



Lake Jackson Aquatic Preserve

Management Plan



**Florida Department of Environmental Protection
Office of Resilience and Coastal Protection**

3900 Commonwealth Blvd., MS #235, Tallahassee, FL 32399
www.aquaticpreserves.org



Floating islands provide numerous resting areas to waterfowl and wading birds such as this great egret.

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June 2019



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Bald eagles nest on the shores of Lake Jackson.

Mission Statement

The Office of Resilience and Coastal Protection's mission statement is: Conserving and restoring Florida's coastal and aquatic resources for the benefit of people and the environment.

The four long-term goals of the Office of Resilience and Coastal Protection's Aquatic Preserve Program are to:

1. protect and enhance the ecological integrity of the aquatic preserves;
2. restore areas to their natural condition;
3. encourage sustainable use and foster active stewardship by engaging local communities in the protection of aquatic preserves; and
4. improve management effectiveness through a process based on sound science, consistent evaluation, and continual reassessment.

Acquisition and Restoration Council Management Plan Compliance Checklist

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	Requirement	Statute/Rule	Pg#/App
Section A: Acquisition Information Items			
1	The common name of the property.	18-2.018 & 18-2.021	Ex. Sum.
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	p. 1
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	p. 1, 6-8
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	Ex. Sum & p. 12-13
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	p. 12
6	An assessment as to whether the property, or any portion, should be declared surplus. <i>Provide Information regarding assessment and analysis in the plan, and provide corresponding map.</i>	18-2.021	N/A
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. <i>Please clearly indicate parcels on a map.</i>	18-2.021	N/A
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	p. 27-29
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)	p. 6
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	p. 17-19
Section B: Use Items			
11	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	p. 11-13
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	p. 9-11, 25-26, 48-52
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	N/A
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	p. 6-8, 27-52
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	p. 25, 42, App. E.2
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	p. 27-29, 42-44, 48-50
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)	p. 48-52
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	p. 6-8
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	App. E.3

**Land Management Plan Compliance Checklist
Required for State-owned conservation lands over 160 acres**

Item #	Requirement	Statute/Rule	Pg#/App
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	p. 12-19, 31-52
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	N/A
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	p. 48-50

*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

24	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	App. C
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)	N/A
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. <i>Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.</i>	259.032(10)	App. C
27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	App. C
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. <i>Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.</i>	253.034(5) & 259.032(10)	App. C
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. <i>Include manager's replies to the team's findings and recommendations.</i>	259.036	N/A
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	N/A

**Land Management Plan Compliance Checklist
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Item #	Requirement	Statute/Rule	Pg#/App
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	N/A
Section D: Natural Resources			
32	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. <i>Use brief descriptions and include USDA maps when available.</i>	18-2.021	p. 15-16
33	Insert FNAI based natural community maps when available.	ARC consensus	p. 22
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	Ex. Sum
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	p. 15-22
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	N/A
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	p. 15-16
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	p. 20-26, App. B.3.1
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	p. 20-23, App. B.3.2
40	The identification or resources on the property that are listed in the Natural Areas Inventory. <i>Include letter from FNAI or consultant where appropriate.</i>	18-2.021	p. 20-22
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)	p. 25-26, 42, 45, App. E.2
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.	259.032(10) & 253.034(5)	p. 20-26, 32-52
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.	259.032(10) & 253.034(5)	App. D.1
42-C.	The associated measurable objectives to achieve the goals.	259.032(10) & 253.034(5)	p. 38-52, App. D.1
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. <i>Include fire management plans - they can be in plan body or an appendix.</i>	259.032(10) & 253.034(5)	App. D.1
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.	259.032(10) & 253.034(5)	App. D.1
43	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. <i>See footnote.</i>	253.034(5)	Ex. Sum, p. 20

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Item #	Requirement	Statute/Rule	Pg#/App
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).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-C.	Measurable objectives (see requirement for #42-C).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-D.	Related activities (see requirement for #42-D).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-E.	Budgets (see requirement for #42-E).	18-2.021, 253.034(5) & 259.032(10)	N/A
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).	259.032(10) & 253.034(5)	p. 23-25, 42-45
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
45-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 44-45, App. D.1
45-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
45-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
46	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. <i>See footnote.</i>	253.034(5)	p. 23-25, 42-44, App. B.3.2
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 required via lease language	App. B.4
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).	259.032(10) & 253.034(5)	p. 23-25, 42-45, App. D.1
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 44-45, App. D.1
48-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 44-45, App. D.1
48-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 23-25, 42-45, App. D.1
48-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section E: Water Resources			
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. <i>If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.</i>	18-2.018 & 18-2.021	p. 1-4

**Land Management Plan Compliance Checklist
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Item #	Requirement	Statute/Rule	Pg#/App
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	p. 1-4, 12-13
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	p. 20-22
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. <i>See footnote.</i>	253.034(5)	Ex. Sum
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).	259.032(10) & 253.034(5)	p. 32-52, App. D.1
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 38-52, App. D.1
53-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 38-52, App. D.1
53-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 32-52, App. D.1
53-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1

Section F: Historical, Archaeological and Cultural Resources

54	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. <i>Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.</i>	18-2.018, 18-2.021 & per DHR's request	Ex. Sum, p. 25-26, App. B.5
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	Ex. Sum, p. 25-26
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	p. 42, 45, App. D.1, App. E.2
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).	259.032(10) & 253.034(5)	p. 24-25, 42, 45, App. D.1, App. E.2
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 45, App. D.1, App. E.2
57-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 45, App. D.1, App. E.2
57-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 45, App. D.1, App. E.2
57-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1

**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.

**Land Management Plan Compliance Checklist
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Item #	Requirement	Statute/Rule	Pg#/App
Section G: Facilities (Infrastructure, Access, Recreation)			
58	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. <i>See footnote.</i>	253.034(5)	p. 55
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).	259.032(10) & 253.034(5)	p. 55, App. D.1
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
59-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	App. D.1
59-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
59-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	p. 48-52
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).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
Section H: Other/ Managing Agency Tools			
62	Place this LMP Compliance Checklist at the front of the plan.	ARC & managing agency consensus	Front & App. E.1
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC & 253.034(5)	Ex. Sum
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	App. D.3
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	p. 32-52
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)	App. D.1
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)	App. D.1
68	A statement of gross income generated, net income and expenses.	18-2.018	N/A
*** = 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.			

Executive Summary

Lake Jackson Aquatic Preserve Management Plan

Lead Agency	Florida Department of Environmental Protection's (DEP) Office of Resilience and Coastal Protection (RCP)
Common Name of Property	Lake Jackson Aquatic Preserve
Location	Leon County, Florida
Acreage Total	5,133 acres
Acreage Breakdown According to Florida Natural Areas Inventory (FNAI) Natural Community Type	
FNAI Natural Communities	Acreage according to GIS
Clastic Upland Lake	4,234
Wet Prairie	833
Hydric Hammock	40
Sinkholes	<5
Management Agency:	Office of Resilience and Coastal Protection
Designation:	Aquatic Preserve
Unique Features:	LJAP is a unique system rich with historic and environmental significance. It remains one of the only large sinkhole lakes in Florida in which hydrology has not been altered by man. The lake supports seven animal species that are listed as Threatened. It is also internationally known for sport fishing.
Archaeological/ Historical Sites:	The Department of State's Division of Historical Resources have identified seven earthen temple mounds within Lake Jackson Archaeological Mounds State Park boundary, which is adjacent to LJAP. The largest earthen mound is believed to be the temple mound. In total, there are 37 archaeological and historical sites near LJAP including archaeological sites, farmsteads, plantations and other historic structures.
Management Needs (See Management Issues and Goals)	
Ecosystem Science	Maintaining the health of the natural resources is crucial to ensuring the survival of the aquatic preserve for future generations. With so many different agencies conducting various monitoring tasks, it is imperative that LJAP staff bring these various agencies together to form a long-term framework for organizing and sharing data related to LJAP. These agencies include the city of Tallahassee, Leon County, LAKEWATCH, the Northwest Florida Water Management District and the Florida Fish and Wildlife Conservation Commission and their monitoring activities include water quality monitoring, vegetation surveys, invasive plant monitoring and more.
Resource Management	Partnerships with Northwest Florida Water Management District and Florida Fish and Wildlife Conservation Commission prove invaluable in the assessment of native vegetation and the treatment of non-native and/or invasive species.
Education and Outreach	Education and outreach is a key component to the successful management of LJAP. New programs will be introduced that include such things as community events, working groups, and partnerships. Signage will also be increased to provide the community with information and foster a deeper understanding of this natural treasure in their own backyard.
Public Use	LJAP is an internationally known bass fishery, but it also draws duck hunters, boaters, swimmers, picnickers, kayakers, and bird watchers. It is important to address and maintain the balance between resource management and recreational use to protect, conserve, and enhance the aquatic preserve.
Public Involvement:	Public support is vital to the success of conservation programs. The goal is to foster understanding of the problems facing these fragile ecosystems and the steps needed to adequately manage this important habitat. LJAP staff held public and advisory committee meetings on December 5 and 6 in Tallahassee to receive input on the draft management plan. A second public meeting will be held in Tallahassee when the Acquisition and Restoration Council reviews the management plan.

RCP/Trustees Approval

RCP Approval:

ARC approval:

Trustees approval:

Comments:

Acronym List

Abbreviation	Meaning
BMAP	Basin Management Action Plan
CSO	Citizen Support Organization
DEAR	Division of Environmental Assessment and Restoration
DEP	Florida Department of Environmental Protection
DNR	Florida Department of Natural Resources
EPA	United States Environmental Protection Agency
F.A.C.	Florida Administrative Code
FNAI	Florida Natural Areas Inventory
FoLJ	Friends of Lake Jackson
F.S.	Florida Statutes
FTE	Full Time Employment
FWC	Florida Fish and Wildlife Conservation Commission
G	Global
LJAP	Lake Jackson Aquatic Preserve
LVI	Lake Vegetation Index
NERR	National Estuarine Research Reserve
NOAA	National Oceanic and Atmospheric Administration
NWFWMD	Northwest Florida Water Management District
OFW	Outstanding Florida Water
OPS	Other Personal Services
RCP	Office of Resilience and Coastal Protection
S	State
SWIM	Surface Water Improvement and Management
STORET	STorage and RETrieval (databases)
TAPP	Think about Personal Pollution
TMDL	Total Maximum Daily Load
Trustees	Board of Trustees of the Internal Improvement Trust Fund
UF/IFAS	University of Florida, Institute of Food and Agricultural Sciences
USFWS	U.S. Fish and Wildlife Service
WBID	Waterbody ID
WIN	Watershed Information Network
WMA	Wildlife Management Area

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Fragrant water lily (Nymphaea odorata) and lily pads.

Part One

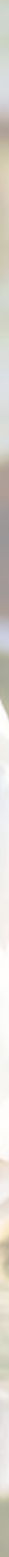
Basis for Management

Chapter One

Introduction

The Florida aquatic preserves are administered on behalf of the state by the Florida Department of Environmental Protection's (DEP) Office of Resilience and Coastal Protection (RCP) as part of a network that includes 41 aquatic preserves, three National Estuarine Research Reserves (NERRs), a National Marine Sanctuary, Coral Reef Conservation Program, Florida Coastal Management Program, Outer Continental Shelf Program, the Clean Boating Program and the Florida Resilient Coastlines Program (Map 1). This provides for a system of significant protections to ensure that our most popular and ecologically important aquatic ecosystems are cared for in perpetuity. Each of these special places is managed with strategies based on local resources, issues and conditions.

Our extensive coastline and wealth of aquatic resources have defined Florida as a subtropical oasis, attracting millions of residents and visitors and the businesses that serve them. Florida's submerged lands play important roles in maintaining good water quality, hosting a diversity of wildlife and habitats (including economically and ecologically valuable nursery areas), and supporting a treasured quality of life for all. In the 1960s, it became apparent that the ecosystems that had attracted so many people to Florida could not support rapid growth without science-based resource protection and management. To this end, state legislators provided extra protection for certain exceptional aquatic areas by designating them as aquatic preserves.



2

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1.1 / **Management Plan Purpose and Scope**

Florida's aquatic resources are at risk for both direct and indirect impacts of increasing development and recreational use, as well as resulting economic pressures, such as energy generation and increased fish and shellfish harvesting to serve and support the growing population. These potential impacts to resources can reduce the health and viability of the ecosystems that contain them, requiring active management to ensure the long-term health of the entire network. Effective management plans for the aquatic preserves are essential to address this goal and each site's own set of unique challenges. The purpose of these plans is to incorporate, evaluate, and prioritize all relevant information about the site into a cohesive management strategy, allowing for appropriate access to the managed areas while protecting the long-term health of the ecosystems and their resources.

The mandate for developing aquatic preserve management plans is outlined in Section 18-20.013 and Subsection 18-18.013(2) of the Florida Administrative Code (F.A.C.). Management plan development and review begins with the collection of resource information from historical data, research and monitoring, and includes input from individual RCP managers and staff, area stakeholders, and members of the general public. The statistical data, public comment, and cooperating agency information is then used to identify management issues and threats affecting the present and future integrity of the site, its boundaries and adjacent areas. The information is used in the development and review of the management plan, which is examined for consistency with the statutory authority and intent of the Aquatic Preserve Program. Each management plan is evaluated periodically and revised as necessary to allow for strategic improvements. Intended to be used by site managers and other agencies or private groups involved with maintaining the natural integrity of these resources, the plan includes scientific information about the existing conditions of the site and the management strategies developed to respond to those conditions.

To aid in the analysis and development of the management strategies for the site plans, the RCP identified four comprehensive management programs applicable to all aquatic preserves. To address the goals, objectives, integrated strategies and performance measures of the four programs, relevant information about the specific site has been collected, analyzed, and compiled to provide a foundation for development of the management plan. While it is expected that unique issues may arise regarding resource or management needs of a particular site, the following management programs will remain constant across the resource protection network:

- Ecosystem Science
- Resource Management
- Education and Outreach
- Public Use

Each aquatic preserve management plan will identify unique local and regional issues and contain the goals, objectives, integrated strategies, and performance measures to address those issues. The plan will also identify the program and facility needs required to meet the goals, objectives, and strategies of the management plan. These components are key elements for achieving the resource protection mission of each aquatic preserve.

The previous Lake Jackson Aquatic Preserve management plan was approved July 23, 1991.

1.2 / **Public Involvement**

RCP recognizes the importance of stakeholder participation and encourages their involvement in the management plan development process. RCP is also committed to meeting the requirements of Florida's Government-in-the-Sunshine Law (§286.011, F.S.), including:

- meetings of public boards or commissions must be open to the public;
- reasonable notice of such meetings must be given; and
- minutes of the meetings must be recorded.

Several key steps are to be taken during management plan development. First, staff compose a draft plan after gathering information of current and historic uses; resource, cultural and historic sites; and other valuable information regarding the property and surrounding area. Staff then organize an advisory committee comprised of key stakeholders, and conduct, in conjunction with the advisory committee, public meetings to engage the stakeholders for feedback on the draft plan and the development of the final draft of the management plan. Additional public meetings are held when the plan is reviewed by the Acquisition and Restoration Council and the Trustees for approval. For additional information about the advisory committee and the public meetings refer to Appendix C - Public Involvement.



Entirely secluded Mallard Pond is its own oasis.

Chapter Two

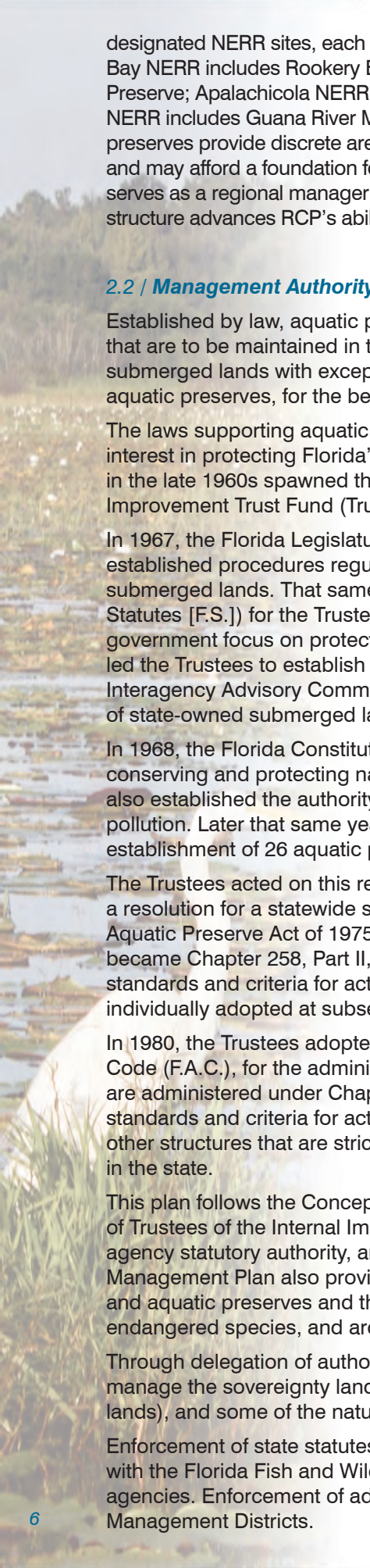
The Florida Department of Environmental Protection's Office of Resilience and Coastal Protection

2.1 / Introduction

The Florida Department of Environmental Protection (DEP) protects, conserves and manages Florida's natural resources and enforces the state's environmental laws. DEP is the lead agency in state government for environmental management and stewardship and commands one of the broadest charges of all the state agencies, protecting Florida's air, water and land. DEP is divided into three primary areas: Regulatory Programs, Land and Recreation, and Ecosystem Restoration. Florida's environmental priorities include restoring America's Everglades; improving air quality; restoring and protecting the water quality in our springs, lakes, rivers and coastal waters; conserving environmentally-sensitive lands; and providing citizens and visitors with recreational opportunities, now and in the future.

The Office of Resilience and Coastal Protection (RCP) is the unit within the DEP that manages more than five million acres of submerged lands and select coastal uplands. This includes 41 aquatic preserves, three National Estuarine Research Reserves (NERRs), the Florida Keys National Marine Sanctuary as well as providing management support through the Florida Coastal Management Program, the Outer Continental Shelf Program, the Coral Reef Conservation Program, the Clean Boating Program, and the Florida Resilient Coastlines Program. The three NERRs, the Florida Keys National Marine Sanctuary, and the Coral Reef Conservation Program are managed in cooperation with the National Oceanic and Atmospheric Administration (NOAA).

RCP manages sites in Florida for the conservation and protection of natural and historical resources and resource-based public use that is compatible with the conservation and protection of these lands. RCP is a strong supporter of the NERR system and its approach to coastal ecosystem management. Florida has three



designated NERR sites, each encompassing at least one aquatic preserve within its boundaries. Rookery Bay NERR includes Rookery Bay Aquatic Preserve and Cape Romano-Ten Thousand Islands Aquatic Preserve; Apalachicola NERR includes Apalachicola Bay Aquatic Preserve; and Guana Tolomato Matanzas NERR includes Guana River Marsh Aquatic Preserve and Pellicer Creek Aquatic Preserve. These aquatic preserves provide discrete areas designated for additional protection beyond that of the surrounding NERR and may afford a foundation for additional protective zoning in the future. Each of the Florida NERR managers serves as a regional manager overseeing multiple other aquatic preserves in their region. This management structure advances RCP's ability to manage its sites as part of the larger statewide system.

2.2 / *Management Authority*

Established by law, aquatic preserves are exceptional areas of submerged lands and associated waters that are to be maintained in their natural or existing conditions. The intent was to forever set aside submerged lands with exceptional biological, aesthetic, and scientific values as sanctuaries, called aquatic preserves, for the benefit of future generations.

The laws supporting aquatic preserve management are the direct result of the public's awareness of and interest in protecting Florida's aquatic environment. The extensive dredge and fill activities that occurred in the late 1960s spawned this widespread public concern. In 1966, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) created the first offshore reserve, Estero Bay, in Lee County.

In 1967, the Florida Legislature passed the Randall Act (Chapter 67-393, Laws of Florida), which established procedures regulating previously unrestricted dredge and fill activities on state-owned submerged lands. That same year, the Legislature provided the statutory authority (§253.03, Florida Statutes [F.S.]) for the Trustees to exercise proprietary control over state-owned lands. Also, in 1967, government focus on protecting Florida's productive water bodies from degradation due to development led the Trustees to establish a moratorium on the sale of submerged lands to private interests. An Interagency Advisory Committee was created to develop strategies for the protection and management of state-owned submerged lands.

In 1968, the Florida Constitution was revised to declare in Article II, Section 7, the state's policy of conserving and protecting natural resources and areas of scenic beauty. That constitutional provision also established the authority for the Legislature to enact measures for the abatement of air and water pollution. Later that same year, the Interagency Advisory Committee issued a report recommending the establishment of 26 aquatic preserves.

The Trustees acted on this recommendation in 1969 by establishing 16 aquatic preserves and adopting a resolution for a statewide system of such preserves. In 1975, the state Legislature passed the Florida Aquatic Preserve Act of 1975 (Act) that was enacted as Chapter 75-172, Laws of Florida, and later became Chapter 258, Part II, F.S. This Act codified the already existing aquatic preserves and established standards and criteria for activities within those aquatic preserves. Additional aquatic preserves were individually adopted at subsequent times up through 1989.

In 1980, the Trustees adopted the first aquatic preserve rule, Chapter 18-18, Florida Administrative Code (F.A.C.), for the administration of the Biscayne Bay Aquatic Preserve. All other aquatic preserves are administered under Chapter 18-20, F.A.C., which was originally adopted in 1981. These rules apply standards and criteria for activities in the aquatic preserves, such as dredging, filling, building docks and other structures that are stricter than those of Chapter 18-21, F.A.C., which apply to all sovereignty lands in the state.

This plan follows the Conceptual State Lands Management Plan, adopted March 17, 1981 by the Board of Trustees of the Internal Improvement Trust Fund and represents balanced public utilization, specific agency statutory authority, and other legislative or executive constraints. The Conceptual State Lands Management Plan also provides essential guidance concerning the management of sovereignty lands and aquatic preserves and their important resources, including unique natural features, seagrasses, endangered species, and archaeological and historical resources.

Through delegation of authority from the Trustees, the DEP and RCP have proprietary authority to manage the sovereignty lands, the water column, spoil islands (which are merely deposits of sovereignty lands), and some of the natural islands and select coastal uplands to which the Trustees hold title.

Enforcement of state statutes and rules relating to criminal violations and non-criminal infractions rests with the Florida Fish and Wildlife Conservation Commission law enforcement and local law enforcement agencies. Enforcement of administrative remedies rests with RCP, the DEP Districts, and Water Management Districts.

2.3 / Statutory Authority

The fundamental laws providing management authority for the aquatic preserves are contained in Chapters 258 and 253, F.S. These statutes establish the proprietary role of the Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund, as Trustees over all sovereignty lands. In addition, these statutes empower the Trustees to adopt and enforce rules and regulations for managing all sovereignty lands, including aquatic preserves. The Florida Aquatic Preserve Act was enacted by the Florida Legislature in 1975 and is codified in Chapter 258, F.S.

The legislative intent for establishing aquatic preserves is stated in Section 258.36, F.S.: “It is the intent of the Legislature that the state-owned submerged lands in areas which have exceptional biological, aesthetic, and scientific value, as hereinafter described, be set aside forever as aquatic preserves or sanctuaries for the benefit of future generations.” This statement, along with the other applicable laws, provides a foundation for the management of aquatic preserves. Management will emphasize the preservation of natural conditions and will include lands that are statutorily authorized for inclusion as part of an aquatic preserve.

Management responsibilities for aquatic preserves may be fulfilled directly by the Trustees or by staff of the DEP through delegation of authority. Other governmental bodies may also participate in the management of aquatic preserves under appropriate instruments of authority issued by the Trustees. RCP staff serves as the primary managers who implement provisions of the management plans and rules applicable to the aquatic preserves. RCP does not “regulate” the lands per se; rather, that is done primarily by the DEP Districts (in addition to the Water Management Districts) which grant regulatory permits. The Florida Department of Agriculture and Consumer Services through delegated authority from the Trustees, may issue proprietary authorizations for marine aquaculture within the aquatic preserves and regulates all aquaculture activities as authorized by Chapter 597, Florida Aquaculture Policy Act, F.S. Staff evaluates proposed uses or activities in the aquatic preserve and assesses the possible impacts on the natural resources. Project reviews are primarily evaluated in accordance with the criteria in the Act, Chapter 18-20, F.A.C., and this management plan.

Comments of RCP staff, along with comments of other agencies and the public are submitted to the appropriate permitting staff for consideration in their issuance of any delegated authorizations in aquatic preserves or in developing recommendations to be presented to the Trustees. This mechanism provides a basis for the Trustees to evaluate public interest and the merits of any project while also considering potential environmental impacts to the aquatic preserves. Any activity located on sovereignty lands requires a letter of consent, a lease, an easement, or other approval from the Trustees.

Florida Statutes that authorize and empower non-RCP programs within DEP or other agencies may also be important to the management of RCP sites. For example, Chapter 403, F.S., authorizes DEP to adopt rules concerning the designation of “Outstanding Florida Waters” (OFWs), a program that provides aquatic preserves with additional regulatory protection. Chapter 379, F.S., regulates saltwater fisheries, and provides enforcement authority and powers for law enforcement officers. Additionally, it provides similar powers relating to wildlife conservation and management. The sheer number of statutes that affect aquatic preserve management prevents an exhaustive list of all such laws from being provided here.

