, 431

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	iii
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC and 253.034(5)	i
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	43-46
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	46-90
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)	91-92, 431
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)	91-92, 431
68	A statement of gross income generated, net income and expenses.	18-2.018	40-41, 91-92, 431

*** = 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.

Management Plan Compliance Checklist - Conservation Lands.xlsx

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1 Introduction and General Information

Nestled within a large rural mosaic of public and private conservation lands in a landscape of cypress swamps, pine forests and pastures in Pasco County, Florida, the Little Gator Creek Wildlife and Environmental Area's (LGCWEA) swamps and forested wetlands provide vital habitat to the endangered wood stork. One of the largest wood stork nesting sites outside of south Florida is situated on the area. Wood storks have been nesting intermittently in the area for at least the past 70 years. For the protection of the wood stork and other wading birds, public access to the LGCWEA is limited.

The LGCWEA conserves habitat important for rare and imperiled species that occur on the site including the wood stork and other rare wading birds, gopher tortoise, eastern indigo snake and Sherman's fox squirrel. The area provides valuable opportunities for research and environmental education on the ecology of this range of rare and imperiled species.

The LGCWEA is managed by the Florida Fish and Wildlife Conservation Commission (FWC) for the conservation, protection and management of native wildlife species and their habitats, with emphasis on protecting the wood stork and wading bird colony being the primary purpose for acquisition of the area.

1.1 Management Plan Purpose

This Management Plan serves as the basic statement of policy and direction for the management of the LGCWEA. It provides information including the past usage, conservation acquisition history, and descriptions of the natural and cultural resources found on the LGCWEA. Furthermore, it identifies the FWC's future management intent, goals and associated short and long-term objectives, as well as identifying challenges and solutions. This Management Plan has been developed to guide each aspect of the LGCWEA's management for the next ten years.

This Management Plan is submitted for review to the Acquisition and Restoration Council (ARC) acting on behalf of the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees) of the State of Florida through the Florida Department of Environmental Protection's (DEP) Division of State Lands (DSL), in compliance with paragraph two of Lease No. 3291 (Appendix 13.1) and pursuant to Chapters 253 and 259, Florida Statutes (FS), and Chapters 18-2 and 18-4, Florida Administrative Code (FAC). Format and content were drafted in accordance with the ARC requirements for management plans and the model plan outline provided by the staff of DSL. Terms used in this Management Plan describing management activities and associated measurable goals and objectives conform to those developed for the Land Management Uniform Accounting Council Biennial Land Management Operational Report (Appendix 13.13).

1.1.1 FWC Planning Philosophy

The FWC's planning philosophy includes emphasizing management recommendation

consensus-building among stakeholders and input from user groups and the general public at the beginning of the planning process. The FWC engages stakeholders by convening a Management Advisory Group (MAG) and solicits additional input from user groups and the general public at a public hearing (Appendix 13.2). The FWC also engages area, district, and regional agency staff, as well as other FWC staff expertise, in developing this Management Plan, thereby facilitating area biologist and manager "ownership" of the Management Plan, and thus the development of meaningful management intent language, goals with associated measurable objectives, timelines for completion, and the identification of challenges and solution strategies for inclusion in the LGCWEA Management Plan (Sections 5 – 8).

Additional management planning input is received through Land Management Reviews (LMR) conducted every five years, which includes a review of the previous Management Plan, as well as a field review of LGCWEA. The LMR report (Section 5.1, Appendix 13.3) provides FWC staff with important information and guidance provided by a diverse team of land management auditors, and communicates the recommendations of the LMR team to FWC so they may be adequately addressed in this Management Plan, and thus guides the implementation of the LMR team recommendations on LGCWEA.

Additionally, the FWC maintains transparency and accountability throughout the development and implementation of this Management Plan. A "living document" concept, linking this updated Management Plan to the previous one, is accomplished by reporting on the objectives, management activities, and projects accomplished over the last planning timeframe (previous ten years; see Section 4), thereby ensuring agency accountability through time. Also, in an effort to remain adaptive for the duration of this Management Plan, continuous input and feedback will be collected from FWC staff, stakeholders, user groups, and other interested parties and individuals. As needed, amendments to this Management Plan will be presented to the DSL and the ARC for review and consideration.

1.2 Location

The LGCWEA is a 566-acre, square shaped parcel with straight linear boundaries on its eastern, southern, and western borders and two rectangular nodes extending along its northern boundary. As shown in Figure 1, the property lies within Section 24, Township 25 South, and Range 22 East, in Pasco County, Florida.

The LGCWEA is located in the southeast corner of Pasco County, nine miles northeast of Zephyrhills, 4.1 miles north of the State Road 98 / 471 intersection or 2.6 miles south of the Withlacoochee River on State Road 471. Public access to the LGCWEA is currently available only by permit and through one entry point directly off of SR471.

The Green Swamp Area of Critical State Concern is located immediately east and north of SR 471 from LGCWEA. The northeast and southern boundaries adjoin privately owned forest land.

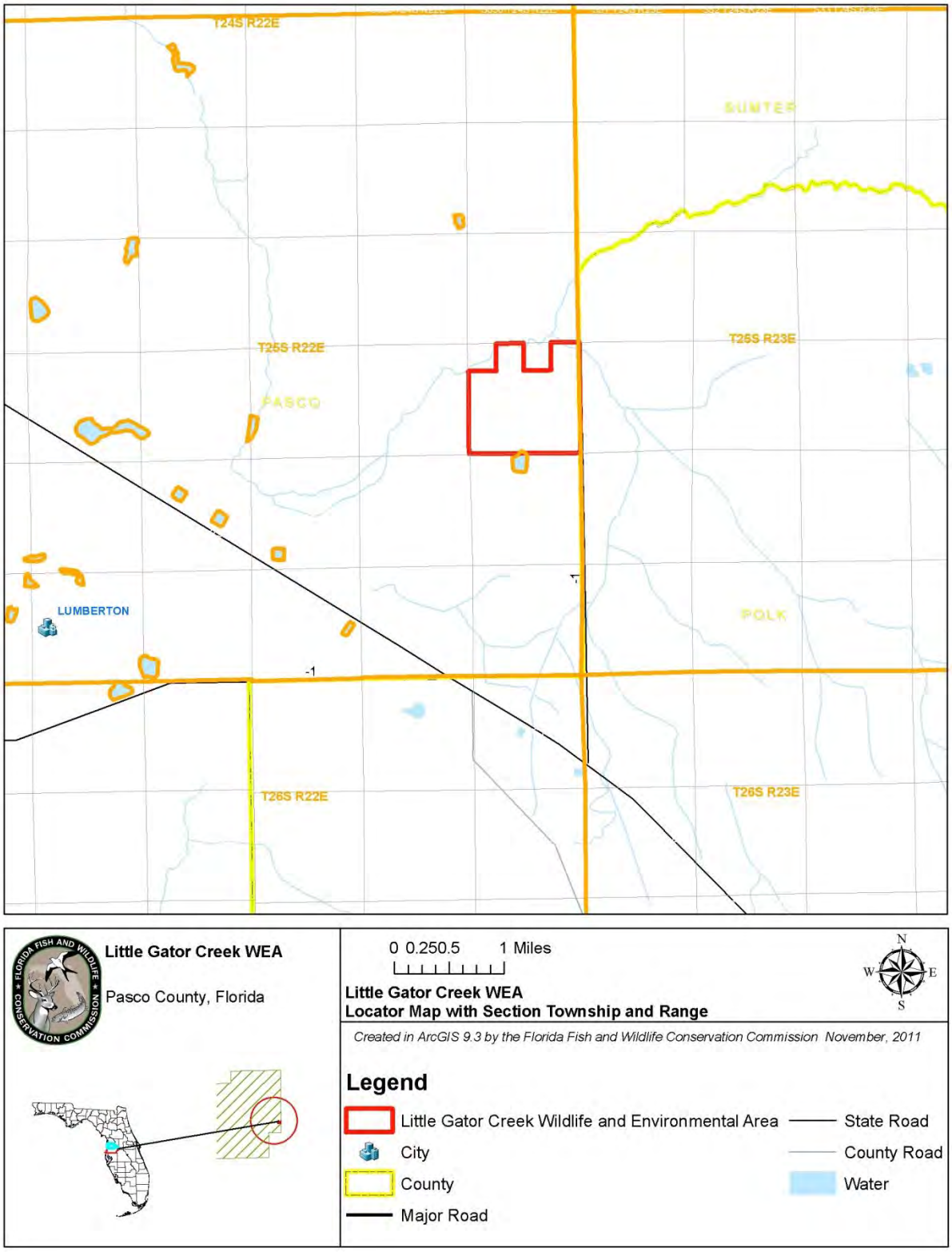


Figure 1: LGCWEA Proximity Map with Section, Township and Range

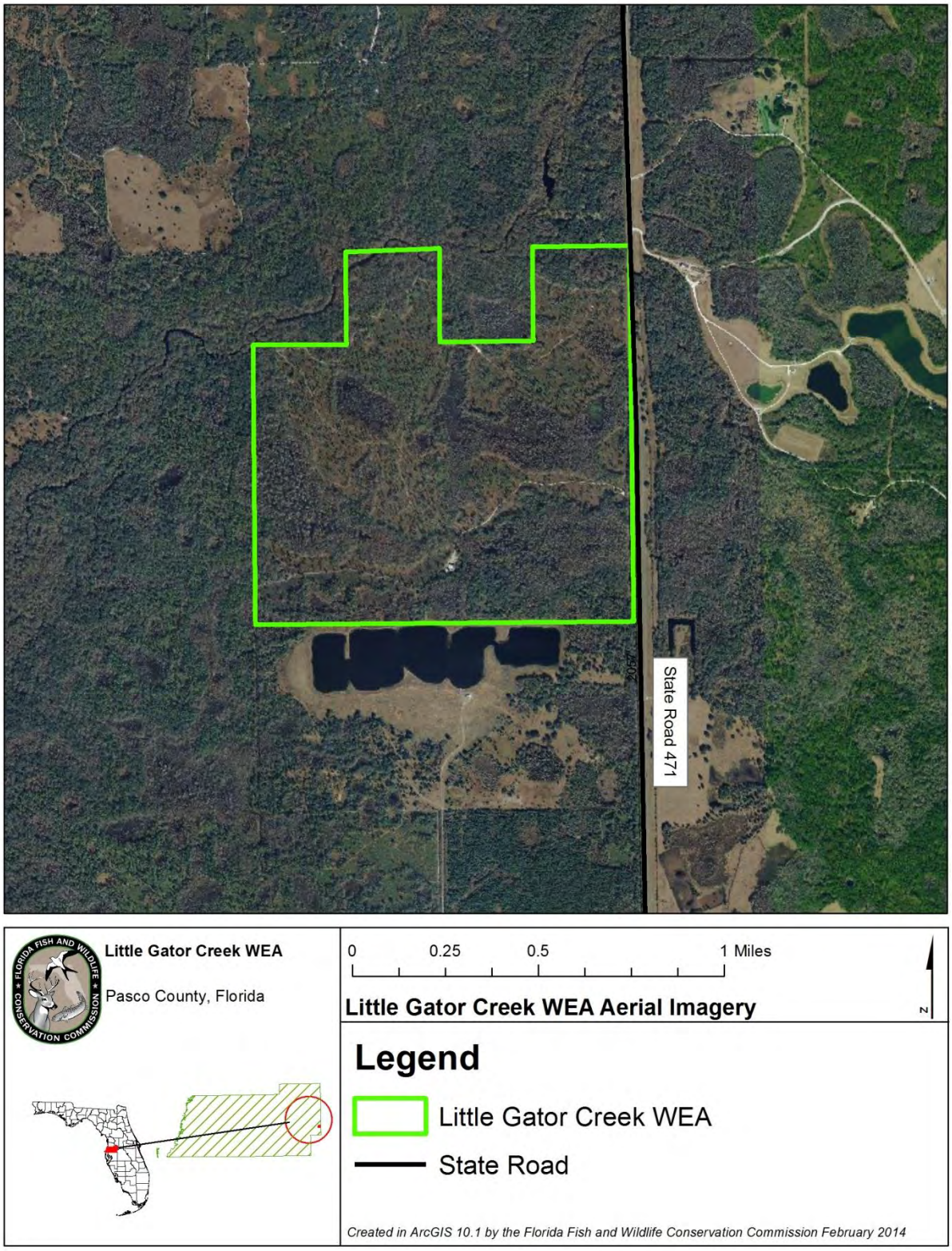


Figure 2: Aerial Imagery of LGCWEA

1.3 Acquisition

The LGCWEA was acquired in 1982 from Mr. C. M. Overstreet, a local cattleman and rancher under the Conservation and Recreation Lands (CARL) acquisition program. The CARL Trust Fund was approved in 1979 and relies on funds generated principally from the documentary stamp tax and severance taxes on phosphate rock. The CARL program was established for the purpose of purchasing environmentally endangered lands and those which have potential for public recreation. Subsequent to the purchase of the property, the Land Acquisition Advisory Council recommended the FWC as the lead managing agency for the area.

1.4 Purpose for Acquisition of the Property

The area was acquired as a single use property under the CARL program, for the preservation and proper management of a significant wading bird colony containing a large number of nests of the endangered wood stork and other wading bird species. As a condition of the acquisition, Mr. Overstreet, the former owner, agreed to provide the equipment and structures needed to regulate the water flow and levels within the wood stork colony for a period of five years after state acquisition.

1.5 Management Authority

The FWC is the designated lead managing agency for the LGCWEA under the authority granted by Lease Number 3291 from the Board of Trustees agent, DSL. Further management authority derives from Article IV, Section 9 of the Florida Constitution as well as the guidance and directives of Chapters 253, 259, 327, 370, 372, 373, 375, 378, 403, 487, 870, and 597, FS. These constitutional provisions and laws provide FWC the authority to protect, conserve, and manage the State's fish and wildlife resources.

1.6 Management Directives

The Board of Trustees' Lease Agreement Number 3291 with FWC directs the FWC to "provide for the following environmental protection and compatible recreation purposes in accordance with Chapter 259, FS," specifically to "protect and manage the wood stork colony and associated endangered species." The lease agreement further directs the FWC to "preserve the existing freshwater wetlands which, together with the colony identify this parcel as a unique and outstanding natural area."

1.7 Title Interest and Encumbrances

As State-owned lands, title to LGCWEA is vested in the Board of Trustees (Governor and Cabinet). In 1983, the Department for Natural Resources (now DEP-DSL), as staff to the Board of Trustees, entered into Lease Agreement Number 3291, a 20 year lease agreement, granting FWC management authority for LGCWEA. The original lease has twice been amended, in 2003 and 2013, with each amendment extending the lease for an additional ten years.

1.8 Proximity to Other Public Properties

As shown in Figure 3, the LGCWEA is surrounded by a vast complex of publically-owned conservation lands. Much of the conservation land adjacent to the LGCWEA is held and managed by the Southwest Florida Water Management District (SWFWMD). The Green Swamp Wilderness Preserve, managed by the SWFWMD, borders the north, northwest, and western boundaries of LGCWEA. Additionally, the DEP-managed Colt Creek State Park lies to the east of SR 471 (the eastern boundary of LGCWEA), as does the Green Swamp Area of Critical State Concern.

Tables 1 and 2 list the conservation lands and Florida Forever Projects, respectively, within a 20-mile radius of LGCWEA, including lands managed by public and private entities, that conserve cultural and natural resources within this region of southwest Florida.

Most of the public conservation lands listed in Table 1 are owned in full fee by a public entity. However, some of these conservation lands are protected by less-than-fee conservation easements consisting primarily of privately owned and managed ranchlands with a public or private entity holding and monitoring a conservation easement. Conservation easements may be held by either public agencies or private entities, while the landowner who sells or otherwise grants the conservation easement retains the remaining title interests. The LGCWEA is not located within any Area of Critical State Concern (Chapter 380.05, FS), though it is in close vicinity to the Green Swamp Area of Critical State Concern.

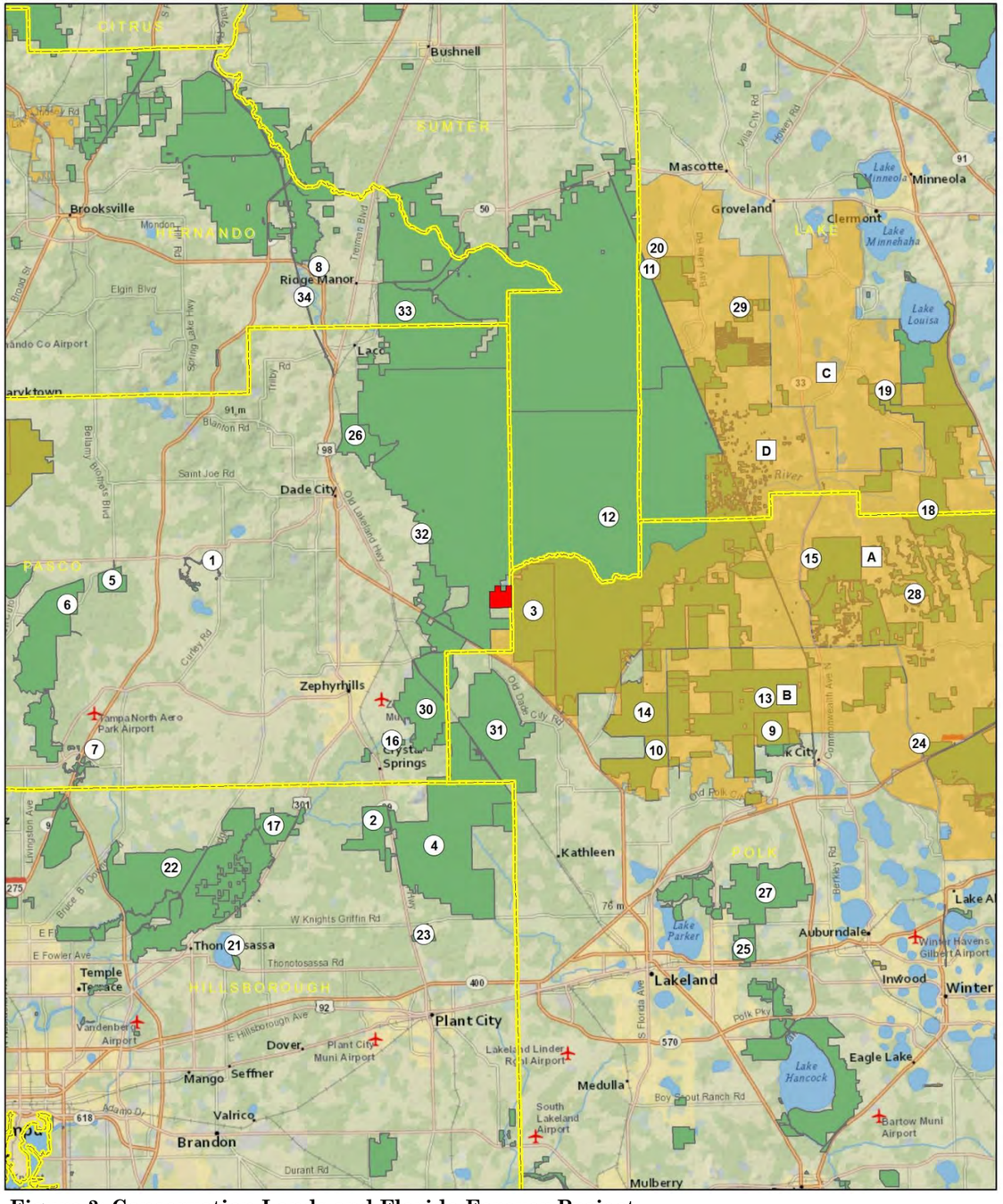
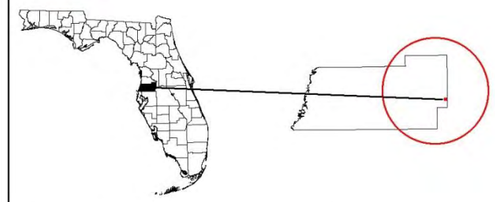


Figure 3: Conservation Lands and Florida Forever Project

Map Label	Site Name
1	Bella Verde Conservation Easement
2	Blackwater Creek Preserve
3	Colt Creek State Park
4	Cone Ranch
5	Cypress Creek Conservation Easement
6	Cypress Creek Flood Detention Area
7	Cypress Creek Preserve
8	Cypress Lakes Preserve (Hernando County)
9	FL DEP Green Swamp Conservation Easements
10	Gator Creek Reserve
11	General James A. Van Fleet State Trail
12	Green Swamp
13	Green Swamp Land Authority Land Protection Agreements
14	Green Swamp/Bass Conservation Easement
15	Green Swamp/Chai Investments Co. Conservation Easement
16	Hillsborough River Corridor
17	Hillsborough River State Park
18	Hilochee WMA
19	Lake Louisa and Green Swamp Mitigation Bank
20	Lake Louisa State Park
21	Lake Thonotosassa
22	Lower Hillsborough Flood Detention Area
23	McIntosh/Zack
24	Osprey Unit
25	Saddle Creek County Park
26	SWFWMD Green Swamp Conservation Easements
27	Tenoroc Fish Management Area
28	The Jahna Ranch Conservation Easement
29	The Pasture
30	Upper Hillsborough
31	Upper Hillsborough Conservation Easement
32	Withlacoochee River Park
33	Withlacoochee State Forest
34	Withlacoochee State Trail

Map Label	Florida Forever Project
A	Green Swamp - Hilochee Corridor
B	Green Swamp - Peace River Headwaters
C	Green Swamp - Pine Island Recharge Area
D	Green Swamp - Withlacoochee River Headwaters

Little Gator Creek Wildlife and Environmental Area
Pasco, Florida
566 Acres



Conservation Lands and Florida Forever Projects within a 20 Mile Radius

Legend

- Little Gator Creek WEA
- County
- Florida Forever Project
- Conservation Land

0 3.75 7.5 15 Miles

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Table 1. Conservation Lands within a 20-mile Radius of LGCWEA

State of Florida	Managing Agency
Colt Creek State Park	DEP-DRP
FL DEP Green Swamp Conservation Easements	DEP-DSL
General James A. Van Fleet State Trail	DEP-OGT
Green Swamp Land Authority Land Protection Agreements	DEP-DSL
Green Swamp/Bass Conservation Easement	DEP-DSL
Green Swamp/Chai Investments Co. Conservation Easement	DEP-DSL
Hillsborough River State Park	DEP-DRP
Hilochee Wildlife Management Area	FWC
Lake Louisa State Park	DEP-DRP
Hilochee Wildlife Management Area - Osprey Unit	FWC
Tenoroc Fish Management Area	FWC
The Jahna Ranch Conservation Easement	DEP-BMMR
Withlacoochee State Forest	DACS-FFS
Withlacoochee State Trail	DEP-OGT

Water Management District	Managing Agency
Cypress Creek Conservation Easement	SWFWMD
Cypress Creek Flood Detention Area	SWFWMD
Green Swamp	SWFWMD
Hillsborough River Corridor	SWFWMD
Lake Thonotosassa	SWFWMD
Lower Hillsborough Flood Detention Area	SWFWMD
SWFWMD Green Swamp Conservation Easements	SWFWMD
Upper Hillsborough Conservation Easement	SWFWMD
Upper Hillsborough	SWFWMD

Local Government	Managing Agency
Bella Verde Conservation Easement	Pasco County
Blackwater Creek Preserve	Hillsborough County
Cone Ranch	Hillsborough County
Cypress Creek Preserve	Pasco County
Cypress Lakes Preserve	Hernando County
Gator Creek Reserve	Polk County
McIntosh/Zack	City of Plant City
Saddle Creek County Park	Polk County
The Pasture	Lake County
Withlacoochee River Park	Pasco County

Table 1. Conservation Lands within a 20-mile Radius of LGCWEA

Private	Managing Entity
Lake Louisa and Green Swamp Mitigation Bank	Mitigation Resources, LLC

Acronym Key	Agency Name
DACS-FFS	Florida Department of Agriculture and Consumer Services, Florida Forest Service
DEP-BMMR	Florida Department of Environmental Protection, Bureau of Mining and Minerals Regulation
DEP-DRP	Florida Department of Environmental Protection, Division of Recreation and Parks
DEP-DSL	Florida Department of Environmental Protection, Division of State Lands
DEP-OGT	Florida Department of Environmental Protection, Office of Greenways and Trails
FWC	Florida Fish and Wildlife Conservation Commission
SWFWMD	Southwest Florida Water Management District

Table 2. Florida Forever Projects within a 20 mile Radius of LGCWEA

Project Name	GIS Acres
Green Swamp Florida Forever BOT Project	287,711.4

1.9 Adjacent Land Uses

The LGCWEA and the surrounding land in Pasco County are zoned as an A-C Agriculture district. This zoning designation aims to preserve rural and open space while providing for certain agricultural, residential and noncommercial uses. Residential density in A-C Agriculture districts is limited to a maximum of one dwelling unit per ten acres.

The Future Land Use element of the Pasco County Comprehensive Plan was amended in 2000 to include a conservation element that protected wellfields and public lands through the identification and protection of wildlife corridors. Land designated Conservation is protected from incompatible uses as well as from adjacent development through setbacks and buffers, and is managed to exclude exotic and nuisance vegetation. The LGCWEA and most of the surrounding land is designated as Conservation on the Pasco County future land use map. The properties adjacent to the southern and northeastern borders of LGCWEA have the future land use designation of Agriculture, with a maximum residential

density of one dwelling unit per ten acres.

Adjacent to the southern boundary of LGCWEA is a quarry for a commercial mining operation that has existed since at least 1977, based on historic aerial photographs. Though the quarry is no longer in use, it has altered a drainage area that fed into the LGCWEA and the wading bird colony and has apparently caused cracks in the underlying limestone substrate, further impacting the hydrology of the area. A ditch extends from the quarry ponds directly south of the LGCWEA and has been used to pump water from the quarry into the wading bird colony on the LGCWEA when necessary. This quarry is the only commercial land use immediately affecting the LGCWEA.

The parcels immediately to the east of LGCWEA are within the boundary of Polk County and have a land use designation of Agricultural/Residential-Rural. Residential development on these parcels is limited to a maximum density of one dwelling unit per five acres.

1.10 Public Involvement

FWC conducted a MAG meeting in Webster, Florida, on February 22, 2012, to obtain input from both public and private stakeholders regarding management of the LGCWEA. Results of this meeting were used by FWC to develop management goals and objectives and to identify opportunities and strategies for inclusion in this Management Plan. A summary of issues and opportunities raised by the MAG, as well as a listing of participants, is included as Appendix 13.2.1. Also, a public hearing, as required by Chapter 259.032(10), FS, was held in New Port Richie, Florida, on March 27, 2012. The report of that hearing is contained in Appendix 13.2.3. A website is also maintained for receipt of public input at http://myfwc.com/conservation/terrestrial/management-plans/develop-mps/ . Further testimony and input is received at a public hearing held by the ARC. Input received from all public involvement efforts has been considered in the development of this Management Plan.

2 Natural and Cultural Resources

2.1 Physiography

2.1.1 Climate

The climate of Pasco County, like most of peninsular Florida, is humid and subtropical. Between October and May, cold fronts regularly sweep through the state which keeps conditions dry, particularly over the peninsula. In winters where an El Niño climate cycle exists, rainfall increases while temperatures are cooler statewide. Beginning in the spring, towards the end of the dry season, lightning originated wild fires become more common. There is a defined rainy season from June through September, which are also the months most at risk of tropical cyclones making landfall in the region. Easterly winds off the warm waters of the Gulf Stream running through the Florida Straits keep temperatures moderate across the central peninsula year round.