2.4 / Administrative Rules

Chapters 18-18, 18-20 and 18-21, F.A.C., are the three administrative rules directly applicable to the uses allowed in aquatic preserves specifically and sovereignty lands generally. These rules are intended to be cumulative, meaning that Chapter 18-21 should be read together with Chapter 18-18 or Chapter 18-20 to determine what activities are permissible within an aquatic preserve. If Chapter 18-18 or Chapter 18-20 are silent on an issue, Chapter 18-21 will control; if a conflict is perceived between the rules, the stricter standards of Chapter 18-18 or Chapter 18-20 supersede those of Chapter 18-21. Because Chapter 18-21 concerns all sovereignty lands, it is logical to discuss its provisions first.

Originally codified in 1982, Chapter 18-21, F.A.C., is meant “to aid in fulfilling the trust and fiduciary responsibilities of the Board of Trustees of the Internal Improvement Trust Fund for the administration, management and disposition of sovereignty lands; to insure maximum benefit and use of sovereignty lands for all the citizens of Florida; to manage, protect and enhance sovereignty lands so that the public may continue to enjoy traditional uses including, but not limited to, navigation, fishing and swimming; to manage and provide maximum protection for all sovereignty lands, especially those important to public drinking water supply, shellfish harvesting, public recreation, and fish and wildlife propagation and management; to insure that all public and private activities on sovereignty lands which generate

revenues or exclude traditional public uses provide just compensation for such privileges; and to aid in the implementation of the State Lands Management Plan.”

To that end, Chapter 18-21, F.A.C., contains provisions on general management policies, forms of authorization for activities on sovereignty lands, and fees applicable for those activities. In the context of the rule, the term “activity” includes “construction of docks, piers, boat ramps, boardwalks, mooring pilings, dredging of channels, filling, removal of logs, sand, silt, clay, gravel or shell, and the removal or planting of vegetation” (Rule 18-21.003, F.A.C.). In addition, activities on sovereignty submerged lands must be not contrary to the public interest (Rule 18-21.004, F.A.C.). Chapter 18-21 also sets policies on aquaculture, geophysical testing (using gravity, shock wave and other geological techniques to obtain data on oil, gas or other mineral resources) and special events related to boat shows and boat displays. Of importance to RCP site management, the rule also addresses spoil islands, preventing their development in most cases.

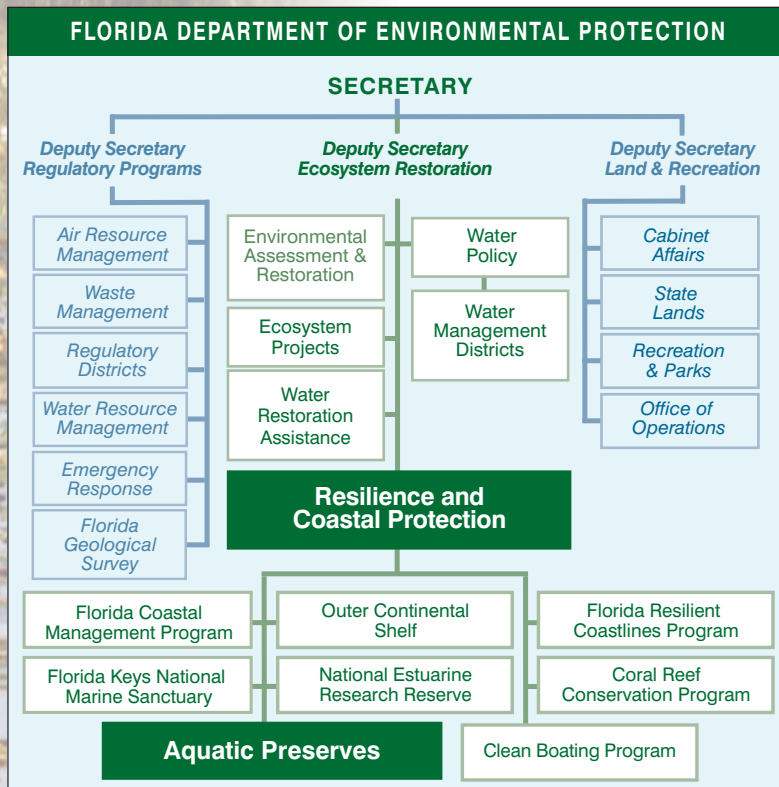


Figure 1 / State management structure.

cumulative impacts of a request in the context of prior, existing, and pending uses within the aquatic preserve, including both direct and indirect effects. The rule directs management plans and resource inventories to be developed for every aquatic preserve. Further, the rule provides provisions specific to certain aquatic preserves and indicates the means by which the Trustees can establish new or expand existing aquatic preserves.

Aquatic preserve management relies on the application of many other DEP and outside agency rules. Perhaps most notably, Chapter 62-302, F.A.C., concerns the classification of surface waters, including criteria for OFW, a designation that provides for the state’s highest level of protection for water quality. All aquatic preserves contain OFW designations. No activity may be permitted within an OFW that degrades ambient water quality unless the activity is determined to be in the public interest. Once again, the list of other administrative rules that do not directly address RCP’s responsibilities but do affect RCP-managed areas is so long as to be impractical to create within the context of this management plan.

Chapters 18-18 and 18-20, F.A.C., apply standards and criteria for activities in the aquatic preserves that are stricter than those of Chapter 18-21. Chapter 18-18 is specific to the Biscayne Bay Aquatic Preserve and is more extensively described in that site’s management plan. Chapter 18-20 is applicable to all other aquatic preserves. It further restricts the type of activities for which authorizations may be granted for use of sovereignty lands and requires that structures that are authorized be limited to those necessary to conduct water dependent activities. Moreover, for certain activities to be authorized, “it must be demonstrated that no other reasonable alternative exists which would allow the proposed activity to be constructed or undertaken outside the preserve” (Paragraph 18-20.004(1)(g), F.A.C.).

Chapter 18-20, F.A.C., expands on the definition of “public interest” by outlining a balancing test that is to be used to determine whether benefits exceed costs in the evaluation of requests for sale, lease, or transfer of interest of sovereignty lands within an aquatic preserve. The rule also provides for the analysis of the



Water shield (Brasenia schreberi) is one of several species of lily that grows on the surface of the aquatic preserve.

Chapter Three

Lake Jackson Aquatic Preserve

3.1 / Historical Background

Lake Jackson, Carr Lake, and Mallard Pond were designated an aquatic preserve by the Florida Legislature in 1973 (Florida Administrative Code 18-20.004). The goal of the Florida Legislature was to protect the lake's valuable resources from degradation that was occurring due to increased development surrounding the lakes. The aquatic preserve has proved its value through the years by providing crucial habitat for a diverse range of species and contributing significant economic gain for Tallahassee, but many don't realize the amount of historical significance the Lake Jackson area holds. The aquatic preserve was once home to advanced Native American cultures that date back to 10,000 B.C., pre-Civil War cotton farmers and wealthy hunting plantations of the 1900s (Florida Department of State, n.d.-a).

Lake Jackson's original name, Okeeheepkee, is derived from the Creek Indian term for "disappearing waters" - evidence that the lake's unusual tendency to drain its water supply through sinkholes was apparent to settlers of the region dating back centuries ago (Nowak, 2017). There is significant evidence to suggest that remains of settlements excavated around Lake Jackson date back to 10,000 B.C. The remains of four earthen mounds were attributed to the Fort Walton culture that lived on the shores of the lake around 1000 B.C (Nowak, 2017). The mounds were made of material from the earth, such as underlying sand and rock piles. They were thought to be used for burial grounds and other symbolic ritualistic events (Mission San Luis, n.d.). Two of the four mounds have been well preserved through time and remain important archaeological sites that offer insight into the advanced cultures that lived in the North Florida territory long before the influence of white settlers (Florida Department of State, n.d.-c.).

The early Native American lifestyle was dependent on the land they lived on and relied on abundant natural resources which Lake Jackson provided at the time. After the control shifted from the Fort Walton culture to the Apalachee tribes from around 500 B.C. into the 1600s, villages surrounding Lake Jackson were used predominantly as trading posts (Mission San Luis, n.d.). These Native American cultures specialized in

ornamental pottery that was traded with settlements as far reaching as Oklahoma and Tennessee (Florida Department of State, n.d.-a). The remains of such communities can be found at the Museum of Florida History in downtown Tallahassee. The native tribes relied heavily on their proximity to Lake Jackson which allowed them to benefit from the areas lush natural resources. The productive soils of the surrounding uplands made growing diverse crops a common practice for Native Americans. It is said that Native American cultures would anticipate drawdown cycles of the lake and plant peach tree orchards on the lake bottom when the water drained into the sinkholes about every 25 years (Nowak, 2017). The soil on the lake bottom was loaded with nutrients following a natural draining of the lake and the natives understood the importance of productive soils for growing crops.



Carr Lake is less frequented by visitors, and its shoreline is less developed.

Seminoles further south (Florida Department of State, n.d.-d.). The U.S. Territory of Florida was established in 1821 and Andrew Jackson was subsequently appointed governor for helping secure American influence in the region (City Data, n.d.).

With a drastic increase in American settlements in just a few years, Tallahassee was established as the territorial capital in 1824 (City Data, n.d.). During this time Lake Jackson and surrounding areas shifted from small agriculture production to large cotton plantations (Brueckheimer, 1979). The shores and adjacent upland areas of Lake Jackson provided desirable home sites for prominent figures in Tallahassee at the time. Some of the state's most important historical figures like Richard Keith Call, Colonel Robert Butler, Sid Cooper, and Governor Thomas Brown chose Lake Jackson's shoreline to build large estates. The cotton plantations that flourished in the early 1800s saw a decline in value after the Civil War. Wealthy northerners, looking to purchase cheap land for hunting retreats, established wild game management areas on what were once thriving cotton plantations. The era of the quail farms in the late 1800s ushered in a new recreational outlook for Lake Jackson (Brueckheimer, 1979). The lake and its neighboring upland ecosystems provided a diverse habitat for a myriad of wildlife and became a recreational destination for

Two Spanish expeditions passed through the area. The first, led by Pánfilo de Narváez in 1528 gave the Apalachee their first taste of Spanish conquistadors. In 1539, Hernando de Soto followed rumors of gold towards the Apalachee capital, Anhaica, which was located in present-day Tallahassee. Having prior experience with conquistadors, the Apalachee abandoned the area before de Soto's expedition arrived. He used their buildings and food stores to camp for five months and plan the next steps of the expedition. After de Soto left, the Apalachee returned (Florida Department of State, n.d.-b). In 1633, the Apalachee invited Spanish friars to establish a mission in the area – Mission San Luis – and some Spanish settlers followed. However, the mission was burned and abandoned in 1704 due to conflict with the English colonies. Most of the Apalachee fled west to Mobile, a French village (Mission San Luis, n.d.).

In the 1700s, bands of Creek Indians migrated from Alabama and Georgia and joined with other tribes and runaway slaves. Encouraged by Spain who saw them as a buffer for their colony, they established small farms and towns in surrounding areas and continued to use Lake Jackson as a productive agricultural resource. These groups became known as the Seminoles in 1770. White settlers continued to move to the area which sparked conflicts over land and runaway slaves. This escalated into the first Seminole war in 1817. Andrew Jackson invaded Spanish Florida and drove the



Spatterdock (Nuphar advena) is another lily species that grows on the surface of the aquatic preserve.

avid sportsmen throughout the southeast. With the establishment of Florida State University (FSU) in 1851 and Florida Agricultural and Mechanical University (FAMU) in 1887, the population of Tallahassee and Leon County grew substantially. Into the 1900s the growing population expanded from the city out to rural areas. By the 20th century, education and government replaced agriculture as the chief industry in Tallahassee (City Data, n.d.). At this time, Lake Jackson was facing mounting pressure from an increase in demand for higher density residential housing.

In the 1920s, a major highway project involving “Road 1” (now U.S. Highway 27) was underway to create a main transportation corridor connecting a growing urban area in Tallahassee. The project was aimed at facilitating better access to neighboring small towns just outside of Tallahassee. This road project bisected a small body of water referred to as Little Lake Jackson (Aresco, 2005). Along this road, boat launches were established along the south shores of the lake to allow for easy access to the lake’s spectacular sport fishing. In the late 1950s, it was not uncommon for anglers to travel from neighboring states to fish for trophy largemouth bass (*Micropterus salmoides*) on Lake Jackson. Increased access to the lake and the construction of Interstate 10 heightened the lake’s recreational appeal and development prospect. In the 1970s plantation owners around the lake faced pressure from developers to sell chunks of rural land to be used for developing suburban neighborhoods. Development surrounding the lake steadily increased throughout the ‘70s (Florida Department of State, n.d.-a.). With little regulation and numerous building projects, the Lake Jackson area was seeing its first signs of environmental decline from development.

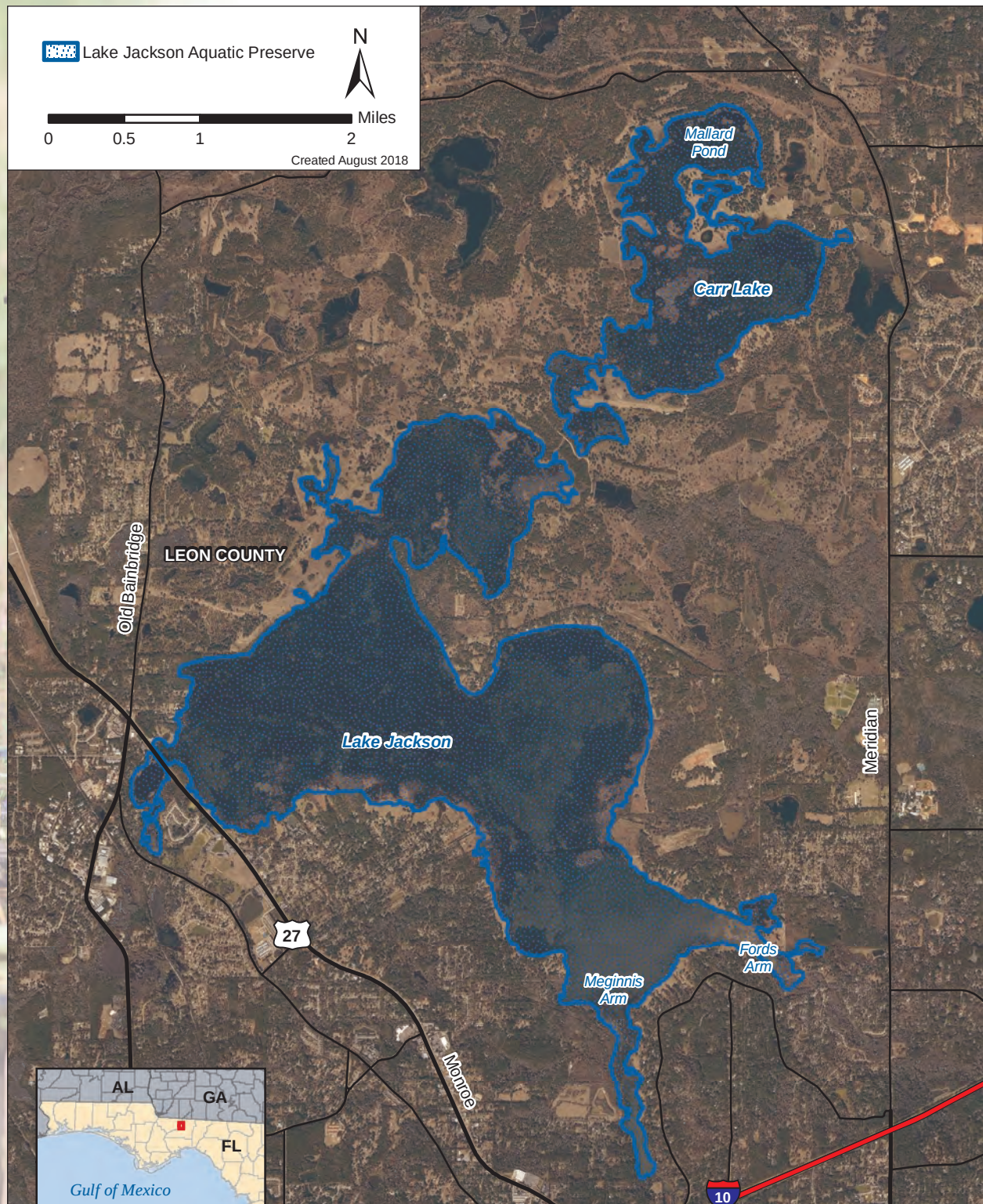
In 1973, shortly after development reached two thirds capacity within the surrounding areas of the lake, the Florida Legislature designated the area as Lake Jackson Aquatic Preserve (LJAP), realizing the importance of protecting such a productive habitat with rich cultural history (Florida Department of Environmental Protection [DEP], n.d.-b). The aquatic preserve designation was meant to ensure that the integrity of the ecosystem and the resources it provides remain in their essentially natural condition.

The Lake Jackson ecosystem has important historical significance to Leon County and Florida dating back to the first Native Americans who settled in the area thousands of years ago. Since the designation of Lake Jackson as an Aquatic Preserve, organizations partnered with the Florida Department of Environmental Protection (DEP) have worked to ensure that the use of the lake and surrounding areas will not take away from its function as a valuable economic, ecological, historical, and archaeological resource to Tallahassee, Leon County, and Florida.

3.2 / General Description

International/National/State/Regional Significance

Florida is nationally renowned for its abundance of water throughout the state. The Sunshine State has more than 30,000 lakes covering more than three million acres (Boas, 2006). Water bodies scattered throughout Northwest Florida are diverse and complex. The aquatic ecosystems that exist are some of the most productive in the nation. The Florida Panhandle is home to more than 700 native vertebrate species and 2,000 native plants (DEP, 2008). Tallahassee and the surrounding areas in Leon County have about 200 lakes. The lakes range from less than one acre in size to the 4,700-acre Lake Jackson, located within the city limits of Tallahassee in the northern section of Leon County (University of South Florida



Water Institute, 2001). The lake is exceptional in that it is the only freshwater lake to be designated an aquatic preserve and an Outstanding Florida Water (OFW). The aquatic preserve is located in a broader regional designation called the Tallahassee Hills Region. This region is characterized by rolling hills and elevated terrain especially around Lake Jackson (DEP, n.d.-b). The dynamics of the Tallahassee Hills is discussed in more detail under the topography and geomorphology section of this report. Aside from contributing to the productivity of the ecosystem; Lake Jackson's regional location has created many unique features that distinguish the lake from others around the state.

The Floridan aquifer is the source for almost all the groundwater to the area. It is made of limestone and dolomite, which are both attributes of north Florida's karst topography. Karst topography is a landscape feature that contributes to the formation of sinkholes that occur from the dissolution of underlying limestone. Lake Jackson is located atop two active sinkholes - Lime Sink and Porter Hole Sink. There are numerous sinkholes scattered throughout the lake bottom, some are small and inactive while others are large like Lime Sink and Porter Hole. These two sinks lead directly into the underlying aquifer and cause natural, periodic draining of the lake following a cyclical pattern of about 20-25 years. The knowledge of the draining and refilling of the lake is an important aspect of effective management for the aquatic preserve.

With cooperation from local agencies, management plans should be developed to preserve the unique and ecologically important characteristics of the lake that consider the regional significance of the area. More specifically, water quality, pollution impact from development, and resource management are important areas of focus. The DEP in partnership with the Florida Fish and Wildlife Conservation Commission (FWC) and Northwest Florida Water Management District (NFWMD), along with other federal, state, and local organizations need to develop current management plans that assess the past, present and future state of this important aquatic preserve.

Location/Boundaries

LJAP includes all state-owned sovereignty submerged lands that extends laterally landward of the ordinary high-water line to include all adjacent wetlands (Map 2). According to the Regulatory Guidance Letter from the US Army Corps of Engineers the ordinary high water mark extends into the adjacent wetlands (Riley, 2005).

The adjacent water bodies, Carr Lake and Mallard Pond, are included in the aquatic preserve, however, privately-owned uplands are excluded. There are two sections of Lake Jackson that branch off the main waterbody. Meginnis Arm extends almost two miles south narrowing into Meginnis Creek which crosses under Interstate 10 to a storm water treatment facility that can be seen from the highway. Fords Arm extends east from Lake Jackson's main waterbody and is mostly marshy terrain with limited accessibility. Both areas of the lake are of special concern for the aquatic preserve due to the extensive development within the watershed that led to a decrease in water quality. The location of the aquatic preserve within the city limits of Tallahassee has allowed easy access to the lakes' many recreational uses available to a growing Leon County population. Interstate 10 is within proximity to the lake and the U.S. Highway 27 (Monroe Street) exit is less than two miles from a main access point to Lake Jackson. The major roads near the lake are Monroe Street and Meridian Road. Monroe Street provides access to boat ramps along the south end of the aquatic preserve and can become heavily congested during peak periods of traffic. Meridian Road leads to the north end of Lake Jackson and Carr Lake and is a smaller two-lane road which passes through residential areas and three public access points - two on Lake Jackson and one on Carr Lake.



Lake Jackson is internationally known for its largemouth bass fishing.

The 81-acre Lake Jackson Archaeological Mounds State Park is located off Crowder Road just before the paved boat ramp for Lake Jackson. Though not located within the aquatic preserve, the park offers trails that lead to many of the historic mounds constructed by Native Americans of the area. Most of the land surrounding the lake has been developed throughout the years, some areas more intensively than others. A few local businesses exist on Lake Jackson's shores including the Hartsfield Law Offices overlooking the lake and a section of local shops off N. Monroe Street. Shucker's Half-Shell Oyster Bar and Oyster Island Bait & Tackle are local staples for recreational users of Lake Jackson. They are both located on the southwest shores of the lake at Sunset Landing. There are several suburban communities surrounding the aquatic preserve, including Lakebreeze, Harbinwood, and Lake Club Apartments.

3.3 / Resource Description

Surrounding Population Data and Future Projected Changes

Over the last 100 years, Leon County has evolved from a rural county dominated by agriculture to an urban center with city limits encompassing 103 square miles. The first significant population increase occurred in the 1960s when Leon County experienced a 40 percent increase in population. The county continued growing steadily into the new millennium with a population of more than 287,000 in 2017. It is predicted that by 2030 the county will grow to more than 320,000 (University of Florida, 2018). Most of the Leon County

population lives in the Tallahassee urban area.

However, due to urban sprawl the urban boundary has moved away from the city center along the major transportation corridors. The road system in Tallahassee has five main corridors that start in downtown and lead to areas outside of the city. This allowed for growth and development to extend well outside of the city's central business district into areas that were once rural. One such area that has experienced considerable growth over the years is the Lake Jackson watershed. The accessibility of this area is made possible by two major roads leading out of downtown Tallahassee - Monroe Street and U.S. Highway 319 (Thomasville Road). Easy access along with the proximity to Lake Jackson, a popular recreational destination, has made this area desirable to developers. Growth rate between 2010- 2016, Leon County's percent population change was 4.5 percent over the six-year period for an average annual growth rate of 0.75 percent ("Report Shows Leon Population Growth," 2017).

In 1990, in response to mounting pressure to further develop within the Lake Jackson watershed combined with declining water quality in the lake, the Lake Protection district was established by the Leon County Board of County Commissioners. The intent of the district was to protect environmentally sensitive areas adjacent to the lake and reduce development within already critically impacted areas (City of Tallahassee, n.d.-b). Regulating certain development within the watershed surrounding Lake Jackson allowed the Commission to protect the integrity of the ecosystem without completely ruling out future development. The district allows residential uses of one unit per two acres or two units per acre

if clustered on 40 percent of the property (City of Tallahassee, n.d.-b). This restriction was developed to maintain an adequate amount of undisturbed land without fully restricting development.

The current development surrounding the lake is mostly single family residential with a few commercial areas and multifamily buildings. Most commercial development is concentrated along the extensively developed southern section of Lake Jackson. An area of special concern is the Meginnis Arm extension of Lake Jackson. The arm is a long, narrow section of open water and wetland habitat that extends



Reptiles are commonly seen throughout Lake Jackson Aquatic Preserve, like this Florida water snake (Nerodia fasciata pictiventris)

south and tapers into a creek which passes under Interstate 10. The north end of the lake is currently minimally developed, but is facing pressure from a growing Leon County population. The water quality in this portion of the lake is considered good, but if development increases at the same density seen in the south end of the Lake Jackson watershed, water quality is likely to be negatively impacted. Local growth patterns and expected population increase for the county are important factors when developing a comprehensive lake management plan for the aquatic preserve. Cooperation and partnership between residents, developers, and government agencies will help to facilitate responsible growth practices that will help to restore the environment within the aquatic preserve.

Topography and Geomorphology (Physiography)

LJAP is located within the northern boundaries of the Tallahassee Hills physiographic province. The Tallahassee Hills physiographic province covers a 24-mile wide strip of uplands spanning five counties in northwest Florida (Cairns & Macmillan, 1989). The region extends from the Withlacoochee River, west to the Apalachicola River. The steep hills associated with the Tallahassee Hills form the sub-basins that give Lake Jackson its irregular shape. The rolling topography found within the aquatic preserve and surrounding uplands has a varied elevation of 200 to 230 feet above sea level.

The landforms associated with the Tallahassee Hills physiographic province evolved over a long period of time in response to past sea level fluctuations and erosional and depositional processes. It was not until recently when anthropogenic changes to the natural landscape began contributing to the degradation of the lake's undisturbed ecosystem. The steep sloped hills increase the potential for erosion and the nutrient content of the sediments may impact water quality.

Geology

Some of the unique characteristics of LJAP can be better understood by examining the subsurface geology. Lake Jackson is a flat-bottomed waterbody that has an average depth of six feet except for two known major depressions that have a localized depth of about 28 feet (Florida Department of Natural Resources [DNR], 1991). The lake was formed through the dissolution of limestone over a long period of time which caused a depression on the surface that is now the lake (Cairns & Macmillan, 1989). Limestone dissolution also produced the two major sinkholes located on Lake Jackson that have the capability to drain the lake of its water within days of reopening.

There are three hydrogeologic units adjacent to or underlying Lake Jackson. The surficial or water table aquifer is the uppermost hydrogeologic unit that is present in the higher elevations surrounding the lake. The yellowish-red sand and clay of the Miccosukee Formation act as a water table aquifer. Downward flow of groundwater into the deeper units is restricted by the less permeable intermediate confining unit or intermediate aquifer system. The intermediate aquifer system extends 100 feet below the lake level. It consists of quartz sands and fine-grained limestone at the base of the system. The base of the intermediate aquifer system has low permeability and separates the Floridan aquifer system with 10 to 20 feet of clay. The Floridan aquifer underlies Lake Jackson along with all of Leon County and is the source of most of the ground water to the area (DNR, 1991). The Floridan aquifer is composed of limestone and dolostone and contains high quality water up to 600 feet deep (DNR, 1972). The Floridan aquifer below Lake Jackson's two sinkholes (Lime Sink and Porter Hole Sink) can create a direct route for water from the lake to enter the aquifer (DNR, 1972). Because of this, the periodic draining of the lake into sinkholes has the potential to deliver large quantities of water into the Floridan aquifer.

According to the U.S. Geological Survey, LJAP resides in the Area III sinkhole classification, where sediments that overly the Floridan aquifer are between 30' to 200' thick and consists mainly of cohesive clays of low permeability. Sinkholes are most numerous in this area and are of varying size and have the potential to develop abruptly (e.g. cover-collapse sinkholes). (Sinclair & Stewart. 1985).

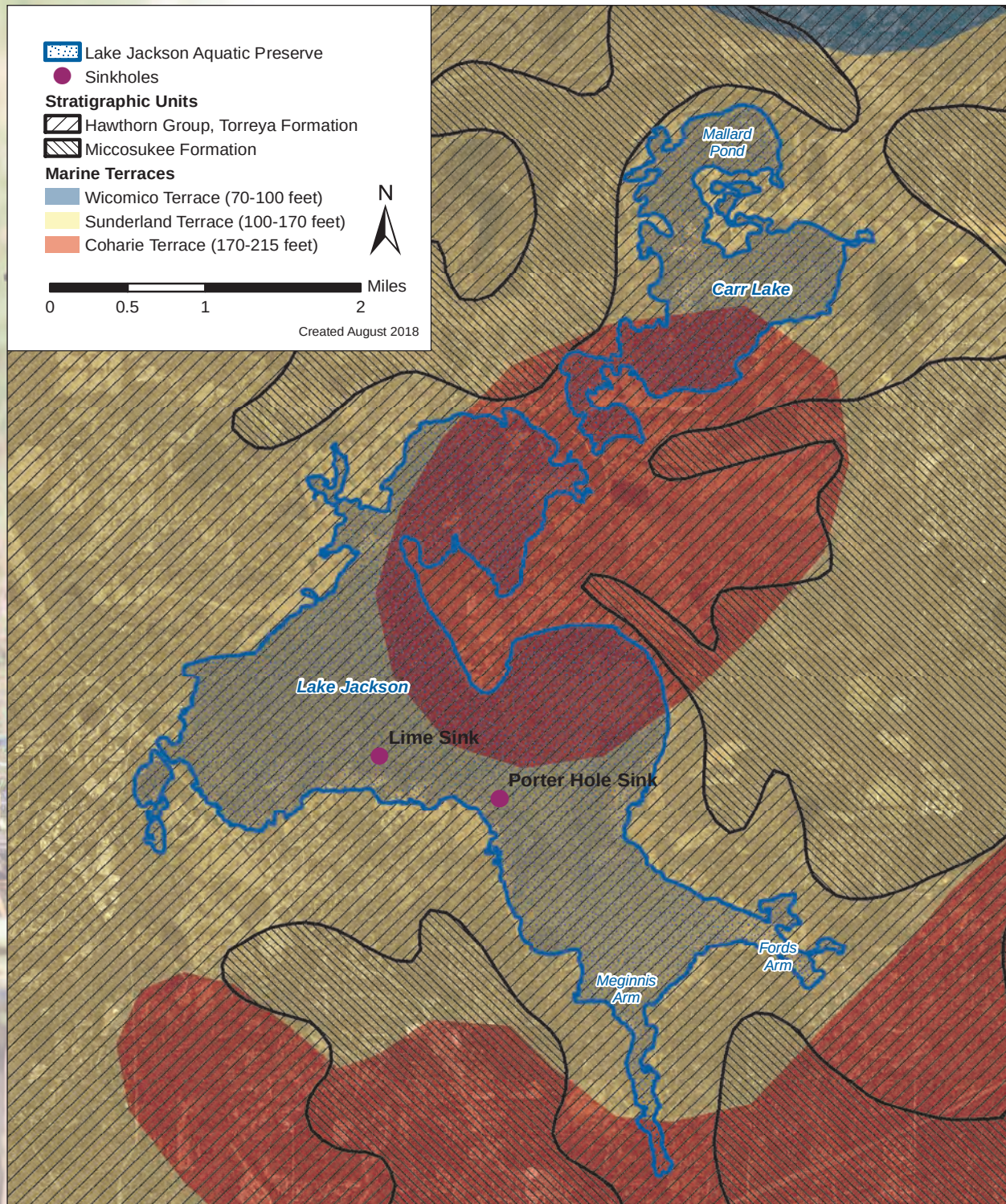
Hydrology and Watershed

The watershed or basin of a lake refers to the area encompassing the lake that drains into the lake due to the gradient of the surrounding topography. Surface water is transported via tributaries to a main waterbody, such as a large lake, from any location within its drainage basin. This is an important feature that has a direct correlation with the hydrological systems of LJAP. Lake Jackson is located within the extensive Ochlockonee River basin that starts in Georgia and ends in Florida's Gulf Coast.

Lake Jackson has its own drainage basin of 43.2 square miles that surrounds the aquatic preserve (Map 5). The aquatic preserve's location among the steep terrain of the Tallahassee Hills region creates a funneling effect within the drainage basin of the lake that speeds up water transport towards the lake. The sub-basins (as described by the U.S. Geological Survey's Hydrologic Unit Codes) of the larger Lake Jackson Basin are the Lake Overstreet drain, Timberlane Run, Meginnis Arm Run, Harbinwood Estates Drain and three

unnamed smaller drains. The area west of Meginnis Arm is especially environmentally sensitive because of the steep grades, ravine systems, and five natural seepage systems (Cairns & Macmillan, 1989). The most imminent issue affecting the lake's hydrology is the amount of non-point source pollution being transported to the aquatic preserve from surrounding developed areas within the watershed. Significant rainfall events transport sediment from roads, residential areas, and nearby construction that can end up draining into the aquatic preserve and impact water quality. Storm water treatment facilities and retention ponds have been constructed to capture storm water before it flows into the aquatic preserve.

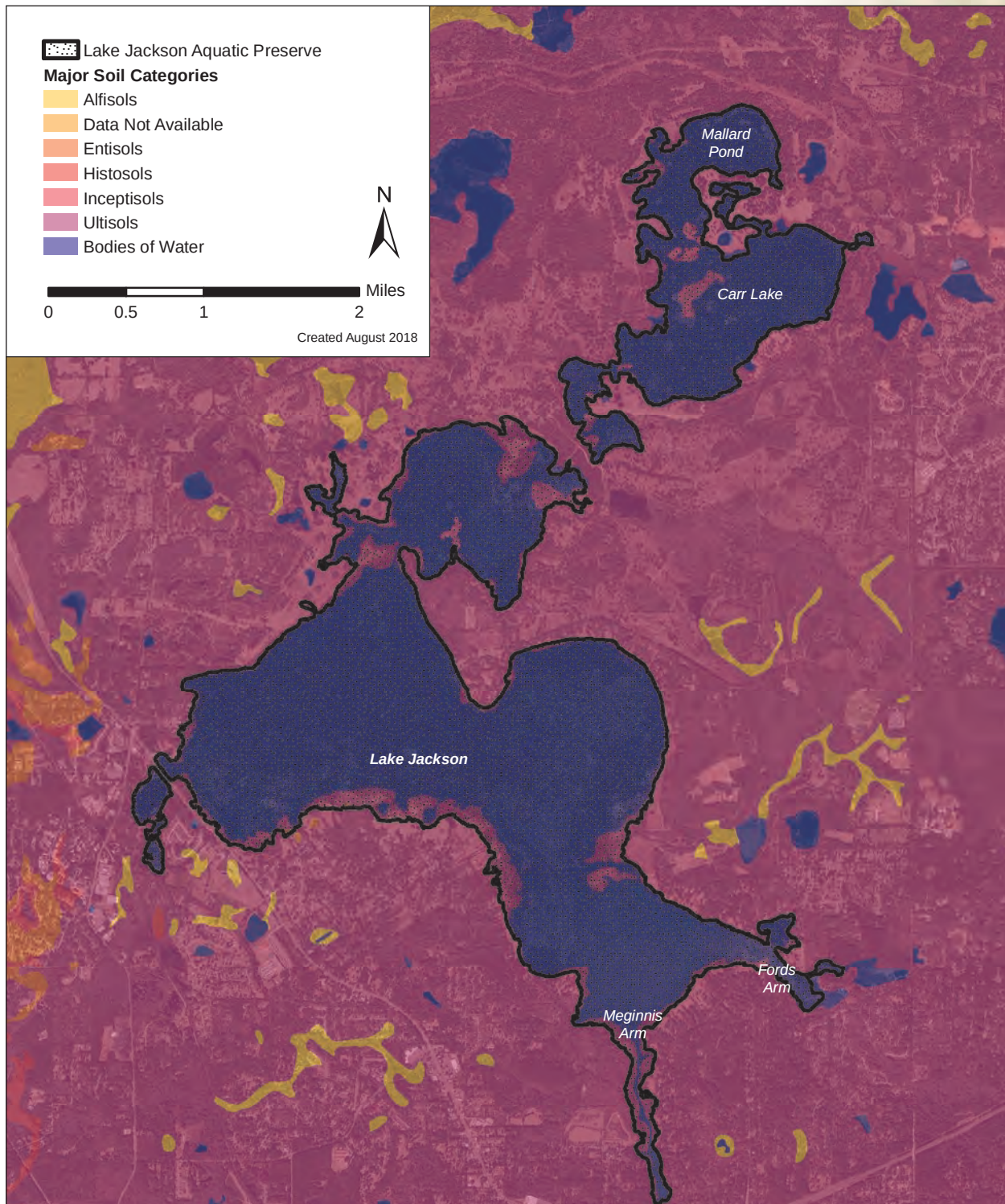
Florida's waterbodies are assessed at the watershed or sub-watershed scale by a Waterbody Identification number (WBID). WBIDs have a unique identification number that is tracked by the department and have a geographic delineation as a polygon layer. The assessment units are drainage basins, lakes, lake drainage



areas, springs, rivers and streams, segments of rivers and streams, coastal, bay and estuarine waters in Florida. The polygons roughly delineate the drainage basins surrounding the waterbody assessment units. The WBIDs are used in the annual impaired waters assessment, implementation of Total Maximum Daily Loads (TMDLs) and Basin Management Action Plans (BMAPs) as well as other applications.

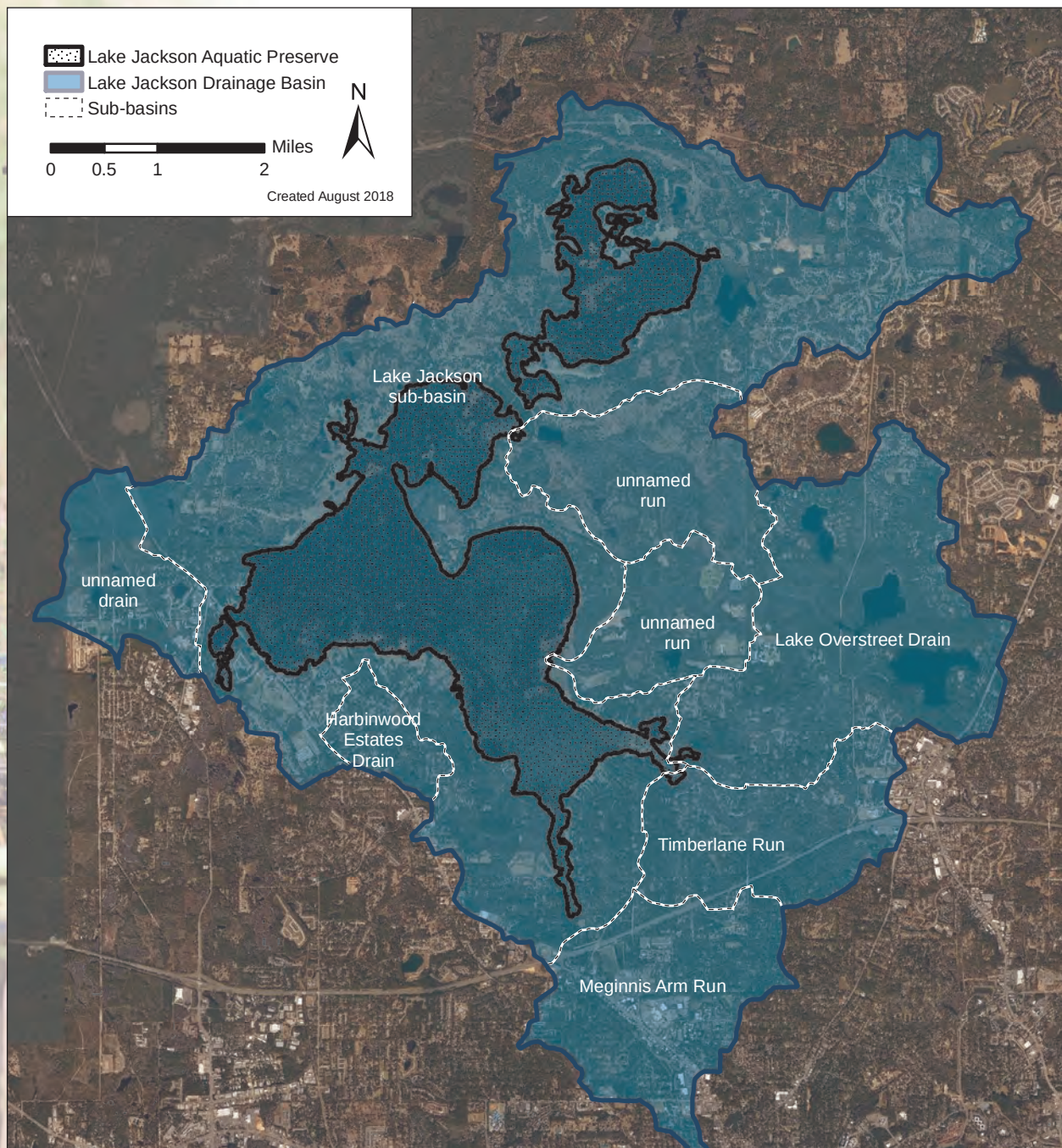
LJAP is separated into two WBIDs: 582B for Lake Jackson and 582C for Carr Lake and Mallard Pond. There are two other WBIDs associated with LJAP: 746A, the Jackson Heights Creek and 582D, the Lake Jackson Outlet which surrounds the entire aquatic preserve.

To look at an interactive map with Verified Impaired WBIDs (those waterbodies impaired for a parameter and in need of a TMDL), Florida TMDLs (existing and in progress) and BMAP areas (existing and in progress) go to: <https://floridadep.gov/dear/watershed-assessment-section/content/basin-411-0>



Map 4 / Soils of Lake Jackson Aquatic Preserve

The aquatic preserve's closed-basin system is a unique element that contributes to the negative effects of non-point source pollution. The aquatic preserve receives inflow from the surrounding basins mentioned above; however, being a closed-basin system, the water has no outflow through a defined drainage way such as a river or stream. Water can only exit the system through evaporation, seepage into the sinks, leakage through the lake's bottom, and transpiration of water by vegetation (DNR, 1991). Lake Jackson water levels tend to fluctuate depending on the amount of annual rainfall and sinkhole activity. This fluctuation of water levels is typical of karst lakes and also occurs in Lake Iamonia which is located in Leon County close to the Florida/Georgia line and in Lake Miccosukee located 20 miles west of Lake Jackson in Jefferson County. The two currently active sinks - Lime Sink and Porter Hole - play an integral role in maintaining the aquatic preserve's ecological integrity. The natural cycling of large volumes of water approximately every 25 years has historically created an ecosystem with rich soils and abundant plant and animal life. It is important for the ecology of the lake for it to drain occasionally; it allows the organic material that accumulates on the bottom of the lake to oxidize and return nutrients back to the lake bottom (McGlynn, 2006; Fox, Brezonik & Keirn, 1977). Normally, the sinkholes are plugged with sediments, but will collapse when groundwater levels drop, allowing lake water to enter the aquifer, and often dramatically lowering the water level.



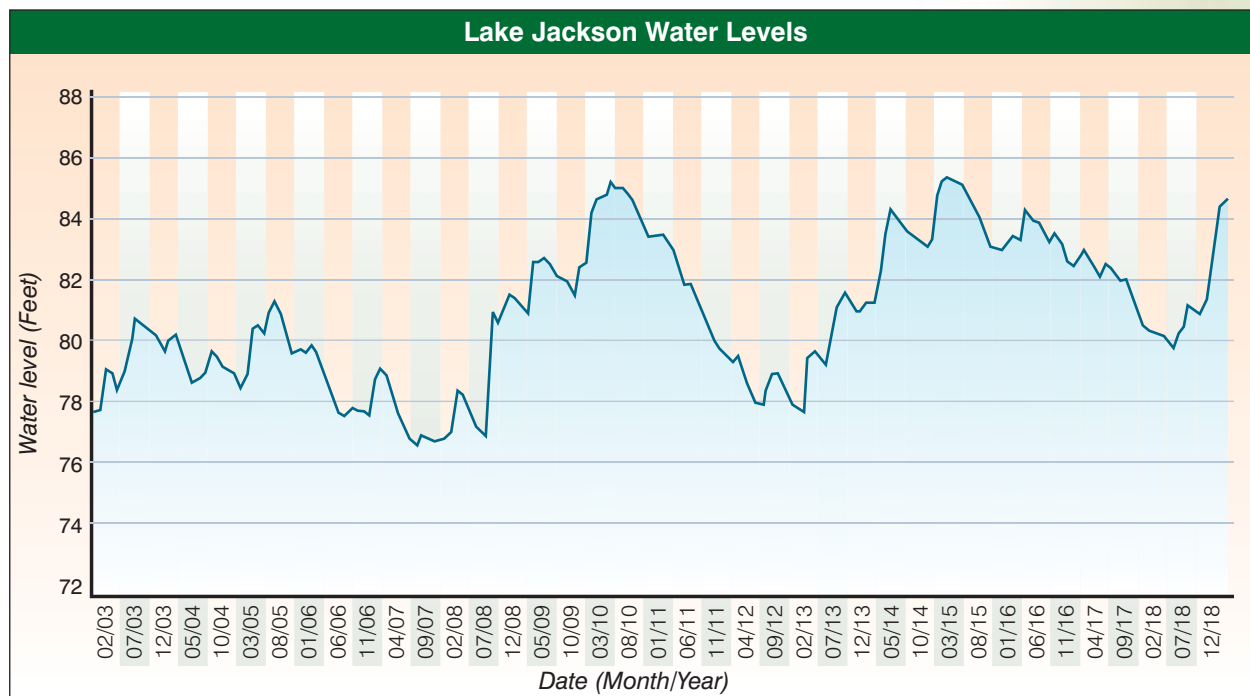


Figure 2 / Water levels for Lake Jackson at Miller Landing Road

After a three-year drawdown period that started in 1956, the oxidization of organic sediments exposed sand on the lake bottom. As the lake refilled in the 1960s, the largemouth bass population increased significantly due to the increase in breeding habitat and decrease in submerged vegetation throughout the water column allowing more areas for bass to move around and ambush prey (McGlynn, 2006). The proliferation of the largemouth bass on Lake Jackson has had a tremendous impact on the local economy throughout the years. However, in 1959 while the lake was still in its natural drawdown cycle, residents, frustrated with the lake's lack of water, loaded the sinkholes with scrap car parts and other large objects to prevent further draining and preserve the lake's recreational viability. The blockage of the sinks altered the natural hydrological process of the lake and may have impeded the sinks' function (McGlynn, 2006).

Although there have been repeated attempts to block both sinks, in 1999 the lake completely drained in a year's time. The process started with the central portion of the lake draining into Porter Hole Sink, exposing 750 acres of sediments (McGlynn, 2006). In May of 2000, Lime Sink drained the north portion of the lake leaving some water trapped in smaller sub-basins throughout the lake, but most of the lake bed was exposed. A massive muck removal project was implemented due to the combined efforts of government organizations, such as NFWFMD, DEP, Florida Legislature, FWC, and Friends of Lake Jackson. The project removed an excess of two million cubic yards of sediment from the lake bottom costing more than \$8 million to restore the lake's sand bottom of the 1950s (McGlynn, 2006). Since the muck removal project, the lake has refilled significantly. Increased rainfall in 2001 raised the level of Lake Jackson to between 80 and 81 feet above sea level, but still lower than the normal 84 feet (McGlynn, 2006). In 2006, the lake partially drained into the aquifer again due to low annual rainfall (McGlynn, 2006). Again, locals attempted to block the Porter Hole Sink with objects such as cinderblocks and sediment. However, this caused two more small sinks to open to the north (McGlynn, 2006). At this time, the lake was dry in most places and it was not uncommon to see trucks and ATV's driving across the lake bottom from Miller Landing to Faulk Drive Landing, which is against county ordinance. There were some areas where water was concentrated into potholes, but in the middle of the lake, a well beaten path formed across the bottom. It was not until early 2008 that Lake Jackson filled up due to a three-day period of heavy rain that raised the lake to a more stable level.

Understanding the hydrological process of LJAP is crucial to developing management techniques aimed to restore water quality on the lake. Hands-on restoration projects, such as the muck removal project of 1999, are a good example of how understanding the aquatic preserve's hydrological processes can lead to an increase in the lake's viability as a productive natural resource.

Climate

Florida's climate has been a driving force behind the population increase that has occurred over the last 100 years. The state's climate ranges from subtropical to temperate and is characterized by minor seasonal transitions. The climate in the northern part of the state is temperate with more sustained cold days in the winter and hot summers. The weather patterns for northwest Florida are influenced by the Gulf

of Mexico, which provides temperate heat along the coast in the summer and warmer winter temperatures than its neighbors to the north in Georgia (Apalachee Regional Planning Council, 2016). Mean annual temperature for the area is 67.6 degrees (U.S. Climate Data, n.d.). Winters are moderate, with an average low temperature of 39 degrees for January and average high temperatures above 70 degrees by the end of February. Summers are typically hot with temperatures reaching into the 100s on some days. Average rainfall around the aquatic preserve is higher than most of Florida. The months of June through August have the rainiest days and average an accumulated rainfall of 7.5 inches (U.S. Climate Data, n.d.). In years with heavy rainfall the lake can rise to levels above 90 feet, as seen in 1966 when the lake reached its highest recorded level of 96.16 feet (Cairns & Macmillan, 1989). In stark contrast, in years with drought conditions the lake can drain into the sinkholes in a matter of days. Tropical storms and hurricanes, though weak by the time they reach the aquatic preserve, can have a dramatic effect on the lake's water level. The climate of the aquatic preserve creates an ecosystem home to many native plant and animal species and some migratory birds who use the lake as a food resource in the fall and winter.

Natural Communities

The natural community classification system used in this plan was developed by the Florida Natural Areas Inventory (FNAI) and the Florida Department of Natural Resources, now DEP, and was updated in 2010. The community types are defined by a variety of factors, such as vegetation structure and composition, hydrology, fire regime, topography and soil type. The community types are named for the most apparent biological or physical characteristic. (FNAI, 2010). FNAI also assigns Global (G) and State (S) ranks to each natural community and species that FNAI tracks. These ranks reflect the status of the natural community or species worldwide (G) and in Florida (S). Lower numbers reflect a higher degree of imperilment (e.g., G1 represents the most imperiled natural communities worldwide, S1 represents the most imperiled natural communities in Florida).

The natural communities of Lake Jackson are part of a unique ecosystem that has become well adapted to the fluctuating water levels that occurs due to periodic draining of the lake's water via sinkholes. The communities found within the aquatic preserve provide good habitat for diverse species that thrive in freshwater lake environments. The aquatic preserve is mostly aquatic habitat and has an abundance of wetlands that provide transition between open water and the surrounding terrestrial upland ecosystems. These wetlands habitats remain in relatively good condition and hold many species that thrive off the abundance of aquatic vegetation that grows in these communities. LJAP represents an ecotone between clastic upland lake and wet prairie. The majority of the aquatic preserve is usually better described as clastic upland lake with much of the remainder falling into the diverse wet prairie natural community type (Map 6). It also includes both sinkholes and hydric hammock communities, although each comprise less than one percent of the area. Lake Jackson's water level is heavily affected by rain water, evaporation and transpiration. There are no inputs from rivers or streams to keep Lake Jackson full, so Lake Jackson may transition to wet prairie as the predominant natural community during droughts instead of the clastic upland lake type.

The following descriptions of natural communities found within LJAP are taken from the **FNAI Guide to the Natural Communities of Florida: 2010 Edition**.

FNAI Natural Communities	Acreage	% of Acreage	Federal Rank	State Rank	Comments
Clastic Upland Lake	4234	82%	G3	S2	Characterized as shallow to relatively deep, irregularly shaped basins without significant outflow. Water is generally dissipated through evaporation, transpiration, and during droughts, through sinks that connect with the aquifer
Hydric Hammock	40	1%	G4	S4	Evergreen hardwood forest with understory occurring on moist soils
Wet Prairie	833	16%	G2	S2	Treeless plain with sparse to dense ground cover of grasses and herbs
Sinkholes	<5	<1%	G2	S2	Karst feature with steep walls. These can be dynamic within the lake. If an existing sinkhole is clogged, a new one will open due to the pressure caused by the weight of the water.