The average annual maximum temperature for the city of St. Leo in Pasco County, Florida, during the period 1895 to 2012 was 82.7° Fahrenheit (F). The average minimum annual temperature for the same period was 61.3° F. Historically, the lowest average temperatures have occurred in January and the highest average temperatures have occurred in July and August. Annually, St. Leo experiences an average total rainfall of 55 inches.

2.1.2 Topography

The LGCWEA is located in the central or mid-peninsular physiographic zone of Florida, which falls within the larger coastal plain physiographic region, a region that includes all of Florida and much of the southeastern United States. The physiographic zones of Florida are further sub-divided into physiographic provinces and LGCWEA lies within the Western Valley physiographic province. The Western Valley is a broad, flat lowland that lies east of the Brooksville Ridge and extends approximately 140 miles from the High Springs Gap in Alachua County to the Zephyrhills Gap in Pasco and Hillsborough counties. Elevations of the Western Valley range from 40 feet to 150 feet above mean sea level. In general, this area is very poorly drained and swamps are therefore prevalent. Though karst features are common, the area contains relatively few springs and the Withlacoochee River is the primary water feature found within the Western Valley.

The LGCWEA itself embodies many of the characteristics of the Western Valley physiographic zone. The topography of LGCWEA is relatively flat, with elevations ranging between 85 and 92 feet above mean sea level. The lowest elevations occur on the north and northeastern portions of the area around the Withlacoochee River and Gator Creek, while the highest elevations exist on the western edge of the site. The area contains many marshes and small creeks and during dry years the marsh and creek bottoms are exposed as depressions. The northern boundary of the property encompasses two short segments of the Withlacoochee River. Gator Creek flows through the northeast corner of the property and Little Gator Creek is proximate to the southeastern end of the property and flows north and northwest into Gator Creek and the Withlacoochee River.

2.1.3 Soils

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) data were used to identify LGCWEA's soil series and soil depth to water table (Figures 4 and 5). Eight soil map units described in the soil survey of LGCWEA are distributed as shown in Figure 4. Analyses of depth to water table for map units occurring within LGCWEA are also provided in Figure 5. The NRCS defines a soil map unit as: "a collection of soil areas or non-soil areas (miscellaneous areas) delineated in a soil survey." Soil map units may contain multiple soil components, which are given names that are unique identifiers. Figure 4 provides aggregation data for LGCWEA soil map units. Soils series descriptions may be found in Appendix 13.4.

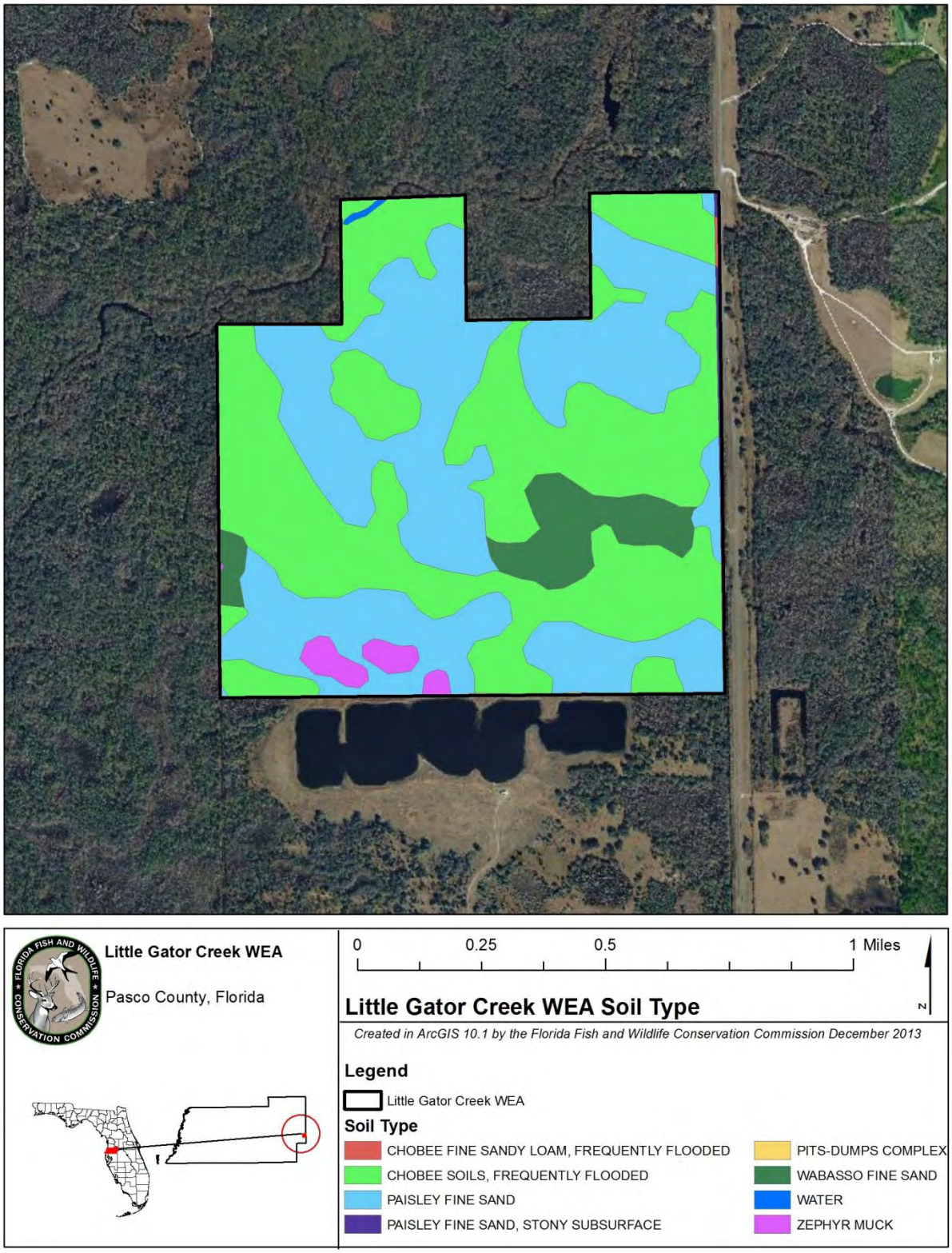


Figure 4: LGCWEA Soils Type

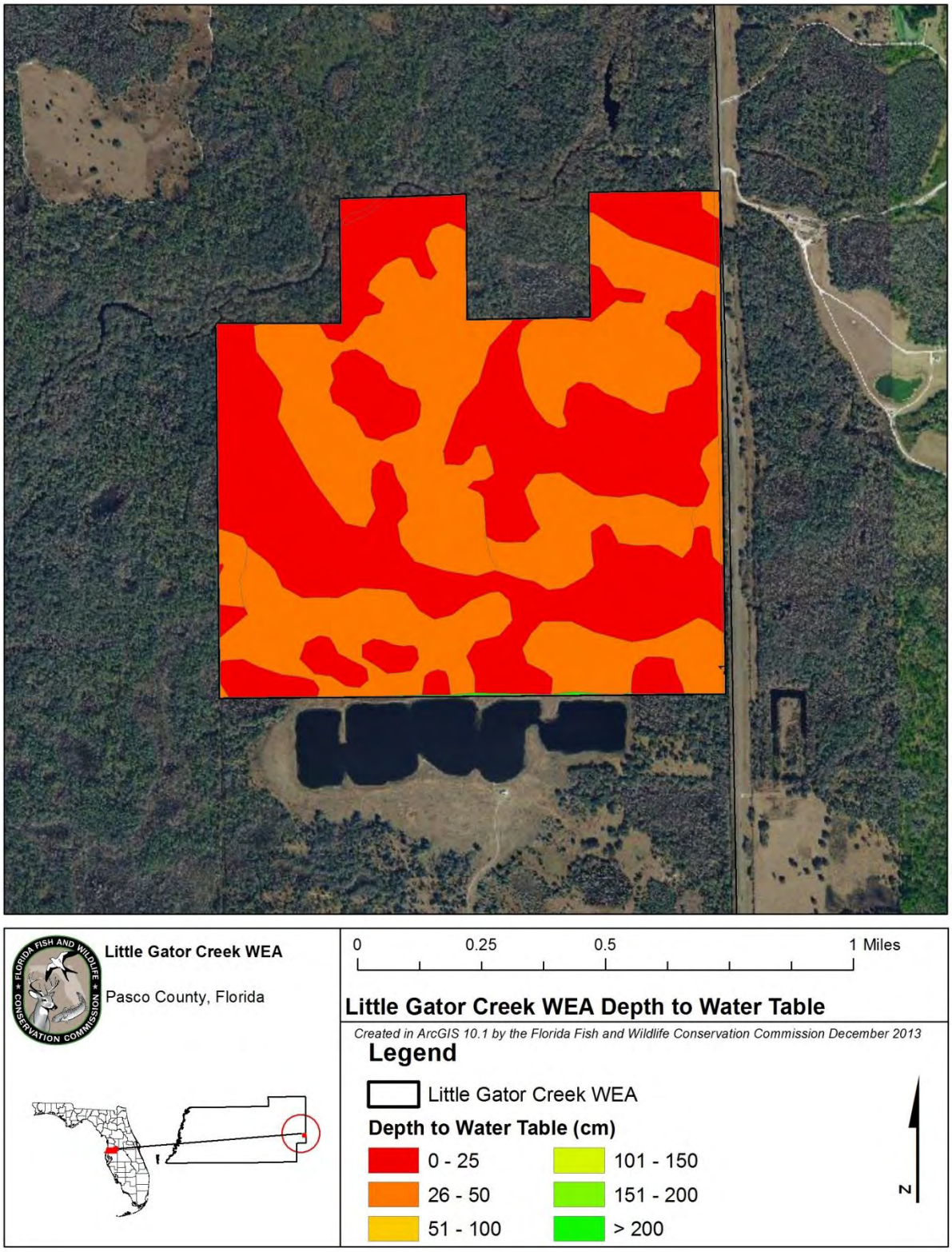


Figure 5: LGCWEA Soil Depth to Water Table

2.1.4 Geologic Conditions

The LGCWEA is composed entirely of one geologic unit, Ocala Limestone. Ocala Limestone is an Upper Eocene stratigraphic unit consisting of nearly pure limestone and occasional dolostones. According to the 2012 Hydrology Assessment and Conceptual Restoration Plan for LGCWEA, Suwannee Limestone is not present on the site and was likely eroded away. The Ocala Limestone geology of the area is characterized by karst depressions, which greatly affect the hydrology of the area. The wading bird colony is thought to be a karst feature and a 40-foot deep sinkhole is present on the southeast side of the wading bird colony area. Due to lower elevations, surface water flows into such depressions and sinkholes, often forming wetlands.

The LGCWEA contains extensive deposits of commercial grade limerock. Richard C. Fountain and Associates of Winter Haven, Florida, estimated that the value of the limerock on the property is $981,906.

2.2 Vegetation

The LGCWEA is a mosaic of uplands and wetlands and, as such, contains a variety of vegetative cover types. The FWC completed natural community mapping of LGCWEA in 2011 through the services of the Florida Natural Areas Inventory (FNAI). The FWC did not have FNAI map historic natural communities on LGCWEA. Through this work FNAI has indentified and mapped a total of seven natural communities, one rare plant and two exotic invasive plants within LGCWEA. Using field surveys and Geographic Information System (GIS) computer software, FNAI has compiled a list of observed plant species on LGCWEA (Tables 3-5, Figure 6).

Table 3. FNAI Natural and Anthropogenic Communities

FNAI Natural Community	Acres*	Percent of Area
Mesic flatwoods	291.0	50.7%
Basin swamp	189.6	33.0%
Hydric hammock	47.2	8.2%
Dome swamp	30.8	5.4%
Clearing/regeneration	5.8	1.0%
Depression marsh	5.1	0.9%
Floodplain swamp	2.4	0.4%
Blackwater stream	1.4	0.2%
Canal/ditch	0.9	0.2%

*Total GIS-calculated acreage for natural community classifications varies slightly from the actual total acreage of LGCWEA.

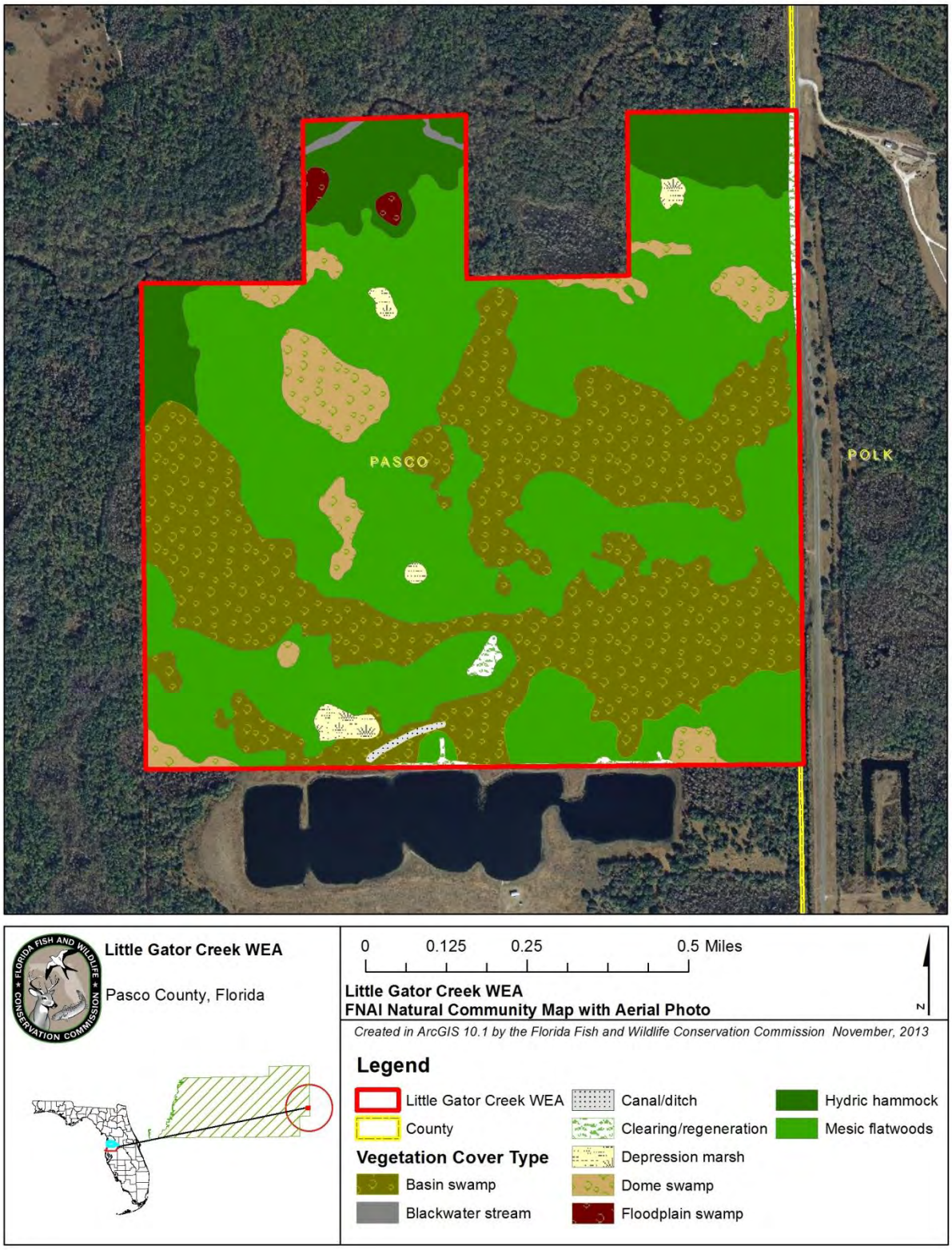


Figure 6: FNAI Natural and Anthropogenic Communities

Table 4. Native Plant Species Observed at LGCWEA

Common Name	Scientific Name
American beautyberry	*Callicarpa americana*
Arrowhead	*Sagittaria sp.*
Bald cypress	*Taxodium distichum*
Beakrush	*Rhynchospora sp.*
Bird iris	*Iris hexagona*
Blackberry	*Rubus sp.*
Blue curls	*Trichostema dichotomum*
Blueberry	*Vaccinium sp.*
Bluestem palmetto	*Sabal minor*
Bog button	*Lachnocaulon sp.*
Bracken fern	*Pteridium aquilinum*
Bristleleaf chaffhead	*Carphephorus pseudoliatris*
Broomsedge	*Andropogon virginicus*
Buttonbush	*Cephalanthus occidentalis*
Cabbage palm	*Sabal palmetto*
Catbrier	*Smilax sp.*
Cinnamon fern	*Osmunda cinnamomea*
Duckweed	*Lemna sp.*
Dwarf blueberry	*Vaccinium myrsinites*
Dwarf huckleberry	*Gaylussacia dumosa*
Dwarf live oak	*Quercus minima*
Elephant's foot	*Elephantopus elatus*
Fingergrass	*Digitaria sp.*
Fireflag	*Thalia geniculata*
Florida butterfly orchid	*Encyclia tampensis*
Fringed nutrush	*Scleria ciliata*
Gallberry	*Ilex glabra*
Goldenrod	*Solidago sp.*
Greenbrier	*Smilax bona-nox*
Hammock fern	*Blechnum occidentale*
Laurel oak	*Quercus laurifolia*
Live oak	*Quercus virginiana*
Lizard tail	*Saururus cernuus*
Longleaf pine	*Pinus palustris*
Maiden cane	*Panicum hemitomon*
Maiden fern	*Thelypteris sp.*
Meadow-beauty	*Rhexia spp.*
Muscadine	*Vitis rotundifolia*
Panic-grass	*Panicum sp.*

Table 4. Native Plant Species Observed at LGCWEA

Common Name	Scientific Name
Paspalum grass	*Paspalum sp.*
Peppervine	*Ampelopsis arborea*
Persimmon	*Diospyros virginiana*
Pickerelweed	*Pontederia cordata*
Poison ivy	*Toxicodendron radicans*
Pond cypress	*Taxodium ascendens*
Pop ash	*Fraxinus caroliniana*
Red maple	*Acer rubrum*
Rose-gentian	*Sabatia sp.*
Royal fern	*Osmunda regalis*
Running oak	*Quercus pumila*
Rush	*Juncus sp.*
Saw palmetto	*Serenoa repens*
Sawgrass	*Cladium jamaicense*
Sedge	*Carex sp.*
Shiny fetterbush	*Lyonia lucida*
Slash pine	*Pinus elliottii*
Slender blazing star	*Liatris gracilis*
Small viburnum	*Viburnum obovatum*
Spanish moss	*Tillandsia usneoides*
Spatterdock	*Nuphar lutea*
St. John's-wort	*Hypericum sp.*
Staggerbush	*Lyonia fruticosa*
Sunflower	*Helianthus sp.*
Swamp aster	*Ampelaster carolinianus*
Swamp bay	*Persea palustris*
Swamp fern	*Blechnum serrulatum*
Swamp rose	*Rosa palustris*
Sweet goldenrod	*Solidago odora*
Sweet gum	*Liquidambar styraciflua*
Thistle	*Cirsium sp.*
Thoroughwort	*Eupatorium sp.*
Tupelo gum	*Nyssa biflora*
Virginia chain fern	*Woodwardia virginica*
Virginia willow	*Itea virginica*
Water oak	*Quercus nigra*
Wax myrtle	*Myrica cerifera*
Whisk fern	*Psilotum nudum*
Wiregrass	*Aristida stricta*
Wood oats	*Chasmanthium sp.*

Table 4. Native Plant Species Observed at LGCWEA

Common Name	Scientific Name
Yaupon	*Ilex vomitoria*
Yellow jessamine	*Gelsemium sempervirens*
Yellow-eyed grass	*Xyris sp.*

Table 5. Rare Plant Species Observed at LGCWEA

Common Name	Scientific Name
Celestial lily	*Nemastylis floridana*

Table 6. Invasive Exotic Plant Species Observed at LGCWEA

Common Name	Scientific Name
Cogon grass	*Imperata cylindrica*
Water lettuce	*Pistia stratiotes*

2.2.1 FNAI Natural Community Descriptions

The following are descriptions of the nine FNAI natural and anthropogenic communities found on LGCWEA (Table 3). These natural community descriptions were prepared by FNAI and modified by FWC.

2.2.1.1 Basin swamp

Basin swamps are typically large, irregularly shaped wetlands occupying a shallow, closed basin and are dominated by a mix of conifer and hardwood species. Two basin swamps (approximately 120 acres and 67 acres, respectively) occur on LGCWEA, occupying depressions that were probably once oxbows or swales within the Withlacoochee River floodplain. Both were inundated at the time of the FNAI's survey. The canopy and subcanopy are dominated by pond cypress, red maple, and swamp laurel oak. According to the LGCWEA Management Plan (FWC 2001), cypress trees were harvested from the site in 1949 and 1955, suggesting that the canopy trees in the basin swamp are approximately 50 years old. The shrub layer is fairly open, with scattered cabbage palm, wax myrtle, shiny fetterbush, and blueberry. Herbs are generally sparse in basin swamps due to high water

levels and low light; on LGCWEA, the most common herbaceous species are maiden-cane and Virginia chain fern.

2.2.1.2 Blackwater stream

Blackwater streams are perennial streams originating in sandy lowlands, and deeply colored with tannins and other organic compounds. The Withlacoochee River crosses the LGCWEA twice on the northwestern side of the WEA, for a total of approximately 0.2 mile; Gator Creek crosses the northeastern corner of the site for 0.1 mile. Both are dark, tannin-stained streams bordered by hydric hammock and floodplain swamp.

2.2.1.3 Depression marsh

This particular marsh type is a shallow, rounded depression in sandy soils dominated by herbaceous and, occasionally, shrub species that often occur in distinct concentric bands. Four depression marshes occur on LGCWEA, three are smaller than 1 acre and one is over 2 acres in size. The smaller marshes are surrounded by mesic flatwoods with slash pine growing in the edge of the marshes. Concentric zones of maiden-cane and rush surround the deeper center of arrowhead.

The larger marsh resembles a dome swamp around the edges, with an encircling band of pond cypress, sweet gum, red maple, and oaks, shrubs and vines such as wax myrtle and muscadine and the center is open and herbaceous, dominated by sedges and grasses.

2.2.1.4 Dome Swamp

A dome swamp is a shallow, usually more or less circular isolated wetland, forested with a mix of conifers and hardwoods that are typically taller toward the center of the swamp, creating a domed profile. Nine dome swamps, ranging in size from 1 to 12 acres, occur on LGCWEA. Most are dominated by pond cypress with a large hardwood component of red maple, sweet gum, and swamp laurel oak. According to the LGCWEA Management Plan (FWC 2001), cypress were harvested from the site in 1949 and 1955, suggesting that the cypress trees in the dome swamps are approximately 50 years old. (One dome swamp completely lacks cypress, although numerous cypress stumps are present, and is dominated entirely by hardwoods. No cypress seedlings or saplings were observed in the understory so it appears that this community is not returning to its pre-logging condition.) Wax myrtle and persimmon occur in the understory. Due to high water levels and low light, the herbaceous layer in dome swamps is usually sparse, which is the case on LGCWEA, with maiden cane, sedges, and duckweed being the most common herbs. Saw grass forms the herbaceous layer in one small dome swamp on the edge of the Withlacoochee River floodplain forest.

2.2.1.5 Hydric hammock

The hydric hammock ecotype is a closed-canopy of evergreen hardwood and/or palm forest and a variable understory typically dominated by palms and ferns occurring on moist soils, often with limestone very near the surface. On LGCWEA, Little Gator Creek is located in the confluence of Gator Creek and the Withlacoochee River, and hydric hammocks are

found in the floodplains of both. The canopy and subcanopy of these forests are dominated by laurel oak, live oak, and water oak, with red maple, tupelo gum, and cabbage palm also common. Common shrubs include cabbage palm and yaupon. Due to inundation and low light levels, the herbaceous layer is sparse, but usually includes beak-rushes, finger-grass, and other grasses.

The hydric hammock on LGCWEA contains two small patches of pond cypress-dominated floodplain swamp in a low area closer to the Withlacoochee River. The vegetation resembles hydric hammock except bald cypress is a canopy dominant.

2.2.1.6 Mesic flatwoods

Mesic flatwoods are a fire-maintained forest ecotype of widely spaced pines on a flat, moderately to poorly drained soils, usually with species-rich shrub and herbaceous layers. At approximately 291 acres, mesic flatwoods are the most extensive natural community on LGCWEA, forming a matrix to the numerous wetland inclusions on site. In 2009 and 2010, a slash pine harvest was conducted on LGCWEA and the density of slash pine was significantly thinned. Prior to that harvest, slash pine formed the canopy in most areas though older, flat-topped longleaf pine dominated one centrally located flatwoods area. A turpentine operation was operated at the site from 1928 to 1934. Virgin longleaf pines were harvested in 1903-04, and a second tree harvest took place in 1939, suggesting that most of the pines on site are younger than 75 years old. Saw palmetto is the most common shrub although other shrubs such as dwarf live oak, staggerbush, and dwarf blueberry are also common. Wiregrass is the dominant species in the ground cover, but a variety of other herbaceous species and vines are also present.

Mesic flatwoods must be burned regularly, every 2-3 years, to maintain the open, grassy character of the ground layer and promote wiregrass flowering. The 2001 LGCWEA Management Plan states that regular burning was conducted on site until 1970 in support of cattle grazing operations. Fire scars on trees indicate that recent fires have occurred, which undoubtedly contributed to the high quality of most of the flatwoods on LGCWEA. Two prescribed burns have taken place on the area in the past four years.

Cogon grass was found at five locations in mesic flatwoods.

A population of approximately 50 plants of celestial lily was observed in a mesic flatwoods in the central portion of LGCWEA. Celestial lily was also collected in a mesic flatwoods in the northeastern portion of the site in 1991 but was not observed during this survey. This fall-flowering Florida endemic is ranked as imperiled by FNAI. It is dependent on frequent fire to promote flowering and limit competition from woody species.

2.2.1.7 Floodplain swamp

Floodplain swamp is a closed-canopy forest of hydrophytic trees occurring on frequently or permanently flooded hydric soils adjacent to stream and river channels and in depressions and oxbows within floodplains. Trees are often buttressed, and the understory and groundcover are sparse. Two patches of floodplain swamp, each approximately one acre in size, occur within the hydric hammock on LGCWEA, within the floodplain of the Withlacoochee River. The canopy of these floodplain swamps is dominated by bald cypress.

2.2.1.8 Ruderal

Lands that have experienced heavy anthropogenic disturbances are referred to as ruderal. On LGCWEA, ruderal areas total approximately seven acres and are divided into two categories. The first category is clearing/regeneration, which on LGCWEA consists of over six acres of historic clearings in which the groundcover and overstory of the original natural community has been significantly altered. Cogon grass is commonly found in these areas. These historic clearings are in the process of being converted back to a natural community type. The second ruderal category found on LGCWEA is canal/ditch, which is an area where the historic natural community has been altered by an artificial drainage way. Less than one acre of LGCWEA falls into this category, due to the presence of a ditch on the southern portion of the area.