Table 1 / Summary of Florida Natural Areas Inventory natural communities in Lake Jackson Aquatic Preserve.

Clastic Upland Lake

(Synonyms: clay-bottomed lake, silt-bottomed lake, fluctuating or disappearing lake, deep water lake, limesink). Clastic upland lakes are generally characterized as shallow to relatively deep, irregular-shaped depressions or basins occurring in uplands on clay substrates. They are lentic water bodies with surface inflows but often without significant outflows. Water is generally dissipated through evaporation and transpiration, but it may also disappear, especially during prolonged droughts, through sinks that connect with the aquifer. This community type represents the bulk of LJAP.

Clastic upland lakes may range from having relatively low nutrient levels, to eutrophic with very high nutrient levels, depending upon their geologic age and nutrient supplements from the surrounding uplands. LJAP falls onto the higher end of the nutrient spectrum for several natural and anthropocentric reasons detailed within this management plan. Even though LJAP has high nutrient levels, it does not suffer from harmful algal blooms as is common in eutrophic systems. Clastic upland lakes are important breeding areas for many terrestrial and semi-aquatic amphibians. They are frequently very important feeding and nesting areas for many wading birds, ducks, reptiles, and fish (FNAI. 2010). Clastic upland lakes are vulnerable to hydrological manipulations which permanently lower the water levels and hasten successional processes, and those which prevent periodic dry-downs and hasten eutrophication. They are also vulnerable to various activities in the surrounding uplands. Land clearing and timber harvests on the adjacent uplands generally increase sedimentation rates and, therefore, successional processes.

This natural community is currently in fair to good condition. Management will need to continue and be reassessed to maintain and improve the health as conditions shift.

Wet Prairie

(Synonyms: freshwater marsh, grasslands of prairie type, seepage savannas). Wet prairies are herbaceous communities found on continuously wet, but not inundated soils on flat, gentle slopes. The communities usually exist between low lying depression marshes and slightly higher wet flatwoods, or dry prairies.

Approximately 14 percent of the sovereign submerged lands of LJAP are categorized as wet prairie. Within the aquatic preserve, wet prairie communities are prevalent in the northern section of Lake Jackson near the "cattle gap". Elevated ridges that separate the numerous sub-basins of the lake form portions of dryer land that drain into the main waterbody. The most extensive wet prairie community is located near the northeast section of Lake Jackson adjacent to an undeveloped, forested upland community. Because of the limited physical alteration to the adjacent communities, the wet prairie community is in good condition and displays evidence of a productive ecosystem home to a diverse range of flora and fauna. The American alligator (*Alligator mississippiensis*) prefers this community for nesting along with other reptiles and some wading bird species. Depending on the amount of water in the wet prairie there can be a range of species utilizing the habitat from opossums (*Didelphis virginiana*) and white-tailed deer (*Odocoileus virginianus*) to snakes and fish. The wet prairies of Lake Jackson are areas that need to be a focal point for aquatic preserve management due to their ability to support an abundance of diverse wildlife.

Hydric Hammock

This community type occurs on low, flat, wet sites that frequently get inundated by water due to flooding. In LJAP, this community exists in the southeast near the end of Fords Arm and in a small patch to the east of Jackson View Park. Essentially, these areas are small patches of land slightly elevated above the wet prairie community where hardwood species like live oak (*Quercus virginiana*), water oak (*Q. nigra*), sweetgum (*Liquidambar styraciflua*), sugarberry (*Celtis laevigata*) and American elm (*Ulmus americana*) can take hold.

These areas are on the outer edges of the aquatic preserve and go through more fluctuations and dry periods. Even during times of dry periods, the hydric hammock areas remain healthy as a natural part of the ebb and flow of rain events.

Sinkholes

The karst topography of the north Florida produces numerous sinkholes from the dissolution of underlying limestone. LJAP has multiple small to medium size sinkholes scattered throughout the lake bottom. The sinkholes are not a natural community themselves but are vital to the lake's ecosystem. The natural drawdown and refill cycles of the lake are determined by the activity of these sinks and the amount of rainfall to the area. Natural periodic draining creates a cleansing effect for the lake, allowing invasive vegetation to die off and exposes organic sediments which eventually dry out. The draining of the lake also allows for more hands-on restoration efforts to take place such as removal of exposed organic muck (sedimentation) that has accumulated on the lake bottom.

Disturbed lands

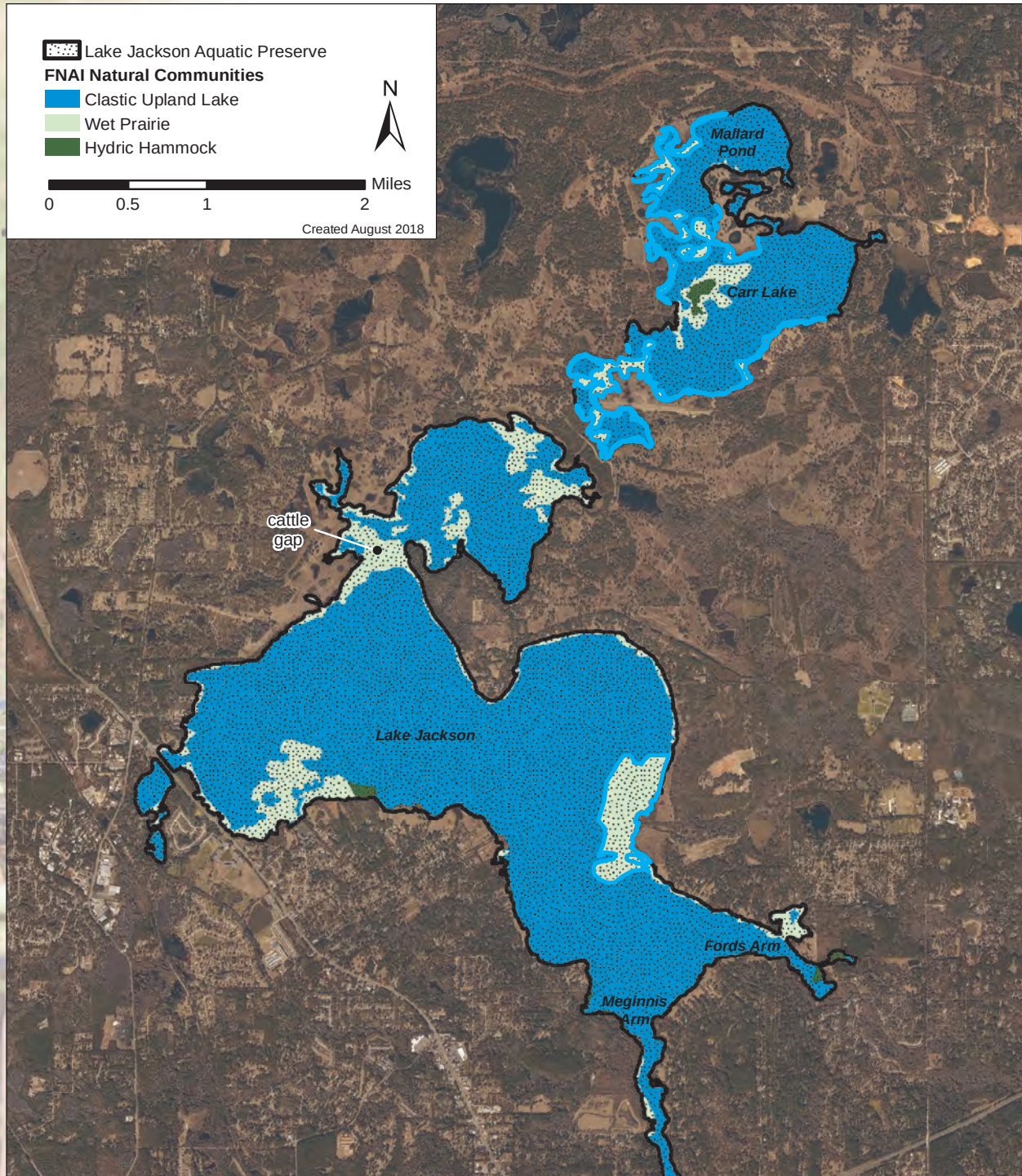
In disturbed lands ruderal plant species thrive. A ruderal species is a plant species that is first to colonize disturbed lands. The disturbance can be natural (wildfires, floods) or have human influence (agriculture,

construction). Ruderal species usually dominate the site for a short period until the native plant gradually repopulates. However, in cases of extreme disturbance where the topsoil is covered with foreign materials the ruderal species will become invasive and permanently established. LJAP has some prime examples of ruderal species that have emerged due to disturbance of the once natural communities including the invasive non-native (exotic) Chinese tallow (*Triadica sebifera*).

Many of the edges of Lake Jackson are considered disturbed because of the many houses that line the lake except for the northern areas. Homeowners often mow their lawns to the very edge of Lake Jackson which inhibits natural community growth and allows opportunities for exotic species to invade.

Native Species

The habitat of LJAP is a diverse ecosystem with productive ecotones that harbor a myriad of wildlife. Most species living in the aquatic preserve have adapted to living in variable conditions, which is beneficial to





A great blue heron (Ardea herodias) stalks prey in the shallow waters of Lake Jackson.

survival given the lake's tendency to fluctuate between water levels. The most biodiversity is seen in the transitional marsh (wet prairie) communities that separate the open water systems from adjacent uplands. This habitat allows species to adapt to a variety of natural communities. A more detailed list of species in the aquatic preserve can be found in Appendix B.3.1.

Listed Species

There are currently seven state or federally listed animal species which have been recorded in or directly adjacent to the aquatic preserve - six birds and one reptile. (For a comprehensive list of listed species reported within and adjacent to the aquatic preserve, refer to Appendix B.3.2.)

The listed birds which have been identified using the aquatic preserve are the wood stork (*Mycteria americana*), tricolored heron (*Egretta tricolor*), little blue heron (*E. caerulea*), Florida sandhill crane (*Grus canadensis pratensis*), and least tern (*Sternula antillarum*). The black skimmer (*Rynchops niger*) has also been observed as an occasional visitor. These species use LJAP for multiple uses including nesting, roosting and migratory purposes; they are dependent on the small aquatic species within the shallow waters of the aquatic preserve, such as insects, snails or fish. Current threats to these birds come from fragmentation and deterioration of habitats due to human development and agricultural use, accumulation of non-native vegetation making foraging difficult, and the decline in small prey. In addition, the bald eagle (*Haliaeetus leucocephalus*) uses the aquatic preserve, but it is no longer listed as threatened or endangered.

There is one listed reptile which uses the aquatic preserve - the American alligator. The main threats to alligators come from the destruction and degradation of their habitat due to the encroachment of human development, predation of eggs or juvenile alligators, and illegal collection.

Invasive Non-native Species

The fluctuating water levels and habitats within the aquatic preserve prevent the domination of most potential invasive species. The island apple snail (*Pomacea maculata*) and channeled apple snail (*Pomacea canaliculata*) are adapted to such an ecosystem and are believed to be thriving in the southern part of the aquatic preserve. Currently found throughout Florida, these invasive species are originally from South America and were brought into the U.S. for aquaculture purposes (Denson, 2005). The channeled apple snail and the island apple snail have a very similar appearance. They are very hard to distinguish from each other as eggs and as adults (Rawlings, Hayes, Cowie, & Collins, 2007). There is a need for an analysis to be done in Lake Jackson to determine which species are present because both have been reported in Florida which is why it may be better to refer to these species as the nonindigenous apple snail (*Pomacea* spp.). These invasive apple snails do not seem to be present in Carr Lake and Mallard

Pond. These snails are voracious eaters that feed off all types of aquatic plants and given a large enough population will eat an area bare of plant life. They threaten the natural environment of the aquatic preserve and can reduce the habitat for other native species. With no effective control measures, apple snails remain a possible concern in LJAP.

Since the arrival of the island and channeled apple snails there has been a more noticeable presence of limpkins (*Aramus guarauna*) in the area. The limpkin was taken off the Florida Threatened and Endangered Species List as a Species of Special Concern on January 11, 2017 but is still part of the Imperiled Species Management Plan in Florida.

Organizations that deal within the aquatic preserve have had to manage invasive vegetation that proliferates in open water and some wetland environments. Efficient management practices along with regular natural drawdowns of the lake have led to a manageable concentration of these invasive plants. The five main invasive plants within the aquatic preserve are water hyacinth (*Eichornia crassipes*), Cuban bulrush (*Oxycarum cubense*), Chinese tallow, hydrilla (*Hydrilla verticillata*) and alligator weed (*Alternanthera philoxeroides*).

Historically the hydrilla concentrations on the lake were abundant during long periods of normal water levels. A natural drawdown in 1999 nearly eradicated the large hydrilla mats and allowed for easier management of the remaining concentrations. Currently the FWC's Invasive Plant Management Section is treating the plant using multiple strategies (FWC, n.d.-b). One way to control the spread of hydrilla is by adding grass carp (*Ctenopharyngodon* spp.) to the lake. The fish that are introduced are sterile and pose no threat to become invasive themselves. They are voracious feeders and hydrilla is one of their preferred foods. The grass carp that feed on hydrilla along with herbicidal treatments such as fluridone have proven successful in managing the concentrations of the plant on Lake Jackson. The continued use of grass carp at Lake Jackson is essential for keeping hydrilla density low. In the last year, hydrilla density has significantly increased on the south side of Lake Jackson and on Carr Lake as of October 2018. These management methods along with herbicidal control should be increased to decrease the presence of hydrilla in the aquatic preserve.

Water hyacinth, Cuban bulrush and alligator weed are other invasive plants of note found in the aquatic preserve. FWC has been monitoring water hyacinth in both Lake Jackson (since 1983) and Carr Lake (since 1982). Water hyacinth is more abundant on Carr Lake than Lake Jackson so it is treated more frequently, but has remained at a low abundance.

FWC has been monitoring alligator weed on both Lake Jackson (since 1984) and Carr Lake (since 1994). Currently alligator weed is not present on Carr Lake or Mallard Pond, but it is present on the shores of Lake Jackson. It is treated with a biocontrol called the alligator weed flea beetle (*Agasicles hygrophila*) which is effective at maintaining low levels of alligator weed. These tiny beetles feed on the invasive plant and can control the spread of alligator weed without help from herbicidal treatment. The alligator weed flea beetle has kept alligator weed in maintenance condition, and additional treatments have not been needed in recent years (D. Fussell, personal communication, May 22, 2019).

Cuban bulrush, another problematic invasive exotic, has been seen over the last decade in both Lake Jackson and Carr Lake. Cuban bulrush was first surveyed in Lake Jackson in 2009. Its acreage has fluctuated over the past decade, but has not exceeded 15 acres. It was first surveyed in Carr Lake in 2015 covering less than an acre. This plant is still present in Carr Lake, but is being monitored very closely in both Carr Lake and Lake Jackson due to the potential for its ability to quickly spread. It has not been identified in Mallard Pond at this time (A. Dew, personal communication, June 3, 2018). The work and dedication that the Invasive Plant Management Section has done and continues to do has been a huge asset to the management of LJAP.

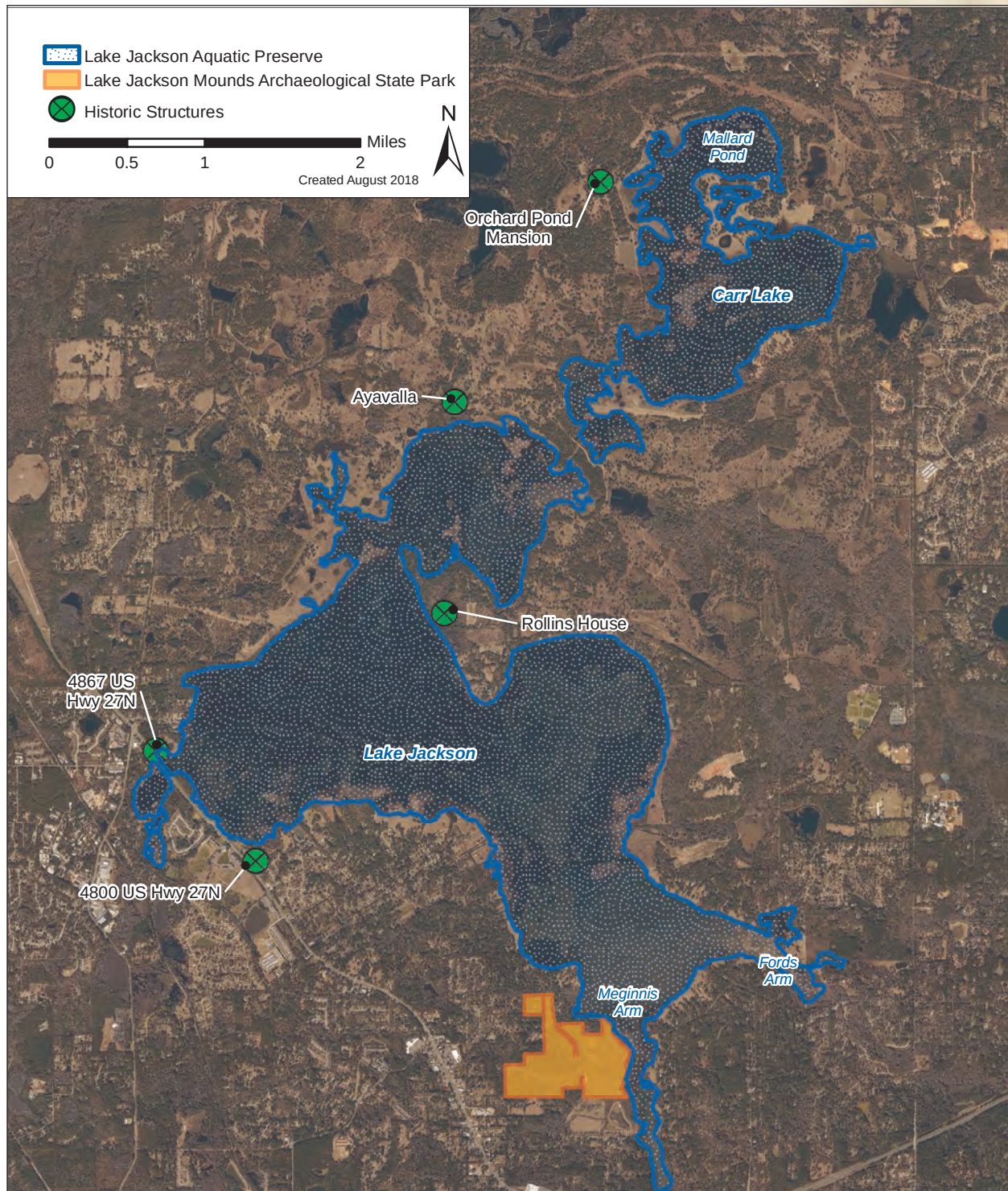
Chinese tallow is not an aquatic plant but can become invasive in saturated areas such as wetlands. The aquatic preserve has some concentrations of this plant that have become invasive due to their resilience in diverse environmental settings. Most of the areas where Chinese tallow is present are disturbed areas where native species were removed and invasive species with higher adaptability have prospered. Management of the plant has generally been successful over the years, but it still causes problems for native species such as the tupelo and cypress trees that decrease when the invasive Chinese tallow takes root. Several areas around Lake Jackson, including near Faulk Drive and Miller landings, are turning into monocultures of Chinese tallow and should be treated promptly. Additional surveys should be conducted to determine the extent of Chinese tallow.

There are many other invasive species throughout LJAP that are lesser known and have the potential to become a problem in the future; other invasive species include parrot feather water-milfoil (*Myriophyllum aquaticum*), torpedo grass (*Panicum repens*), small-leaf spiderwort (*Tradescantia fluminensis*), coral ardisia

(*Ardisia crenata*), wild taro (*Colocasia esculenta*), Japanese climbing fern (*Lygodium japonicum*) and water fern (*Salvinia minima*). The management of these species is predominantly to watch them to make sure they do not become an increased problem and to notify the respective agencies if changes occur in their growth patterns.

Archaeological and Historical Resources

Archaeological sites and historical resources are protected under Florida Statutes Chapter 267 and are not to be disturbed unless prior permission is granted from the Division of Historical Resources. Lake Jackson has served as an important natural resource to communities long before its designation as an aquatic preserve in 1974 which is reflected by the rich assortment of archaeological and cultural resources in the vicinity - 37 sites totaling more than 453 acres (Appendix B.5).. The Fort Walton Culture of 1200 A.D.



Map 7 / Cultural sites associated with Lake Jackson Aquatic Preserve.

-1500 A.D. thrived in the early environmental setting of the aquatic preserve and surrounding areas. The remains of their ritualistic culture can be found at the Lake Jackson Archaeological Mounds State Park. The “Southeastern Ceremonial Complex” located in the park is evidence of an advanced community structure that existed around 1200 A.D. near Lake Jackson. The earthen mounds constructed more than 800 years ago have been preserved to offer visitors the opportunity to look back through time into the area’s rich cultural history (DEP, n.d.-c).

Other Associated Resources

The Great Florida Birding and Wildlife Trail

Due to its unique geographic placement, mild climate and diverse habitat, Florida is a popular location for many native and migratory bird species. The Great Florida Birding and Wildlife Trail was created by FWC, supported in part by the Florida Department of Transportation and the Fish and Wildlife Foundation of Florida, to help visitors experience this bird paradise. The trail traverses throughout the state and allows visitors to access many hidden locations and state parks known for their excellent bird viewing. The trail divides the state into four regions, each containing various sections accessible by car, boat, bicycle or foot (Fish and Wildlife Foundation of Florida, Inc., n.d.).

The extensive wetlands that border all three water bodies in the aquatic preserve attract a diverse multitude of wildlife ranging from deer and bobcats (*Lynx rufus*) to resident and migratory birds which is why Crowder Landing and Faulk Drive Landing are sites of the Panhandle Section for the Great Florida Birding and Wildlife Trail (Fish and Wildlife Foundation of Florida, Inc., n.d.). These areas allow recreational users a glimpse of a variety of bird species in their natural habitats.

Currently there are 20 miles of canopy road systems in Tallahassee that offer scenic driving underneath intertwined canopies of old growth hardwood trees. Off Meridian Road abutting LJAP, there is a three mile stretch of canopy road that leads to a boat ramp at Miller Landing. On the south side of the lake off Crowder Road is a smaller span of canopy roads that leads into the state park and Crowder Landing which is also a boat ramp. The city and county commissioners are responsible for designating canopy roads and maintaining them. More information on the canopy roads in Tallahassee is available at <http://www.leoncountyfl.gov/pubworks/oper/canopy/index.asp>.

Fishing Resources

Lake Jackson is known for its largemouth bass fishery, but other sportfish consist of black crappie (*Pomoxis nigromaculatus*) and bream (mainly bluegill (*Lepomis macrochirus*) and redear sunfish (*L. microlophus*)). FWC biologists perform annual spring electrofishing assessments to monitor status of the bass population and have been closely monitoring the largemouth bass population since 2007. They also perform an annual angler survey to assess effort, catch and harvest of bass, bream species and crappie. FWC biologists encourage the harvest of smaller individuals for a healthy population; most angler caught largemouth bass on Lake Jackson are between 12 and 16 inches. In 2017, 75 percent of bass collected were less than 16 inches. FWC biologists have been conducting creel surveys from 2011- 2017 to better understand how anglers utilize the plentiful resources of Lake Jackson.

Waterfowl

Seven duck boxes have been installed around Lake Jackson. Duck boxes are installed with predator guards on them to protect eggs and young birds. Duck boxes are specifically made for wood ducks, but black-bellied whistling ducks often use the boxes for nesting as well. Duck boxes are cleaned out every year before nesting season and new nesting material is added.

3.4 / Values

LJAP has been a historical and recreational attraction in Tallahassee for more than 50 years. The lakes have provided recreational opportunities for a growing Leon County population. The unique attributes of the aquatic preserve along with the location just outside the city limits of Tallahassee make the LJAP an ideal recreational resource. Access for all recreational uses of Lake Jackson, such as boating, fishing, picnicking, bird watching, and more, are free to the public.

Though Lake Jackson has substantial recreational value, it also provides unique opportunities for research. The extraordinary features of the lake that allow it to drain and refill through sinkholes is a geological wonder. There are few lakes in the country that share this attribute. Some see the lake as having little value during drawdown periods; however, this gives scientists a rare opportunity to actively explore the lake bottom and caverns that are otherwise inaccessible when the lake is filled to normal water levels.

3.5 / Citizen Support Organizations and other Working Groups

Support from the community is vital to the success of any aquatic preserve. The Aquatic Preserve Society, a statewide CSO, was formed in June 2014 to promote the protection of Florida's 41 aquatic preserves. This organization works in conjunction with other CSO groups and regional staff to hold events and enhance awareness of aquatic preserves. The Aquatic Preserve Society has gained the Florida Nonprofit Status and is an official CSO for DEP's Office of Resilience and Coastal Protection. As of the writing of this management plan, no citizen support organization (CSO) exists specifically for LJAP. However, the non-profit organization, Friends of Lake Jackson (FoLJ), was formed to preserve the Lake Jackson ecosystem and promote responsible recreational and economic use by working with local, regional and state agencies (Friends of Lake Jackson, n.d.). The Friends of Lake Jackson hold monthly meetings with their board of directors and members to discuss matters that affect Lake Jackson. They also hold an Annual FoLJ Member Meeting & Mixer to increase membership and to bring more attention to Lake Jackson. To learn more about FoLJ or to become a member, go to: <http://friendsoflakejackson.org/folj/>.

LJAP is working to create and be a part of working groups which discuss local issues that impact and affect the aquatic preserve. These include the opportunity to make comments on the Ochlockonee River and Bay SWIM Plan while also taking part in meetings with the Science Advisory Committee and the Leon County Water Resources Committee.

3.6 / Adjacent Public Lands and Designated Resources

Leon County has many local parks and trails to accommodate the growing population of outdoor enthusiasts. Opportunities for passive and active recreation are abundant around LJAP in the many nearby public lands and conservation areas (Map 8).

Elinor-Klapp Phipps Park

This 670-acre conservation easement was made possible by the city of Tallahassee, NFWFMD, and Colin Phipps, of the predominant Phipps family that has resided in Tallahassee for more than 50 years (City of Tallahassee, n.d.). The park has an extensive trail system that offers both hiking and horseback riding. There is an off-road biking trail known as the Red Bug Trail that allows riders to bike through diverse ecosystems. The Forest Meadows Sports Complex and Meridian Park Baseball fields are both located within the park off Meridian Road. The park is maintained by the city of Tallahassee (City of Tallahassee, n.d.-a).

Parwez "P. A." Alam Park, formerly known as Okeeheepkee Prairie Park

This 26-acre property located on the eastern end of Fuller Road by Meginnis Arm tributary has a large stormwater pond with a ½ mile stabilized trail (Leon County, n.d.-b.). The park also offers a picnic shelter, bike rack, and a boardwalk overlook.

J. Lee Vause Park

This park is located on the northern shores of Lake Jackson with 26 acres of open and wooded spaces. There are six picnic pavilions available for rent, restrooms, extensive boardwalks, a playground, and a mile of hard surface path for bikes and pedestrians (Leon County, n.d.-a).

Farm's Eden Conservation Easement

The conservation easement for this property located on the eastern side of Lake Jackson is held by Tall Timbers Research Station & Land Conservancy. Tall Timbers is a widely regarded information resource for the areas of fire ecology, game bird management, vertebrate ecology and forestry (Tall Timbers Research Station & Land Conservancy, n.d.).

Lake Jackson Mounds Archaeological State Park

The park abuts the aquatic preserve and is easily accessible from Crowder Road. Within the park there are hiking trails that lead to two mounds built by native settlers to the area. It is believed that these mounds functioned as ceremonial complexes and burial grounds. Butler Mill Trail, named after Florida's first surveyor general; Colonel Robert Butler offers diverse scenery including hardwood forests and a steep head ravine that follows a creek that was once used to generate grinding power for a grist mill. This area boasts spectacular trillium and columbine blooms in the spring.

Jackson View Park

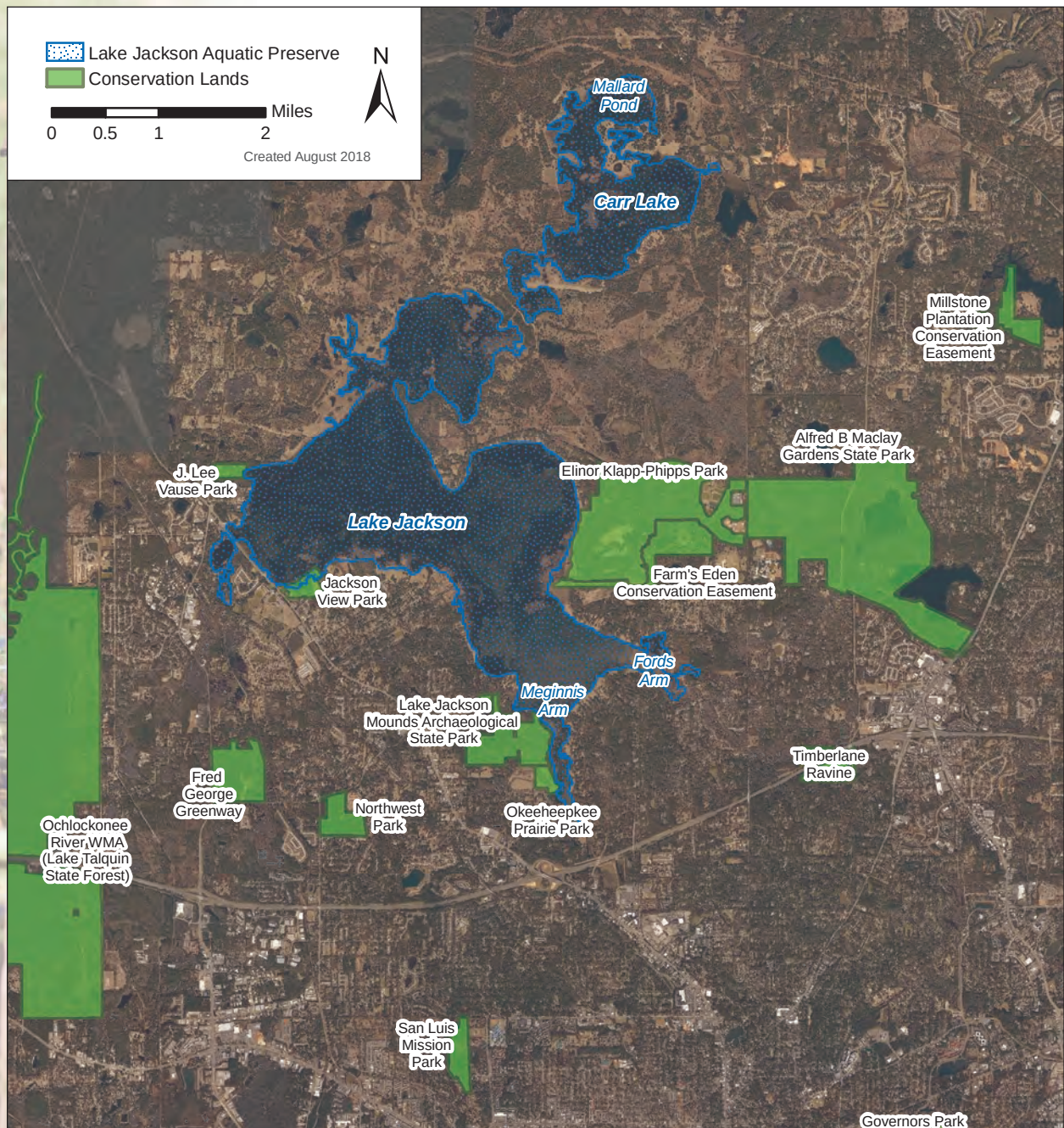
The park is located off North Monroe Street north of Perkins Road. The park features a mile-long looping trail, picnic areas with playground equipment, and an observation pier (Leon County, n.d.-a).

Alfred B. Maclay Gardens State Park

The former quail plantation and estate has a variety of gardens with azalea plantings established in 1923 (Florida Hikes, n.d.). There are natural areas throughout the park, and trails leading to Lake Overstreet. There are five miles of trails allowing mountain bikers and hikers to trek through natural habitats in the area.

Ochlockonee River Wildlife Management Area

Ochlockonee River Wildlife Management Area (WMA) is just south of Lake Jackson off Stoneler Road and is maintained by FWC. The 2,000-acre area is part of the Lake Talquin State Forest and has a mix of pine and hardwoods that borders the Ochlockonee River. Within Ochlockonee River WMA, there are trails that offer scenic hiking down improved roads or game trails. Ochlockonee River WMA provides likely opportunities to spot bobcats (*Lynx rufus*), coyotes (*Canis latrans*), and red-shouldered hawks (*Buteo lineatus*) in their natural habitat. Ochlockonee River WMA is popular with hunters seeking white-tailed deer (*Odocoileus virginianus*), turkey (*Meleagris gallopavo*), and gray squirrel (*Sciurus carolinensis*). The habitat within Ochlockonee River WMA holds a good concentration of native flora and fauna (FWC, n.d.-c). For more information on Ochlockonee River WMA visit: <http://myfwc.com/viewing/recreation/wmas/cooperative/ochlockonee-river>.





A view of Sunset Landing and Shuckers Half-Shell Oyster Bar from Lake Jackson.

3.7 / **Surrounding Land Use**

The watershed surrounding LJAP has a variety of land uses ranging from undeveloped conservation lands to heavily developed commercial and residential areas (Map 9). The 43.2 square mile area is generally characterized by a relatively high percentage (69 percent) of developed area.

Much of the land on the north side of the aquatic preserve is rural with no or little development, and is also zoned rural. There are a few single-family houses and barns scattered throughout, but it is mostly undeveloped, including natural areas. A large estate known as the Ayavalla Plantation is located on the adjacent uplands on the north side of Lake Jackson. Most of the land surrounding Carr Lake and Mallard Pond is also undeveloped, aside from a few houses on the north end of Carr Lake. The Elinor Klapp-Phipps Park is located on the northeast upland hills on Lake Jackson abutting the aquatic preserve. There are several single-family residences along Miller Landing Road, which accesses the lake just south of Ayavalla Plantation.

Low to medium density residential development characterizes the southwest, south and southeast shores of Lake Jackson. Most of this shoreline area, which includes the Elinor Klapp-Phipps Park and the Lake Jackson Mounds Archaeological State Park, has large houses with expansive yards leading down to the lake. The area of the drainage basin between the swale and U.S. Highway 27 includes a mixture of low to medium density residential development and includes several residential subdivisions including Lake Breeze and Harbinwood (DNR, 1991). The area known as Little Lake Jackson in the northwest corner of the lake has medium density single family homes, townhomes and apartments on the adjacent uplands.

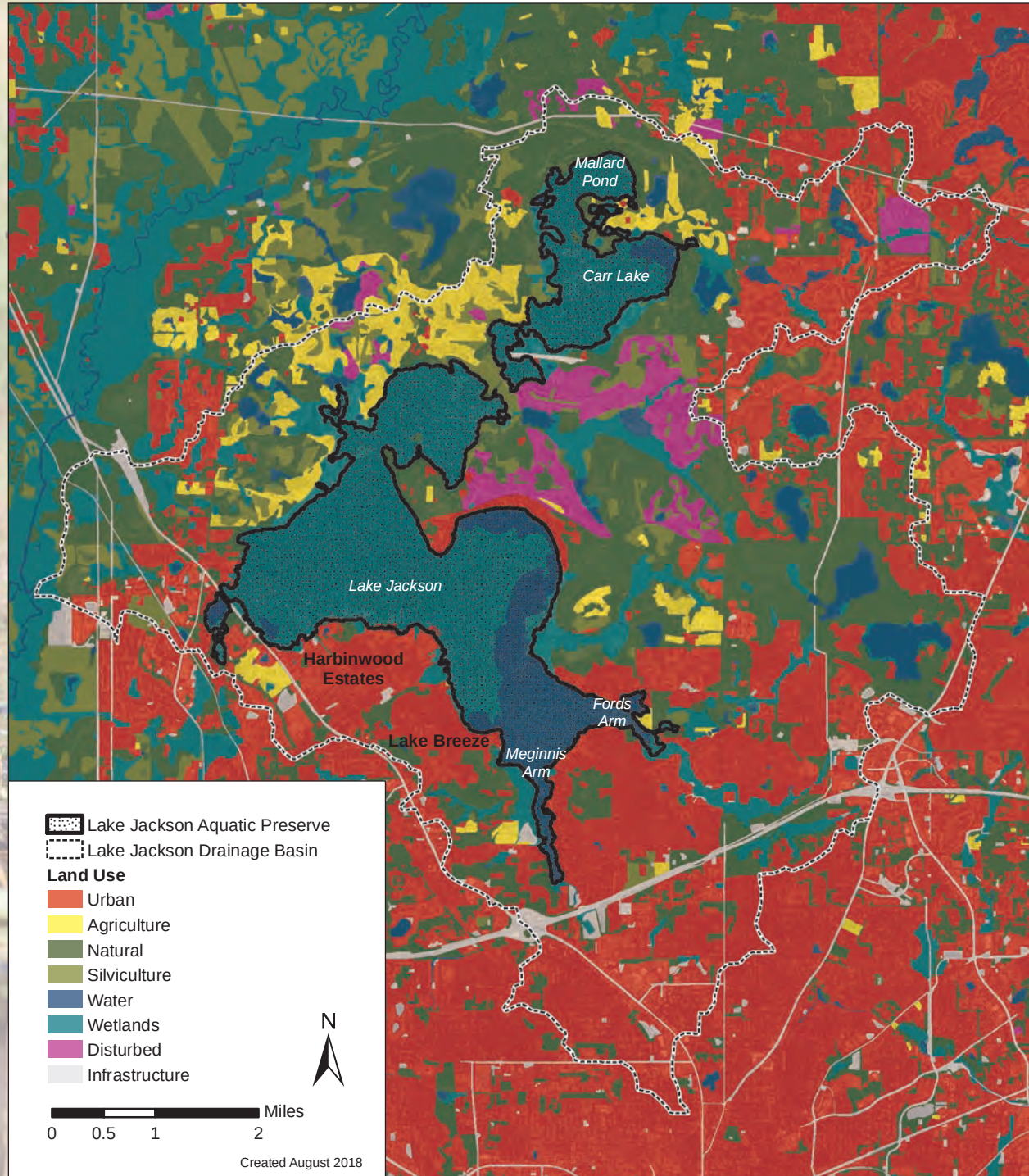
Most of the area within the drainage basin north of Interstate 10 is either zoned Rural or Lake Protection. The Rural zoning district allows residential uses at a gross density of one residential unit per ten acres. The Lake Protection zoning district allows low density residential development at one unit per two acres or two units per gross acre if clustered on 40 percent of the property (City of Tallahassee, n.d.-b). Placing the remaining 60 percent under a permanent conservation easement is essential for protecting the aquatic preserve.

The land use patterns within the portion of the drainage basin south of Interstate 10 are more urbanized. This area is characterized by a mix of offices, hotels and shopping centers, -as well as many smaller commercial areas lining the main roadways, and low density single-family residential neighborhoods with some scattered medium density housing complexes. Much of this area is built-out, but there are smaller areas that will eventually be redeveloped, although to higher land development standards than previously required, including advanced storm water management.

The majority of the drainage basin has a comprehensive plan land use designation of Lake Protection, with a similar zoning category. This is a low-density residential category that also allows mixed residential and

nonresidential uses at four “nodes” throughout the basin that area located at the intersection of several major streets. A comparatively strict storm water management development standard is also required of all new major development and redevelopment projects. Existing vacant residential lots are exempt. A significant part of the northern portion of the drainage basin is designated Rural in the comprehensive plan with Rural zoning. Several conservation areas within the basin are designated Recreational/Open Space, with Open Space zoning. The area south of Interstate 10 has a mix of land use and zoning categories that reflects the mostly urban land use patterns in this area.

Monroe Street runs along the southwest shore of Lake Jackson for about one mile. It separates the lake from Little Lake Jackson by a causeway that is lined with sparse vegetation and wetland species. On each side of the causeway, there is an ecopassage that was completed in 2010. The ecopassage is a permanent guide wall and culvert system that diverts wildlife from crossing over the highway and protects passengers and cars from wildlife-collision related accidents (Aresco, 2004).





Leon County citizens paddling on Lake Jackson while participating at the Lake Jackson Fun Paddle.

Part Two

Management Programs and Issues

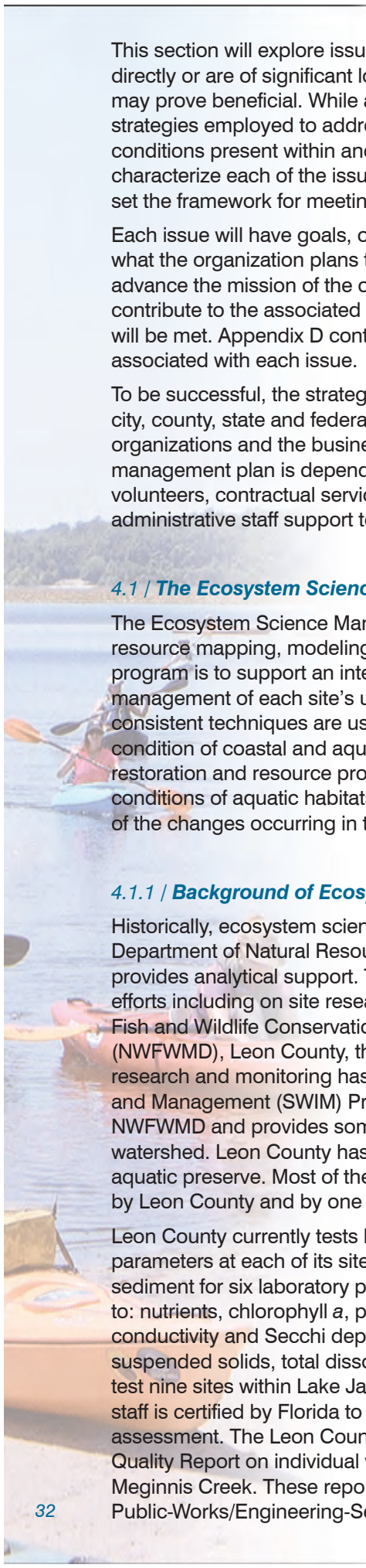
Chapter Four

Lake Jackson Aquatic Preserve Management Programs and Issues

The work performed by the Office of Resilience and Coastal Protection (RCP) is divided into components called management programs. In this management plan all site operational activities are explained within the following four management programs: Ecosystem Science, Resource Management, Education and Outreach and Public Use.

The hallmark of Florida's Aquatic Preserve Program is that each site's natural resource management efforts are in direct response to and designed for unique local and regional issues. When issues are addressed by an aquatic preserve it allows for an integrated approach by the staff using principles of the Ecosystem Science, Resource Management, Education and Outreach and Public Use Programs. This complete treatment of issues provides a mechanism through which the goals, objectives and strategies associated with an issue have a greater chance of being met. For instance, an aquatic preserve may address declines in water clarity by monitoring levels of turbidity and chlorophyll (Ecosystem Science – research), planting eroded shorelines with marsh vegetation (Resource Management – habitat restoration), creating a display or program on preventing water quality degradation (Education and Outreach) and offering training to municipal officials on retrofitting stormwater facilities to increase levels of treatment (Education and Outreach).

Issue-based management is a means through which any number of partners may become involved with an aquatic preserve in addressing an issue. Because most aquatic preserves are endowed with very few staff, partnering is a necessity and by bringing issues into a broad public consciousness, partners who wish to be involved are able to do so. Involving partners in issue-based management ensures that an issue receives attention from angles that the aquatic preserve may not normally address.



This section will explore issues that impact the management of Lake Jackson Aquatic Preserve (LJAP) directly or are of significant local or regional importance that the aquatic preserve's participation in them may prove beneficial. While an issue may be the same from preserve to preserve, the goals, objectives and strategies employed to address the issue will likely vary depending on the ecological and socioeconomic conditions present within and around an aquatic preserve's boundary. This management plan will characterize each of the issues of LJAP and delineate the unique goals, objectives and strategies that will set the framework for meeting the challenges presented by the issues.

Each issue will have goals, objectives and strategies associated with it. Goals are broad statements of what the organization plans to do and/or enable in the future. They should address identified needs and advance the mission of the organization. Objectives are a specific statement of expected results that contribute to the associated goal and strategies are the general means by which the associated objectives will be met. Appendix D contains a summary table of all the goals, objectives, strategies and cost estimates associated with each issue.

To be successful, the strategies identified in this plan will be accomplished in partnership with local citizens, city, county, state and federal officials, colleges and universities, students and faculty, non-governmental organizations and the business community. Full implementation of the strategies identified in this management plan is dependent upon administrative support for reassigning or otherwise acquiring staff, volunteers, contractual services, equipment, training and supplies. RCP management will seek additional administrative staff support to process grants and contracts to expand its ability to pursue outside funding.

4.1 / The Ecosystem Science Management Program

The Ecosystem Science Management Program supports science-based management by providing resource mapping, modeling, monitoring, research and scientific oversight. The primary focus of this program is to support an integrated approach (research, education and stewardship) for adaptive management of each site's unique natural and cultural resources. RCP ensures that, when applicable, consistent techniques are used across sites to strengthen the state of Florida's ability to assess the relative condition of coastal and aquatic resources. This enables decision-makers to more effectively prioritize restoration and resource protection goals. In addition, by using the scientific method to create baseline conditions of aquatic habitats, the Ecosystem Science Management Program allows for objective analyses of the changes occurring in the state's natural and cultural resources.

4.1.1 / Background of Ecosystem Science at Lake Jackson Aquatic Preserve

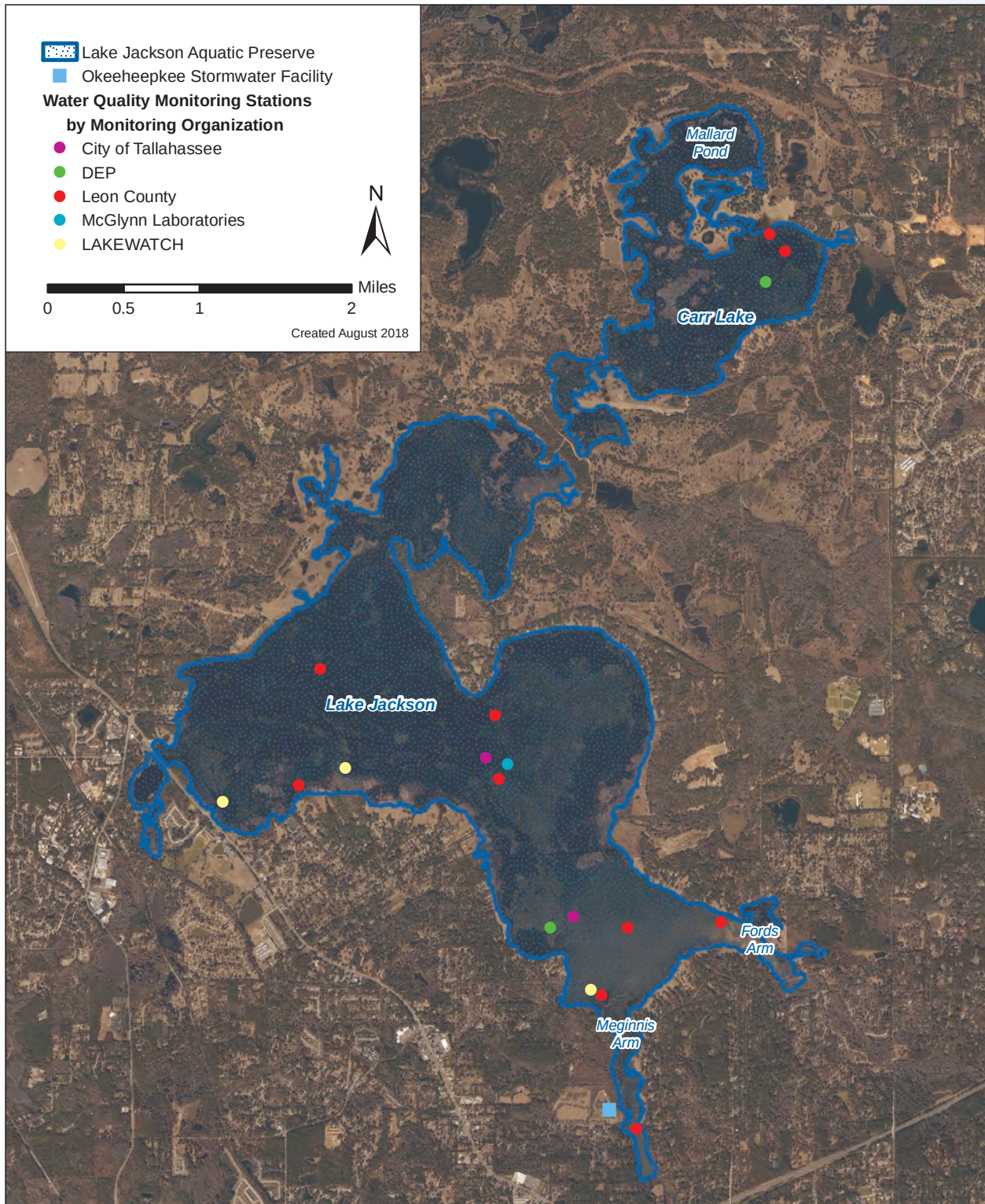
Historically, ecosystem science programs conducted in association with LJAP were the responsibility of the Department of Natural Resources, now the Department of Environmental Protection (DEP) and DEP still provides analytical support. The aquatic preserve's programs have focused on research and monitoring efforts including on site research projects executed by organizations partnered with DEP such as Florida Fish and Wildlife Conservation Commission (FWC), Northwest Florida Water Management District (NFWFMD), Leon County, the city of Tallahassee, LAKEWATCH and other private entities. Funding for research and monitoring has been allocated through several resources. The Surface Water Improvement and Management (SWIM) Program established in 1987 by the Florida Legislature is administered by NFWFMD and provides some of the funding for research and monitoring within the Lake Jackson watershed. Leon County has also been and continues to be a strong funding source for the needs of aquatic preserve. Most of the compiled data from LJAP is obtained by quarterly water quality surveys done by Leon County and by one water level monitoring station maintained by NFWFMD.

Leon County currently tests both Carr Lake and Lake Jackson on a quarterly basis for 39 water chemistry parameters at each of its sites, contracting with an outside laboratory for analyses, and annually analyzes sediment for six laboratory parameters (Map 10). Water chemistry parameters include, but are not limited to: nutrients, chlorophyll *a*, physical and chemical parameters such as dissolved oxygen, pH, temperature, conductivity and Secchi depth, bacteria including fecal coliform and *E. coli*, true color, turbidity, total suspended solids, total dissolved solids, and biological oxygen demand (Leon County, n.d.-c). They test nine sites within Lake Jackson, two sites within Carr Lake, but none in Mallard Pond. Leon County staff is certified by Florida to perform the field work for the annual Lake Vegetation Index (LVI) biological assessment. The Leon County Public Works Division of Engineering Services publishes an annual Water Quality Report on individual waterbodies throughout the county including Carr Lake, Lake Jackson and Meginnis Creek. These reports can be found online at <http://cms.leoncountyfl.gov/Home/Departments/Public-Works/Engineering-Services/Stormwater-Management/Water-Quality-Data>.