2.2.2 Forest Resources

A Timber Assessment for LGCWEA was completed by the FFS in March 2012 and is included as Appendix 13.12. A timber harvest was conducted in 2009 on the LGCWEA and removed most of the slash pine on the upland portions of the area. As a result, the overstory on the upland areas of LGCWEA currently consists primarily of scattered longleaf pines and occasional slash pines. The Timber Assessment estimates that another commercial harvest will not be necessary for another 20 to 30 years.

The FWC utilizes forest management regimes consistent with the purposes for acquisition of this property. When silvicultural practices are necessary for restoration of wildlife

habitat or to accomplish ecosystem management objectives, personnel from the FFS or a professional forestry consultant will be consulted.

2.3 Fish and Wildlife Resources

The LGCWEA has a diverse assortment of plant and animal species (Tables 4-13). There are eleven imperiled or protected plant and animal species, also known as listed species, documented as occurring on the LGCWEA, including the state threatened gopher tortoise. Additionally, a significant wading bird colony is present on the area and hosts a large number of nests of the endangered wood stork and other wading bird species. Table 14 lists the rare and imperiled wildlife species documented or reported to occur on the LGCWEA.

A partial inventory of bird species occurring on the LGCWEA is listed below in Table 7. Additionally, a list of bird species breeding within Pasco County is taken from the Florida Breeding Bird Atlas as listed below in Table 8. Most of the area is forested and supports breeding populations of a wide variety of bird species.

The FWC has developed a GIS-based assessment tool that incorporates a wide variety of land cover and wildlife species data. This tool, the Integrated Wildlife Habitat Ranking System (IWHRS), ranks the Florida landscape based upon the habitat needs of wildlife as a way to identify ecologically significant lands in the state, and to assess the potential impacts of management and land-use changes. The IWHRS was developed to provide technical assistance to various local, regional, state, and federal agencies, and entities interested in wildlife needs and conservation in order to: (1) determine ways to avoid or minimize project impacts by evaluating alternative placements, alignments, and transportation corridors during early planning stages, (2) assess direct, secondary, and cumulative impacts to habitat and wildlife resources, and (3) identify appropriate parcels for public land acquisition for wetland and upland habitat mitigation purposes. The IWHRS (2009) indicates that the LGCWEA has a very high mean wildlife value of 7.6 (Figure 7).

Following are lists of wildlife species either occurring or potentially occurring on the area.

Table 7. Native Avian Species Known to Occur at LGCWEA

Common Name	Scientific Name
American robin	*Turdus migratorius*
American swallow-tailed kite	*Elanoides forficatus*
American woodcock	*Scolopax minor*
Anhinga	*Anhinga anhinga*
Bachman's sparrow	*Peucaea aestivalis*
Belted kingfisher	*Megaceryle alcyon*
Black vulture	*Coragyps atratus*
Black-crowned night heron	*Nycticorax nycticorax*
Blue jay	*Cyanocitta cristata*
Cattle egret	*Bubulcus ibis*
Common yellow throat	*Geothlypis trichas*
Eastern bluebird	*Sialia sialis*
Glossy ibis	*Plegadis falcinellus*
Gray catbird	*Dumetella carolinensis*
Great blue heron	*Ardea herodias*
Great egret	*Ardea alba*
Limpkin	*Aramus guarauna*
Little blue heron	*Egretta caerulea*
Mourning dove	*Zenaida macroura*
Northern bobwhite	*Colinus virginianus*
Northern cardinal	*Cardinalis cardinalis*
Northern mockingbird	*Mimus polyglottos*
Osceola wild turkey	*Meleagris gallopavo osceola*
Pileated woodpecker	*Dryocopus pileatus*
Red-bellied woodpecker	*Melanerpes carolinus*
Red-shouldered hawk	*Buteo lineatus*
Snowy egret	*Egretta thula*
Southern bald eagle	*Haliaeetus leucocephalus*
Tricolored heron	*Egretta tricolor*
Turkey vulture	*Cathartes aura*
White ibis	*Eudocimus albus*
Wood duck	*Aix sponsa*
Wood stork	*Mycteria americana*

Table 8. Breeding Bird Atlas – Confirmed Breeding – Pasco County

Common Name	Scientific Name	Status
American crow	*Corvus brachyrhynchos*	NL
American oystercatcher	*Haematopus palliatus*	SSC
Anhinga	*Anhinga anhinga*	NL
Bachman's sparrow	*Peucaea aestivalis*	NL
Barn owl	*Tyto alba*	NL
Barn swallow	*Hirundo rustica*	NL
Barred owl	*Strix varia*	NL
Belted kingfisher	*Megaceryle alcyon*	NL
Black vulture	*Coragyps atratus*	NL
Black-crowned night-heron	*Nycticorax nycticorax*	NL
Black-necked stilt	*Himantopus mexicanus*	NL
Blue grosbeak	*Passerina caerulea*	NL
Blue jay	*Cyanocitta cristata*	NL
Blue-gray gnatcatcher	*Polioptila caerulea*	NL
Boat-tailed grackle	*Quiscalus major*	NL
Brown pelican	*Pelecanus occidentalis*	SSC
Brown thrasher	*Toxostoma rufum*	NL
Brown-headed cowbird	*Molothrus ater*	NL
Brown-headed nuthatch	*Sitta pusilla*	NL
Budgerigar	*Melopsittacus undulatus*	NL
Burrowing owl	*Athene cunicularia*	SSC
Canada goose	*Branta canadensis*	NL
Carolina chickadee	*Poecile carolinensis*	NL
Carolina wren	*Thryothorus ludovicianus*	NL
Cattle egret	*Bubulcus ibis*	NL
Chimney swift	*Chaetura pelagica*	NL
Chuck-will's-widow	*Caprimulgus carolinensis*	NL
Clapper rail	*Rallus longirostris*	NL
Common grackle	*Quiscalus quiscula*	NL
Common ground dove	*Columbina passerina*	NL
Common moorhen	*Gallinula chloropus*	NL
Common nighthawk	*Chordeiles minor*	NL
Common peafowl	*Pavo cristatus*	NL
Common yellowthroat	*Geothlypis trichas*	NL
Cooper's hawk	*Accipiter cooperii*	NL
Double-crested cormorant	*Phalacrocorax auritus*	NL
Downy woodpecker	*Picoides pubescens*	NL
Eastern bluebird	*Sialia sialis*	NL
Eastern kingbird	*Tyrannus tyrannus*	NL
Eastern meadowlark	*Sturnella magna*	NL
Eastern screech-owl	*Megascops asio*	NL

Table 8. Breeding Bird Atlas – Confirmed Breeding – Pasco County

Common Name	Scientific Name	Status
Eastern towhee	*Pipilo erythrophthalmus*	NL
Eurasian collared-dove	*Streptopelia decaocto*	NL
European starling	*Sturnus vulgaris*	NL
Fish crow	*Corvus ossifragus*	NL
Florida sandhill crane	*Grus Canadensis pratensis*	ST
Florida scrub-jay	*Aphelocoma coerulescens*	FT
Gray catbird	*Dumetella carolinensis*	NL
Gray kingbird	*Tyrannus dominicensis*	NL
Great blue heron	*Ardea herodias*	NL
Great crested flycatcher	*Myiarchus crinitus*	NL
Great egret	*Ardea alba*	NL
Great horned owl	*Bubo virginianus*	NL
Green heron	*Butorides virescens*	NL
Greylag goose	*Anser anser*	NL
Hairy woodpecker	*Picoides villosus*	NL
House sparrow	*Passer domesticus*	NL
Indigo bunting	*Passerina cyanea*	NL
Killdeer	*Charadrius vociferus*	NL
King rail	*Rallus elegans*	NL
Least bittern	*Ixobrychus exilis*	NL
Least tern	*Sternula antillarum*	ST
Limpkin	*Aramus guarauna*	SSC
Little blue heron	*Egretta caerulea*	SSC
Loggerhead shrike	*Lanius ludovicianus*	NL
Mallard	*Anas platyrhynchos*	NL
Monk parakeet	*Myiopsitta monachus*	NL
Mottled duck	*Anas fulvigula*	NL
Mourning dove	*Zenaida macroura*	NL
Muscovy duck	*Cairina moschata*	NL
Northern bobwhite	*Colinus virginianus*	NL
Northern cardinal	*Cardinalis cardinalis*	NL
Northern flicker	*Colaptes auratus*	NL
Northern mockingbird	*Mimus polyglottos*	NL
Northern parula	*Setophaga americana*	NL
Northern rough-winged swallow	*Stelgidopteryx serripennis*	NL
Osceola wild turkey	*Meleagris gallopavo osceola*	NL
Osprey	*Pandion haliaetus*	SSC
Pied-billed grebe	*Podilymbus podiceps*	NL
Pileated woodpecker	*Dryocopus pileatus*	NL
Pine warbler	*Setophaga pinus*	NL
Prairie warbler	*Setophaga discolor*	NL

Table 8. Breeding Bird Atlas – Confirmed Breeding – Pasco County

Common Name	Scientific Name	Status
Prothonotary warbler	*Protonotaria citrea*	NL
Purple gallinule	*Porphyrio martinica*	NL
Purple martin	*Progne subis*	NL
Red-bellied woodpecker	*Melanerpes carolinus*	NL
Red-eyed vireo	*Vireo olivaceus*	NL
Red-headed woodpecker	*Melanerpes erythrocephalus*	NL
Red-shouldered hawk	*Buteo lineatus*	NL
Red-tailed hawk	*Buteo jamaicensis*	NL
Red-winged blackbird	*Agelaius phoeniceus*	NL
Rock dove	*Columba livia*	NL
Ruby-throated hummingbird	*Archilochus colubris*	NL
Ruddy duck	*Oxyura jamaicensis*	NL
Seaside sparrow	*Ammodramus maritimus*	NL
Snowy egret	*Egretta thula*	SSC
Snowy plover	*Charadrius nivosus*	ST
Southeastern American kestrel	*Falco sparverius paulus*	ST
Southern bald eagle	*Haliaeetus leucocephalus*	NL
Summer tanager	*Piranga rubra*	NL
Tricolored heron	*Egretta tricolor*	SSC
Tufted titmouse	*Baeolophus bicolor*	NL
Turkey vulture	*Cathartes aura*	NL
White ibis	*Eudocimus albus*	SSC
White-eyed vireo	*Vireo griseus*	NL
Willet	*Tringa semipalmata*	NL
Wilson's plover	*Charadrius wilsonia*	NL
Wood duck	*Aix sponsa*	NL
Wood stork	*Mycteria americana*	FE
Yellow-billed cuckoo	*Coccyzus americanus*	NL
Yellow-crowned night-heron	*Nyctanassa violacea*	NL
Yellow-throated vireo	*Vireo flavifrons*	NL
Yellow-throated warbler	*Setophaga dominica*	NL

Abbreviation	Status
FT	Federal Threatened
FE	Federal Endangered
ST	State Threatened
SSC	Species of Special Concern
NL	Not Listed

Table 9. Native Amphibian Species Known or Expected to Occur at LGCWEA

Common Name	Scientific Name
Green tree frog	*Hyla cinerea*
Gopher frog*	*Lithobates capito*
Bullfrog	*Lithobates catesbeianus*

*=Species not directly observed on LGCWEA, but known to occur in the surrounding landscape

Table 10. Native Fish and Invertebrate Species Known to Occur at LGCWEA

Common Name	Scientific Name
Fish	
Largemouth bass	*Micropterus salmoides*
Bluegill	*Lepomis macrochirus*
Warmouth	*Lepomis gulosus*
Redear sunfish	*Lepomis microlophus*
Spotted sunfish	*Lepomis punctatus*
Invertebrate	
Peninsular floater	*Utterbackia peninsularis*

Table 11. Native Mammal Species Known to Occur at LGCWEA

Common Name	Scientific Name
Bobcat	*Lynx rufus*
Cotton rat	*Sigmodon hispidus*
Coyote	*Canis latrans*
Eastern cottontail rabbit	*Sylvilagus floridanus*
Florida black bear	*Ursus americanus floridanus*
Gray fox	*Urocyon cinereoargenteus*
Marsh rabbit	*Sylvilagus palustris*
Raccoon	*Procyon lotor*
River otter	*Lontra canadensis*
Sherman's fox squirrel	*Sciurus niger shermani*
White-tailed deer	*Odocoileus virginianus*

Table 12. Native Reptile Species Known to Occur at LGCWEA

Common Name	Scientific Name
American alligator	*Alligator mississippiensis*
Coral snake	*Micrurus fulvius*
Cottonmouth	*Agkistrodon piscivorus*
Eastern indigo snake	*Drymarchon couperi*
Florida box turtle	*Terrapene carolina bauri*
Gopher tortoise	*Gopherus polyphemus*
Peninsula ribbon snake	*Thamnophis sauritus sackenii*
Pygmy rattlesnake	*Sistrurus miliarius*
Southern black racer	*Coluber constrictor priapus*
Striped mud turtle	*Kinosternon baurii*

Table 13. Exotic and Invasive Animal Species Known or Expected to Occur at LGCWEA

Common Name	Scientific Name
Brown anole	*Anolis sagrei*
Feral hog	*Sus scrofa*
Greenhouse frog	*Eleutherodactylus planirostris*
Island applesnail	*Pomacea insularum*
Nine-banded armadillo	*Dasypus novemcinctus*

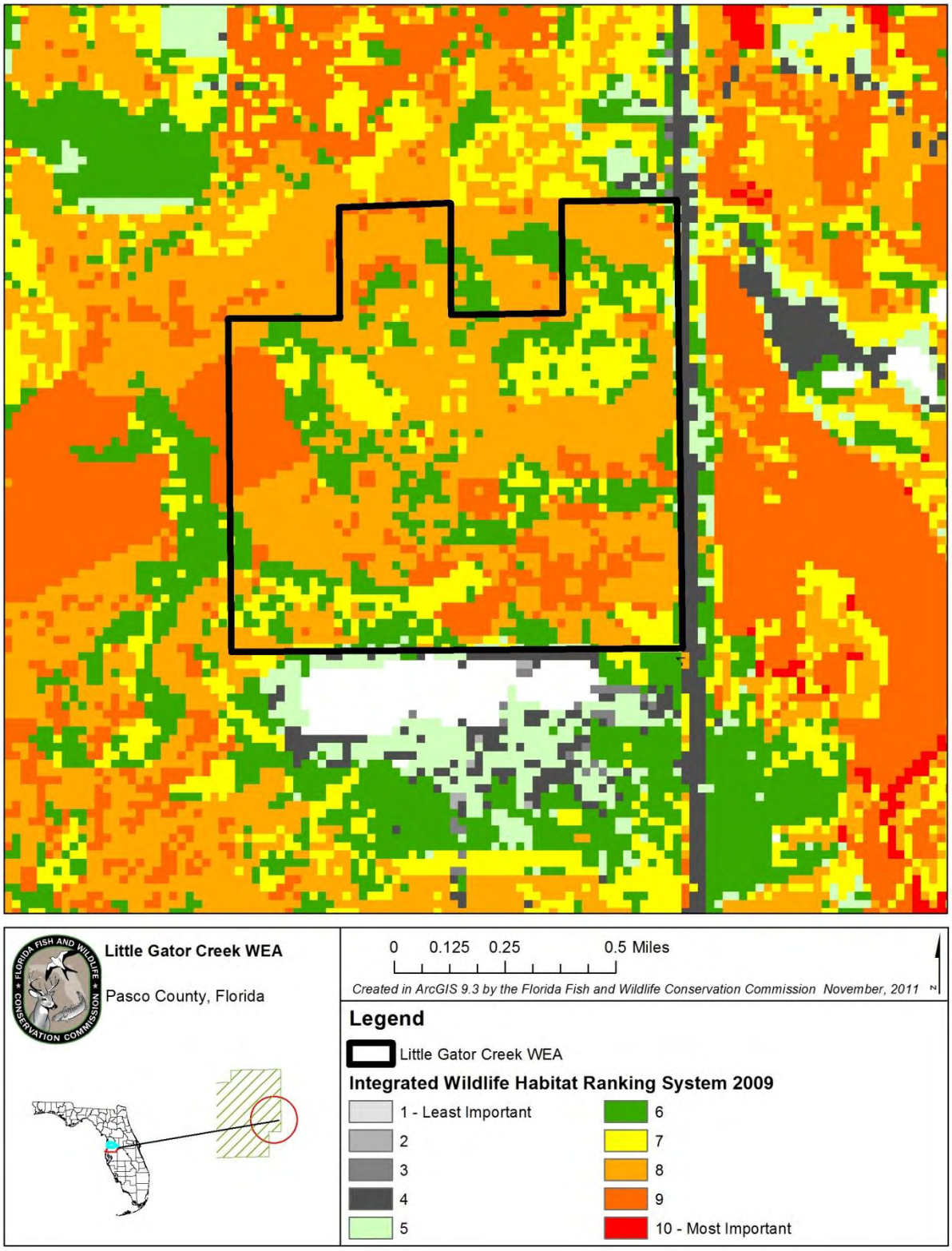


Figure 7: Integrated Wildlife Habitat Ranking System 2009

2.3.1 Imperiled Species

For the purposes of this Management Plan, the term "Imperiled Species" refers to plant and animal species that are designated as endangered, threatened, or a species of special concern by FWC, or that are designated as endangered or threatened by the U.S. Fish and Wildlife Service. This designation is also commonly known as "listed species." As shown in Table 14, ten imperiled animal species have been documented on the LGCWEA and another, the gopher frog, occurs in the surrounding landscape and can be reasonably expected to occur on the LGCWEA.

On November 8, 2010, new threatened species rules approved by the FWC were implemented. All federally listed species that occur in Florida will now be included on Florida's list as federally-designated endangered or federally-designated threatened species. In addition, the state has implemented a listing process to identify species that are not federally listed, but that may be at risk of extinction. These species will be called state-designated Threatened. All previous state-designated imperiled species were grandfathered on the list and have undergone status reviews. The FWC will continue to maintain a separate species of special concern category until all the former imperiled species have been reviewed and those species are either determined to be state-designated Threatened or removed from the list.

Table 14. Rare and Imperiled Animal Species Known or Expected to Occur at LGCWEA

Common Name	Scientific Name	Status
American alligator	*Alligator mississippiensis*	FT (S/A)
Eastern indigo snake	*Drymarchon couperi*	FT
Gopher tortoise	*Gopherus polyphemus*	ST
Gopher frog*	*Lithobates capito*	SSC
Limpkin	*Aramus guarauna*	SSC
Little blue heron	*Egretta caerulea*	SSC
Sherman's fox squirrel	*Sciurus niger shermani*	SSC
Snowy egret	*Egretta thula*	SSC
Tricolored heron	*Egretta tricolor*	SSC
White ibis	*Eudocimus albus*	SSC
Wood stork	*Mycteria americana*	FE

*=Species not directly observed on LGCWEA, but known to occur in the surrounding landscape

Abbreviation	Status
FT	Federally Threatened
FT (S/A)	Federally Threatened due to Similarity of Appearance
FE	Federal Endangered
ST	State Threatened
SSC	Species of Special Concern

An FWC Wildlife Conservation Prioritization and Recovery Species Management Strategy (WCPR Strategy) was completed for the LGCWEA in December 2012. Using statewide landcover-based habitat models, the WCPR Strategy identifies 15 focal species and one group of species (wading birds) as having potential habitat on the LGCWEA (Table 15). Except for those species identified with an alphabetical superscript, workshop participants and expert reviewers determined that ongoing management would meet the needs of the species. In the following species list, an [A] denotes species for which a measurable objective is identified, a [B] for species for which some level of monitoring is recommended, a [C] for species for which a Strategic Management Area (SMA) is recommended, and a [D] for species for which species management is recommended. For species with no alphabetical superscripts, participants and reviewers agreed there is no need for measureable objectives, monitoring, SMAs, or species-specific management. Occasionally, statewide models indicate a species has potential habitat on the area, but the local assessment indicates there is little opportunity to manage for these species. These limited opportunity species are denoted with an *. Section 5.4.3 discusses the WCPR program in greater detail and the WCPR Strategy for the LGCWEA is attached to this Management Plan as Appendix 13.7.

Table 15. Focal Species Identified as having Potential Habitat on LGCWEA

Common Name	Scientific Name	Status
American swallow-tailed kite	*Elanoides forficatus*	NL
Bachman's sparrow	*Peucaea aestivalis*[B]	NL
Brown-headed nuthatch	*Sitta pusilla*[B]	NL
Cooper's hawk	*Accipiter cooperii*	NL
Eastern indigo snake	*Drymarchon couperi*	FT
Florida black bear	*Ursus americanus floridanus*	NL
Florida mottled duck	*Anas fulvigula**	NL
Florida sandhill crane	*Grus canadensis pratensis**	ST
Gopher frog	*Lithobates capito*	SSC
Gopher tortoise	*Gopherus polyphemus*	ST
Limpkin	*Aramus guarauna**	SSC
Northern bobwhite	*Colinus virginianus*	NL
Sherman's fox squirrel	*Sciurus niger shermani*	SSC
Southeastern American kestrel	*Falco sparverius paulus*	ST
Southern bald eagle	*Haliaeetus leucocephalus*	NL
Wading birds	*Multiple spp.*[A, B]	

Abbreviation	Status
FT	Federally Threatened
NL	Not Listed
ST	State Threatened
SSC	Species of Special Concern

Superscript	Meaning
A	Species for which a measurable objective is identified
B	Species for which some level of monitoring is recommended
C	Species for which a SMA is recommended
D	Species for which species management is recommended
*	Limited opportunity species

2.3.2 FWC Wildlife Observations and FNAI Element Occurrences

A diversity of wildlife species is found on LGCWEA. The FNAI element occurrence records include several threatened or endangered species and species of special concern. As defined by FNAI, an "element" is any exemplary or rare component of the natural environment, such as a species, natural community, bird colony, spring, sinkhole, cave, or other ecological feature. An element occurrence is a single extant habitat which sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element. FNAI assigns a rank to each "element" occurrence. This ranking system was developed by The Nature Conservancy and the Natural Heritage Program Network based on the element's global rank (element's worldwide status) or state rank (status of element in Florida). The FNAI ranking system and definitions are located on the following website: www.fnai.org/ranks.cfm.

Known locations of FWC wildlife occurrences and FNAI element occurrences from the most recent GIS databases of the respective agencies are displayed in Figure 8. Appendix 13.5 contains a letter from FNAI authorizing the FWC to utilize their database for the purpose of displaying known plant and animal resources.

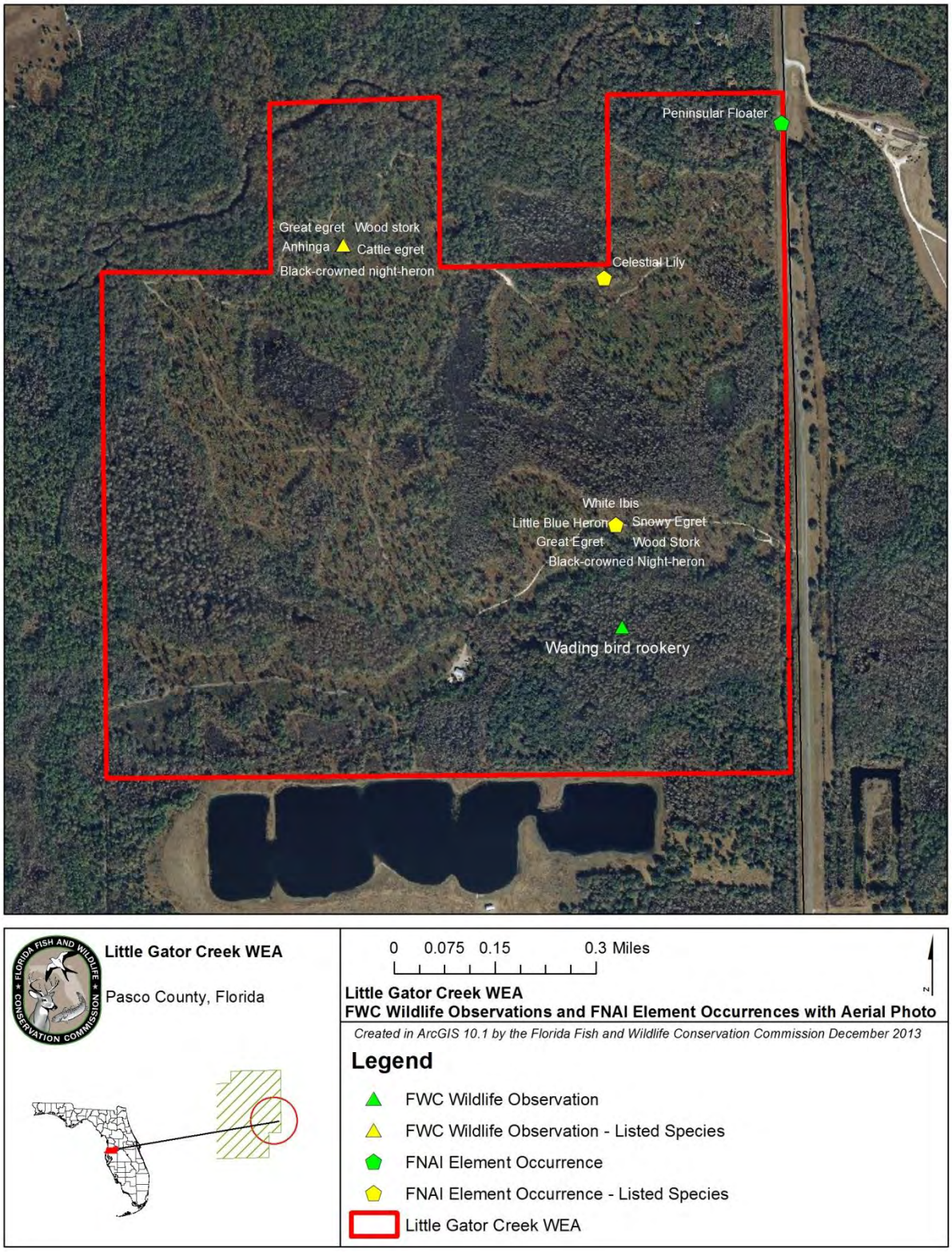


Figure 8: FWC Wildlife Observations and FNAI Element Occurrences

2.4 Native Landscapes

The native landscapes on the LGCWEA include mesic flatwoods, basin swamp, floodplain forest, and dome swamp and are fully described in the Section 2.2.1 of this Management Plan.

2.5 Water Resources

The LGCWEA is primarily affected by two waterways: Gator Creek and the Withlacoochee River. The northern boundary of LGCWEA encompasses two short segments of the Withlacoochee River and Gator Creek also flows through the northeast corner of the property. Additionally, Little Gator Creek, from which the property derives its name, is proximate to the southeast corner of LGCWEA and runs north into Gator Creek and the Withlacoochee River. The Withlacoochee watershed is classified as an Outstanding Florida Water and over 13% of LGCWEA falls within the Withlacoochee River System. Additionally, National Wetlands Inventory data indicates that wetlands are present on nearly 46% of LGCWEA.