The city of Tallahassee conducts quarterly monitoring of two locations within Lake Jackson and performs water chemistry analyses like Leon County's. Additionally, the city of Tallahassee conducts bi-monthly monitoring at the discharge of the NFWFMD facility into Meginnis Arm, which characterizes the discharge of the city of Tallahassee's Municipal Separate Storm Sewer System.

LAKEWATCH monitors three active stations on Lake Jackson and has three inactive stations on Carr Lake. LAKEWATCH has not done monitoring on Mallard Pond, but they are interested in reactivating Carr Lake and to begin monitoring Mallard Pond with the help of additional volunteers.

NFWFMD does not actively take water quality samples within LJAP but does have a permanent monitoring station near Miller Landing that takes daily lake level and precipitation readings. These readings are very



Map 10 / Water quality monitoring sites of Lake Jackson Aquatic Preserve.

important to try and better understand how rainfall affects water level and to identify indicators of the sinkholes opening.

DEP's Division of Environmental Assessment and Restoration (DEAR) is charged with monitoring and assessing Florida's surface water and groundwater quality; identifying, verifying and prioritizing pollution problems; developing strategies to resolve the problems; and implementing those strategies through comprehensive restoration actions in partnership with local stakeholders.

All the monitoring programs that collect water quality samples submit their data for storage in DEP's new database, the Watershed Information Network (WIN). WIN is the successor to the original database Florida STORage and RETrieval (STORET). Through both the WIN and Florida STORET databases, the WIN section within DEAR implements Florida statutory requirements, DEP rule requirements and U.S. Environmental Protection Agency (EPA) funding requirements for management of environmental (non-regulatory databases) data for the state. This includes management of data provided by both internal (e.g., DEAR programs, Regional Operations Centers) and external (e.g., Water Management Districts, counties, local governments, volunteer organizations). The WIN section works with those data providers to implement WIN through data quality standards and rules, training, database maintenance and enhancements and documentation maintenance. WIN section staff upload Florida STORET and WIN data to the U.S. EPA Water Quality Exchange per U.S. EPA 106 grant requirements.

DEAR uses the best available information to identify waterbodies and water segments (WBIDs) that are not meeting the applicable water quality standards and designated uses based on the Identification of Impaired Surface Waters Rule, Chapter 62-303, Florida Administrative Code (F.A.C.). Waterbodies that do not meet water quality standards are identified as "impaired" for the pollutants of concern - nutrients, bacteria, mercury, etc. - and TMDLs must be developed, adopted and implemented to reduce those pollutants and clean up the waterbody. A TMDL is a scientific determination of the maximum amount of a given pollutant that a surface water can absorb and still meet the water quality standards that protect human health and aquatic life.

Both Carr Lake and Lake Jackson are monitored using DEP's LVI. The LVI is a multi-metric index that evaluates how closely a lake's plant community resembles one that would be expected in a condition of minimal human disturbances. It is based on a rapid field assessment of aquatic and wetland plants as indicators of various effects of human disturbance over time. Plants respond to physical disturbances such as introduction of exotic species or lakeshore alterations, and chemical disturbance such as introduction of excess nutrients, particulates, or herbicides from the surrounding land uses (Leon County, n.d.-d). The LVI method is performed from a boat and involves dividing a lake into 12 units and identifying plants in four of the 12 units. Plants are identified in the selected unit by a visual boat "drive by" and also via a transect approach. The resulting data are used to calculate the LVI and is evaluated according to the scoring system. Current LVI results can be found online at <http://cms.leoncountyfl.gov/Home/Departments/Public-Works/Engineering-Services/Stormwater-Management/Water-Quality-Data>.

Carr Lake's LVI was 63 in 2018 which places the lake's vegetative community in the healthy category (Leon County n.d.-d). The description of this category states that about 85 percent of plant taxa are native to Florida; invasive taxa present. Native plant taxa sensitive to disturbance have declined to about 15 percent. During the survey, 64 different plant species were found on Carr Lake.

Lake Jackson's LVI was 54, also placing the lake's vegetative community in the healthy category (Leon County, n.d.-e). During the survey, 76 species were found on Lake Jackson.

The data are used to identify changes in LJAP and for future research efforts. The data display the status of the aquatic preserve along with indicated changes. The data collected focus on issues concerning water quality and water levels. This information is crucial to determining best management practices for the aquatic preserve. Ecosystem science programs within the aquatic preserve provide useful data to facilitate more comprehensive management strategies including resource management, outreach programs, and public use management. Advances in technology have allowed the Ecosystem Science Management Program to more effectively contribute useful information to better protect the aquatic preserve's sensitive natural resources.

4.1.2 / Current Status of Ecosystem Science at Lake Jackson Aquatic Preserve

Ecosystem science provides the foundation for resource management programs within the aquatic preserve. The research associated with these programs provides useful information regarding the natural processes within the aquatic preserve. Monitoring the lake's changes over time helps develop a better understanding of the current condition of resources in the aquatic preserve. By monitoring the aquatic preserve over time

and comparing results to baseline data the extent to which the environment is degrading or improving will be better understood. The issues commonly addressed include decreased water quality due to stormwater input and urban sedimentation and land use changes within the watershed. Through effective resource management practices, education and outreach, research and monitoring, and partnerships, they can be managed, and the resource can be preserved for generations to come. Current ecosystem science research projects within LJAP and the future needs of the program are discussed in the following sections.

Water Quality Monitoring

Water quality is the focal point of the LJAP Ecosystem Science Management Program. The major factor affecting Lake Jackson's water quality is urban stormwater runoff.

When the development within Lake Jackson's watershed reached two thirds capacity in the 1970s, researchers noticed a significant decline in water quality in certain areas of the lake. In 1993, a major study conducted on the ecology of lakes in Leon County concluded that considerable portions of Lake Jackson were experiencing hypoxic conditions (Livingston & Swanson, 1993). The reduction of oxygen in a lake system (hypoxia) can lead to environmental issues such as eutrophication and proliferation of invasive vegetation. The cause of the hypoxia was determined to be an increase in polluted storm water input to the lake via neighboring residential areas. It was determined that the water nearest Meginnis Arm and Fords Arm was the most impaired. This was thought to be a direct cause of increased nutrient loading from entry points for stormwater into Lake Jackson (Livingston & Swanson, 1993). Nutrient loading commonly occurs in the form of phosphorus and nitrogen which accumulates from fertilizers on residential lawns whose byproduct ends up in the lake's water via inflow from streams and tributaries. The Meginnis Creek sub-watershed has been under the most scrutiny since it is the most extensively developed area adjacent to the aquatic preserve. The water quality data for Meginnis Arm points toward improving conditions within the drainage area. However, a high concentration of chlorophylls, bacteria, and nutrients were found to be present in the water leading into the lake via Meginnis Creek (McGlynn, 2006).

Due to acknowledgement of these issues, NFWFMD has worked with Leon County and the city of Tallahassee to construct and improve several storm water treatment facilities from 1983 to 2010 (Costello & Dunbar, 2016). In 1983, NFWFMD teamed up with the EPA and DEP to construct the Meginnis Arm Stormwater Treatment Facility. Since then, in cooperation with Leon County and the city of Tallahassee, regional storm water facilities were constructed or restored at Yorktown Pond, Boone Boulevard, the Okeeheepkee Basin, Harbinwood Estates, and Sharer Road. NFWFMD also purchased more than 500 acres of land on the eastern shore of Lake Jackson which is now managed in cooperation with the city of Tallahassee as Elinor Klapp-Phipps Park. The city subsequently purchased an additional 162 acres adjacent to the park (Costello & Dunbar, 2016).

The primary form of storm water treatment near LJAP is retention. The pollutants are kept in the storm water pond and the water either percolates in the ground or is reused for irrigation purposes, thereby preventing pollutants from discharging to downstream surface waters. This is the form of treatment found in volume control type ponds. Volume control in the Leon County Land Development Regulations mean that the storm water pond must retain a volume of storm water runoff in excess of the pre-development runoff volume for all storm events up to a 100-year, 24-hour duration storm. One-half this required pond volume must be recovered within seven days, and the full volume must be recovered within 30 days. In general, as a development increases its previous area, there is a corresponding increase in the volume of storm water generated and the Lake Jackson volume control standard requires that this new volume must be retained and recovered onsite. (M. Heidecker & J. Kraynak, personal communication, February 15, 2019).

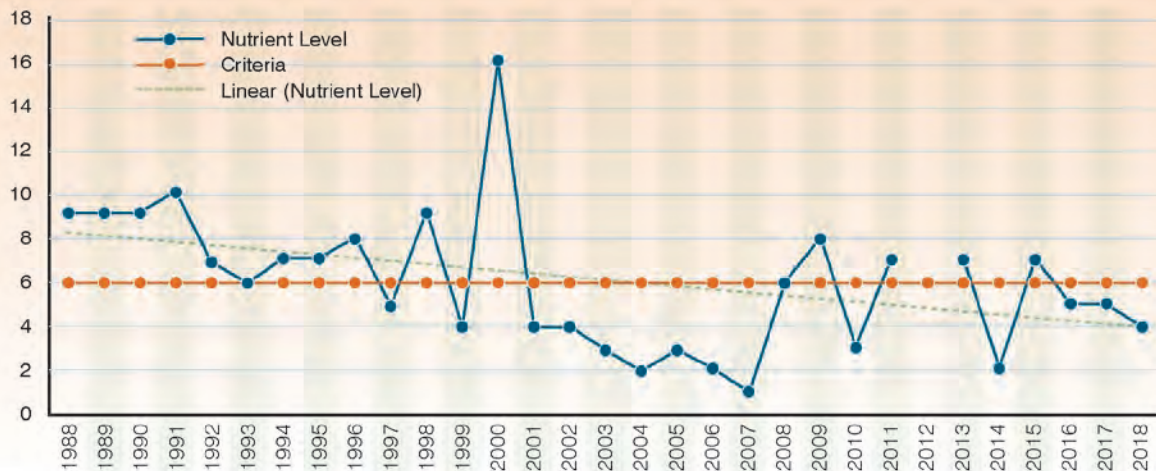
Available data from Florida STORET and WIN show that annual chlorophyll a, total nitrogen, and total phosphorus for both Lake Jackson (Figure 3) and Carr Lake (Figure 4) currently meet state water quality standards for nutrients.

It is important to form a lasting link between water quality monitoring and resource management programs. By closely monitoring water quality data along with habitat restoration projects, the effectiveness of these projects can be better assessed and then direct future restoration efforts. This will also help determine whether additional water quality monitoring – either number of stations or frequency of collection – is needed.

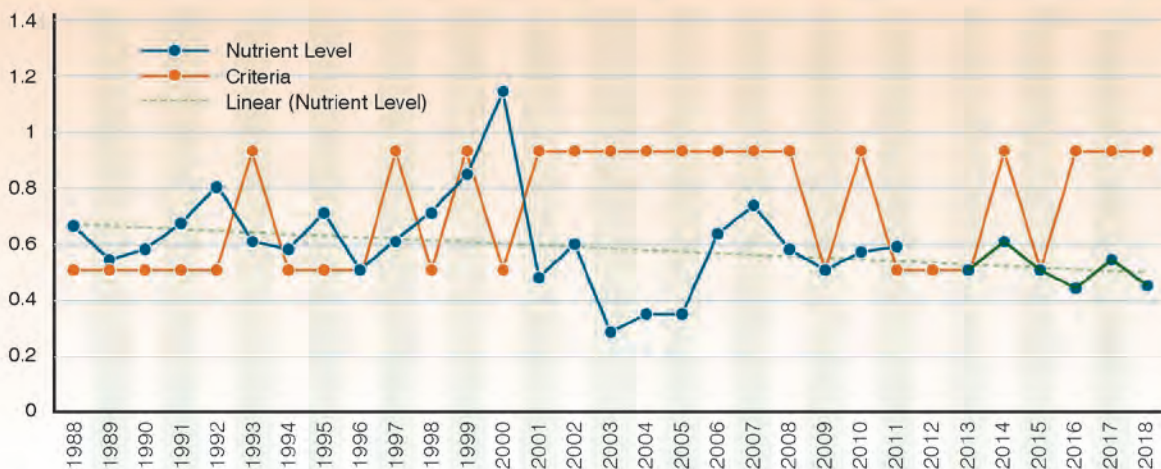
Sedimentation

The once sandy bottoms of Lake Jackson that existed into the 1970s were ideal conditions for breeding fish. Extensive development within the lake's watershed began during these years with the construction of Interstate 10 that crosses over the Meginnis Creek sub-basin. Road projects and residential development over the years have led to an increase in sedimentation of the aquatic preserve. Sediment particles that end up in the aquatic preserve's water can become suspended when water is stirred up during storms or heavy

Chlorophyll-a Levels by Annual Geometric Mean (AGM) in Lake Jackson

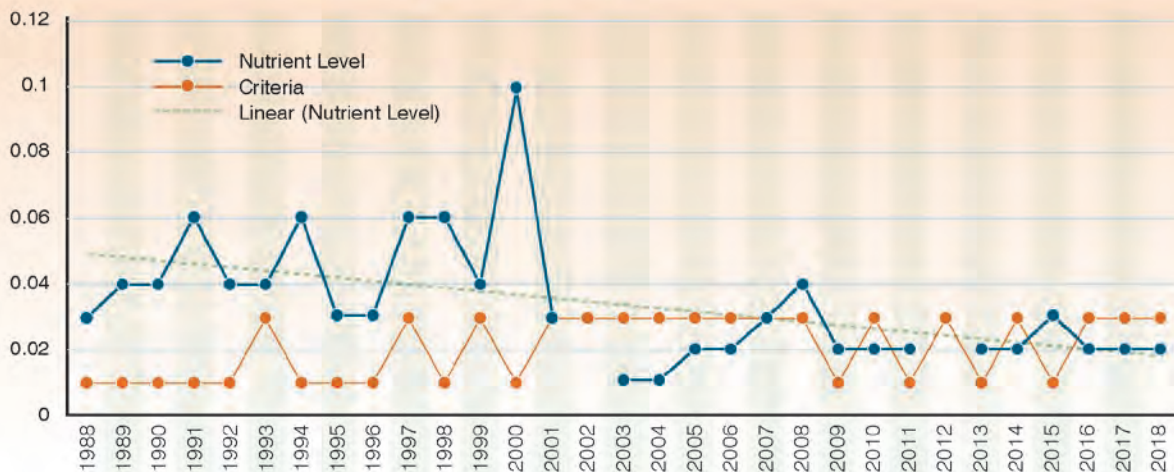


Total Nitrogen Levels by AGM in Lake Jackson

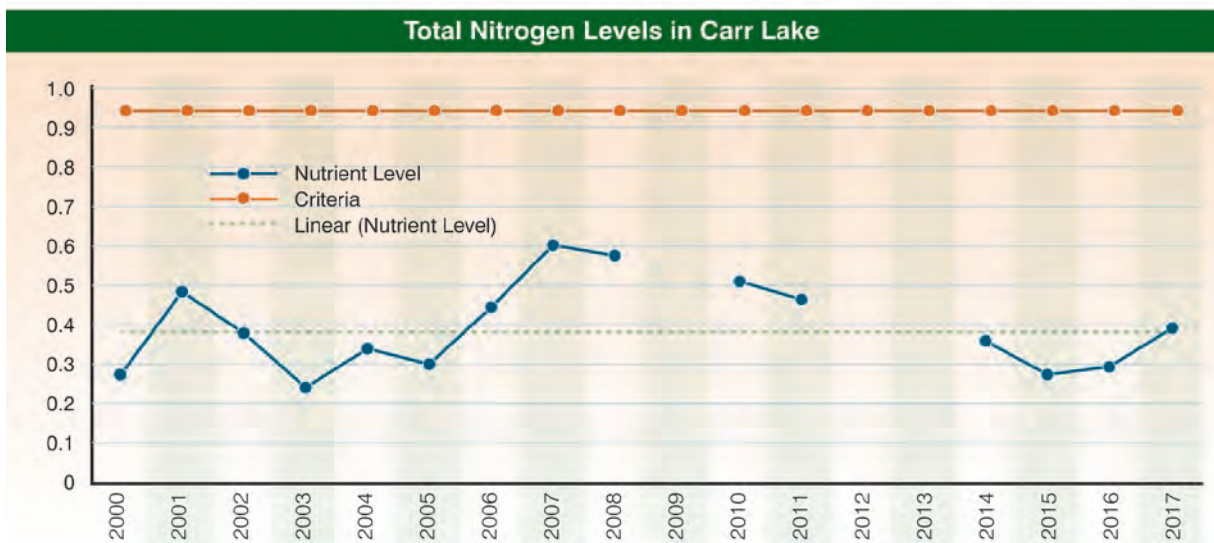
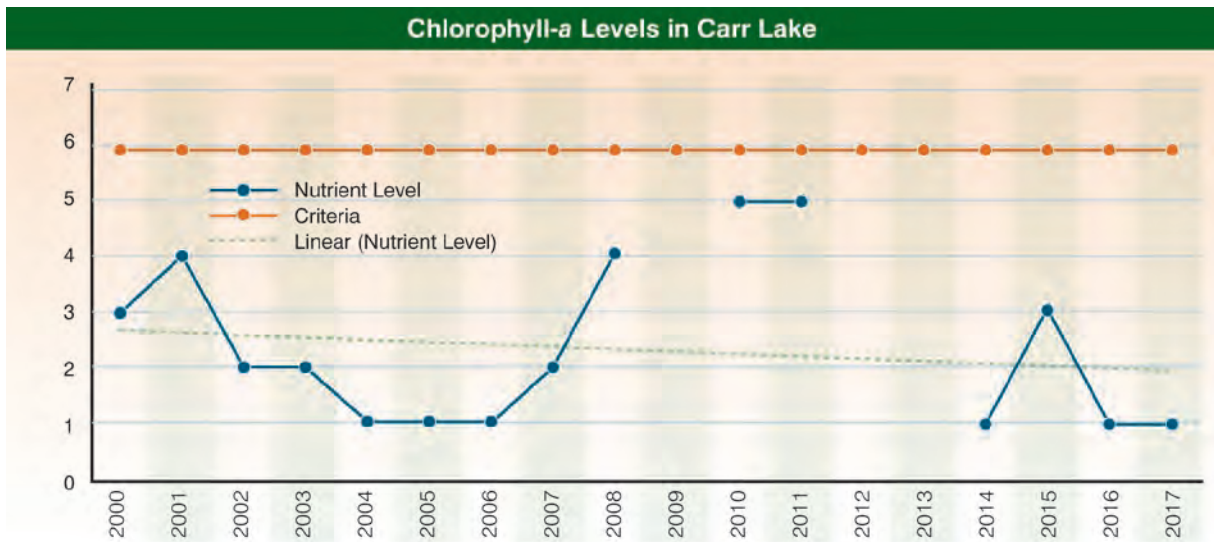


The criteria for Total Nitrogen (TN) is dependent on whether the Chlorophyll-a criteria is met. As a result, the criteria for TN may vary from year to year. Chl-a Annual Geometric Mean (AGM) $\leq 6 \mu\text{g/L}$, TN AGM $\leq 0.93 \text{ mg/L}$; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM $> 6 \mu\text{g/L}$, TN AGM $\leq 0.51 \text{ mg/L}$

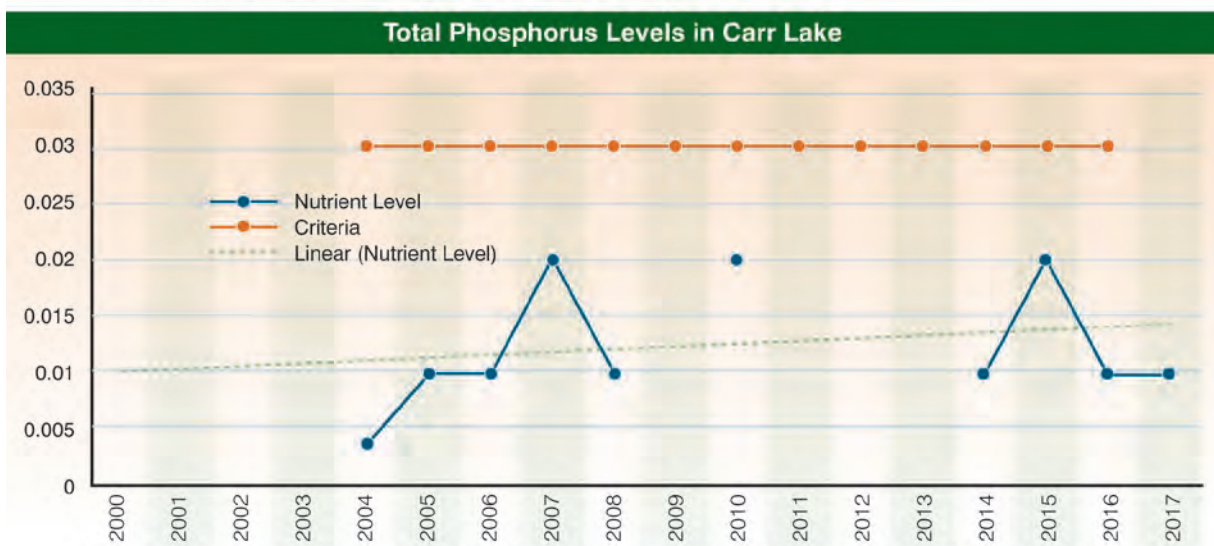
Total Phosphorus Levels by AGM in Lake Jackson



The criteria for Total Phosphorus (TP) is dependent on whether the Chlorophyll-a criteria is met. As a result, the criteria for TP may vary from year to year. Criteria: Chl-a AGM $\leq 6 \mu\text{g/L}$, TP AGM $\leq 0.03 \text{ mg/L}$; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM $> 6 \mu\text{g/L}$, TP AGM $\leq 0.01 \text{ mg/L}$

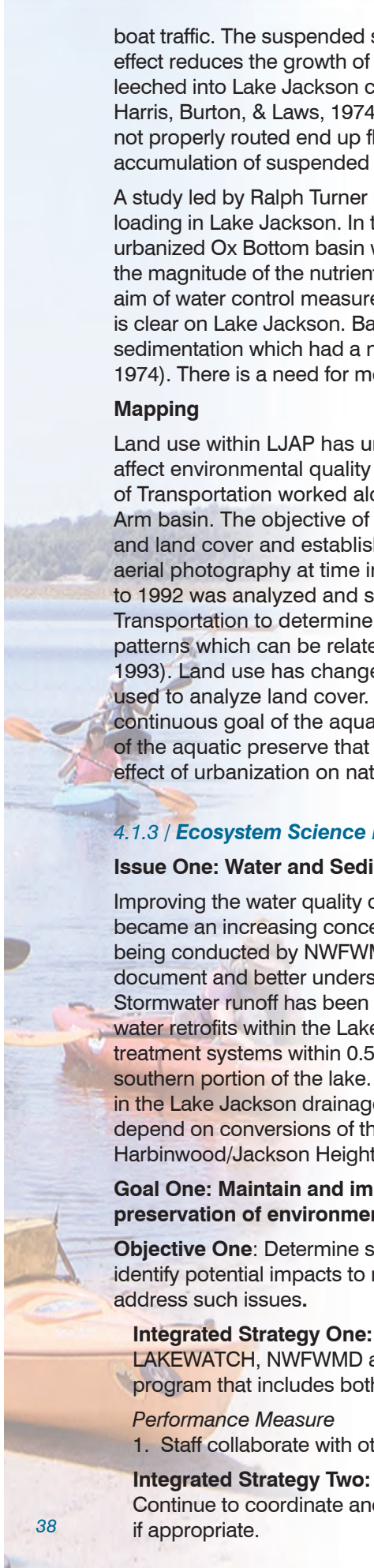


The criteria for Total Nitrogen (TN) is dependent on whether the Chlorophyll-a criteria is met. As a result, the criteria for TN may vary from year to year. Criteria: Chl-a AGM $\leq 6 \mu\text{g/L}$, TN AGM $\leq 0.93 \text{ mg/L}$; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM $> 6 \mu\text{g/L}$, TN AGM $\leq 0.51 \text{ mg/L}$.



The criteria for Total Phosphorus (TP) is dependent on whether the Chlorophyll-a criteria is met. As a result, the criteria for TP may vary from year to year. Criteria: Chl-a AGM $\leq 6 \mu\text{g/L}$, TP AGM $\leq 0.03 \text{ mg/L}$; If Chl-a has Insufficient or No Data to calculate AGM or if Chl-a AGM $> 6 \mu\text{g/L}$, TP AGM $\leq 0.01 \text{ mg/L}$.

Figure 4 / Water quality data for Carr Lake

A person in a blue kayak is on the water, with a forested shoreline in the background. The water is calm and reflects the surrounding greenery.

boat traffic. The suspended sediments then deprive the lake bottom of much needed sunlight, which in effect reduces the growth of native vegetation essential for productive ecosystems. Typical sediments being leached into Lake Jackson consist of construction related heavy metals and concrete byproduct (Turner, Harris, Burton, & Laws, 1974). After a period of rainfall, these harmful pollutants are washed downhill and if not properly routed end up flowing into the lake via tributaries. The lake in its current state is laden with an accumulation of suspended sediment particles that threaten the lake's viability as a productive ecosystem.

A study led by Ralph Turner in 1974 attempted to find linkages between land use, hydrology, and nutrient loading in Lake Jackson. In this study, runoff from the urbanized Meginnis Arm basin and the non-urbanized Ox Bottom basin were regularly sampled for a year. The findings from this study confirmed that the magnitude of the nutrient loading problem make it a difficult one to solve and should be the primary aim of water control measures (Turner et al, 1974). The link between sediments and environmental quality is clear on Lake Jackson. Based on older data much of the southern portion of the lake accumulated sedimentation which had a negative effect on water quality and aquatic plant and animal life (Turner et al, 1974). There is a need for more current studies involving the state of the lake bottom.

Mapping

Land use within LJAP has undergone a drastic change since the 1950s. To understand how land use can affect environmental quality it is essential to map these changes through time. The Florida Department of Transportation worked alongside NFWFMD in 1993 to study land use changes within the Fords Arm basin. The objective of this research project was to characterize historic and existing land use and land cover and establish a connection to any environmental changes in the area. The study used aerial photography at time intervals to assess the land use changes in the given area. Data from 1957 to 1992 was analyzed and separated into land use categories provided by the Florida Department of Transportation to determine changes in land use. This study provided a good indication of past land use patterns which can be related to environmental quality data from the corresponding period (NFWFMD, 1993). Land use has changed since this study was conducted and more advanced technologies are used to analyze land cover. NFWFMD produces updated land cover data on a regular basis. It is a continuous goal of the aquatic preserve manager to use this data to create updated and accurate maps of the aquatic preserve that can be understood by the public and create a better understanding of the effect of urbanization on natural resources.

4.1.3 / Ecosystem Science Issue

Issue One: Water and Sediment Quality

Improving the water quality of Lake Jackson is the leading issue for the aquatic preserve. Water quality became an increasing concern in Lake Jackson since the 1970s which is why consistent monitoring is being conducted by NFWFMD, Leon County and the city of Tallahassee. Monitoring allows researchers to document and better understand the short-term variability and long-term changes in the natural system. Stormwater runoff has been directly linked to degraded conditions, but there have been several storm water retrofits within the Lake Jackson basin since 1983. There are 2,187 parcels containing on-site septic treatment systems within 0.5 miles of Lake Jackson (Map 11), with the majority densely populated at the southern portion of the lake. The map also identifies 4,517 parcels with on-site septic treatment systems in the Lake Jackson drainage basin. Additional improvements to water quality within Lake Jackson may depend on conversions of these on-site septic treatment systems to central sewer, particularly in the Harbinwood/Jackson Heights area (NFWFMD, 2017).

Goal One: Maintain and improve water and sediment quality within and adjacent to LJAP for preservation of environmental services, fisheries and recreational activities.

Objective One: Determine status and trends of water and sediment quality within and adjacent to LJAP to identify potential impacts to natural resources and provide quality scientific data and recommendations to address such issues.

Integrated Strategy One: Compile existing sediment quality data including that from Leon County, LAKEWATCH, NFWFMD and other entities that collect sediment data to create a long-term monitoring program that includes both biotic and abiotic parameters.

Performance Measure

1. Staff collaborate with other groups to compile data on sediment quality.

Integrated Strategy Two: Evaluate compiled data to identify status, trends and information gaps. Continue to coordinate and collaborate with other agencies and convene a working group to close gaps, if appropriate.

Performance Measures

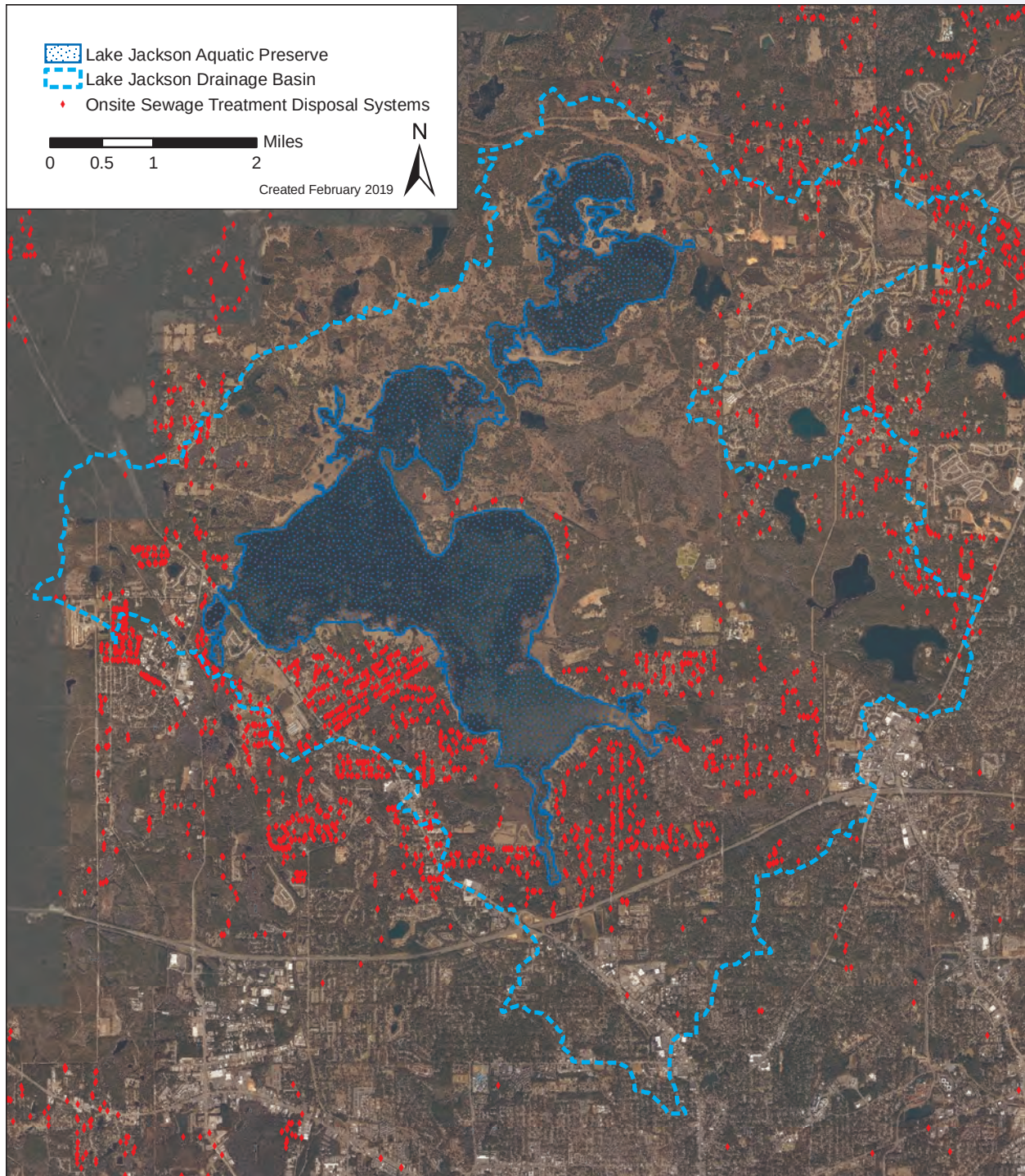
2. A report is produced that evaluates the status and trends of water and sediment quality.
3. A prioritized list of monitoring and research needs to address water and sediment quality is created.

Integrated Strategy Three: Inform other entities, managers and the public about water and sediment quality conditions.

Performance Measure

1. A report is published on water and sediment quality conditions, including trends. This report will include the prioritized list of monitoring and research needs.

Integrated Strategy Four: Attend or participate in conferences and meetings that focus on water and land management topics to increase and enhance knowledge of new and improved management techniques for LJAP.



Map 11 / On-site sewage treatment and disposal systems near Lake Jackson Aquatic Preserve.



Lake Jackson is often heavily vegetated during the growing season.

Performance Measure

1. Staff actively participate in conferences and meetings.

Integrated Strategy Five: Review all permit applications for projects within the aquatic preserve especially those that could alter hydrology or water quality.

Performance Measure

1. Permit applications or projects within the aquatic preserve are reviewed.

Objective Two: Identify nutrients, sediments and other pollutants entering the lake, their sources, and coordinate with other agencies to develop appropriate response strategies to these issues and reduce the amounts entering LJAP.

Integrated Strategy One: Monitor water quality.

Performance Measure

1. Coordinate with partners and existing monitoring agencies to establish a strategic long-term water quality monitoring program within LJAP.
2. Monitoring sites and data collection frequency is increased, if necessary.
3. Work with partner agencies to identify sources of pollution.

Integrated Strategy Two: Evaluate sediment quality and monitor sediments.

Performance Measures

1. A strategic long-term sediment quality monitoring program within LJAP is created.
2. Evaluate existing sediment data.
3. Sediment quality monitoring sites and testing frequency is increased, if necessary.
4. Work with partner agencies to identify sources of sediments.

Objective Three: Support efforts of regulatory programs, local government and land owners to reduce the impacts from development in the watershed.

Integrated Strategy One: Support projects to enhance storm water and sewage treatment within LJAP's watershed.

Performance Measures

1. Review and provide recommendations on proposed watershed protection/improvement projects.
2. Create a list and map of watershed improvement projects.

Integrated Strategy Two: Support local government comprehensive growth management plans and land development rules and ordinances that enhance abatement of nonpoint source pollutants.

Performance Measure

1. Review and provide recommendations on comprehensive growth management plans and land development rules and ordinances that enhance abatement of nonpoint source pollutants in the LJAP watershed.

Integrated Strategy Three: Give recommendations on homeowner's growth and land development needs.

Performance Measure

1. Review and provide recommendations on permits that involve LJAP.

Objective Four: Coordinate with regulatory programs and local government to develop a prioritized work plan for potential lake drawdown actions.

Integrated Strategy One: Convene a working group and create and implement a drawdown work plan.

Performance Measures

1. Hold at least one meeting to discuss initial plans and ideas.
2. Produce and publish a work plan.

Objective Five: Ensure that management activities and public use do not impede the natural cycle.

Integrated Strategy One: Provide public awareness opportunities to help adjacent homeowners avoid altering the aquatic preserve with excess nutrients.

Performance Measures

1. Host an annual education and outreach program for targeted audiences, such as landscape/lawn care providers and homeowners regarding lawn and garden maintenance.
2. Work with University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS) Florida Friendly Landscaping program, City of Tallahassee's Think About Personal Pollution (TAPP) program and other organizations to facilitate programs that educate homeowners about best management practices.

4.2 / *The Resource Management Program*

The Resource Management Program addresses how RCP manages LJAP and its resources. The primary concept of LJAP resource management projects and activities are guided by RCP's mission statement: "Conserving and restoring Florida's coastal and aquatic resources for the benefit of people and the environment." RCP's sites accomplish resource management by physically conducting management activities on the resources for which they have direct management responsibility, and by influencing the activities of others within and adjacent to their managed areas and within their watershed. Watershed and adjacent area management activities, and the resultant changes in environmental conditions, affect the condition and management of the resources within their boundaries. RCP managed areas are especially sensitive to upstream activities affecting water quality and quantity.

RCP works to ensure that the most effective and efficient techniques used in management activities are used consistently within our sites, throughout our program and when possible, throughout the state. The strongly integrated Ecosystem Science, Education and Outreach and Public Use Management Programs, provide guidance and support to the Resource Management Program. These programs work together to provide direction to the various agencies that manage adjacent properties, our partners and our stakeholders. LJAP also collaborates with these groups by reviewing various protected area management plans. The sound science provided by the Ecosystem Science Management Program is critical in the development of effective management projects and decisions. The nature and condition of natural and cultural resources within LJAP are diverse. This section explains the history and current status of our Resource Management efforts.

4.2.1 / *Background of Resource Management at Lake Jackson Aquatic Preserve*

The Resource Management Program in conjunction with the Ecosystem Science Management Program is aimed at preserving and enhancing, where needed, the environmental quality of the aquatic preserve. The collaborative efforts of these programs, creates successful management strategies tailored to the specific goals of aquatic preserve managers. Management agencies partnered with the DEP that work to improve environmental conditions within the aquatic preserve includes NFWFMD, FWC, Leon County, and the city of Tallahassee. Funding limitations and outdated research projects have limited the scope of resource

management projects for LJAP. However, with the opportunity for more current research and monitoring, funding for resource management projects can accomplish the long-standing goal of protecting the aquatic preserve's natural resources. Resource Management Programs in the past have focused on habitat restoration/mitigation and invasive species management.

4.2.2 / Current Status of Resource Management at Lake Jackson Aquatic Preserve

Historically, the DEP and RCP have not had a direct role in resource management for LJAP. For this reason, partnership with other organizations becomes increasingly important to the protection of the aquatic preserve's resources. Due to the needs of LJAP and the limited program resources, aquatic preserve staff now works with a variety of different stakeholders to protect and restore LJAP resources. Staff often partners with other land managers, agencies, researchers and private entities to accomplish resource management goals. LJAP strives to be as effective as possible and shares resources such as staff time, vessels and equipment to accomplish common goals. It is the DEP's responsibility to transmit knowledge of the aquatic preserve to organizations with a more hands-on role in management. To effectively manage the aquatic preserve as a natural resource, it is important to understand how the resource functions.

Management of LJAP primarily takes on a proactive and preventative approach. Due to undesirable trends in both abiotic and biotic components of the lake, long-term planning, involving multiple stakeholders, is needed for the appropriate management and restoration of the aquatic preserve. The status of the resource management programs within the aquatic preserve as well as future needs are described in the following sections.

Habitat restoration/mitigation

The natural habitat found in LJAP is valuable to an extensive population of native flora and fauna. This valuable ecosystem has been an area of focus since its designation as an aquatic preserve in 1974. In the past, resource management projects have been aimed at restoring habitat within the aquatic preserve. The muck removal project of 1999 is an excellent example of a successful habitat restoration project. A team of scientists, contractors, and government workers removed accumulated muck from Lake Jackson's exposed lake bottom after a natural drawdown of water to remove unwanted polluted sediments and expose the natural sandy bottom. The project improved water quality in previously impaired sections of the lake and when the lake filled up, fish populations were on the rise and invasive vegetation was down from prior to the muck removal. Although the muck removal project was successful in many ways, there were some revelations about the lake bottom. While some parts of the lake historically had a sandy bottom, other areas of the lake clearly had an organic (muck) bottom, as evidenced by the depth (>6 feet) of the muck and black organic soils observed during sediment removal. The equipment operators were instructed to remove organic sediment until they reached sand but in many areas of the lake bottom sand could not be reached. The organic material (muck) that accumulates on the bottom of Lake Jackson is a result of decaying macrophytes, this material is very important to some of the species that rely on the aquatic preserve. During drought and natural drydowns of the lake, numerous species of amphibians and reptiles use the organic sediment to aestivate until the lake refills (e.g. *Amphiuma* spp., *Siren* spp.) (Aresco & Gunzburger, 2004). Large scale removal of the organic sediment not only removes aestivation habitat, but also causes direct mortality of amphibians and reptiles. During future large-scale sediment removal projects, all positive and negative outcomes should be considered before taking any actions.

Storm water treatment areas and retention ponds have been implemented throughout the aquatic preserve's watershed. The Lake Jackson Stormwater Treatment Facility, built in 1983, was one of the first to use detention with filtration to treat stormwater runoff (Dierberg, Williams, & Schneider, 1988; Cairns & Macmillan, 1989). This facility, along with the Okecheepkee Prairie Regional Stormwater Facility and several other projects, has substantially decreased the amount of storm water input to the lake. Additional storm water retrofit projects and natural vegetation treatment should be explored for future improvements to the ecosystem. With development pressures increasing within the watershed it is imperative that additional innovative storm water treatment and retention areas be developed to intercept pollutants. No land clearing or ground disturbance, above or below the ordinary high water line, will be undertaken by staff until the Division of Historical Resources has provided a review and recommendations for the proposed activity.

Invasive vegetation

For more than a century Florida has been dealing with invasive vegetation introduced into the states' waters that threaten the ecological and economic resources. Invasive and exotic plant species such as water hyacinth, alligator weed, and hydrilla have been documented in the aquatic environment of LJAP since the early 1970s (Thorpe, 1996). The Chinese tallow has also become established in the wetlands and nearby uplands throughout the aquatic preserve. Water hyacinth, alligator weed, and more recently,



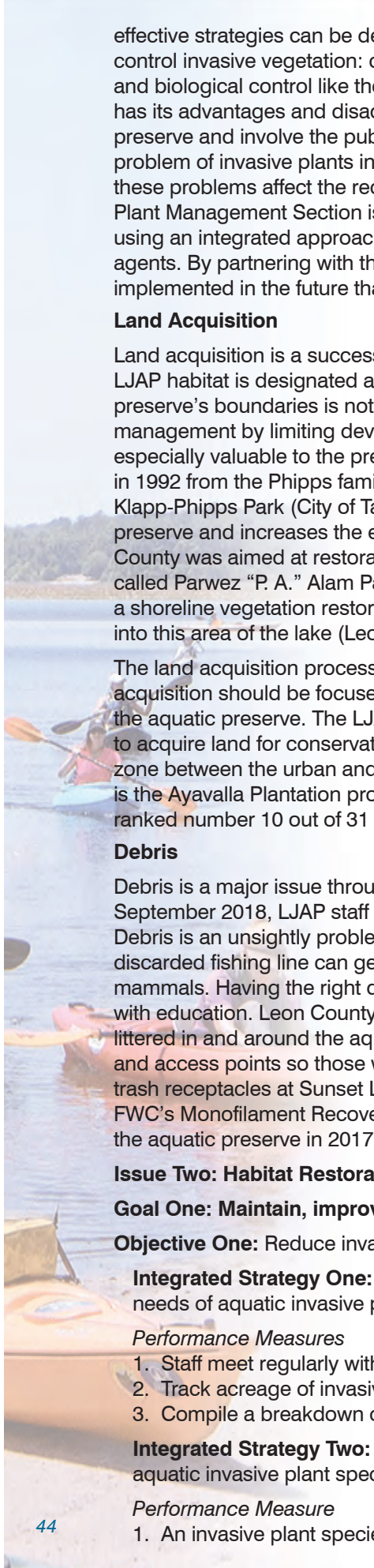
During a drawdown event at Lake Jackson, the water drains through the opening of a sinkhole. Over time the sun bakes the lake bottom and oxidizes plant and muck material, restoring the sandy bottom many fish rely on for spawning.

Cuban bulrush have all been problematic, but hydrilla has been the greatest control challenge. Treatments with herbicides such as fluridone were conducted for years with good success but herbicides are only a temporary solution. To help with the long-term maintenance of hydrilla, low stocking rates of grass carp have provided control between treatments and have extended the control life of many applications. Also, large rafts of ducks and coots have helped to knock back the biomass of hydrilla in winter months. The occasional drawdown of Lake Jackson has proven to be one of the greatest controlling factors of hydrilla and many other invasive species. While the lake is low in many areas during drawdown, the hydrilla dies due to the combined stressors of sun and lack of water. When the lake comes back up, the hydrilla population has significantly decreased. This was significantly seen in the drawdown of 1999.

The eradication of such a prolific exotic species such as hydrilla is nearly impossible. Left unmanaged, hydrilla threatens to decrease biological diversity of the ecosystem and impede recreational use by boaters because of the hydrilla mats that form in open water that can clog boat motors and propellers. The major threat posed by hydrilla to Lake Jackson is its ability to dominate the ecosystem by occupying the lake's water column at different levels (Gettys & Enloe, 2016). Hydrilla's only perceived benefit is as a food resource for migrating waterfowl. In winter months foraging ducks such as ringnecks (*Aythya collaris*), greater scaup (*A. marila*), canvasbacks (*A. valisineria*), and other diving duck species use hydrilla as an essential and abundant food source. It is also touted as a great cover for game fish like the largemouth bass (Langeland, Enloe, & Gettys, 2016). The problem is that it takes a large amount of management dollars to keep hydrilla at these desirable levels.

However, with adequate funding and cooperation between agencies responsible for controlling these invasive species, LJAP can maintain its status as a popular recreational destination and productive fishery. The primary goal of invasive plant control is to limit the rapid growth of the plant before it overtakes the ecosystem. In 1995, hydrilla covered more than 1,700 acres of habitat on Lake Jackson; almost half of the entire lake (Thorpe, 1996). In contrast, for the last ten years the highest acreage amount surveyed on the lake has been 265 acres (FWC, n.d.-a), and is often much lower. Due to boater education and biocontrol, hydrilla has been effectively managed, and is no longer as large a nuisance as it once was. Lake Jackson has been surveyed by FWC since 1982 and has fluctuated heavily on percent coverage by hydrilla. Carr Lake has been surveyed for exotic vegetation since 1983. It has never had a high percentage of hydrilla, and as of 2017 there was less than 0.1 acres (A. Dew, personal communication, 5/14/2018).

Effective invasive species management starts with support for realistic management techniques. By educating the public and partnerships between organizations responsible for funding such projects,



effective strategies can be determined that will help improve the problem. There are a few methods used to control invasive vegetation: chemical treatments with herbicides such as fluridone, mechanical harvesting and biological control like the addition of grass carp to the ecosystem to feed on the plants. Each method has its advantages and disadvantages. It is important to evaluate each method as it pertains to the aquatic preserve and involve the public in the decision-making process. Steps need to be taken to minimize the problem of invasive plants in the aquatic preserve and create a better understanding by the public of how these problems affect the recreational and environmental integrity of the system. Currently, FWC's Invasive Plant Management Section is responsible for controlling invasive plants in Florida's water and they are using an integrated approach to manage the hydrilla with a combination of herbicide and biological control agents. By partnering with the surrounding land management agencies successful programs can be implemented in the future that focus on public outreach, education, and resource management.

Land Acquisition

Land acquisition is a successful method for conserving valuable habitat throughout the state and nation. LJAP habitat is designated as government owned submerged lands, so land acquisition within the aquatic preserve's boundaries is not necessary. However, land acquisition has played an important role in resource management by limiting development in the surrounding watershed. Two land acquisitions have been especially valuable to the preservation of LJAP. Adjacent to Lake Jackson, 670 acres were purchased in 1992 from the Phipps family and converted into a public park and sports complex, now called Elinor Klapp-Phipps Park (City of Tallahassee, n.d.-a). Land acquisition on this scale is important to the aquatic preserve and increases the economic value of the lake. A more recent land acquisition purchase by Leon County was aimed at restoration and involved a 17-acre parcel of wetlands adjacent to Meginnis Arm now called Parwez "P. A." Alam Park, and formerly known as Okeeheepkee Prairie Park. This land was used for a shoreline vegetation restoration project and an additional stormwater treatment facility to alleviate runoff into this area of the lake (Leon County, n.d.-b).

The land acquisition process can be costly but is valuable for protecting lake resources. The future of land acquisition should be focused on smaller land parcels that can serve as buffers for the wetland habitat of the aquatic preserve. The LJAP management team will continue to work with the public and other agencies to acquire land for conservation easements and natural parks whenever possible. This land offers a buffer zone between the urban and suburban development, and the aquatic preserve. A prime example of this is the Ayavalla Plantation property that is currently on the Florida Forever Less-than-Fee Projects list. It is ranked number 10 out of 31 projects with a total of 5,903 acres (DEP, n.d.-a)

Debris

Debris is a major issue throughout our aquatic systems including LJAP. From November 2017 to September 2018, LJAP staff and volunteers removed 1,900 pounds of debris from the aquatic preserve. Debris is an unsightly problem and causes problems for wildlife and the aquatic ecosystems. Improperly discarded fishing line can get caught in trees, line can also tangle wildlife including birds, fish and mammals. Having the right debris receptacles is a big part of keeping the aquatic preserve clean along with education. Leon County Parks and Recreation department tries to reduce the amount of trash that is littered in and around the aquatic preserve by placing trash and recycling receptacles at all boat landings and access points so those who visit will have a place to dispose of trash. They also installed cigarette butt trash receptacles at Sunset Landing in 2018 to reduce cigarette butt litter. LJAP staff has also worked with FWC's Monofilament Recovery and Recycling Program to install five monofilament recycling bins around the aquatic preserve in 2017 to better recycle fishing line.

Issue Two: Habitat Restoration and Resource Protection

Goal One: Maintain, improve and increase healthy habitat within LJAP.

Objective One: Reduce invasive aquatic vegetation in LJAP.

Integrated Strategy One: Coordinate with FWC's Invasive Plant Management Section to determine needs of aquatic invasive plant control.

Performance Measures

1. Staff meet regularly with FWC's Invasive Plant Management Section to assess needs.
2. Track acreage of invasive species eradication efforts by all agencies.
3. Compile a breakdown of acres treated for each individual species and herbicide used.

Integrated Strategy Two: Look at existing data and track trends as to increases and decreases of aquatic invasive plant species.

Performance Measure

1. An invasive plant species report is created and updated annually.

Objective Two: Reduce invasive upland and wetland vegetation around LJAP.

Integrated Strategy One: Coordinate with multiple agencies to determine needs of upland invasive plant control.

Performance Measures

1. Track acreage of invasive species in the wetlands and uplands of LJAP.
2. Find funding sources for removal of invasive species.
3. Treat and track acreage of invasive species eradication efforts by all agencies.

Objective Three: Improve habitat in LJAP for species diversity.

Integrated Strategy One: Assist in the restoration efforts of Carr Lake, Mallard Pond and Lake Jackson.

Performance Measures

1. Track acreage of revegetation efforts by all agencies, including upland and buffer restoration.
2. Establish and monitor permanent vegetative plots via percentage cover and species composition and analyze for change.
3. Create opportunities for community involvement in the form of restoration projects.
4. Track volunteer hours.

Integrated Strategy Two: Identify and track species diversity of LJAP.

Performance Measures

1. Set up “blitz” style species inventory activities on LJAP to record all living species present.
2. Update species lists for all flora and fauna occurring in the aquatic preserve.

Objective Four: Reduce the amount of debris in the aquatic preserve.

Integrated Strategy One: Ensure that appropriate access points to the aquatic preserve have monofilament line depositories and trash receptacles.

Performance Measure

1. Assess which access points needs monofilament line depositories and trash receptacles.

Integrated Strategy Two: Encourage managers of local parks, launch sites and other facilities to erect informational signage that promotes “Leave No Trace” and “Pack it in, Pack it Out” No Trace stewardship.