Surface drainage on LGCWEA and surrounding areas is poorly developed. Pasco County is drained primarily by underground seepage. This drainage is interrupted by prolonged above-normal rainfall which raises the ground-water level so that sinkholes that normally act as surface drains become springs and add to the excessive surface water. Water levels in the colony are regulated through a well and an electric pump to provide optimum depths at various stages of the wood stork's reproductive cycle. If there is not enough rainfall, then the electric pump is turned on to increase the water level. The water at the colony serves as a protective mechanism: alligators limit the number of raccoons and snakes that are able to reach the eggs and nestlings. Yearly draw downs at the end of the breeding season in July are required to maintain healthy cypress for nesting.

2.6 Beaches and Dunes

There are no beaches or dunes associated with LGCWEA.

2.7 Mineral Resources

LGCWEA contains extensive deposits of commercial grade limerock. Richard C. Fountain and Associates of Winter Haven, Florida, estimated that the value of the limerock on the property is $981,906.

2.8 Cultural Resources

Seven archaeological or historic sites were identified within the boundaries of the LGCWEA according to the Florida Master Site File GIS thematic data layer maintained by the Florida Department of State, Division of Historical Resources (DHR). These prehistoric sites contain low density lithic and artifact scatters and range in date from the Early Archaic period to the Middle Archaic period, between 9,000 and 2,000 years before the present. All of the sites are defined according to their identifiable man-made chipped stone

artifacts, which include spear points, knives, hammer stones, and flakes from the tool-making process.

Archaeologists have theorized that the entire area encompassed by LGCWEA may have been a single large prehistoric quarry where chert was mined for use in tool-making. Numerous chert flakes and artifacts have been observed at LGCWEA. Consequently, the cultural resources at this site may be considerable and will be taken into account during all management activities.

Though archaeological and historical surveys were conducted on or around LGCWEA in 1981 and 2005, it is possible that additional, undocumented small prehistoric sites may exist on the area. All Master Site recording, assessments, and preservation strategies will be coordinated with DHR upon discovery.

2.9 Scenic Resources

The Withlacoochee River and Gator Creek run along the northern border of LGCWEA and provide valuable scenic resources for the area. Additional scenic resources include flatwoods, floodplain forest, basin swamp, and dome swamp, among others. Complete descriptions of the natural communities found on the LGCWEA can be found in Section 2.2.1 of this Management Plan.

3 Uses of the Property

3.1 Previous Use and Development

Prior to European settlement, the landscape of Florida, including this area of the peninsula, was settled and used by a variety of aboriginal peoples whose culture relied mainly on hunting, fishing and subsistence agriculture. Early accounts of this site indicate that Native Americans were occupying this area into the mid 1850s.

Historical research indicates that thousands of years ago, Native Americans were mining the limestone formations on LGCWEA for chert, a flint-like stone that was chipped into tools. These early people lived by hunting small and large animals and gathering wild plants.

The climate was much drier than today, the portion of the Florida peninsula above sea level was much larger, and the springs, lakes, rivers, and wetlands that greeted Spanish explorers nonexistent. Instead there were open grassy prairies, scrub oaks, and pine forests. Water holes were critical to the survival of people and the animals—mammoths, horses, and bison—they hunted. At LGCWEA, archeologists have found spear points, knives, hammer stones, and flakes from the tool making process spanning 7,000 years.

Though some land alteration occurred, only minor alteration of the landscape is thought to have taken place until the advent of European settlement beginning with the Spanish occupation of Florida in the sixteenth century.

Along with more advanced agricultural practices, the Spanish and other settlers brought live stock, primarily cattle and hogs, to Florida. This began an era of broad use of the landscape for agriculture. Rangeland cattle grazing and other agricultural practices began to be utilized in a more systematic way and occurred throughout much of the central Florida peninsula through most of the European settlement era from the 16th through the 20th centuries. Use of these agricultural practices began an era of increased alteration of the natural landscape. However, it wasn't until the 19th and 20th centuries that major settlement and more extensive alteration of the landscape in the area began with the widespread use of agriculture and associated development.

More recently, in the 20th century, pine timber production, cypress harvesting and cattle grazing had been the two primary uses of the land and natural resources on the area. Records indicate that old growth longleaf pine and slash pine were harvested from the tract in 1903 and 1904. No old growth timber remains on the property. During the period from 1928 to 1934, a naval stores operation was established and maintained. Many of the turpentine faces can still be seen on the trunks of the trees that have remained since that time. A second tree harvest took place in 1939. In 1949 and 1955, bald cypress was harvested on the area.

Until 1970, when the practice of cattle grazing was discontinued, prescribed burning was conducted on a regular two-year cycle. Burning has been conducted irregularly since that time. In 1980, a wildfire burned part of the tract, resulting in some loss of second-growth pine.

A previous lime rock mining operation adjacent to the property controlled both the quantity and quality of water entering the area. A water control levee and an 11-inch casing were installed to direct water to the cypress swamp containing the wood stork colony.

Prior to acquisition of the land by the State, the colony was monitored by the National Audubon Society and the FWC.

3.2 Current Use of the Property

Currently, the LGCWEA is managed primarily for the conservation and protection of the wood stork and other wading bird species. Wildlife based public outdoor recreation is limited and requires possession of a special-use permit. A wide range of operational and resource management actions are conducted on LGCWEA each year including activities such as prescribed burning; wildlife habitat restoration and improvement; invasive exotic species maintenance and control; road repairs and maintenance; imperiled species management, monitoring and protection; facilities and infrastructure maintenance and

repair; conservation acquisition and stewardship activities; archeological and historic resources monitoring and protection; and research related activities.

Due to the sensitivity of the wood stork and wading bird colony, current and anticipated resource uses of the property are limited and public access is by special-use permit only. Hunting is currently not allowed on LGCWEA and public access is authorized solely via permit process.

However, the FWC is currently planning on opening an entrance for public access on the northern boundary of the area, dependent on funding and site feasibility, which would allow public access to the area outside of the wood stork nesting season. The diversity of vegetation not only harbors a variety of bird species but also provides opportunities for mammalian wildlife viewing, which recreational users could enjoy if greater public access were allowed. Other uses being considered that may be allowed include hiking, photography, sightseeing, and special youth and mobility impaired hunting opportunities.

Because the area is closed to public access except via special-use permit due to the sensitive nature of wood stork colony nesting sites, FWC is not collecting data on annual public use. If the area is opened to public access in the future, FWC will start collecting such data and public use of the area can be expected to increase.

3.2.1 Visitation and Economic Benefits

Currently, visitation and public use of the LGCWEA is very low due to the fact that, by rule, a permit is required for public access to the area. Additionally, public use of the property is further limited by the presence of numerous conservation areas in the vicinity of LGCWEA that are more easily accessible to the public and that allow a wider range of recreational uses.

However, as described above, the FWC is considering a number of options to increase public use of LGCWEA and to lift some of the restrictions on public access to the area. Under consideration is the construction of a new parking area and access point in the northeastern portion of the property, located farther away from the wading bird colony than the current parking area and thereby allowing increased public access without compromising the sensitive natural resources of the area. Additionally, the FWC is considering regulatory changes that would allow public access to LGCWEA without a permit except during the January through August wood stork and wading bird nesting season.

With this expansion of public access, the LGCWEA is estimated to have a carrying capacity of 20 visitors per day for the months outside of the wood stork and wading bird nesting season. If the restrictions to public access were alleviated and optimum visitor levels were obtained, a total of 2,440 visitors per year could be expected. Such visitation and public use of the area for fish and wildlife based public outdoor recreational opportunities would provide a source of potential economic impacts from the LGCWEA for this region of Florida. If the area were at carrying capacity, FWC economic analysis estimates indicate that the LGCWEA could potentially generate an estimated annual economic impact of $783,801 for the State and the central Florida region. This estimated potential annual economic impact would aid in the support or creation of an estimated five jobs.

Additional revenue generating potential of LGCWEA will depend upon future uses described in this Management Plan. Additional revenue from environmental lands such as the LGCWEA might include sales of various permits and recreational user fees and ecotourism activities, if such projects could be feasibly developed. The annual area regulations can be consulted to clarify the necessary and required permits, fees, and regulations. Additionally, the long-term values of ecosystem services to local and regional land and water resources from air and water quality functions of the area, among others, and to human health, are considered to be significant.

3.3 Single- or Multiple-use Management

LGCWEA will be managed under the single-use concept as a Wildlife and Environmental Area. LGCWEA will provide limited wildlife resource based public outdoor recreation and educational opportunities, while protecting the natural and cultural resources found on the area. Due to the fact that the primary purpose for the acquisition of LGCWEA was the preservation of the significant wading bird colony, public access is limited and allowed only through the issuance of a permit. Although, as outlined above, the feasibility of increasing some public access outside of the wood stork nesting season is being planned. Any natural and cultural resources of LGCWEA will be managed under the guidance of ARC, the Conceptual State Lands Management Plan, and as outlined in the original purposes for acquisition.

3.3.1 Analysis of Multiple-use Potential

The following actions or activities have been considered under the multiple-use concept as possible uses to be allowed on LGCWEA. Uses classified as “Approved” are considered to be in accordance with the purposes for acquisition, as well as with the Conceptual State Lands Management Plan, and with the FWC agency mission, goals and objectives as expressed in the Agency Strategic Plan (Appendix 13.6). Uses classified as "Conditional" indicate that the use may be acceptable but will be allowed only if approved through a process other than the management plan development and approval process (e.g., special-use permitting, managed-area regulation and rule development). Uses classified as “Rejected” are not

considered to be in accordance with the original purpose of acquisition or one or more of the various forms of guidance available for planning and management:

	Approved	Conditional	Rejected
Apiaries		✓	
Astronomy			✓
Bicycling		✓	
Cattle grazing			✓
Citrus or other agriculture			✓
Ecosystem services and maintenance	✓		
Ecotourism		✓	
Environmental Education		✓	
First-responder training		✓	
Fishing			✓
Geocaching		✓	
Hiking		✓	
Horseback riding		✓	
Hunting		✓	
Linear facilities			✓
Military training		✓	
Preservation of cultural sites	✓		
Preservation of historical sites	✓		
Primitive camping			✓
Protection of imperiled species	✓		
Off-road vehicle use			✓
Shooting sports park			✓
Soil and water conservation	✓		
Timber harvest	✓		
Wildlife observation		✓	

3.3.2 Assessment of Impact of Planned Uses of the Property

To communicate FWC's planned uses and activities, specific management intentions, long- and short-term goals and associated objectives, identified challenges, and solution strategies have been developed for LGCWEA (Sections 5 -8). A detailed assessment of the benefits and potential impacts of planned uses and activities on natural and cultural resources was an integral part of the development of the management activities and intent, goals, objectives, challenges, and strategies sections of this Management Plan.

3.4 Acreage That Should Be Declared Surplus

On conservation lands where the FWC is the lead manager, FWC evaluates and identifies recommended areas for a potential surplus designation by DSL, ARC, and the Board of

Trustees. This evaluation consists of GIS modeling and analysis, aerial photography interpretation, analysis of fish and wildlife resources, review of resource and operational management needs, and a review of public use of the area.

The evaluation of LGCWEA by the FWC has determined that all portions of the area are being managed and operated for the original purposes of acquisition, and remain integral to the continued conservation of important fish and wildlife resources, protection of an active wading bird colony, and continue to provide good fish and wildlife resource based public outdoor recreational and educational opportunities. Therefore, the FWC has determined that no portion of LGCWEA should be considered or declared surplus.

4 Accomplished Objectives from the LGCWEA Management Plan 2001 – 2011

A wide variety of management activities were accomplished over the course of the previous planning cycle. Notable activities include the previously described slash pine harvest undertaken in 2009 and 2010, the implementation of a prescribed fire program, and the dismantling and removal of a dilapidated boardwalk and viewing platform previously located in the vicinity of the wading bird colony.

The following Resource Management Goals and Objectives are from the LGCWEA Management Plan 2001 – 2011. Planned activities for LGCWEA during this period were detailed in the Objectives listed below. The degree to which the FWC was able to accomplish the planned activities during this period is reflected as Percent Accomplished with each associated Objective.

Goals and Objectives	**Percent Accomplished**
Goal 1: Considering both current and projected climatic conditions, manage to perpetuate vegetative communities and water levels to ensure suitable conditions for a wood stork rookery.	N/A
Objective 1: By 2001, develop an engineering study contract to determine the adequacy of culverts on the area. *Comment: It was determined that the culverts were functioning adequately and therefore an engineering study was not necessary; however, it was further determined that a comprehensive hydrological assessment for the area was needed. This comprehensive hydrological assessment was completed in December 2012.*	0%

Goals and Objectives	Percent Accomplished
Objective 2: By 2002, improve ten acres of wood stork nesting habitat inside the rookery by reducing mid-story and understory vegetation using fire, chemical and mechanical means. *Comment: Improvement treatments were performed in 2001 and 2005.*	100%
Objective 3: By 2004, develop a computer model for managers to use in predicting wood stork nesting and foraging success. *Comment: It was determined that this effort should be evaluated for development on a state-wide level.*	0%
Objective 4: Based upon annual wetland conditions on surrounding areas, conduct draw-downs to maintain healthy cypress, and to provide suitable nesting conditions for storks and other wading birds (**Ongoing**). *Comment: Draw-downs continue to be an annual post-nesting season management practice.*	100%
Objective 5: During periods of suitable climatic conditions, regulate water levels to a depth of two feet inside the diked rookery site, thereby improving likelihood of wood stork nesting success. (**Ongoing**)(This responds to the Management Review Team's third checklist finding [see Appendix IX]).	100%
Objective 6: When the rookery is inactive, simulate natural rates of flow in Little Gator Creek, to prevent flooding on neighboring properties. Accomplish this by managing water control structures to achieve maximum flows (Ongoing)(This responds to the Management Review Team's third checklist finding [see Appendix IX]).	100%
Objective 7: During periods of wood stork reproductive activity, operate the existing ten-inch well and pump to supplement and maintain water levels inside the rookery (Ongoing)(This responds to the Management Review Team's third checklist finding [see Appendix IX]).	100%
Goal 2: Maintain diverse floral and faunal communities.	N/A
Objective 1: By 2001, develop a contract with FNAI (or other contractors) to provide a comprehensive floral and faunal	100%

Goals and Objectives	Percent Accomplished
inventory.	
Objective 2: Continue to manage plant succession and exotic plant invasion using fire, as well as mechanical and chemical techniques (Ongoing).	100%
Objective 3: By 2001, remove ineffective and unused metal wood duck nesting structures.	100%
Objective 4: By 2002, install and maintain 30 bluebird boxes to supplement natural cavity availability. *Comment: It was determine that there was minimal suitable bluebird habitat on the area during the last management plan cycle.*	0%
Objective 5: By 2002, request that an assessment of conservation and revenue-generating potential of the WEA's timber resources be completed by the DOF's Bureau of Forest Management. *Comment: A Timber Assessment for LGCWEA was completed by the Florida Forest Service in March 2012.*	100%
Objective 6: Continue current fire management activities by implementing a burning plan that includes a mixture of dormant and growing season burns, on a 2 – 5 year frequency over the 300 acres of upland, fire-dependent plant communities **(Ongoing)** (This responds to the Management Review Team's first checklist finding [see Appendix IX]).	100%
Objective 7: Continue to monitor non-native wildlife species, document associated ecological impacts and minimize negative impacts through appropriate management actions (This responds to the Management Review Team's second checklist finding [see Appendix IX]) (Ongoing).	100%
Goal 3: Provide appropriate levels of environmental education.	N/A
Objective 1: Upon public request, conduct limited environmental education tours on the area, except in the rookery during the nesting season (Ongoing).	100%

Goals and Objectives	Percent Accomplished
Goal 4: Establish and secure optimum boundaries necessary to assure the long-term welfare of the WEA.	N/A
Objective 1: By 2002, locate the northeast property boundary to determine the ownership of land at the north gate.	100%
Objective 2: Repair, replace, and relocate fencing necessary to properly define property boundaries, and to control access, by 2005.	100%
Goal 5: Identify and protect cultural resources of the area.	N/A
Objective 1: By 2001, contact the DHR for assistance with a comprehensive inventory of cultural resources and sites on the WEA. *Comment: DHR was contacted and two cultural resource surveys have been conducted on or near LGCWEA in 1981 and 2005, respectively.*	100%
Objective 2: By 2003, contract with DHR or a private archaeologist to provide a written historical record of cultural sites on the WEA. *Comment: Two cultural resource surveys have been conducted on or near LGCWEA in 1981 and 2005, respectively. The 2005 survey contains a comprehensive written historical record of the area on and around LGCWEA.*	100%

5 Management Activities and Intent

The following section provides a description of agency plans to locate, identify, protect, preserve or otherwise use fragile natural resources and nonrenewable cultural resources. In general, the FWC's management intent for LGCWEA is to restore and maintain natural communities in a condition that sustains ecological processes and conserves biological diversity, especially fish and wildlife resources. As the stated purpose for acquisition of the area was for the "…protection and proper management of the endangered wood stork and associated species," the conservation and management of habitat essential to maintaining a viable wood stork and wading bird nesting colony is of paramount importance.

In conjunction with this primary emphasis, and to the extent feasible, it is the FWC's intent to provide good fish and wildlife resource based public outdoor recreational opportunities on

LGCWEA. The FWC will utilize the best available data, guidelines, natural resource management practices, and recreational management practices to achieve these outcomes in accordance with the original purposes for acquisition. Furthermore, the management activities described in this section are in compliance with those of the Conceptual State Lands Management Plan.

5.1 Land Management Review

A land management review was conducted in April of 2000 and the results of that review and FWC responses to recommendations are included as Appendix 13.3. It was determined that the LGCWEA is being managed in accordance with the purposes for acquisition and that management practices, including public access, are in compliance with the management plan.

5.2 Adaptive Management

Adaptive management is "learning by doing";[1] it is the adjustment or modification of conservation actions to achieve a desired conservation goal. In practice, adaptive management is a rigorous process that includes sound planning and experimental design with a systematic evaluation process that links monitoring to management.[1, 2] Adaptive management requires flexibility for implementation, but should be fitted over a fundamentally sound, well-planned design.

An adaptive management process produces the strongest inference and most reliable results when experimental design components are incorporated into the monitoring process. Adaptive management is most rigorously applied in an active format when components of experimental design (i.e., controls, replication, and randomization) are included in the monitoring process.[2, 3] Incorporating valid statistical analyses of results will further enhance the value of the adaptive management process. However, in some situations, rigorous experimental design procedures can be relaxed without invalidating monitoring results. In a passive format,[2, 3] adaptive management can involve applying a conservation action at a site, observing the results and adjusting the action in the future if warranted.

Proposed adaptive management, monitoring and performance measures are developed through literature reviews and FWC staff meetings. Overall, a results-based approach is incorporated into this Management Plan, for which effective monitoring is an integral component. FWC will monitor conservation actions, species, habitats, and major threats to the conservation of the natural and cultural resources of LGCWEA.

5.2.1 Monitoring

A well-developed monitoring protocol is also one of the principal, required criteria for the management of LGCWEA. Monitoring and performance measures are important, but often overlooked elements of conservation planning. Monitoring provides the critical link between implementing conservation actions and revising management goals.

Monitoring is the systematic, repeated measurement of environmental characteristics to detect changes, and particularly trends, in those characteristics. Monitoring provides essential feedback, the data needed to understand the costs, benefits, and effectiveness of planned conservation actions and the management projects undertaken to address them.[2]

For natural communities, monitoring protocols are established through the FWC's Objective-Based Vegetation Management (OBVM, Section 5.3.1) program, which monitors how specific vegetative parameters are responding to FWC management. For imperiled and focal fish and wildlife species, monitoring protocols are established through FWC's Wildlife Conservation Prioritization and Recovery (WCPR, Section 5.4.3) program. Additional select common and game fish and wildlife species may be monitored by FWC staff as appropriate. Exotic and invasive plant and animal species (Section 5.5) are also monitored as needed and appropriate. Recreational uses are monitored through FWC's Public Access and Wildlife Viewing program, and work in conjunction with the establishment and adjustment of public access carrying capacities (Section 5.6.3). Cultural and historical resources (Section 5.9) are monitored with guidance from the DHR.

5.2.2 Performance Measures

Performance measures include qualitative or quantitative measures used to provide an estimate or index of the characteristic of interest, and to chart the overall progress of conservation actions towards specific goals. Successful monitoring programs and their associated performance measures provide natural resource professionals with valuable feedback on the effectiveness of conservation actions and make it possible to implement a more flexible adaptive management approach. An adaptive management approach ultimately will be more efficient and effective when it tracks inputs, incorporates an effective monitoring program that integrates performance measures, and evaluates results against desired goals.

5.2.3 Implementation

The LGCWEA Management Plan serves as the guiding framework to implement this adaptive management process. It serves as the underpinning for the integration of management programs (OBVM, WCPR, Public Access and Wildlife Viewing, Recreation Master Plans, etc.) underway to accomplish needed conservation actions that are planned to manage the natural resources of LGCWEA, and resolve conservation threats to fish and wildlife and the habitats they occupy. Based on evaluations of project results, the conservation actions are revised as necessary, and the adaptive management process is repeated.

5.3 Habitat Restoration and Improvement

On LGCWEA, the FWC will focus on managing for native habitat diversity, emphasizing maintenance of high-quality natural communities, and restoration of disturbed areas. Restoration may be achieved on disturbed areas by the re-introduction of fire, restoring historic hydrological conditions and/or the use of mechanical or chemical forest

management techniques as appropriate. Providing for natural regeneration of historic old growth components of forests remains an important consideration on the area. LGCWEA has high-quality native communities including mesic flatwoods, basin swamp, and floodplain forest that FWC will continue to manage and protect. On disturbed upland sites, FWC intends to initiate ground cover and natural community restoration.

As described above, the FNAI has conducted surveys and mapped the current vegetative communities on LGCWEA (Table 3, Figure 6). This information will be used to guide and prioritize management and restoration efforts on the area.

5.3.1 Objective-Based Vegetation Management

The FWC uses a comprehensive resource management approach to managing FWC-managed areas. Restoring the form and function of Florida's natural communities is the foundation of this management philosophy. The FWC uses OBVM to monitor how specific vegetative attributes are responding to FWC management.

The first step in implementing OBVM is to map the current, and in most cases the historic natural communities, on the managed area using the FNAI Natural Community Classification. The FWC contracts with FNAI to provide these mapping services, and plans to have natural community maps recertified on most areas on a five-year basis. A natural community, as defined by FNAI, is a distinct and recurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment.

After natural communities have been mapped, management units are delineated. Delineating management units takes into account the distribution and extent of the current and/or historic mapped natural communities, existing and proposed infrastructure, and other management considerations. FWC land managers then identify the predominant current or historic natural community within each management unit that guides the type and frequency of management activities that should be applied.

At the same time, measurable habitat management objectives referred to as 'desired future conditions' are established for each actively managed natural community. Desired future conditions are the acceptable range of values for quantifiable vegetation attributes, such as basal area, shrub height and cover, and ground cover. The FWC collaborated with FNAI to identify 'reference sites' for each actively managed natural community and applied the OBVM monitoring methodology at these reference sites to determine what attribute values occur in a high-quality community (http://www.fnai.org/reference-natural-communities.cfm). FWC staff considers the reference site attribute values when setting area-specific desired future conditions for natural communities.

Vegetation monitoring samples the selected attributes with the results being compared to the established desired future conditions. All monitoring performed under OBVM is completed using the program's Standard Operating Procedures.

Initial mapping and vegetation sampling provides FWC staff with baseline data indicating natural community structure, distribution, and condition on the area. Comparing the subsequent monitoring results to desired future conditions, provides key operational information on a natural community's vegetation structural status at a given point in time and trend over time. Using this information, managers can evaluate, adjust and modify their management practices to meet the stated objectives. By comparing natural community mapping products through the years, managers can track progress in moving altered communities to functioning natural communities.

5.3.2 Prescribed Fire and Fire Management

Periodic spring and summer fires occurred in fire-adapted communities under natural conditions. Plant species composition reflects the frequency and intensity of these fires. In the absence of fire, fallow fields on former longleaf sites follow a successional pattern through mixed pine-hardwood forests to an exclusively hardwood community rather than to the original plant community. The plant species composition may differ slightly on poorer soils of the slash pine dominated mesic flatwoods, but the dominant role of fire in controlling hardwoods is equally important in either ecosystem.

Timber removal, site preparation, drainage, and lack of fire have all combined to alter the plant species composition of the area resulting in a loss of fuel and inhibiting the return to a more "natural" fire management regime. On LGCWEA, a combination of prescribed fire, mechanical control, and longleaf pine reforestation is needed to restore the area to historic natural communities.

The FWC employs a fire management regimen to increase both species and habitat diversity and will continue a prescribed burning program on the LGCWEA in accordance with vegetative management objectives. As fire moves across a landscape, some areas carry fire better than others. Areas with higher vegetative fuel loads typically burn more evenly and with greater intensity. Areas with lower vegetative fuel loads or wetland areas inundated with water typically will not carry fire as evenly, and usually burn at a lower intensity. Employing a burning program with different burning frequencies, intensities, and seasonality (dormant season vs. growing season) of prescribed

burns creates habitat diversity and a mosaic of vegetation patterns. This mosaic is designed to have both frequently burned and infrequently burned aspects.

On some portions of LGCWEA, prescribed burning is limited by the buildup of mid-story brush and a lack of pyrogenic groundcover fuels. This habitat condition is not conducive to the perpetuation of many wildlife populations. Mechanical control of brush on upland sites by roller chopping can be utilized to reduce shading and encourage the grasses and forbs that are necessary to carry prescribed fire.

Single drum (with standard, not offset blades), one-pass roller chopping can be a valuable management tool, enabling the use of prescribed fires in areas heavily invaded by dense woody vegetation. However, roller chopping may damage the herbaceous ground cover, especially wiregrass. Therefore, its application will be limited to situations where burning can only be accomplished by first reducing woody vegetation by mechanical means. Roller chopping and mulching could be utilized to reduce the amount of hardwoods and saw palmetto present in the mesic flatwoods. However, roller chopping has never been utilized on the LGCWEA and, at present, there are no plans to begin doing so. Additionally, some portions of LGCWEA that are dominated by saw palmettos are too rocky for roller chopping to be practical; on such areas burning and hand planting of longleaf pine seedlings is the only option for habitat restoration and maintenance.

Whenever possible, existing firebreaks such as roads and trails, as well as natural breaks such as creeks and wetlands, will be used to define burning compartments. Disk harrows, mowing, and foam lines will be used as necessary to minimize disturbance and damage created by fire plows.

The transitional areas between two adjacent but different vegetative cover types, such as forests and wetlands, are known as ecotones. With the possible exception of wildfire suppression, mechanical soil disturbance in ecotones will be avoided in order to protect habitats for important rare species that often occur between flatwoods and riparian drainages. Silvicultural site preparation and creation of firebreaks are avoided when possible in these zones. Additionally, fires are allowed to burn into the edges of marshes, swamps and other wetlands in order to maintain these habitats. Once fuel loads have been reduced and a more open appearance has returned, vegetative management objectives will likely dictate a fire return interval that averages 1-4 years, preferably during the spring and early summer months.

In addition to the general prescribed fire management guidelines described above, an area-specific Prescribed Fire Plan has been updated and implemented for the LGCWEA (Appendix 13.8). This plan includes delineation of burn management units, detailed descriptions of prescribed fire methodology, safety, and smoke management guidelines.

5.3.3 Habitat Restoration

Habitat restoration is also referred to in this management plan as natural community restoration. Restoration activities will include removal of off-site species, longleaf pine reforestation on approximately 49 acres within the mesic flatwoods, and natural community improvement including mid-story tree removal within the wood stork and wading bird colony. In 2009 and 2010, approximately 255 acres of slash pine were harvested on LGCWEA and longleaf pine restoration activities have been initiated. Upon successful restoration of natural communities, the restored areas will be managed pursuant to the OBVM program as discussed in Section 5.3.1.

5.3.4 Apiaries

Currently, there are no apiaries operating on LGCWEA. However, use of apiaries is conditionally approved for LGCWEA, and is deemed to be consistent with purposes for acquisition, is in compliance with the Conceptual State Lands Management Plan, and is consistent with the FWC agency mission, goals, and objectives as expressed in the agency Strategic Plan and priorities document (Appendix 13.6). However, an Apiary Assessment (Appendix 13.10.1) has been conducted for the LGCWEA and no suitable sites for apiaries were identified due to the small size of the area. If conditions change and suitable sites for apiaries on the LGCWEA are identified, the location, management, and administration of apiaries on LGCWEA will be guided by the FWC Apiary Policy (Appendix 13.10).

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

5.4.1 Fish and Wildlife

Due to the quality of extant natural communities of LGCWEA, and a vast expanse of surrounding public conservation lands, a diversity of associated wildlife, including rare and imperiled species, common game and non-game species, can be found on LGCWEA. In managing for wildlife species, an emphasis will be placed on conservation, protection, and management of natural communities. Natural communities important to wildlife include mesic flatwoods, basin swamp, floodplain forest, and dome swamp.

Wildlife management emphasis is placed on documenting the occurrence and abundance of rare and imperiled species on the property. Following species inventory work, management practices are designed to restore, enhance or maintain imperiled species and their habitats. Resident wildlife will be managed for optimum diversity and abundance. In addition to resident wildlife, LGCWEA provides resources critical to many migratory birds including passerines, raptors, and others. Habitats important to migratory species will be protected, maintained or enhanced. The FWC will continue to update inventories for certain species, with emphasis on rare and imperiled fish and wildlife species. Monitoring of wildlife species will continue as an ongoing effort for the area.

Rare and imperiled species and their habitats will be protected and restored by following approved Federal and FWC recovery plans, guidelines, and other applicable scientific recommendations. Land management activities including prescribed burning and timber stand improvements will take into account imperiled species requirements and habitat needs. The potential for negative impacts from recreational activities will also be considered and monitored.

FWC intends to manage game populations on a sustained-yield basis to assure healthy game populations and a high-quality recreational experience. However, hunting is prohibited on LGCWEA due to the small size and sensitive nature of the site although some limited expansion for small-scale hunts, such as youth and mobility impaired hunts, outside of the wood stork nesting season is being considered. An evaluation of the hunting opportunities offered on LGCWEA is performed by FWC annually.

5.4.2 Wood Stork and Wading Bird Colony

For the purposes of this management plan, and following recent scientific literature trends, what was formerly referred to by FWC as the LGCWEA wood stork **rookery** is now referred to as the wood stork and wading bird **colony**. The stated purpose for acquisition of LGCWEA was "…the protection and proper management of the endangered wood stork and associated species." Therefore, maintenance and enhancement of this important wildlife resource is of particular emphasis on LGCWEA. The wading bird colony occupies approximately ten acres of the 53-acre basin swamp in the southern portion of LGCWEA and is composed primarily of an overstory of bald cypress and mixed hardwoods.

While other factors, including the disturbance of nesting birds and the availability of proximal foraging areas, may affect the nesting success of the colony, maintaining appropriate water levels during the pre-nesting and nesting seasons of wood storks and other wading birds within the colony site provides these species with a suitable location to construct nests, lay eggs, and fledge their young. Pre-nesting season, where mating pairs of birds are actively searching for appropriate nesting sites, may begin as early as January. Nest construction and nesting activity has been documented in February within the LGCWEA colony site, and may continue through August. Maintaining an appropriate water level of approximately two feet within the colony site during pre-nest and active nesting periods provides nesting wood storks and wading birds security from predators, and thereby increases nesting and fledging success. The FWC accomplishes water level

management using a water pumping system flowing into the swamp basin of the colony site when rainfall has been insufficient, and water control structures to manage the outflow of water from the colony site.

Another important consideration in managing the wood stork and wading bird colony is limiting disturbance of nesting birds. To accomplish this, FWC will prohibit public access to the colony site during periods of nesting activity. Currently, public access to LGCWEA is by special-use permit only. The FWC will annually monitor the colony during the pre-nesting and nesting seasons to determine when nesting activity begins and ends each year, and use this information when considering public access and the issuance of special-use permits or other limited entry to LGCWEA by the public.

Suitable wood stork and wading bird foraging habitat within proximity to LGCWEA is also important to the nesting success of birds within the colony. The FWC will continue to manage suitable foraging habitats of LGCWEA to promote the life history requirements and nesting success of the colony birds. In addition, as part of a Conservation Action Strategy (see Section 5.11.3), FWC will coordinate with other natural resource managers and private land owners within the region to emphasize the importance of foraging habitat to the birds of the LGCWEA colony, and encourage the proper management of their foraging habitat.

5.4.3 Imperiled Species - Wildlife Conservation Prioritization and Recovery

The FWC has identified the need to: 1) demonstrate optimal wildlife habitat conservation on FWC-managed lands; 2) develop science-based performance measures to evaluate management; 3) recover imperiled species; and 4) prevent future imperilment of declining wildlife species. To help meet these needs, the FWC uses a comprehensive resource management approach to managing FWC-managed areas. As described above, restoring the form and function of Florida's natural communities is the foundation of this management philosophy. The FWC uses OBVM to monitor how specific vegetative parameters are responding to FWC management, and uses the WCPR program to ensure management is having the desire effect on wildlife.

The goal of WCPR is to provide assessment, recovery, and planning support for the FWC-managed areas to enhance management of focal species and the recovery of imperiled species. The WCPR program objectives include prioritizing what FWC does for imperiled and focal species on FWC-managed areas; ensuring the actions taken on these areas are part of statewide conservation programs and priorities; and informing others about the work accomplished on lands FWC manages.

The WCPR program helps FWC take a proactive, science-based approach to species management on FWC-managed lands. This approach assesses information from statewide potential habitat models and Population Viability Analysis, and in conjunction with input from species experts and people with knowledge of the area, creates site-specific wildlife

assessments for imperiled wildlife species and a select suite of focal species. Staff combines these assessments with area-specific management considerations to develop a Species Management Strategy for the area. Each Strategy contains area-specific measurable objectives for managing priority species and their habitat, prescribes management actions to achieve these objectives, and establishes monitoring protocols to verify progress towards meeting the objectives. By providing FWC managers with information on actions they should undertake, the FWC intends for the Strategy to assure the presence and persistence of Florida's endangered and threatened fish and wildlife species (see http://myfwc.com/media/1515251/Threatened_Endangered_Species.pdf), as well as select focal species found on the area.

In summary, for FWC-managed areas, the WCPR program helps assess imperiled and focal wildlife species needs and opportunities, prioritize what FWC does for imperiled and focal species, prescribe management actions to aid in species recovery, prescribe monitoring protocols to allow evaluation of the species' response to management, and ensure the information is shared with others. Through the actions of this program, the FWC will facilitate fulfilling the needs of focal and imperiled wildlife species on LGCWEA. In the long-term, by implementing these strategies on FWC-managed lands and continuing to assess wildlife species' needs, the FWC will continue to play an integral role in aiding the recovery of imperiled species and preventing the future imperilment of declining wildlife species.

As described above, the completed WCPR Strategy for the LGCWEA identified potential habitat for 15 focal species and one group of species on the LGCWEA. For more detailed information regarding the LGCWEA WCPR Strategy, and FWC's planned monitoring and management actions for these species and their associated habitats, see Appendix 13.7.

5.5 Exotic and Invasive Species Maintenance and Control

The FWC will continue efforts to control the establishment and spread of Florida Exotic Pest Plant Council (FLEPPC) Category I or II plants on LGCWEA. Exotic plant species known to occur on the LGCWEA include cogon grass and water lettuce. Control technologies may include mechanical, chemical, biological, and other appropriate treatments. Treatments utilizing herbicides will comply with instructions found on the herbicide label and employ the Best Management Practices for their application. On the LGCWEA, cogon grass is widespread and continuous effort is made to prevent the spread of this exotic invasive species through the use of herbicide treatment.

An exotic animal species of concern found on the LGCWEA is the feral hog. These animals have high reproductive rates, and when populations reach high densities, feral hogs can significantly degrade natural communities through foraging activity (rooting). The FWC will consult with other regional natural resource managing agencies and private land owners to coordinate feral hog control measures as necessary. Also, to responsibly control the hog population of the LGCWEA, FWC will evaluate the efficacy of implementing additional control measures, such as limited entry public hunting opportunities or trapping.

5.6 Public Access and Recreational Opportunities

5.6.1 Americans with Disabilities Act

When public facilities are developed on areas managed by the FWC, every effort is made to comply with the Americans with Disabilities Act (Public Law 101-336). As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions. Recreation facilities in semi-primitive or primitive zones will be planned to be universally accessible to the degree possible except as allowed by the ADA[4] where:

1. Compliance will cause harm to cultural or historic sites, or significant natural features and their characteristics.

2. Compliance will substantially alter the nature of the setting and therefore the purpose of the facility.

3. Compliance would not be feasible due to terrain or prevailing construction practices.

4. Compliance would require construction methods or materials prohibited by federal or state statutes, or local regulations.

5.6.2 Recreation Master Plan

The FWC has adopted a comprehensive approach to the planning and administration of fish and wildlife resource based public outdoor recreational opportunities for LGCWEA. To accomplish this, FWC will work with recreational stakeholders and the general public to develop a Recreation Master Plan for LGCWEA that will be used to further design and develop appropriate infrastructure that will support the recreational use of the area by the

general public. This Recreation Master Plan will include planning for parking, trail design, and area resource interpretation.

5.6.3 Public Access Carrying Capacity

Baseline carrying capacities for users on FWC-managed lands are established by conducting a site specific sensitivity analysis using available data for the site. The intent of the carrying capacity analysis is to minimize wildlife and habitat disturbance and provide the experience of being "immersed in nature" that visitors to FWC-managed areas desire. Carrying capacities are just a first step; management of recreational use requires a means of monitoring visitor impacts. Responding to these impacts may require adjusting the carrying capacities as necessary. The carrying capacities generated through this process are used as a tool to help plan and develop public access, wildlife viewing, and fish and wildlife resource based public outdoor recreation opportunities.

Based on an analysis of the overall approved uses and supported public access user opportunities, and the anticipated proportional visitation levels of the various user groups, FWC has determined that LGCWEA can support 20 visitors per day, for the months outside of the January through August wood stork and wading bird nesting season, if public access were allowed and the entrance at the northeast end of the area, away from the wading bird colony, were opened. This public access carrying capacity will be periodically reevaluated, and additional capacity may be contemplated as part of the Recreation Master Plan development and implementation process.

It is important to note that public access carrying capacities are not developed to serve as a goal for expanding the public use of a particular area to match the established carrying capacity. Rather, they are developed to establish maximum thresholds for public use of the respective area in order to protect the natural and cultural resources on every area and to ensure that visitors will have a high-quality visitor experience.

5.6.4 Wildlife Viewing

Currently, public access to the LGCWEA for wildlife viewing is by special-use permit only. The LGCWEA provides a wide variety of native wildlife species, both resident and seasonally migratory, that are available for visitors' enjoyment for observation and photography. The quality of habitat found on LGCWEA attracts a suite of species including various birds, mammalian, reptile and amphibian wildlife throughout LGCWEA.

5.6.5 Hunting

Currently, hunting is prohibited on the LGCWEA. Due to the small size and characteristics of the site, hunting may not be practical on the LGCWEA. However, an evaluation of the potential for hunting opportunities, including the need to control feral hogs, and the feasibility of offering limited entry hunts administered through the mobility impaired and youth hunting programs, will be periodically performed by FWC. Also, there are many other sites nearby that offer opportunities for hunting access on other public lands.

5.6.6 Fishing

Fishing is currently prohibited as it is not considered to be in accordance with the original purpose of acquisition or one or more of the various forms of guidance available for planning and management of the LGCWEA. Additionally, feasible fishing sites are not available on the area. However, there are many other sites nearby that offer opportunities for fishing access on the Withlacoochee River and other public lands and waters.

5.6.7 Boating

Boating is currently prohibited as it is not considered to be in accordance with the original purpose of acquisition or one or more of the various forms of guidance available for planning and management of the LGCWEA. In addition, feasible boating sites are not available on the area. However, there are many other sites nearby that offer opportunities for fishing access on the Withlacoochee River and other public lands and waters.

5.6.8 Trails

Currently, public access to the LGCWEA is by special-use permit only, and there are no designated and maintained trails on the LGCWEA. If determined to be appropriate and feasible, and in conjunction with the development and implementation of the Recreational Master Plan, FWC anticipates developing up to three miles of trails. The FWC will continue to periodically reevaluate the potential for trail connectivity to other conservation areas and will monitor new trails biannually for user impacts to natural communities.

5.6.8.1 Hiking

Currently, public access to the LGCWEA for hiking is by special-use permit only, and there are no designated hiking trails on the LGCWEA. However, there are many other sites nearby that offer opportunities for hiking access on other public lands.

5.6.8.2 Bicycling

Bicycling is prohibited as it is not considered to be in accordance with the original purpose of acquisition or one or more of the various forms of guidance available for planning and management of the LGCWEA. However, there are many other sites nearby that offer opportunities for bicycling access on other public lands.

5.6.8.3 Equestrian

Currently, horseback riding is prohibited on the LGCWEA. The small size, limited facilities, and natural conditions present at the LGCWEA are not conducive to equestrian use. The FWC will explore providing information to visitors regarding horseback riding opportunities on surrounding conservation and private property.

5.6.9 Camping

Currently, public access to the LGCWEA is by special-use permit only. Due to the sensitivity of the wood stork and wading bird colony, the small size of the area, and the high-quality natural community conditions present, camping is prohibited on the

LGCWEA. In addition, there are ample camping opportunities available at Colt Creek State Park, which is located directly east of LGCWEA on County Road 788.

5.6.10 Geocaching

Geocaching, also known as Geographic Positioning System (GPS) Stash Hunt or GeoStash, is a contemporary combination of orienteering and scavenger hunting generally utilizing a GPS receiver unit. Geocache websites routinely promote good stewardship. However, the potential exists for resource damage, user conflicts, or safety issues caused by inappropriately placed caches and/or links that do not provide adequate information about the area. Consequently, geocaching is only allowed on the LGCWEA upon the issuance of a special permit by FWC.

It is the policy of the FWC to allow placement of geocaches only in those locations that do not present the potential for resource damage, user conflicts, or threats to the safety of the activity participants. The placement of geocaches on FWC-managed lands is governed by specific guidelines. These guidelines may be found on the following FWC website: http://myfwc.com/media/1074886/FWC_Geocache_Guidelines.pdf .

5.6.11 Environmental Education

No formal structured environmental education program exists on the LGCWEA. However, environmental education is an approved activity. The FWC will continue to assess the need for and encourage environmental education partnership opportunities as appropriate.

5.6.12 Interpretation

Interpretive signage and resource interpretation materials are provided at the main entrance. Additional interpretive materials including a website, trail guide, and bird list for the LGCWEA will be developed.

5.7 Hydrological Preservation and Restoration

5.7.1 Hydrological Assessment

A hydrological assessment for the LGCWEA was completed in December 2012. Pursuant to the recommendations of the hydrological assessment, the FWC will implement hydrological restoration as feasible and appropriate.

FWC will also utilize the results of the hydrological assessment to implement management activities and regimens to better maintain appropriate seasonal water levels within the wood stork and wading bird colony site. If determined to be appropriate and feasible, management enhancement of the wood

stork and wading bird colony may include extending the outflow of the current water pump system closer to the swamp basin of the colony.

The Hydrology Assessment and Conceptual Restoration Plan for LGCWEA (Appendix 13.9) recommends replacing several culverts, upgrading to hardened low water crossings, extending the water pump outfall to the northern boundary of the wading bird colony, and evaluating the inflow and outflow volumes of the wading bird colony. These management activities will be implemented as feasible.

5.7.2 Water Resource Monitoring

The FWC will cooperate with the SWFWMD and the DEP to develop and implement any necessary surface water quality and quantity monitoring protocols for LGCWEA. In this capacity, FWC will primarily rely on the expertise of the SWFWMD and the DEP to facilitate these monitoring activities.

5.8 Forest Resource Management

A Timber Assessment of the timber resources of LGCWEA was conducted by the FFS in March 2012 (Appendix 13.12). The management of timber resources will be considered in the context of the Timber Assessment and the overall land management goals and activities.

Pursuant to OBVM management goals, FWC will continue to manage timber resources for wildlife benefits and natural community restoration. Management activities including the use of timber thinning and harvesting may be utilized. The primary management technique for encouraging reforestation is protection of young trees and seedlings on these sites from damage. However, where natural regeneration is lacking, specifically a small area of LGCWEA (49 acres) where longleaf pine density is below optimal, artificial reforestation may be implemented. Planting trees on these selected sites is used to increase the rate of reforestation and to ensure diversity. Forested wetlands are managed for stands with old growth characteristics. Snags will be protected to benefit cavity-nesting species.

5.8.1 Timber Management Plan

As noted above, the most recent timber assessment completed for LGCWEA was performed by the FFS in March 2012. This assessment provided specific management prescriptions for the entirety of LGCWEA. The assessment recommends initiating a longleaf pine reforestation program on the approximately 49 acres that have a basal area of less than 20 square feet per acre. The assessment also notes that a timber harvest was undertaken in 2009, and that another commercial harvest will not be needed for at least another 20 to 30

years. Appendix 13.12 contains more details of the recommended management actions. The FWC will work with the FFS or a professional forestry consultant to develop and implement a Forest Management Plan consistent with OBVM and WCPR objectives for the area.

5.9 Cultural and Historical Resources

Procedures outlined by the DHR will be followed to preserve any such sites. FWC will consult with DHR in an attempt to locate any additional features on the area. As appropriate and necessary, FWC will contact the DHR for assistance prior to any ground-disturbing activity on the area.

To date, the DHR Master Site File indicates seven known cultural sites on LGCWEA. The FWC will submit subsequently located cultural sites on LGCWEA to DHR for inclusion in their Master Site file. In addition, FWC will ensure management staff has DHR Archaeological Resources Monitoring training. Furthermore, FWC will refer to and follow DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for management of these resources, and prior to any facility development or other ground disturbing activities.

5.10 Capital Facilities and Infrastructure

FWC's land management philosophy is designed to conserve the maximum amount of wildlife habitat while providing the minimal number of capital facilities and infrastructure necessary to effectively conduct operational and resource management activities, and to provide ample opportunities for fish and wildlife resource based public outdoor recreation. For these reasons, planned capital facilities and infrastructure will focus on improving access, recreational potential, hydrology, or other resource and operational management objectives.

Current capital facilities and infrastructure on LGCWEA include 2.4 miles of service roads, a work compound that includes a pole barn and a shed, an intake water control structure, an outflow water control structure, a pump station, and one entrance sign.

As described in Section 5.6.1 of this Management Plan, for any public facilities that are developed on areas managed by the FWC, every effort is made to comply with the Americans with Disabilities Act (Public Law 101-336).

5.11 Land Conservation and Stewardship Partnerships

The FWC utilizes a three-tiered approach to identifying, acquiring or otherwise protecting important conservation lands adjacent to or in proximity to existing FWC-managed areas. This involves development of an Optimal Resource Boundary (ORB), Optimal Conservation Planning Boundary (OCPB) and associated Conservation Action Strategy (CAS). Increasingly, cooperative land steward partnership efforts with private landowners plays an integral role in this effort as does ongoing land conservation, either through fee-simple or less-than-fee conservation easements. In combination, this tiered model helps FWC to further the regional conservation of important fish and wildlife habitats through a proactive, comprehensive, and cooperative approach towards conservation.

5.11.1 Optimal Resource Boundary

This three tiered model begins with the development of an ORB, which is a resource-based analysis on a regional scale that integrates important FWC conservation research and analysis into practical planning, acquisition, and management efforts through GIS analysis. The ORB focuses on critical and important wildlife species or habitat considerations such as rare and imperiled species habitat within a particular region or ecosystem-like area on a landscape scale within which an FWC managed area is contained while eliminating urban areas or lands that have already been conserved or protected.

5.11.2 Optimal Conservation Planning Boundary

The second tier is known as the OCPB. The OCPB combines the regional natural resources identified in the ORB, as well as regional and local area conservation planning, including habitat conservation and restoration, habitat linkages, management challenges, land use and zoning issues, infrastructure including roads and developments, improving access, eliminating inholdings, providing prescribed burn buffers, resolving boundary irregularities, water resource protection, and conserving other important natural and cultural resources.

The OCPB provides the basis for development of a broader CAS for LGCWEA. Although the OCPB provides the basis for potential future voluntary, willing-seller conservation acquisitions, it is designed to function primarily as a conservation planning boundary. The OCPB identifies surrounding lands and natural resources that may be important to the continued viability of fish and wildlife populations in the region. As they are currently managed, these lands appear to contribute to regional conservation and may support conservation landscape linkages.

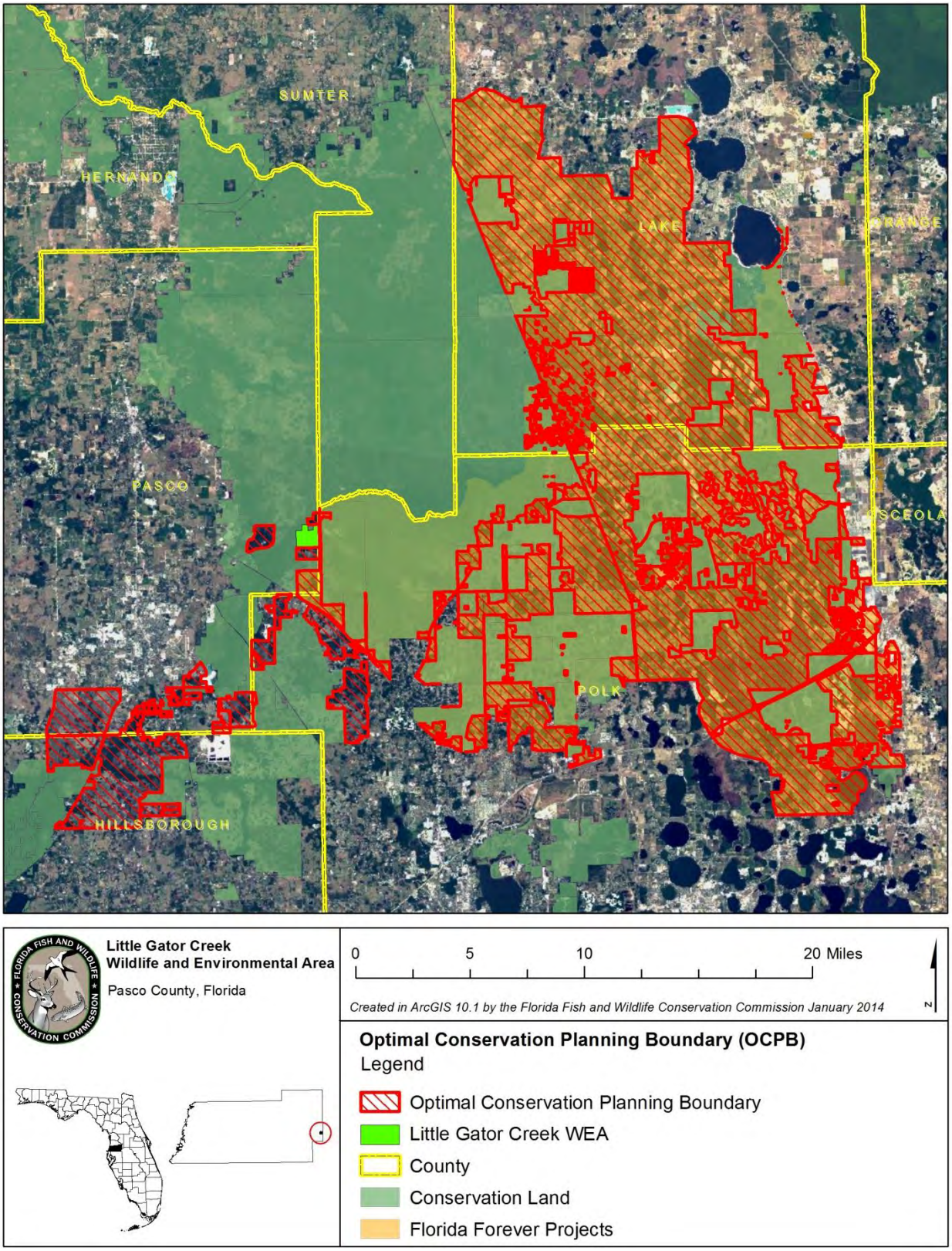


Figure 9: Optimal Conservation Planning Boundary

5.11.3 Conservation Action Strategy

The CAS is the third tier, and implements the results of the ORB and OCPB tiers. This element of the process incorporates the conservation planning recommendations into an action strategy that prioritizes conservation needs. The CAS is integral to the development of conservation stewardship partnerships and also implements the current approved process for establishing the FWC Florida Forever Inholdings and Additions acquisition list.

Primary components of the CAS may include:

- FWC Landowner Assistance Program
- FWC conservation planning
- FWC Additions and Inholdings Program Land Conservation Work Plan
- Forest Stewardship Program proposals
- Florida Forever project proposals and boundary modifications
- Conservation easements
- Federal or State grant conservation proposals
- Regional or local conservation proposals
- Local, state, and federal planning proposals
- Non-governmental organization conservation proposals

Continued conservation of these lands may be aided by available voluntary landowner stewardship programs, conservation easements, and in some cases, potential voluntary conservation acquisitions. Participation in any FWC conservation effort is entirely voluntary and at the sole choice of willing landowners.

Private landowners seeking assistance with habitat management will likely find it offered within FWC's Landowner Assistance Program (LAP). The FWC employs biologists who are available to provide wildlife-related assistance with land-use planning and habitat management. There are many forms of assistance that include technical, financial, educational, and various forms of recognition that seek to award landowners who manage their wildlife habitat responsibly. More information on FWC's LAP program and online habitat management tools are available online at: http://myfwc.com/conservation/special-initiatives/lap/ .

5.11.4 FWC Florida Forever Additions and Inholdings Acquisition List

Currently, the FWC has identified nine acres of potential additions or privately held inholdings for the LGCWEA. Upon completion of the CAS, additions to the FWC Florida Forever Additions and Inholdings acquisition list may be recommended.

5.12 Research Opportunities

The FWC intends to cooperate with researchers, universities, and others as feasible and appropriate. For LGCWEA, the FWC will continue to assess and identify research needs, and pursue research and environmental education partnership opportunities as appropriate. Research proposals involving the use of the area are evaluated on an individual basis. All research activities on LGCWEA must have prior approval by FWC.

5.13 Cooperative Management and Special Uses

The FWC is responsible for the overall management and operation of the LGCWEA as set forth in the lease agreements with the Board of Trustees. In keeping with the lease agreements, and in order to conduct its management operations in the most effective and efficient manner, the FWC cooperates with other agencies to achieve management goals and objectives described in this management plan. These include cooperating with DHR to ensure the requirements of the Management Procedures Guidelines – Management of Archaeological and Historical Resources document (Appendix 13.11) are followed with regard to any ground-disturbing activities. In addition, the FFS assists the FWC by providing technical assistance on forest resource management. Also, the FWC cooperates and consults with the SWFWMD and the DEP for the monitoring and management of both ground and surface water resources and the overall management of the LGCWEA.

5.13.1 First Responder and Military Training

First-responder (public governmental police department or agency, fire and emergency medical service personnel) training and military training are conditionally allowed on the LGCWEA. Such activities are considered allowable uses only when undertaken intermittently and in a manner that does not impede the management and public use of the LGCWEA, or cause unreasonable impact to the natural resources of the area. Additionally, FWC staff must be notified prior to any such training taking place on the LGCWEA. Any first-responder or military training that is not low-impact, intermittent and occasional would require an amendment to this management plan, and therefore will be submitted by the FWC to DSL and ARC for approval consideration prior to authorization.

5.14 Climate Change

Because of Florida's unique ecology and topography, any potential impacts as a result of climate change may be particularly acute and affect multiple economic, agricultural, environmental, and health sectors across the state. The impact of climate change on wildlife and habitat may already be occurring, from eroding shorelines and coral bleaching to increases in forest fires and saltwater intrusion into inland freshwater wetlands.

The Intergovernmental Panel on Climate Change (IPCC), a multi-national scientific body, reports that climate change is likely proceeding at a rate where there will be unavoidable impacts to humans, wildlife, and habitat. Given current levels of heat-trapping greenhouse gas emissions, shifts in local, regional, and national climate patterns including changes in precipitation, temperature, increased frequency and intensity of extreme weather events,

rising sea levels, tidal fluctuations, and ocean acidification are projected. The current trend of global temperature increase has appeared to accelerate in recent decades, and continued greenhouse gas emissions may result in projected global average increases of 2 –11.5° F by the end of the century.[5]

This apparent change in global climate has the potential to disrupt natural processes; in some areas, climate change may cause significant degradation of ecosystems that provide services such as clean and abundant water, sustainable natural resources, protection from flooding, as well as hunting, fishing and other recreational opportunities. Consequently, climate change is a challenge not only because of its likely direct effects, but also because of its potential to amplify the stress on ecosystems, habitats, and species from existing threats such as exponential increases in surface and ground water use, habitat loss due to increased urbanization, introduction of invasive species, and fire suppression.

Potential impacts that may be occurring as a result of climate change include: change in the timing of biological processes, such as flowering, breeding, hibernation, and migration; [6, 7, 8] more frequent invasions and outbreaks of exotic invasive species;[9] and loss of habitat in coastal areas due to sea level rise.[10] Some species are projected to adjust to these conditions through ecological or evolutionary adaptation, whereas others are projected to exhibit range shifts as their distributions track changing climatic conditions. Those species that are unable to respond to changing climatic conditions are projected to go extinct. Some estimates suggest that as many as 20% - 30% of the species currently assessed by the IPCC are at risk of extinction within this century if global mean temperatures exceed increases of 2.7 – 4.5° F.[11] A number of ecosystems are projected to be affected at temperature increases well below these levels.

At this time, the potential effects of climate change on Florida's conservation lands are just beginning to be studied and are not yet well understood. For example, FWC has begun a process for currently developing climate change adaptation strategies for monitoring, evaluating, and determining what specific actions, if any, may be recommended to ameliorate the projected impacts of climate change on fish and wildlife resources, native vegetation, and the possible spread of exotic and invasive species. Currently, the FWC is continuing its work on the development of these potential adaptation strategies. However, as noted above, the effects of climate change may become more frequent and severe within the time period covered by this Management Plan.

For these reasons, there is a continuing need for increased information and research to enable adaptive management to cope with potential long-term climate change impacts. The most immediate actions that the FWC can take are to work with partners to gather the best scientific data possible for understanding natural processes in their current state, model possible impacts and subsequent changes from climate change, develop adaptive management strategies to enhance the resiliency of natural communities to adapt to climate change, and formulate criteria and monitoring for potential impacts when direct intervention may be necessary to protect a species.

Accordingly, when appropriate, the FWC will participate in organizations such as the Peninsular Florida Land Conservation Cooperative or similar organizations so that the FWC continues to gain understanding and share knowledge of key issues related to potential climate change. In addition, the FWC will consider the need for conducting vulnerability assessments to model the potential effects of climate change; especially sea level rise and storm events, on imperiled species and their habitats on FWC managed land.

To address the potential impacts of climate change on LGCWEA, Goals and Objectives have been developed as a component of this Management Plan (Section 6.11). Depending on the recommendations of the adaptive management strategies described above, additional specific goals and objectives to mitigate potential climate change impacts may be developed for the LGCWEA Management Plan in the future.

5.15 Soil and Water Conservation

Soil disturbing activities will be confined to areas that have the least likelihood of experiencing erosion challenges. On areas that have been disturbed prior to acquisition, an assessment will be made to determine if soil erosion is occurring, and if so, appropriate measures will be implemented to stop or control the effects of this erosion.

6 Resource Management Goals and Objectives

The management goals described in this section are considered broad, enduring statements designed to guide the general direction of management actions to be conducted in order to achieve an overall desired future outcome for LGCWEA. The objectives listed within each management goal offer more specific management guidance and measures, and are considered the necessary steps to be completed to accomplish the management goals. Many of the objectives listed have specific end-of-the-calendar-year target dates for completion and all of them are classified as having either short-term (less than two years) or long-term (up to ten years) timelines for completion.

6.1 Habitat Restoration and Improvement

Goal: Improve extant habitat and restore disturbed areas.

Short-term

6.1.1 Prescribe burn approximately 105 acres of fire-adapted natural communities per year.

6.1.2 Maintain 315 acres (100%) of fire-adapted natural communities per year within a 2 - 5 year target fire return interval.

6.1.3 Update and implement a prescribed fire plan for the area.

6.1.4 Conduct habitat/natural community improvement on approximately 3 acres per year including mid-story tree removal within the wood stork and wading bird colony. (Figure 10)

6.1.5 Continue to implement OBVM.

Long-term

6.1.6 Continue to prescribe burn approximately 105 acres of fire adapted natural communities per year.

6.1.7 Continue to maintain 315 acres (100%) of fire-adapted natural communities per year within a 2 – 5 year target fire return interval.

6.1.8 Continue to implement OBVM.

6.1.9 Conduct habitat/natural community improvement on approximately 3 acres per year including mid-story tree removal within the wood stork and wading bird colony site. (Figure 10)

6.1.10 As appropriate, and in consultation with the FFS, hand-plant approximately 49 acres to longleaf pine within the mesic flatwoods to enhance the current longleaf pine density. (Figure10)

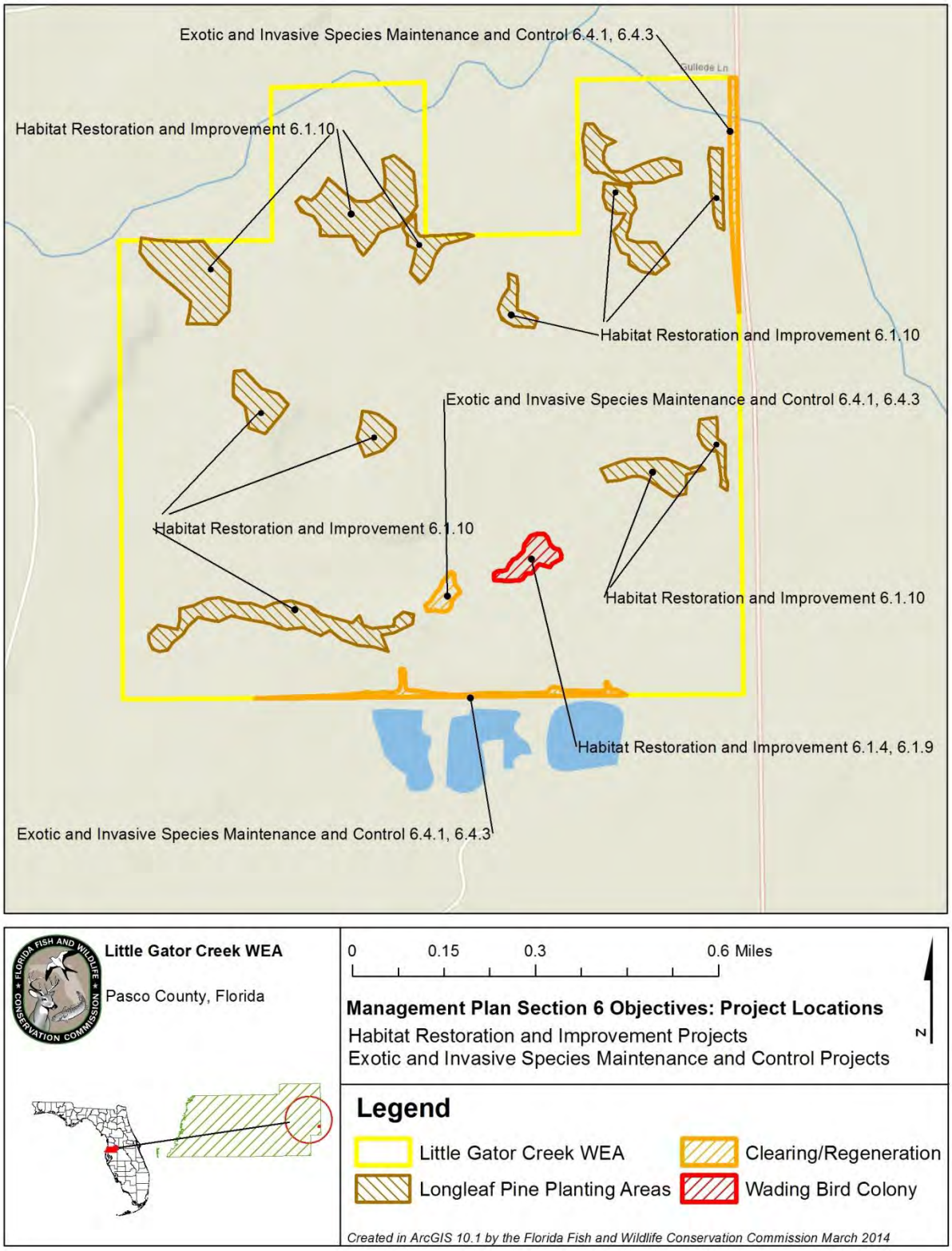


Figure 10: Project Locations

Figure 11: LGCWEA Existing and Proposed Facilities

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

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

Short-term

6.2.1 Utilizing the water pump system, continue to provide an appropriate water level (approximately two feet) in the wood stork and wading bird colony during pre-nest and nesting season.

6.2.2 Implement the recommended actions outlined in the WCPR Strategy.

6.2.3 Continue to implement the monitoring protocol to annually assess the wood stork and wading bird colony for nesting activity.

6.2.4 Continue to conduct opportunistic monitoring to document focal and imperiled species occurrence data for gopher frog, eastern indigo snake, gopher tortoise, American swallow-tailed kite, Bachman's sparrow, brown-headed nuthatch, Cooper's hawk, Florida mottled duck, Florida sandhill crane, limpkin, southeastern American kestrel, southern bald eagle, Florida black bear, and Sherman's fox squirrel.

Long-term

6.2.5 Continue to implement the WCPR strategy by managing identified habitats and monitoring identified species.

6.2.6 Utilizing the pump system, continue to provide an appropriate water level (approximately two feet) in the wood stork and wading bird colony during pre-nest and nesting season.

6.2.7 Continue to implement the monitoring protocol to annually assess the wood stork and wading bird colony for nesting activity.

6.2.8 Continue to conduct opportunistic monitoring to document focal and imperiled species occurrence data for gopher frog, eastern indigo snake, gopher tortoise, American swallow-tailed kite, Bachman's sparrow, brown-headed nuthatch, Cooper's hawk, Florida mottled duck, Florida sandhill crane, limpkin, southeastern American kestrel, southern bald eagle, Florida black bear, and Sherman's fox squirrel.

6.3 Other Wildlife (game and non-game) Habitat Maintenance, Enhancement, Restoration, or Population Restoration.

Goal: Maintain, improve, or restore game and non-game species populations and habitats.

Short-term

6.3.1 Collect opportunistic wildlife species occurrence data.

Long-term

6.3.2 Continue to collect opportunistic wildlife species occurrence data.

6.4 Exotic and Invasive Species Maintenance and Control

Goal: Remove exotic and invasive plants and animals and conduct needed maintenance- control.

Short-term

6.4.1 Annually treat at least seven (7) acres of FLEPPC Category I and Category II invasive exotic plant species, or as needed. (Figure 10)

6.4.2 As necessary, implement control measures on one (1) exotic and nuisance animal species (feral hog).

Long-term

6.4.3 Continue to annually treat at least seven (7) acres of EPPC Category I and Category II invasive exotic plant species. (Figure 10)

6.4.4 Continue to implement control measures on one (1) exotic and nuisance animal species (feral hog).

6.4.5 Opportunistically monitor other exotic animal species that may potentially occur on the area (brown anole, greenhouse frog, nine-banded armadillo, and island applesnail).

6.5 Public Access and Recreational Opportunities

Goal: Provide public access and recreational opportunities.

Short-term

6.5.1 Develop and implement a Recreation Master Plan.

6.5.2 Excluding sensitive periods within the wood stork and wading bird colony (January - August), evaluate the efficacy of developing public access and recreational opportunities to allow for a recreational carrying capacity of 20 visitors per day.

6.5.3 Excluding the wood stork and wading bird colony sensitive periods (January - August), evaluate the need and feasibility for developing and periodically providing limited entry or other special hunt (youth and mobility impaired) hunting opportunities for deer and feral hogs.

6.5.4 Monitor trails annually for visitor impacts if trails are developed on the area.

Long-term

6.5.5 As determined by the Recreational Master Plan to be feasible and appropriate, develop additional public access and recreational opportunities to allow for a carrying capacity of 40 visitors per day.

6.5.6 Evaluate the need and feasibility to develop and install a parking area and a one-panel kiosk at the northeast entrance. (Figure 11)

6.5.7 As determined feasible and appropriate, design, develop and maintain up to 3.0 miles of trails. (Figure 11)

6.5.8 For interpretation and education, continue to maintain FWC web-site interpretive information, a trail map, and a bird list.

6.5.9 Maintain FWC web-site interpretive information and the parking area and a one-panel kiosk at the northeast entrance.

6.5.10 Continue to monitor trails annually for visitor impacts if trails are developed on the area.

6.5.11 Reassess recreational opportunities every three years.

6.5.12 If approved, continue to provide limited entry or other special hunt (youth and mobility impaired) hunting opportunities for deer and feral hogs.

6.5.13 Cooperate with other agencies, County, stakeholders, and regional landowners to investigate regional recreational opportunities including linking hiking, and multi-use trail systems between adjacent public areas.

6.5.14 Continue to identify partnerships that could provide for environmental educational programs and outreach.

6.6 Hydrological Preservation and Restoration

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

Short-term

6.6.1 As feasible and appropriate, initiate implementation of the 2012 hydrology assessment and conceptual restoration plan.

6.6.2 Cooperate with the SWFWMD and the DEP to monitor surface and ground water quality.

Long-term

6.6.3 To enhance natural hydrological functions, and pursuant to the results of the hydrological assessment, continue to install or replace culverts as necessary and appropriate.

6.6.4 As feasible and appropriate, continue to implement the hydrological restoration plan.

6.6.5 Continue to cooperate with the SWFWMD and the DEP to monitor surface and ground water quality.

6.7 Forest Resource Management

Goal: Manage timber resources to improve or restore natural communities for the benefit of wildlife.

Short-term

6.7.1 Consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate.

Long-term

6.7.2 Continue to consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate.

6.8 Cultural and Historical Resources

Goal: Protect, preserve and maintain cultural and historic resources.

Short-term

6.8.1 Ensure all known sites are recorded in the DHR Master Site file.

6.8.2 As recommended by the DHR, continue to monitor, protect, and preserve as necessary up to seven (7) identified sites.

6.8.3 As necessary, monitor, protect, and preserve any future identified sites.

6.8.4 If determined to be necessary by the DHR, contract for a cultural and archaeological resources survey.

6.8.5 Ensure management staff has completed the DHR Archaeological Resources Monitoring training.

6.8.6 Follow the DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for the management of cultural and historic resources.

Long-term

6.8.7 Cooperate with DHR or trained FWC Staff in designing site plans for development of infrastructure.

6.8.8 Continue to monitor, protect, and preserve as necessary seven (7) identified sites.

6.8.9 As necessary, continue to monitor, protect, and preserve any future identified sites.

6.8.10 As needed, continue to coordinate with the DHR for cultural resource management training of FWC staff.

6.8.11 Continue to follow the DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for the management of cultural and historic resources.

6.9 Capital Facilities and Infrastructure

Goal: Develop the capital facilities and infrastructure necessary to meet the goals and objectives of this Management Plan.

Short-term

6.9.1 Continue to maintain four (4) facilities (equipment pole barn, wood stork and wading bird colony water pump, intake water control structure, outflow water control structure). (Figure 11)

6.9.2 Using lime rock gravel, improve and stabilize one (1) mile of existing service road.

6.9.3 Maintain 2.4 miles of existing service roads.

6.9.4 As necessary, replace up to two (2) gates.

6.9.5 Maintain 3.0 miles of perimeter fence and boundary signs.

Long-term

6.9.6 As appropriate and feasible, construct one (1) facility (parking area and one-panel kiosk). (Figure 11)

6.9.7 Monitor trails and infrastructure biannually for visitor impacts.

6.9.8 Continue to maintain four (4) facilities (equipment pole barn, wood stork and wading bird colony water pump, intake water control structure, outflow water control structure). (Figure 11)

6.9.9 Continue to maintain 2.4 miles of roads.

6.9.10 If trail development is feasible and implemented, continue to maintain up to 3.0 miles of trails. (Figure 11)

6.9.11 As necessary, continue to replace up to two (2) gates. (Figure 11)

6.9.12 Continue to maintain 3.0 miles of perimeter fence and boundary signs.

6.10 Land Conservation and Stewardship Partnerships

Goal: Enhance fish and wildlife conservation, resource, and operational management through development of an optimal boundary.

Short-term

6.10.1 Identify potential important wildlife habitat, landscape-scale linkages, wildlife corridors for operational/resource management.

6.10.2 Continue to identify and pursue acquisition needs and conservation stewardship partnerships.

6.10.3 Develop and maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC OCPB for FWC's LAP and Land Acquisition Programs.

6.10.4 Develop a Conservation Action Strategy.

6.10.5 Contact and inform adjoining landowners about the FWC LAP to pursue non-acquisition conservation stewardship partnerships.

6.10.6 Determine which parcels should be nominated for addition to the FWC acquisition list.

6.10.7 Identify potential non-governmental organization partnerships and grant program opportunities.

Long-term

6.10.8 To minimize fragmentation of the area, continue to identify strategic parcels to revise the completed optimal conservation planning boundary for WEA as deemed necessary.

6.10.9 Continue to maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC optimal conservation planning boundary for the FWC Landowner Assistance Program and for the FWC Land Acquisition Program.

6.10.10 Continue to determine which nominated parcels should be added to the FWC acquisition list.

6.10.11 Propose nominations of selected properties as additions to the FWC acquisition list. Pursue acquisition of parcels added to the FWC acquisition list as acquisition work plan priorities and funding allow.

6.10.12 Pursue acquisition of parcels added to the FWC acquisition list as acquisition work plan priorities and funding allow.

6.10.13 Periodically (at least every three to five years) continue to contact and meet with adjacent landowners for willingness to participate in the Conservation Action Strategy.

6.10.14 Continue to coordinate landowner assistance/conservation stewardship partnership workshops as deemed appropriate.

6.11 Climate Change

Goal: Develop appropriate adaptation strategies in response to projected climate change effects and their potential impacts on natural resources, including fish and wildlife, and the operational management of LGCWEA.

Long-term

6.11.1 Coordinate with FWC-FWRI Climate Change Adaptation Initiative to identify potential impacts of projected climate change on fish and wildlife resources and operational management of the LGCWEA.

6.11.2 Incorporate appropriate climate change monitoring protocols and management strategies into the OBVM program for the LGCWEA.

6.11.3 Incorporate appropriate climate change adaptation strategies into the WCPR for LGCWEA.

6.11.4 As appropriate, update the LGCWEA Prescribed Fire Plan to incorporate new scientific information regarding projected climate change, such as increased frequency of drought, on the fire regime of LGCWEA's fire-adapted habitats.

6.11.5 As science, technology, and climate policy evolve, educate natural resource management partners and the public about the agency's policies, programs and efforts to study, document and address potential climate change; assess the need to incorporate public education about climate change into the update of the Recreation Master Plan.

6.12 Research Opportunities

Goal: Explore and pursue cooperative research opportunities.

Short-term

6.12.1 Assess the need for and pursue research and conservation education partnership opportunities as appropriate.

6.12.2 Explore and pursue cooperative research opportunities through universities, the FWC Fish and Wildlife Research Institute, or others.

6.12.3 Cooperate with researchers, universities, and others as appropriate.

Long-term

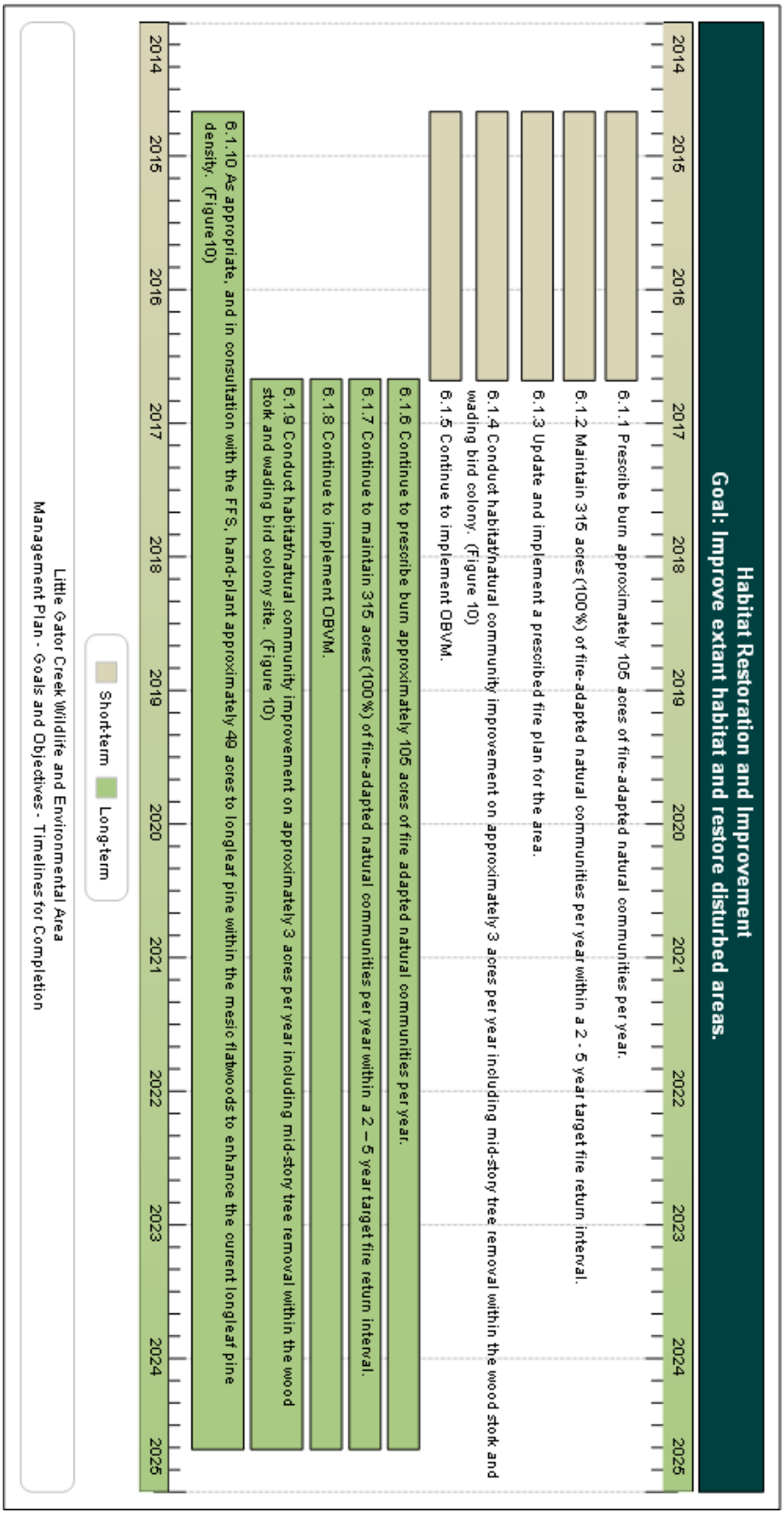
6.12.4 Continue to assess the need for and pursue research and conservation education partnership opportunities as appropriate.

6.12.5 Continue to explore and pursue cooperative research opportunities through universities, the FWC Fish and Wildlife Research Institute, or others.

6.12.6 Continue to cooperate with researchers, universities, and others as appropriate.

7 Schedule: Timelines for Completion of Resource Management Goals and Objectives

The following section presents the short- and long-term goals and objectives for the management of LGCWEA graphically in a timeline format. These timelines directly reflect the short- and long-term goals and objectives presented above in Section 6.


Habitat Restoration and Improvement
Goal: Improve extant habitat and restore disturbed areas.
2014
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2016
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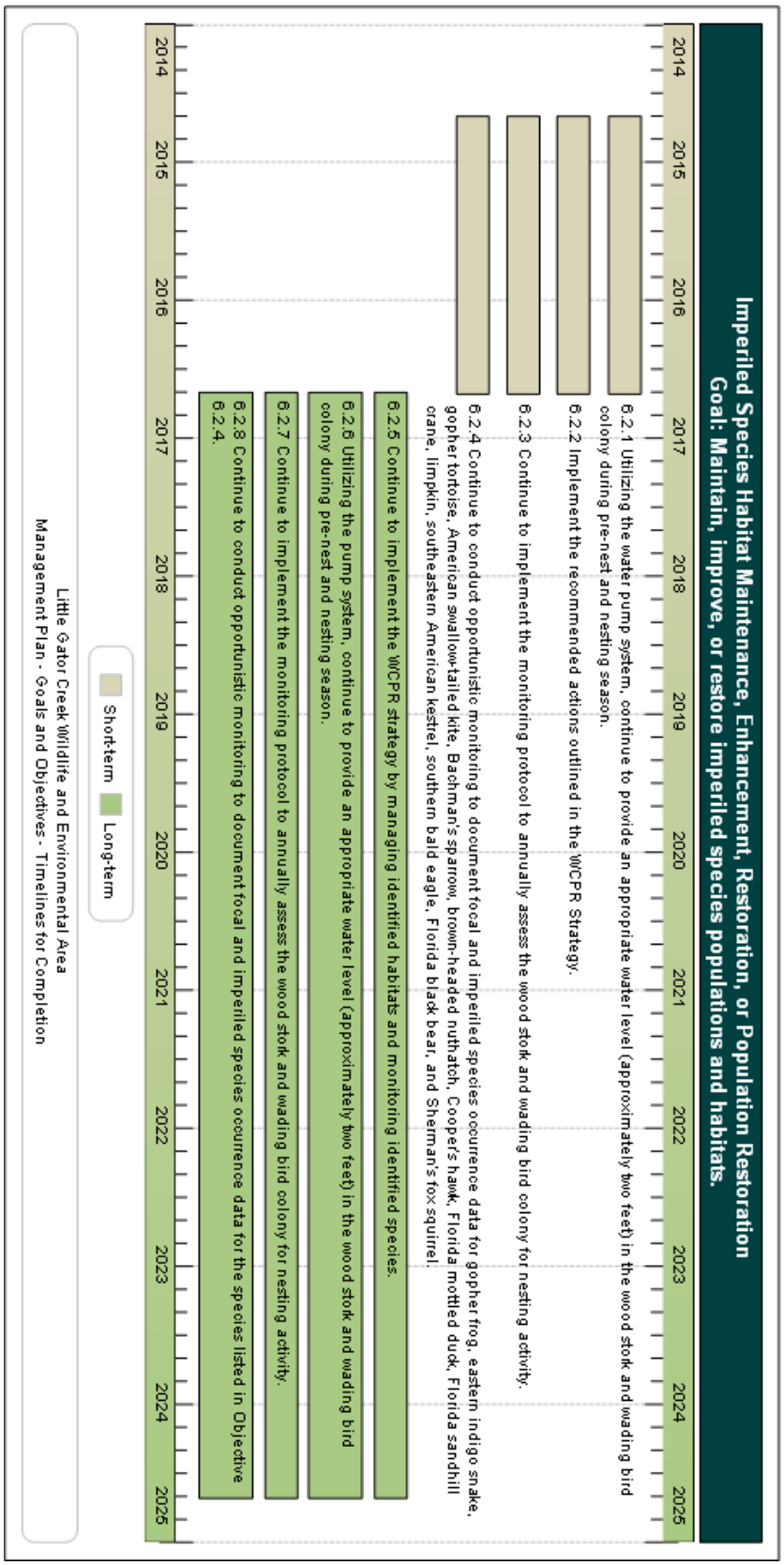
2019
2020
2021
2022
2023
2024
2025
6.1.1 Prescribe burn approximately 105 acres of fire-adapted natural communities per year.
6.1.2 Maintain 315 acres (100%) of fire-adapted natural communities per year within a 2 - 5 year target fire return interval.
6.1.3 Update and implement a prescribed fire plan for the area.
6.1.4 Conduct habitat/natural community improvement on approximately 3 acres per year including mid-story tree removal within the wood stork and wading bird colony. (Figure 10)
6.1.5 Continue to implement OBVM.
6.1.6 Continue to prescribe burn approximately 105 acres of fire adapted natural communities per year.
6.1.7 Continue to maintain 315 acres (100%) of fire-adapted natural communities per year within a 2 – 5 year target fire return interval.
6.1.8 Continue to implement OBVM.
6.1.9 Conduct habitat/natural community improvement on approximately 3 acres per year including mid-story tree removal within the wood stork and wading bird colony site. (Figure 10)
6.1.10 As appropriate, and in consultation with the FFS, hand-plant approximately 49 acres to longleaf pine within the mesic flatwoods to enhance the current longleaf pine density. (Figure 10)
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Imperiled Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration
Goal: Maintain, improve, or restore imperiled species populations and habitats.
2014
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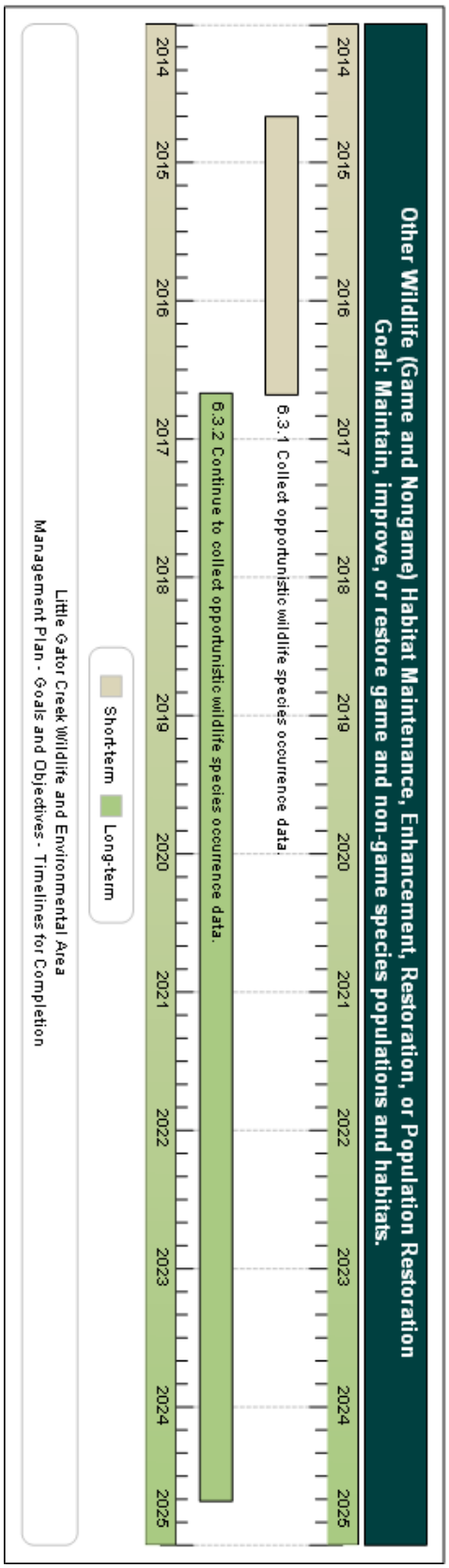
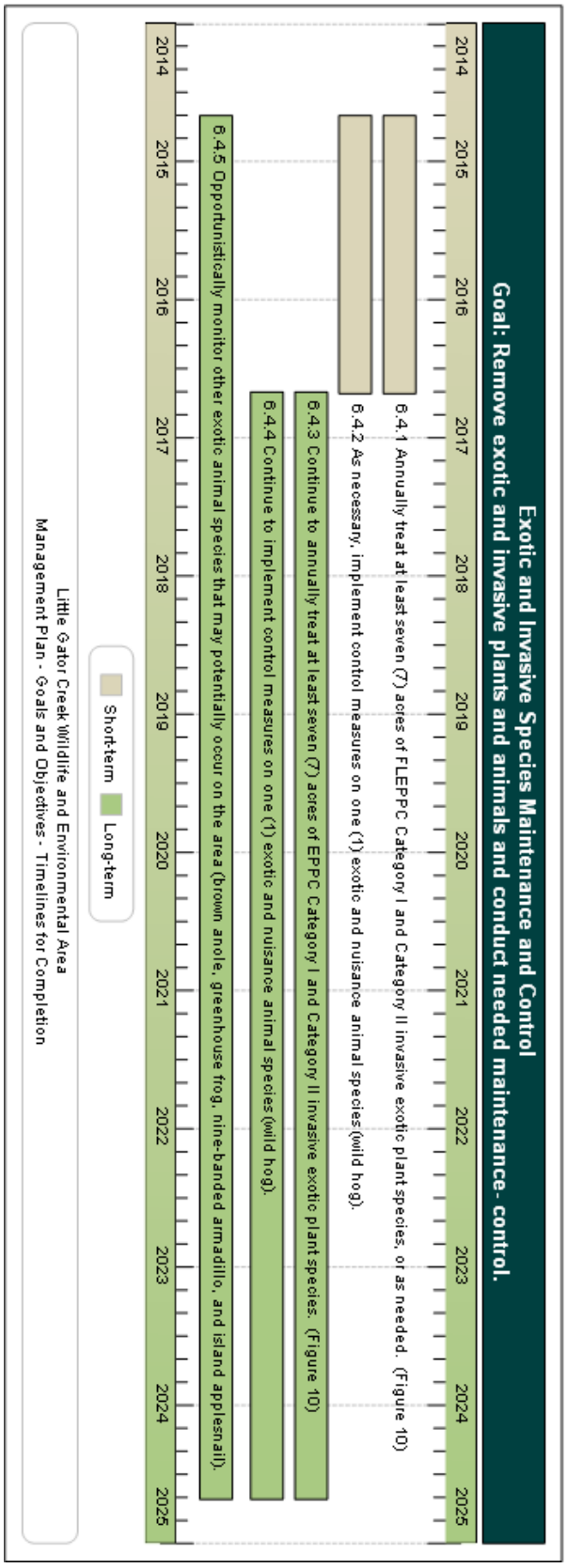
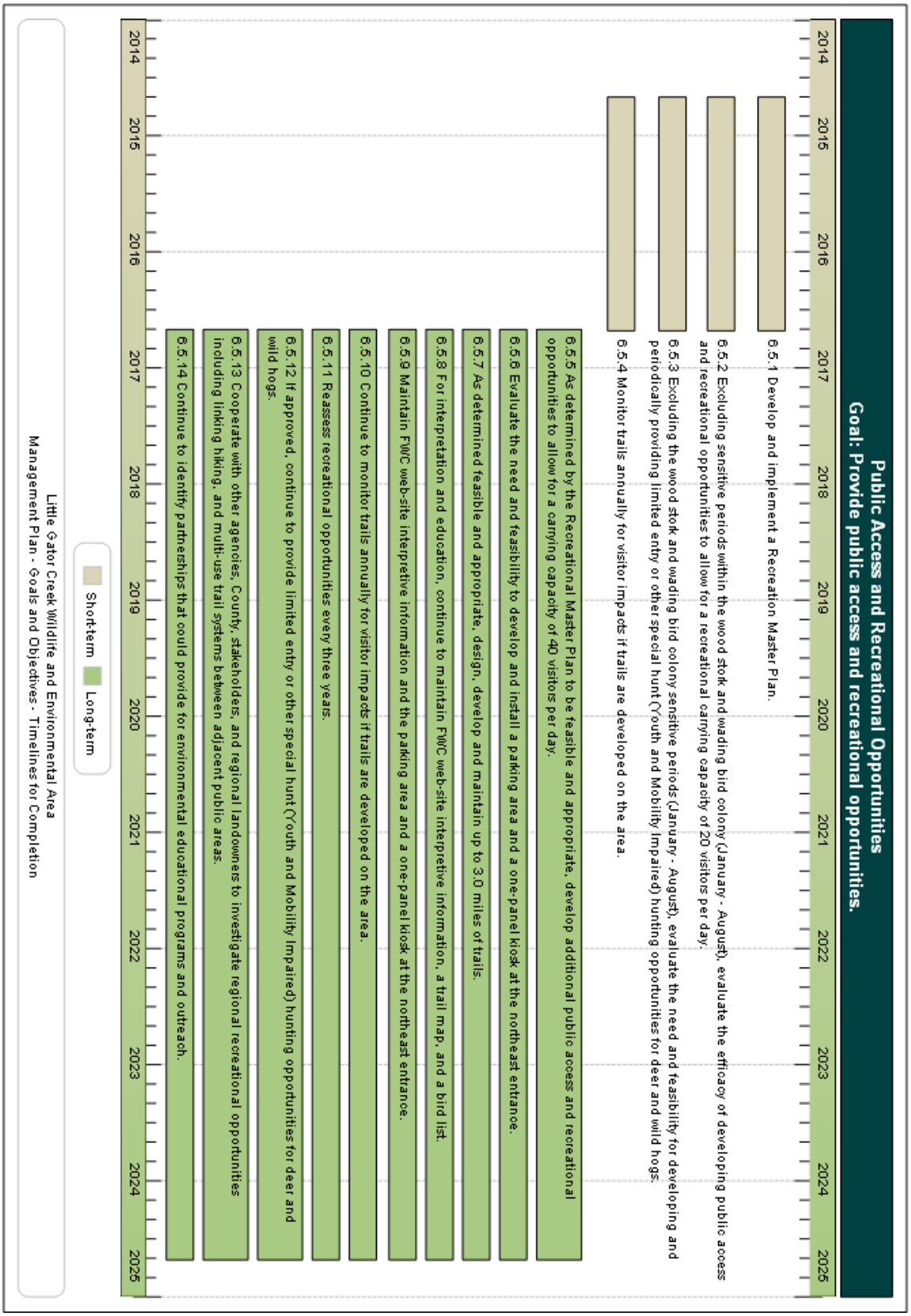
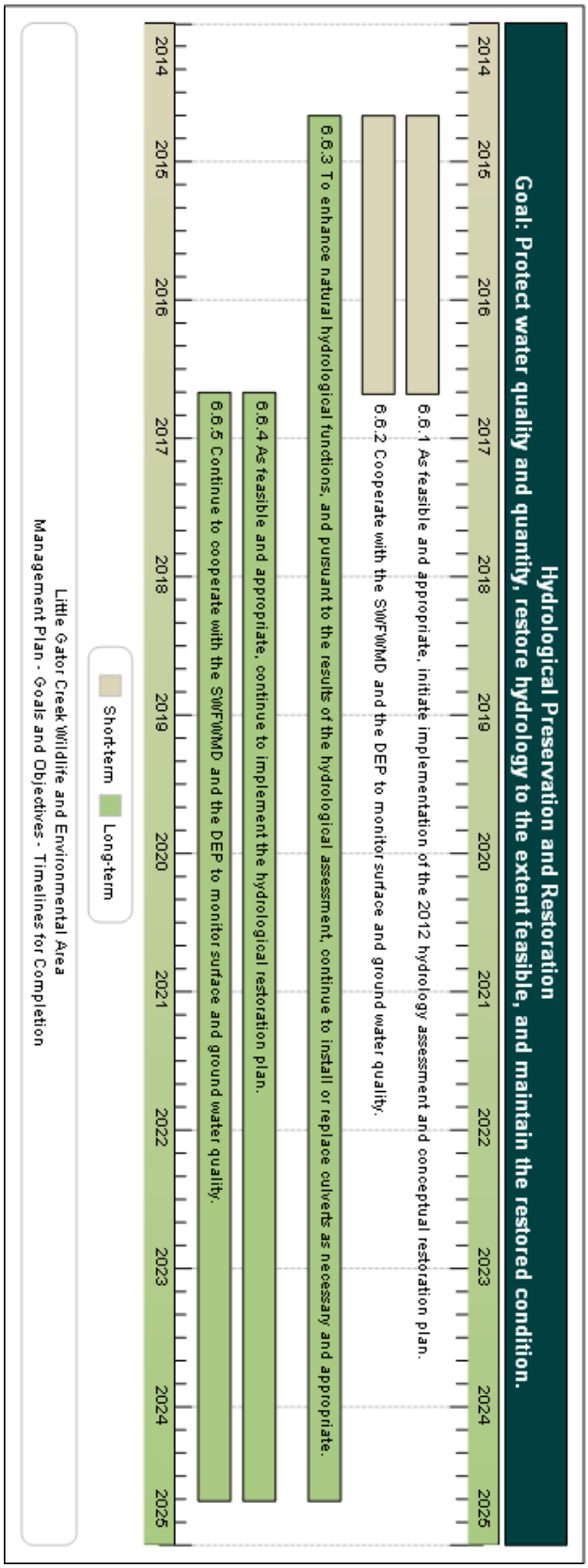
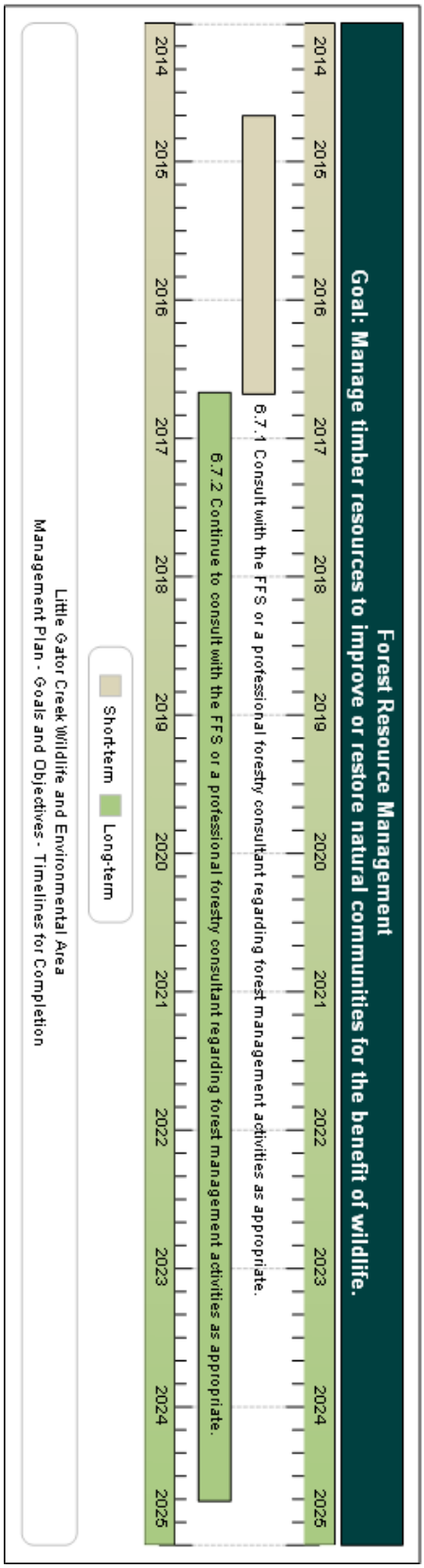
2021
2022
2023
2024
2025
6.2.1 Utilizing the water pump system, continue to provide an appropriate water level (approximately two feet) in the wood stork and wading bird colony during pre-nest and nesting season.
6.2.2 Implement the recommended actions outlined in the WCPR Strategy.
6.2.3 Continue to implement the monitoring protocol to annually assess the wood stork and wading bird colony for nesting activity.
6.2.4 Continue to conduct opportunistic monitoring to document focal and imperiled species occurrence data for gopher frog, eastern indigo snake, gopher tortoise, American swallow-tailed kite, Bachman's sparrow, brown-headed nuthatch, Cooper's hawk, Florida mottled duck, Florida sandhill crane, limpkin, southeastern American kestrel, southern bald eagle, Florida black bear, and Sherman's fox squirrel.
6.2.5 Continue to implement the WCPR strategy by managing identified habitats and monitoring identified species.
6.2.6 Utilizing the pump system, continue to provide an appropriate water level (approximately two feet) in the wood stork and wading bird colony during pre-nest and nesting season.
6.2.7 Continue to implement the monitoring protocol to annually assess the wood stork and wading bird colony for nesting activity.
6.2.8 Continue to conduct opportunistic monitoring to document focal and imperiled species occurrence data for the species listed in Objective 6.2.4.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion

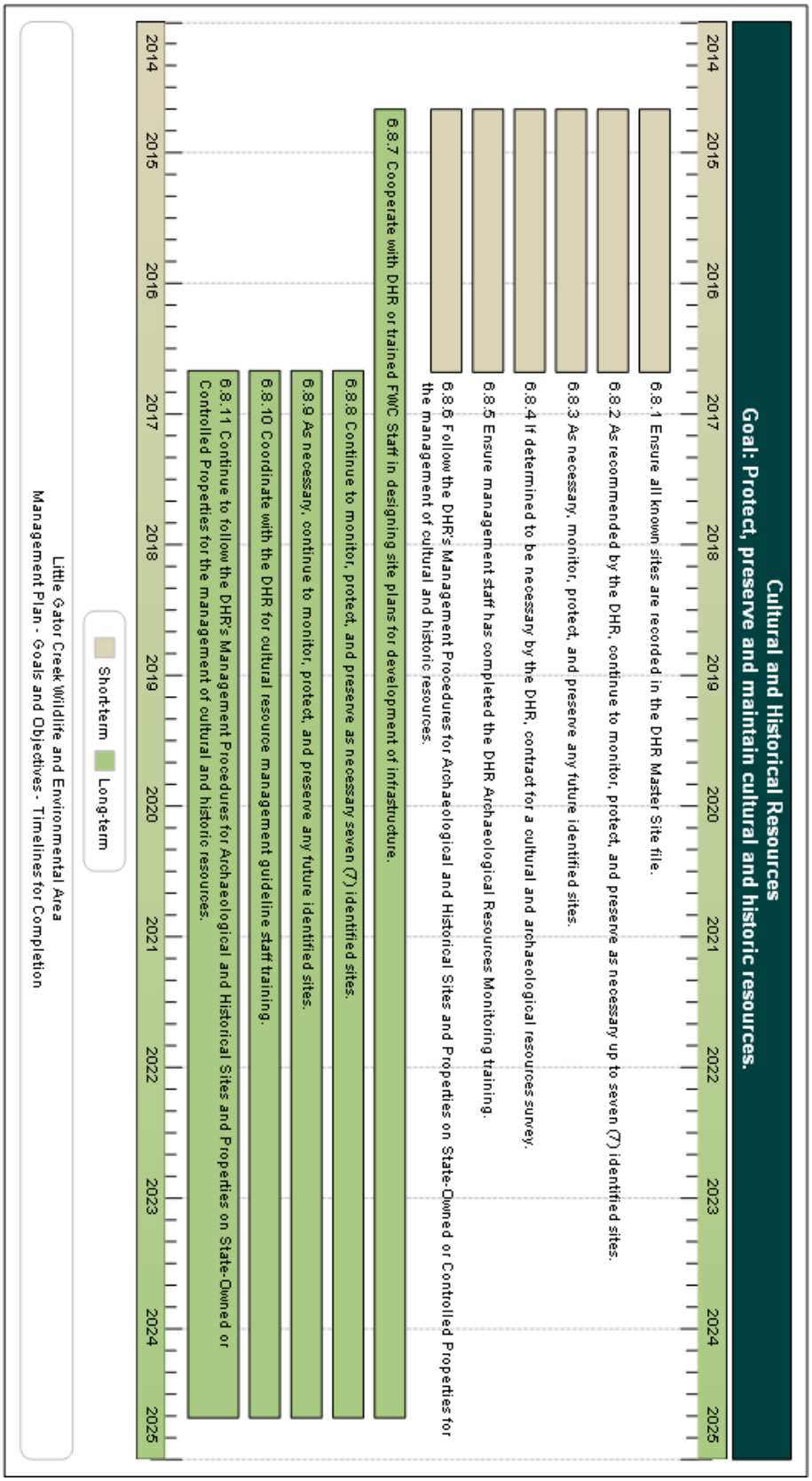

Other Wildlife (Game and Nongame) Habitat Maintenance, Enhancement, Restoration, or Population Restoration
Goal: Maintain, improve, or restore game and non-game species populations and habitats.
2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
6.3.1 Collect opportunistic wildlife species occurrence data.
6.3.2 Continue to collect opportunistic wildlife species occurrence data.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Exotic and Invasive Species Maintenance and Control
Goal: Remove exotic and invasive plants and animals and conduct needed maintenance- control.
2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
6.4.1 Annually treat at least seven (7) acres of FLEPPC Category I and Category II invasive exotic plant species, or as needed. (Figure 10)
6.4.2 As necessary, implement control measures on one (1) exotic and nuisance animal species (wild hog).
6.4.3 Continue to annually treat at least seven (7) acres of EPPC Category I and Category II invasive exotic plant species. (Figure 10)
6.4.4 Continue to implement control measures on one (1) exotic and nuisance animal species (wild hog).
6.4.5 Opportunistically monitor other exotic animal species that may potentially occur on the area (brown anole, greenhouse frog, nine-banded armadillo, and island applesnail).
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Public Access and Recreational Opportunities
Goal: Provide public access and recreational opportunities.
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
6.5.1 Develop and implement a Recreation Master Plan.
6.5.2 Excluding sensitive periods within the wood stork and wading bird colony (January - August), evaluate the efficacy of developing public access and recreational opportunities to allow for a recreational carrying capacity of 20 visitors per day.
6.5.3 Excluding the wood stork and wading bird colony sensitive periods (January - August), evaluate the need and feasibility for developing and periodically providing limited entry or other special hunt (Youth and Mobility Impaired) hunting opportunities for deer and wild hogs.
6.5.4 Monitor trails annually for visitor impacts if trails are developed on the area.
6.5.5 As determined by the Recreational Master Plan to be feasible and appropriate, develop additional public access and recreational opportunities to allow for a carrying capacity of 40 visitors per day.
6.5.6 Evaluate the need and feasibility to develop and install a parking area and a one-panel kiosk at the northeast entrance.
6.5.7 As determined feasible and appropriate, design, develop and maintain up to 3.0 miles of trails.
6.5.8 For interpretation and education, continue to maintain FWC web-site interpretive information, a trail map, and a bird list.
6.5.9 Maintain FWC web-site interpretive information and the parking area and a one-panel kiosk at the northeast entrance.
6.5.10 Continue to monitor trails annually for visitor impacts if trails are developed on the area.
6.5.11 Reassess recreational opportunities every three years.
6.5.12 If approved, continue to provide limited entry or other special hunt (Youth and Mobility Impaired) hunting opportunities for deer and wild hogs.
6.5.13 Cooperate with other agencies, County, stakeholders, and regional landowners to investigate regional recreational opportunities including linking hiking, and multi-use trail systems between adjacent public areas.
6.5.14 Continue to identify partnerships that could provide for environmental educational programs and outreach.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Hydrological Preservation and Restoration
Goal: Protect water quality and quantity, restore hydrology to the extent feasible, and maintain the restored condition.
2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
6.6.1 As feasible and appropriate, initiate implementation of the 2012 hydrology assessment and conceptual restoration plan.
6.6.2 Cooperate with the SWFWMD and the DEP to monitor surface and ground water quality.
6.6.3 To enhance natural hydrological functions, and pursuant to the results of the hydrological assessment, continue to install or replace culverts as necessary and appropriate.
6.6.4 As feasible and appropriate, continue to implement the hydrological restoration plan.
6.6.5 Continue to cooperate with the SWFWMD and the DEP to monitor surface and ground water quality.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Forest Resource Management
Goal: Manage timber resources to improve or restore natural communities for the benefit of wildlife.
2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
6.7.1 Consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate.
6.7.2 Continue to consult with the FFS or a professional forestry consultant regarding forest management activities as appropriate.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Cultural and Historical Resources
Goal: Protect, preserve and maintain cultural and historic resources.
2014
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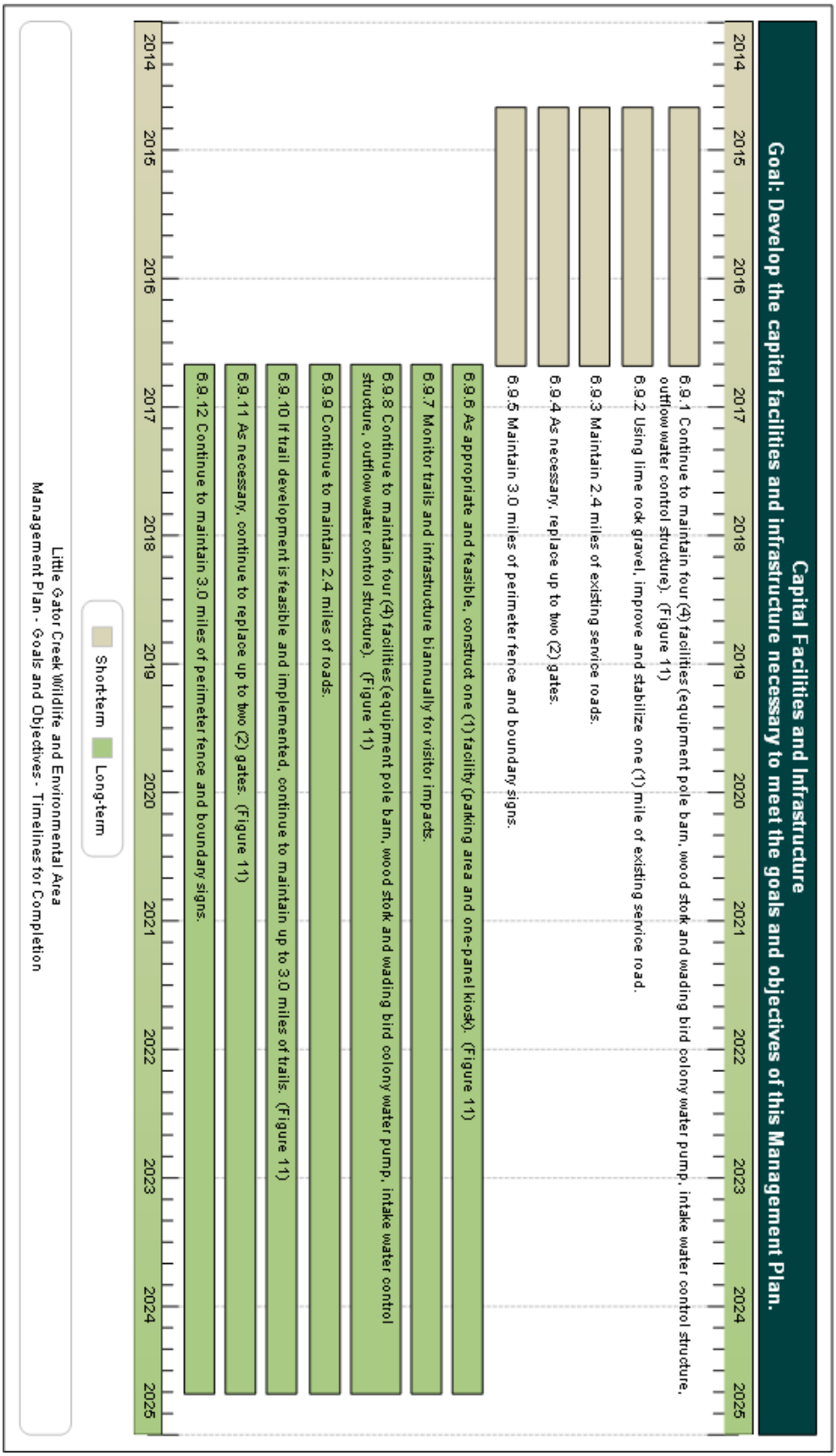
2025
6.8.1 Ensure all known sites are recorded in the DHR Master Site file.
6.8.2 As recommended by the DHR, continue to monitor, protect, and preserve as necessary up to seven (7) identified sites.
6.8.3 As necessary, monitor, protect, and preserve any future identified sites.
6.8.4 If determined to be necessary by the DHR, contract for a cultural and archaeological resources survey.
6.8.5 Ensure management staff has completed the DHR Archaeological Resources Monitoring training.
6.8.6 Follow the DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for the management of cultural and historic resources.
6.8.7 Cooperate with DHR or trained FWC Staff in designing site plans for development of infrastructure.
6.8.8 Continue to monitor, protect, and preserve as necessary seven (7) identified sites.
6.8.9 As necessary, continue to monitor, protect, and preserve any future identified sites.
6.8.10 Coordinate with the DHR for cultural resource management guideline staff training.
6.8.11 Continue to follow the DHR's Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties for the management of cultural and historic resources.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Capital Facilities and Infrastructure
Goal: Develop the capital facilities and infrastructure necessary to meet the goals and objectives of this Management Plan.
2014
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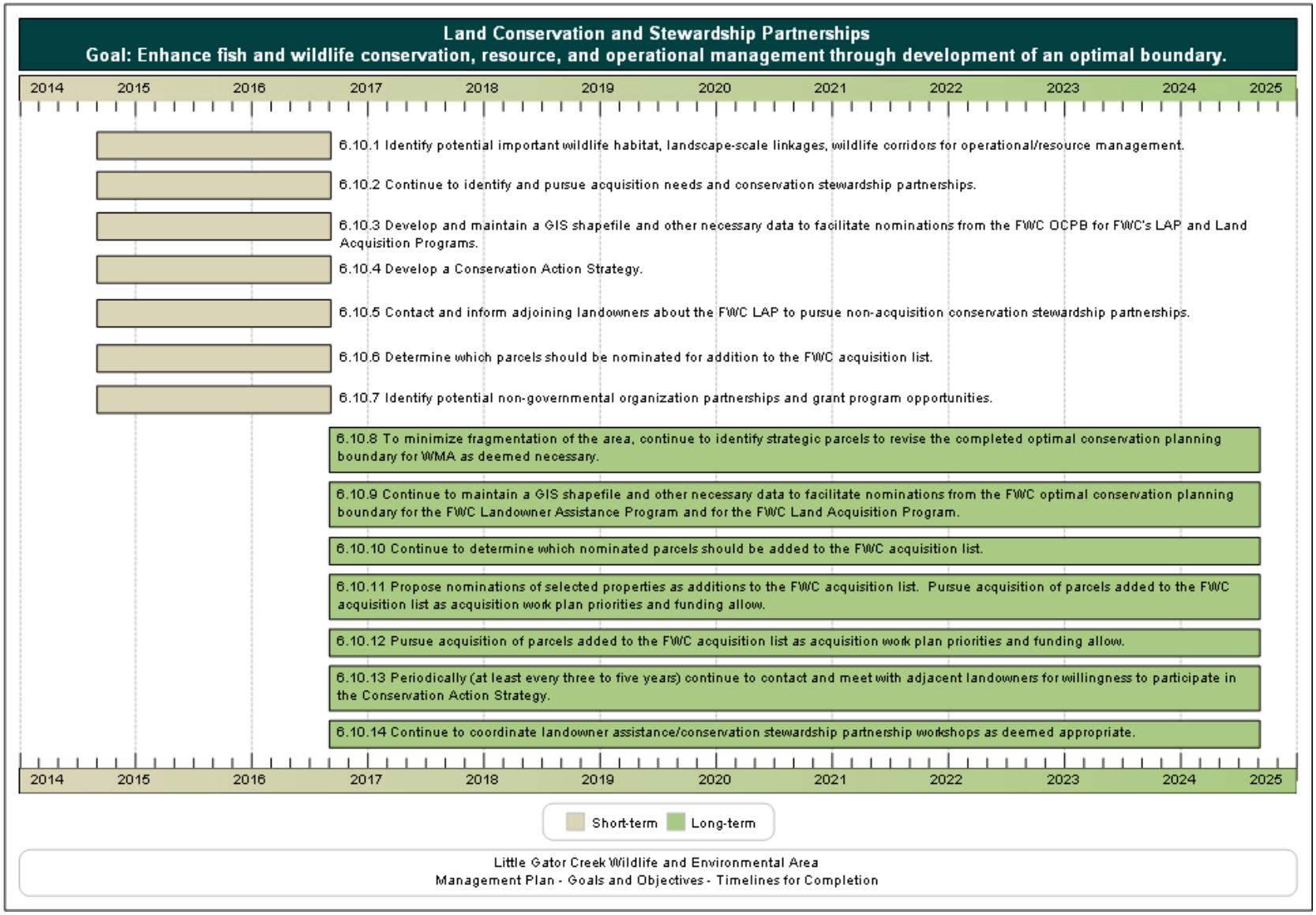
2025
6.9.1 Continue to maintain four (4) facilities (equipment pole barn, wood stork and wading bird colony water pump, intake water control structure, outflow water control structure). (Figure 11)
6.9.2 Using lime rock gravel, improve and stabilize one (1) mile of existing service road.
6.9.3 Maintain 2.4 miles of existing service roads.
6.9.4 As necessary, replace up to two (2) gates.
6.9.5 Maintain 3.0 miles of perimeter fence and boundary signs.
6.9.6 As appropriate and feasible, construct one (1) facility (parking area and one-panel kiosk). (Figure 11)
6.9.7 Monitor trails and infrastructure biannually for visitor impacts.
6.9.8 Continue to maintain four (4) facilities (equipment pole barn, wood stork and wading bird colony water pump, intake water control structure, outflow water control structure). (Figure 11)
6.9.9 Continue to maintain 2.4 miles of roads.
6.9.10 If trail development is feasible and implemented, continue to maintain up to 3.0 miles of trails. (Figure 11)
6.9.11 As necessary, continue to replace up to two (2) gates. (Figure 11)
6.9.12 Continue to maintain 3.0 miles of perimeter fence and boundary signs.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Land Conservation and Stewardship Partnerships
Goal: Enhance fish and wildlife conservation, resource, and operational management through development of an optimal boundary.
2014
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2019
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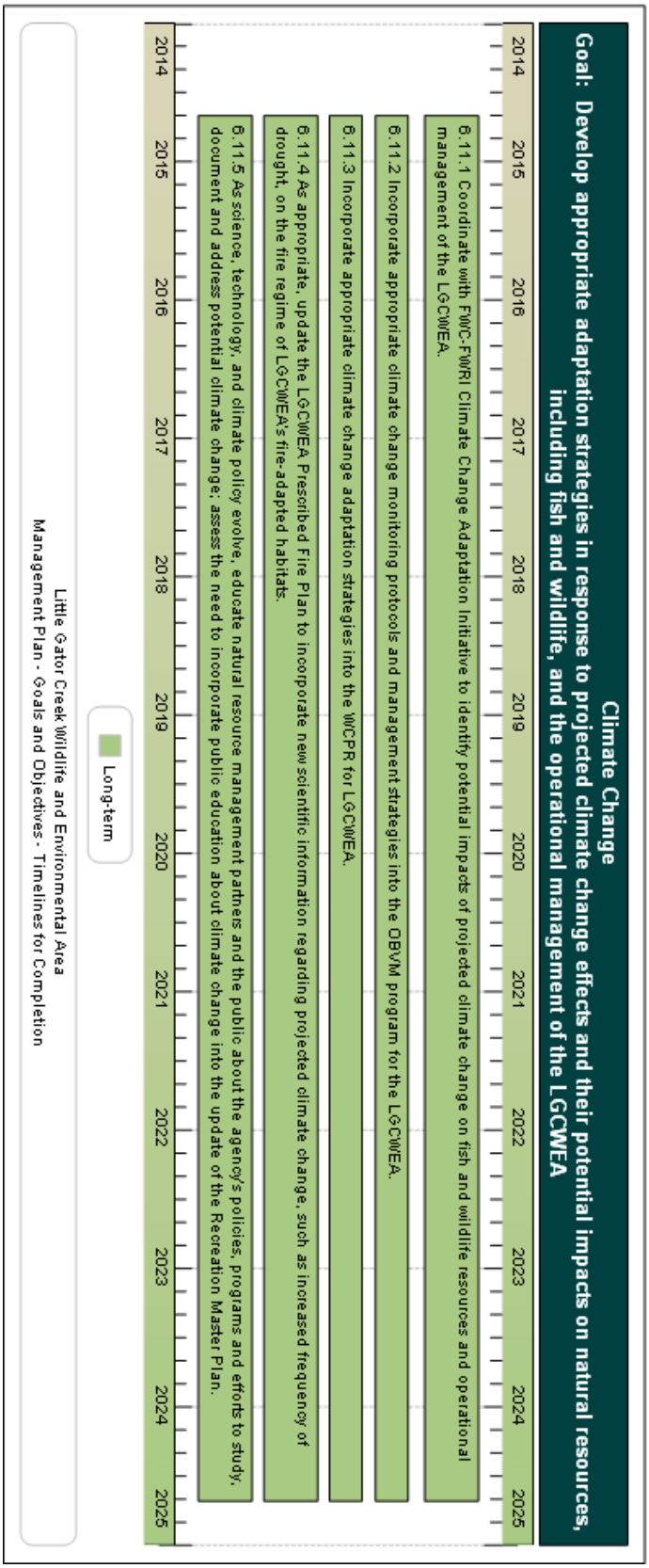
2021
2022
2023
2024
2025
6.10.1 Identify potential important wildlife habitat, landscape-scale linkages, wildlife corridors for operational/resource management.
6.10.2 Continue to identify and pursue acquisition needs and conservation stewardship partnerships.
6.10.3 Develop and maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC OCPB for FWC's LAP and Land Acquisition Programs.
6.10.4 Develop a Conservation Action Strategy.
6.10.5 Contact and inform adjoining landowners about the FWC LAP to pursue non-acquisition conservation stewardship partnerships.
6.10.6 Determine which parcels should be nominated for addition to the FWC acquisition list.
6.10.7 Identify potential non-governmental organization partnerships and grant program opportunities.
6.10.8 To minimize fragmentation of the area, continue to identify strategic parcels to revise the completed optimal conservation planning boundary for WMA as deemed necessary.
6.10.9 Continue to maintain a GIS shapefile and other necessary data to facilitate nominations from the FWC optimal conservation planning boundary for the FWC Landowner Assistance Program and for the FWC Land Acquisition Program.
6.10.10 Continue to determine which nominated parcels should be added to the FWC acquisition list.
6.10.11 Propose nominations of selected properties as additions to the FWC acquisition list. Pursue acquisition of parcels added to the FWC acquisition list as acquisition work plan priorities and funding allow.
6.10.12 Pursue acquisition of parcels added to the FWC acquisition list as acquisition work plan priorities and funding allow.
6.10.13 Periodically (at least every three to five years) continue to contact and meet with adjacent landowners for willingness to participate in the Conservation Action Strategy.
6.10.14 Continue to coordinate landowner assistance/conservation stewardship partnership workshops as deemed appropriate.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Climate Change
Goal: Develop appropriate adaptation strategies in response to projected climate change effects and their potential impacts on natural resources, including fish and wildlife, and the operational management of the LGCWEA
2014
2015
2016
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2018
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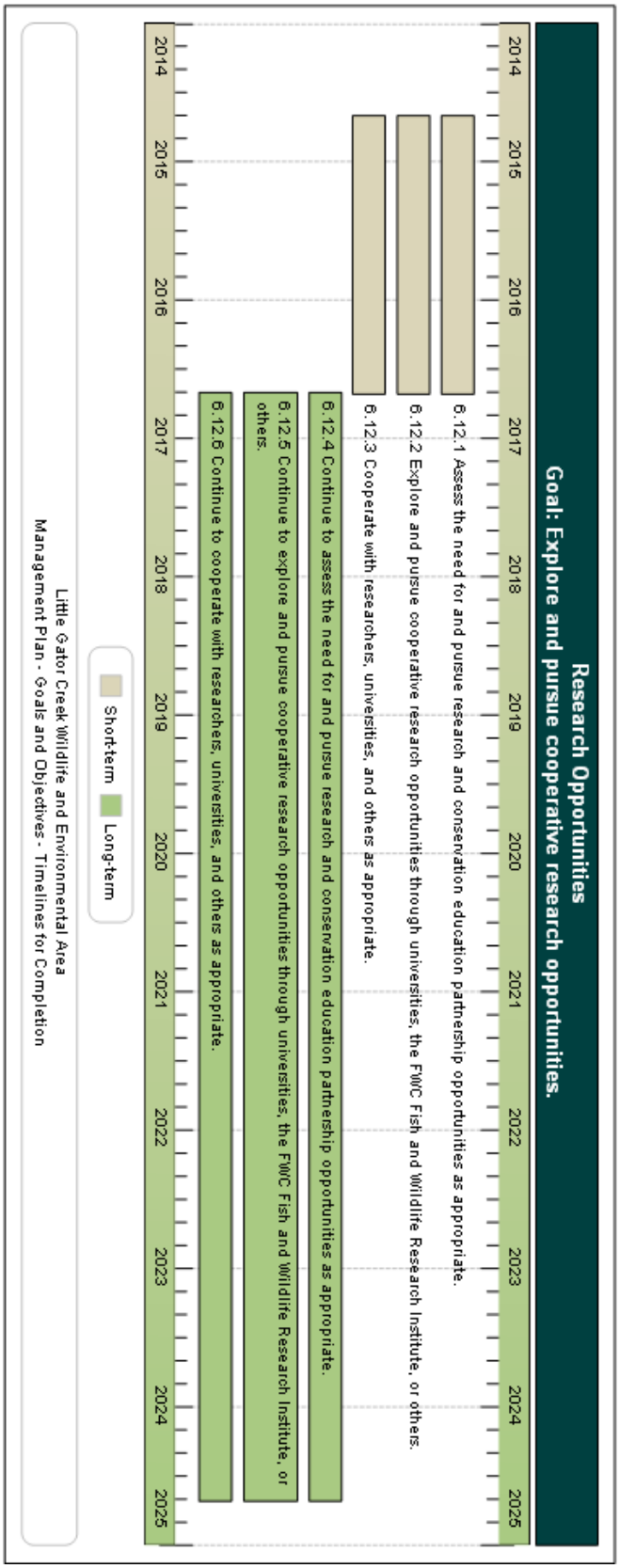
2020
2021
2022
2023
2024
2025
B.11.1 Coordinate with FWC-FWRI Climate Change Adaptation Initiative to identify potential impacts of projected climate change on fish and wildlife resources and operational management of the LGCWEA.
B.11.2 Incorporate appropriate climate change monitoring protocols and management strategies into the OBVM program for the LGCWEA.
B.11.3 Incorporate appropriate climate change adaptation strategies into the WCPR for LGCWEA.
B.11.4 As appropriate, update the LGCWEA Prescribed Fire Plan to incorporate new scientific information regarding projected climate change, such as increased frequency of drought, on the fire regime of LGCWEA's fire-adapted habitats.
B.11.5 As science, technology, and climate policy evolve, educate natural resource management partners and the public about the agency's policies, programs and efforts to study, document and address potential climate change; assess the need to incorporate public education about climate change into the update of the Recreation Master Plan.
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion


Research Opportunities
Goal: Explore and pursue cooperative research opportunities.
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
6.12.1 Assess the need for and pursue research and conservation education partnership opportunities as appropriate.
6.12.2 Explore and pursue cooperative research opportunities through universities, the FWC Fish and Wildlife Research Institute, or others.
6.12.3 Cooperate with researchers, universities, and others as appropriate.
6.12.4 Continue to assess the need for and pursue research and conservation education partnership opportunities as appropriate.
6.12.5 Continue to explore and pursue cooperative research opportunities through universities, the FWC Fish and Wildlife Research Institute, or others.
6.12.6 Continue to cooperate with researchers, universities, and others as appropriate.
Short-term
Long-term
Little Gator Creek Wildlife and Environmental Area
Management Plan - Goals and Objectives - Timelines for Completion

8 Resource Management Challenges and Strategies

The following section identifies and describes further management needs and challenges associated with LGCWEA and provides solution strategies that will address these challenges. These specific challenges may not be fully addressed in the broader goals and objectives section above, and are thereby provided here.

8.1 Challenge: There continue to be illegal access, poaching and vandalism on LGCWEA.

8.1.1 Strategy: Continue to cooperate with agency and local law enforcement to provide adequate security.

8.2 Challenge: Hydrologic conditions within the core foraging area of the wood stork and wading bird colony may be impacting nesting activity and success.

8.2.1 Strategy: Cooperate with regional natural resource agencies, local governments, and nearby private landowners to evaluate actions that may be taken to preserve and enhance wood stork foraging habitat.

8.3 Challenge: Insufficient area exists within LGCWEA for long term conservation of far-ranging species that have been documented to exist on LGCWEA such as Eastern indigo snake and Sherman's fox squirrel.

8.3.1 Strategy: Explore conservation stewardship and acquisition opportunities to secure habitat necessary for far-ranging species such as Eastern indigo snake and Sherman's fox squirrel.

8.4 Challenge: Currently, staffing is at insufficient levels for optimal management of LGCWEA.

8.4.1 Strategy: Explore potential volunteer resources for assisting with management.

8.5 Challenge: There are smoke management challenges during prescribed burns due to proximity to major roadways and residential areas.

8.5.1 Strategy: Use available tools and resources to minimize smoke impact and increase outreach for areas of potential impact.

8.6 Challenge: Exotic invasive plants from adjacent private lands are spreading to LGCWEA.

8.6.1 Strategy: Coordinate with FWC's LAP to work with adjacent landowners to control and manage exotic invasive plants on adjacent properties.

8.6.2 Strategy: Coordinate with other governmental and private organizations to obtain resources to control and manage exotic invasive species on adjacent properties.

8.7 Challenge: Legal access to the southeastern border of LGCWEA needs to be improved since a privately-owned inholding lies between the area's southeastern border and SR 471. (However, legal access to LGCWEA is available on the northeastern boundary of the property.)

8.7.1 Strategy: As appropriate and feasible, continue to pursue acquisition of the 9-acre inholding that is on the FWC Inholdings and Additions list.

9 Cost Estimates and Funding Sources

The following represents the actual and unmet budgetary needs for managing the lands and resources of LGCWEA. This cost estimate was developed using data developed by FWC and other cooperating entities, and is based on actual costs for land management activities, equipment purchase and maintenance, and for development of fixed capital facilities. Funds needed to protect and manage the property and to fully implement the recommended program are derived primarily from the Land Acquisition Trust Fund and from State Legislative appropriations. However, private conservation organizations may be cooperators with the agency for funding of specific projects. Alternative funding sources, such as monies available through mitigation, may be sought to supplement existing funding.

The cost estimate below, although exceeding what FWC typically receives through the appropriations process, is consistent with the direction taken by current operational planning for LGCWEA. Cost estimate categories are those currently recognized by FWC and the Land Management Uniform Accounting Council. More information on these categories, as well as the Fiscal Year 2013-2014 operational plan showing detailed cost estimates by activity and categories of expenditures, may be found in Appendix 13.13.

Table 16: Cost Estimate: Maximum Expected One Year

Little Gator Creek WEA Management Plan Cost Estimate
Maximum expected one year expenditure

Resource Management		**Priority schedule:**	
Exotic Species Control	$4,181	**Bold**	**(1) Immediate (annual)**
Prescribed Burning	$4,469	Normal	(2) Intermediate (3-4 years)
Cultural Resource Management	$0	*Italic*	*(3) Other (5+ years)*
Timber Management	$863		
Hydrological Management	$17,131		
Other	$18,717		
Subtotal	**$45,360**		
Administration			
General administration	**$2,013**		
Support			
Land Management Planning	$8,629		
Land Management Reviews	$0		
Training/Staff Development	$0		
Vehicle Purchase	$131,628		
Vehicle Operation and Maintenance	$8,250		
Other	$1,438		
Subtotal	**$149,944**		
Capital Improvements			
New Facility Construction	$28,725		
Facility Maintenance	$21,255		
Subtotal	**$49,981**		
Visitor Services/Recreation			
Info./Education/Operations	**$7,265**		
Law Enforcement			
Resource protection	**$517**		
Total	**$255,080**	*	

* Based on the characteristics and requirements of this area, 1 FTE position would be optimal to fully manage the area covered by this prospectus. All land management funding is dependent upon annual legislative appropriations.

Table 17: Cost Estimate: Ten-year Projection

Little Gator Creek WEA Management Plan Cost Estimate
Ten-year projection

Resource Management	
Exotic Species Control	$36,735
Prescribed Burning	$39,262
Cultural Resource Management	$1,496
Timber Management	$7,581
Hydrological Management	$150,512
Other	$164,445
Subtotal	**$400,031**
Administration	
General administration	**$17,690**
Support	
Land Management Planning	$75,813
Land Management Reviews	$4,284
Training/Staff Development	$0
Vehicle Purchase	$463,204
Vehicle Operation and Maintenance	$72,482
Other	$12,635
Subtotal	**$628,418**
Capital Improvements	
New Facility Construction	$75,520
Facility Maintenance	$186,753
Subtotal	**$262,273**
Visitor Services/Recreation	
Info./Education/Operations	**$63,830**
Law Enforcement	
Resource protection	**$4,542**
Total	**$1,376,784**

Priority schedule:	
Bold	**Immediate (annual)**
Normal	Intermediate (3-4 years)
Italic	*Other (5+ years)*

* Based on the characteristics and requirements of this area, 1 FTE position would be optimal to fully manage the area covered by this prospectus. All land management funding is dependent upon annual legislative appropriations.

10 Analysis of Potential for Contracting Private Vendors for Restoration and Management Activities

The following management and restoration activities have been considered for outsourcing to private entities. It has been determined that items selected as "approved" below are those that FWC either does not have in-house expertise to accomplish or which can be done at less cost by an outside provider of services. Those items selected as "conditional" items are those that could be done either by an outside provider or by the agency at virtually the same cost or with the same level of competence. Items selected as "rejected" represent those for which FWC has in-house expertise and/or which the agency has found it can accomplish at less expense than through contracting with outside sources:

	Approved	Conditional	Rejected
• Dike and levee maintenance			✓
• Exotic species control			✓
• Mechanical vegetation treatment			✓
• Public contact and educational facilities development			✓
• Prescribed burning			✓
• Timber harvest activities	✓		
• Vegetation inventories			✓

11 Compliance with Federal, State, and Local Governmental Requirements

The operational functions of FWC personnel are governed by the agency's Internal Management Policies and Procedures (IMPP) Manual. The IMPP Manual provides internal guidance regarding many subjects affecting the responsibilities of agency personnel including personnel management, safety issues, uniforms and personal appearance, training, as well as accounting, purchasing, and budgetary procedures.

When public facilities are developed on areas managed by FWC, every effort is made to comply with Public Law 101 - 336, the Americans with Disabilities Act. As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions (e.g., where handicap access is structurally impractical or where providing such access would change the fundamental character of the facility being provided).

Uses planned for LGCWEA are in compliance with the Conceptual State Lands Management Plan and its requirement for "balanced public utilization," and are in compliance with the mission of FWC as described in its Agency Strategic Plan (Appendix 13.6). Such uses also comply with the authorities of the FWC as derived from Article IV, Section 9 of the Florida Constitution as well as the guidance and directives of Chapters 372, 253, 259, 327, 370, 403, 870, 373, 375, 378, 487, and 597 FS.

The FWC has developed and utilizes an Arthropod Control Plan for LGCWEA in compliance with Chapter 388.4111 FS (Appendix 13.14). This plan was developed in cooperation with the local Pasco County arthropod control agency. This plan is also in conformance with the Local Government Comprehensive Plan as approved and adopted for Pasco County, Florida (Appendix 13.15).

12 Endnotes

[1] Aldridge, C. L., M. S. Boyce and R. K. Baydack. 2004. Adaptive management of prairie grouse: how do we get there? Wildlife Society Bulletin 32:92-103.

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[5] Karl, T. R., J. M. Melillo, and T. C. Peterson (Eds.). 2009. Global Climate Change Impacts in the United States. Cambridge University Press. New York, NY.

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[10] Stevenson, J. C., M. S. Kearney, and E. W. Koch. 2002. Impacts of sea level rise on tidal wetlands and shallow water habitats: A case study from Chesapeake Bay. American Fisheries Society Symposium 32:23-36.

[11] IPCC. 2007b. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK.

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