Performance Measure

1. Signage is placed at each access point.

Integrated Strategy Three: Organize public cleanup events to reduce debris.

Performance Measures

1. Organize or partner on at least two clean-up events each year for the public and public groups.
2. Debris is reduced throughout the aquatic preserve by increased stewardship and at access points by being retained in secure receptacles.
3. Track volunteer hours and weight of debris collected from the aquatic preserve.

Objective Five: Encourage an increase in the amount and frequency of law enforcement around Lake Jackson.

Integrated Strategy One: Facilitate regular communication with law enforcement for rapid response to illegal activities.

Performance Measure

1. Track rates of vandalism, dumping and other illegal activities within LJAP.

Objective Six: Protect cultural resources within LJAP.

Integrated Strategy One: Locate and identify unknown archaeological and historical resources.

Performance Measures

1. Staff will obtain Archaeological Resource Management training.
2. Staff will monitor for unidentified cultural resources during other activities in the aquatic preserve. Division of Historic Resources, Bureau of Archaeological Research archaeologists will be invited to join them in the field.

Integrated Strategy Two: Monitor existing archaeological and historical resources.

Performance Measure

1. Staff will assess all seven known archaeological sites within the aquatic preserve every other year, in collaboration with the state park, as appropriate.



Fisherman boat and kayak to all reaches of the aquatic preserve to find the best fishing spots.

4.3 / The Education and Outreach Management Program

The Education and Outreach Management Program components are essential management tools used to increase public awareness and promote informed stewardship by local communities. Education programs include on and off-site education and training activities. These activities include field studies for students and teachers; the development and distribution of media; the distribution of information at local events; the recruitment and management of volunteers; and training workshops for local citizens and decision-makers. The design and implementation of education programs incorporates the strategic targeting of select audiences. These audiences include all ages and walks of life; however, each represents key stakeholders and decision-makers. These efforts by the Education and Outreach Management Program allow the aquatic preserve to build and maintain relationships and convey knowledge to the community; invaluable components to successful management.

4.3.1 / Background of Education and Outreach at Lake Jackson Aquatic Preserve

The LJAP office is in a large office building that is not well-suited for on-site educational programs. There has been little to no education and outreach efforts for LJAP due to the lack of having a designated manager for the aquatic preserve. As of May 2017, when a designated aquatic preserve manager was hired the Education and Outreach Program has been centered around informing the public on the environmental status of the aquatic preserve and issues that are important for effective resource management. The aquatic preserve does not have a formal outreach program, but typical outreach efforts are concentrated on residents of the adjacent areas along with recreational users and commercial businesses within its watershed.

4.3.2 / Current Status of Education and Outreach at Lake Jackson Aquatic Preserve

The primary form of outreach and education for the aquatic preserve has been the use of educational displays, public cleanups, monthly lecture series and events. Education and outreach is closely related to other programs developed to preserve the natural environment. LJAP staff hosted the inaugural Fun Paddle event in April 2018. This event hosted more than 15 exhibitors, two live bands and also offered guided

paddling tours of Lake Jackson. Without community involvement, the numerous studies and management efforts would be less obvious to the public. These education events give the public an opportunity to learn more about LJAP, its surroundings and ways to protect it. Creating a link between the community and resource managers undoubtedly increases the success of implemented policies. There is a need to develop new programs of this nature and implement them effectively throughout the community.

Components of the education and outreach program include specific educational tools such as brochures and visuals at boat ramps and coordinated volunteer efforts for lake cleanup projects. Such programs facilitate public awareness and ensure that the aquatic preserve can be maintained at the highest quality possible for future generations.

Volunteers

The LJAP manager is actively building up a volunteer list. The volunteers are managed by the LJAP manager to help with an array of projects including public cleanups, restoration events, outreach events and student and family education events.

4.3.3 / Education and Outreach Issue

Issue Three: Public Involvement

There is a lack of knowledge regarding LJAP providing many opportunities to better educate stakeholders of its Outstanding Florida Water designation and that it is a part of an aquatic preserve. Historically, there has been very little management in LJAP, so the public is not as knowledgeable as DEP would like. To foster knowledge on the present condition of the aquatic preserve there is a need for educational materials to be available at the boat ramps located on Lake Jackson and Carr Lake. Pamphlets, flyers, and informational posters at launching points should be provided to the public to educate users on the importance of programs aimed at conservation. There is also a need for this information to be distributed throughout the residential and commercial areas within the 43-square mile watershed of the aquatic preserve. A well-informed community will be more apt to contribute to improving the resources that are in their backyard if they have more knowledge on individual steps that can be taken to do so. There is a need to develop a school-based education and outreach program aimed at the younger generations in the community. Educational programs and lake visits for young school aged children that use interactive demonstrations to show the effects of pollution on local lakes will teach younger generations to take initiative in protecting their environment so that the natural resources will be available for future generations.

Goal One: Increase awareness of the presence of the aquatic preserve, the work conducted in it and the significance of that work.

Objective One: Promote awareness of the aquatic preserve and its significance to residents. Outreach for LJAP has historically been minimal. In the future, staff would like to reach out to several target audiences by delivering presentations to appropriate homeowner associations, local businesses and environmental groups to promote knowledge and stewardship of the aquatic preserve. Aquatic preserve staff will also coordinate with ecotour companies to incorporate presentations about the aquatic preserve and the associated resources into their programs.

Integrated Strategy One: Install signage at access points about the aquatic preserve.

Performance Measures

1. Install signs at four access points for the aquatic preserve.

Integrated Strategy Two: Provide educational boat and kayak tours to inform the public about the effect of watershed practices on the aquatic preserve's natural resources (education and outreach).

Performance Measures

1. Develop an ecotour program and track metrics.

Integrated Strategy Three: Provide education events and opportunities for the public to learn about the aquatic preserve.

Performance Measures

1. Provide annual events to increase education and awareness about the aquatic preserve
2. Host two opportunities (school group visits, other group visits, etc.).

Integrated Strategy Four: Create and promote a homeowner's guide to living on LJAP.

Performance Measure

1. Develop and print a homeowner's guide to living on freshwater aquatic systems.

Objective Two: Educate visitors, residents and users about actions they can take to conserve and restore resources in LJAP.

Integrated Strategy One: Provide educational materials (kiosks, brochures, etc.) and opportunities to inform the public and user groups about the value of the resources of LJAP and efforts to conserve and restore these resources.

Performance Measures

1. Create outreach opportunities that highlight efforts and conservation methods that help preserve and restore LJAP's natural resources and ecological goods and services provided by healthy ecosystems.
2. Track outreach (signs, brochures, public events, etc.).
3. Track number of opportunities provided (clean-ups, school group visits, other group visits, etc.).
4. Track number of citizens reached.
5. Post educational signage at four public access points.

Goal Two: Increase public awareness and education on invasive species issues.

Objective One: Increase public capacity to assist in controlling invasive species as well as avoiding introduction of new invasive species.

Integrated Strategy One: Provide interpretive exhibits at boat ramps and information pamphlets to inform the public on the value of native species.

Performance Measures

1. Develop and post signs at four access points.
2. Track number of information pamphlets handed out.
3. Post at least one article in the newspaper or social media about invasive species.

4.4 / The Public Use Management Program

The Public Use Management Program addresses the delivery and management of public use opportunities at the preserve. The components of this program focus on providing the public recreational opportunities within the site's boundaries that are compatible with resource management objectives. The goal for public access management in RCP managed areas is to "promote and manage public use of our preserves and reserves that supports the research, education, and stewardship mission of RCP."

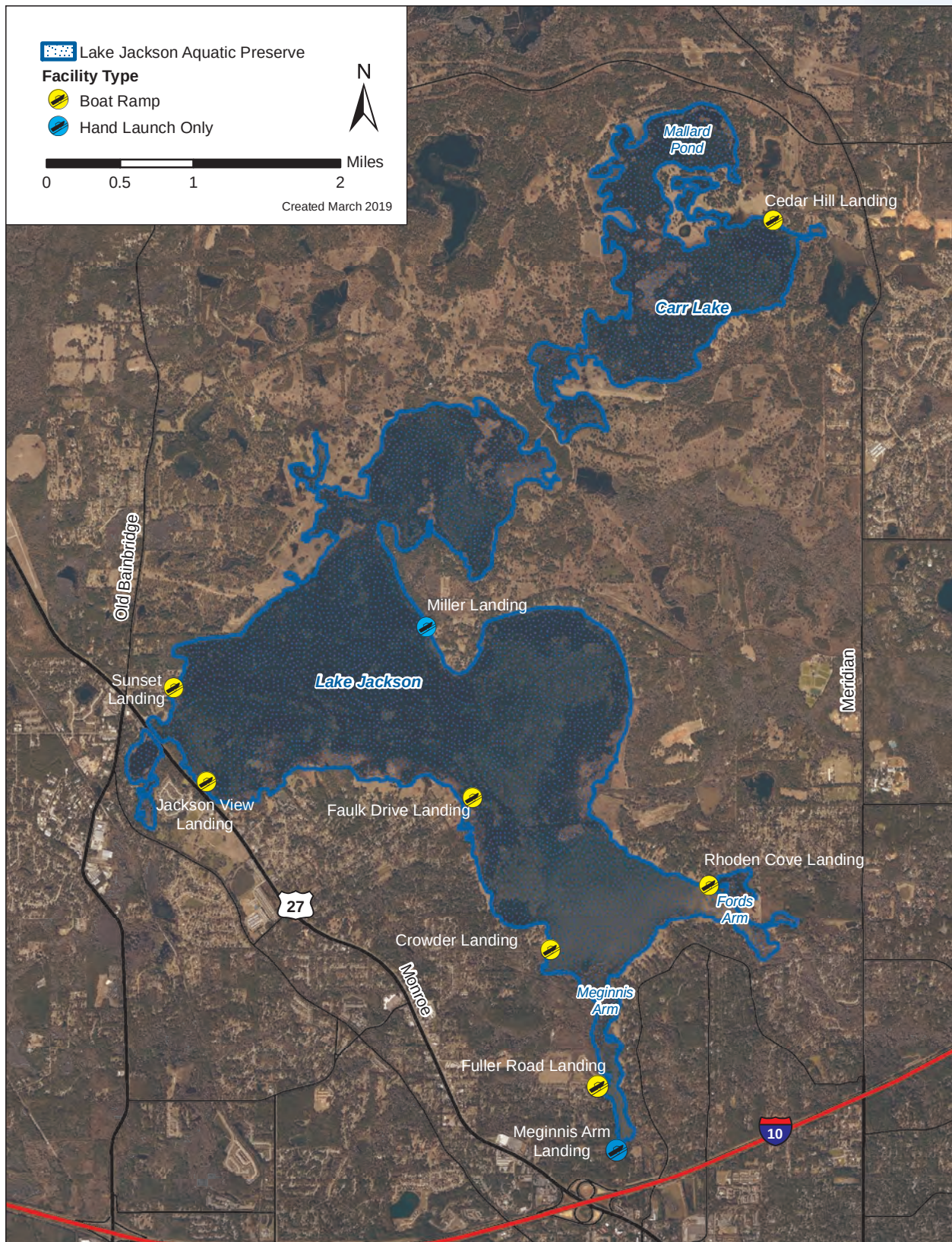
While access by the general public has always been a priority, the conservation of RCP's sites is the primary management concern for RCP. It is essential for staff to analyze existing public uses and define management strategies that balance these activities where compatible in a manner that protects natural, cultural and aesthetic resources. This requires gathering existing information on use, needs, and opportunities, as well as a thorough consideration of the existing and potential impacts to critical upland, wetland and submerged habitats. This includes the coordination of visitor program planning with social science research. One of RCP's critical management challenges during the next 10 years is balancing anticipated increases in public use with the need to ensure preservation of site resources. This section explains the history and current status of our Public Use efforts.

4.4.1 / Background of Public Use at Lake Jackson Aquatic Preserve

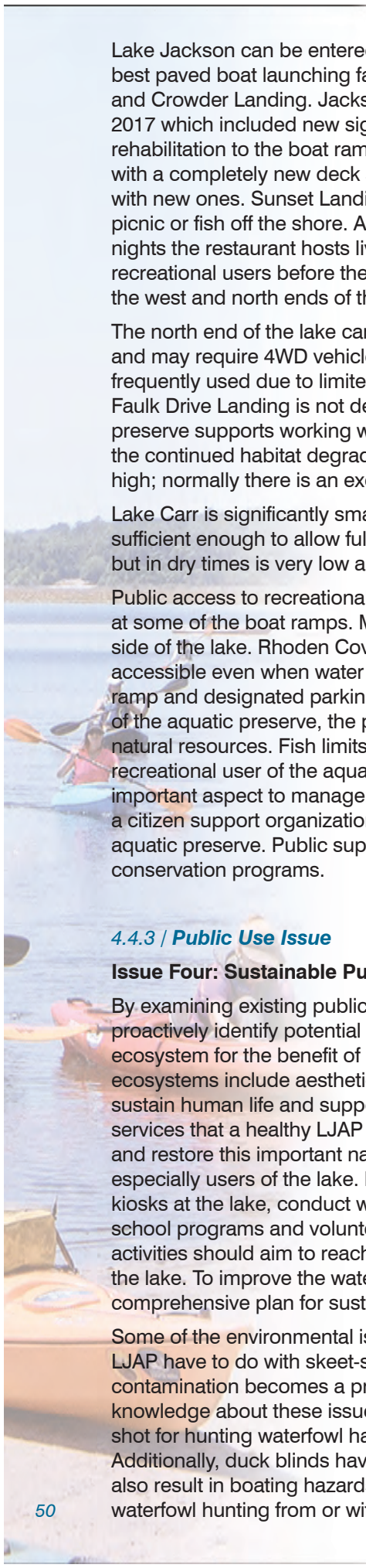
Lake Jackson has struggled with public use issues long before it was designated an aquatic preserve. The lake's natural ability to completely drain through sinkholes has a tremendous impact on public use. The recreational viability of the aquatic preserve is centered around the opportunities to use the lake for boating, fishing, and other activities that are dependent on the lake's water levels. Although it is crucial to the ecosystem for the lake to experience periodic natural drawdowns, recreational opportunities decrease significantly with no water. Because there is no formal public use program for LJAP, it is important to develop a current program that incorporates all aspects of management including ecosystem science, resource management, and education and outreach. Public use must be integrated with education and outreach to ensure that preserve management still occurs when the lake is in its next drawdown stage. Specific public use programs at the aquatic preserve should focus on public access, consumptive and non-consumptive use of the aquatic preserve, and signage at public access areas of the aquatic preserve. Public education during dry periods should include a strong stance from DEP that the berming or plugging of sinkholes within the aquatic preserve is not an option. According to Florida Administrative Code 18-20.017 and Chapter 258, Florida Statutes no further dredging or filling of sovereignty lands of the aquatic preserve shall be approved or tolerated by the Board of Trustees of the Internal Improvement Trust Fund.

4.4.2 / Current Status of Public Use at Lake Jackson Aquatic Preserve

Public use of LJAP is reliant on the diverse recreational opportunities the lake offers and public access to the lake. The most common types of recreation on the lake are boating and fishing. Other popular forms of recreation include hunting, picnicking and sightseeing. There are no commercial operations on the lake involving the harvesting of natural resources, so recreation is the sole economic contributor for the aquatic preserve.



Map 12 / Public access to Lake Jackson Aquatic Preserve.

A vertical photograph on the left side of the page shows a person in a kayak on a body of water, likely Lake Jackson. The person is wearing a life vest and is positioned in the lower half of the frame. The water is calm, and the background shows a shoreline with trees and a clear sky.

Lake Jackson can be entered by any of eight lake access points encircling the shoreline (Map 12). The best paved boat launching facilities are Sunset Landing, Jackson View Landing, Rhoden Cove Landing and Crowder Landing. Jackson View Landing went through an enhancement project that was completed in 2017 which included new signage, better defined parking, the addition of an aluminum, floating dock; and rehabilitation to the boat ramp. The installation of a unisex/family restroom (“drop-toilet”) was added, along with a completely new deck structure and observation pier and the picnic tables and grills were replaced with new ones. Sunset Landing Boat Ramp has a small picnic area overlooking the lake where visitors can picnic or fish off the shore. At the ramp, Shuckers Half-Shell Oyster Bar also overlooks the lake. On some nights the restaurant hosts live music out front. The Oyster Island Bait and Tackle provides supplies to recreational users before they head out on the lake. The ramp is in good condition and provides access to the west and north ends of the lake.

The north end of the lake can be accessed by the unpaved Miller Landing which is better for smaller boats and may require 4WD vehicles for launching boats. The remaining access points to Lake Jackson are less frequently used due to limited parking and amenities. Meginnis Arm Landing is a canoe/kayak launch only; Faulk Drive Landing is not designated as such, but it is only accessible to very small boats. The aquatic preserve supports working with Leon County to make Faulk Drive Landing a hand-launch only site due to the continued habitat degradation by vehicles. Fuller Road Landing is only accessible when the lake is very high; normally there is an excess of plant growth.

Lake Carr is significantly smaller than Lake Jackson making its only access point, Cedar Hill Landing, sufficient enough to allow full access to the lake. Mallard Pond can only be accessed through Carr Lake, but in dry times is very low and not accessible by boat, or only by kayak or canoe.

Public access to recreational services of Lake Jackson is free to the public and include public picnic areas at some of the boat ramps. Miller Landing and Rhoden Cove are both public boat ramps on the north side of the lake. Rhoden Cove offers pavilions with picnic benches and a paved boat landing which is accessible even when water is low. There is potential for improvement at Miller Landing with a paved boat ramp and designated parking. There is a need for more signage at all boat ramps that indicate the entrance of the aquatic preserve, the proper use, and ways that individual users can help with the protection of natural resources. Fish limits and sizes, sensitive habitats, and pollution prevention are all issues that every recreational user of the aquatic preserve should be aware of upon entering the aquatic preserve. The most important aspect to management of the aquatic preserve is citizen support. There is a need to coordinate a citizen support organization that can coordinate with the organizations responsible for protecting the aquatic preserve. Public support is crucial to the successful implementation of comprehensive government conservation programs.

4.4.3 / Public Use Issue

Issue Four: Sustainable Public Use and Access

By examining existing public use and natural resource patterns and trends the aquatic preserve staff can proactively identify potential conflicts and work with stakeholders to prioritize strategies to sustain a healthy ecosystem for the benefit of Leon County residents and visitors. Ecological services derived from healthy ecosystems include aesthetics, water, food, carbon storage, flood protection and pollution abatement that sustain human life and support social and economic prosperity. Raising public awareness for the valuable services that a healthy LJAP provides is a priority objective to build stakeholder support to conserve and restore this important natural resource. This is important for existing residents, new residents, and especially users of the lake. Educational outreach can include the following activities: provide informational kiosks at the lake, conduct workshops for policymakers, and mail newsletters; encourage media outreach, school programs and volunteer opportunities; initiate benefit events; and sponsor clean-up days. These activities should aim to reach the most people and not just those in the immediate vicinity or that frequent the lake. To improve the water quality and restore natural community function, it is essential to develop a comprehensive plan for sustainable public use and educational outreach.

Some of the environmental issues that have emerged from waterfowl hunting and target practice within LJAP have to do with skeet-shooting that results in lead and debris accumulation in the lake bed; this lead contamination becomes a problem for fish and other wildlife. Improved public education can improve knowledge about these issues and reduce the amount of lead found in the lake. A nationwide ban of lead shot for hunting waterfowl has been in place since 1991, requiring a non-toxic shot for waterfowl hunting. Additionally, duck blinds have caused conflicts between hunters who claim territory around blinds. They also result in boating hazards and diminished aesthetic value. A rule was passed in 2008 that prohibits waterfowl hunting from or within 30 yards of any permanent blind on several lakes in Leon and Jefferson

counties, including Lake Jackson and Carr Lake. These issues require additional public education about the current regulations and impacts from this type of public use within the area.

Goal One: Encourage user experiences and public recreation opportunities consistent with natural resources conservation.

Objective One: Increase public access and low impact recreational opportunities on LJAP.

Integrated Strategy One: Support the addition of paddlecraft launches on public lands.

Performance Measures

1. Work with local organizations to encourage paddling events on LJAP
2. Work with local organizations to install paddlecraft launches and update paddlecraft only sites

Objective Two: Ensure appropriate recreational use on the lake bottom during times of low lake levels.

Integrated Strategy One: Hold informational meetings and post signage during low lake levels to educate the public about the natural cycle of drawdown and impacts from driving on the lake bed during this time.

Performance Measures

1. Conduct a public workshop during drawdown events to educate the public about the natural cycle of drawdown or post an article in the newspaper.
2. Post signs at access points during times of low water levels.
3. Conduct restoration projects to create opportunities for public involvement.

Integrated Strategy Two: Improve enforcement of ordinances and rules by increasing coordination between FWC law enforcement, DEP and the public.

Performance Measures

1. Track number of coordination/informational meetings held with FWC law enforcement and the public about allowable uses.
2. Assess whether new or additional signs need to be posted.

Integrated Strategy Three: Examine public use patterns and trends within LJAP to proactively identify potential resource/public use conflicts and work with key stakeholders to develop conservation strategies to minimize damage to the natural resource.

Performance Measures

1. Develop user surveys and track use.
2. Track number of stakeholder workshops hosted.
3. Produce a report to summarize existing and new user survey results from fisheries data, boat ramp and aerial studies and integrate into LJAP outreach and resource management programs.
4. Create a GIS-based analysis of public use trends and patterns compared to habitat maps to assess potential conflicts.
5. Complete an updated map that summarizes existing data on public access facilities and usage areas within LJAP.

Objective Three: Provide user education about hunting and fishing regulations and debris issues within LJAP.

Integrated Strategy One: Coordinate with other agencies to provide education and awareness opportunities about debris problems in LJAP.

Performance Measures

1. Organize or partner on at least two clean-up events each year for the public and public groups.
2. Track additional disposal opportunities and amount of debris collected from LJAP.
3. Track educational opportunities that discuss the issues that surround debris.

Integrated Strategy Two: Coordinate with other agencies to provide brochures and informational materials about regulations regarding the use of duck blinds and hunting and fishing regulations.

Performance Measures

1. Track permanent signs that show regulations for local fishing and hunting laws.
2. Create a prioritized list of where gaps may occur.
3. Post online information on local fishing and hunting laws on the LJAP website.
4. Track number of duck blinds present and provide information to FWC law enforcement of any illegal activities.

Integrated Strategy Three: Improve enforcement and coordination of FWC law enforcement with DEP and the public about allowable uses to improve FWC enforcement of ordinance rules.

Performance Measures

1. Coordinate with FWC law enforcement and the public about allowable uses of LJAP.
2. Track FWC-public interactions and outcomes.

Objective Four: Inventory and assess cumulative impacts on the natural resources from human activities.

Integrated Strategy One: Survey and record boat launching and activity for impacted shoreline and signs of pollution.

Performance Measure

1. Identify areas heavily impacted by docking facilities and record negative impacts, with emphasis on size and associated use if necessary.





Lake Jackson Aquatic Preserve staff participate in education and outreach throughout the Leon County area, such as the Tallahassee Science Festival, to better educate the public on their local aquatic preserve.

Part Three

Additional Plans

Chapter Five

Administrative Plan

Successful implementation of the ecosystem science, public use, education, and resource management programs outlined in this management plan is dependent on an effective administration strategy and framework that provides for adequate staffing, facilities, funding, and cooperation with other agencies and citizen support. The objectives of the aquatic preserve's administrative program include the following: 1) to supervise and administer programs and maintain facilities; 2) to comply with all legal rules, contracts, agreements, and regulations; 3) to maintain all records needed for operating, budgeting, planning, and purchasing; and 4) to communicate and coordinate with all entities involved in research, education, commercial, and recreation utilization or management within the aquatic preserve.

Staffing

As of fiscal year, 2018-2019, staff is composed of the aquatic preserve manager (Environmental Specialist II, Full Time Employment [FTE]). The aquatic preserve manager position was re-established in November 2016, and upgraded to an FTE in March 2018.

Many of the strategies identified in this plan will be implemented using existing staff and funding. However, several objectives and the strategies necessary to accomplish them cannot be completed during the life of this plan without additional resources. The plan's recommended actions, time frames, and cost estimates will guide the Office of Resilience and Coastal Protection's (RCP) planning and

budgeting activities over the period of this plan. These recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that RCP can adjust to changes in the availability of funds, unexpected events such as hurricanes, and changes in statewide issues, priorities and policies.

Statewide priorities for management and restoration of submerged and coastal resources are evaluated each year as part of the process for planning RCP's annual budget. When preparing RCP's budget, it considers the needs and priorities of the entire aquatic preserve program, other programs within RCP, and the projected availability of funding from all sources during the upcoming fiscal year. RCP pursues supplemental sources of funds and staff resources whenever possible, including grants, volunteers, and partnerships with other entities. RCP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of resources, which may vary from year to year. Consequently, the target schedules and estimated costs identified in Appendix D may need to be adjusted during the ten-year management planning cycle.



Lake Jackson Boat Landing is one of nine boat landings that offers public access to Lake Jackson Aquatic Preserve.

Chapter Six

Facilities Plan

Facilities

The Lake Jackson Aquatic Preserve (LJAP) office is currently housed within the Marjory Stoneman Douglas building in Tallahassee, Florida. As field operations and staffing increase, there should be a discussion about moving this position to a more field appropriate location to stow gear and have supplies closer at hand.

Upon the occasion of a hurricane storm event, the manager follows the Emergency Action Plan for the Douglas building. This plan accounts for how all facilities, equipment and data sources are to be protected in the event of a storm, and provides for the relocation of vehicles, vessels and sensitive equipment.

Vehicles

LJAP acquired a 2017 Ford F-150 truck with towing capabilities for a boat. The truck is also used for daily work-related tasks.

Vessels

LJAP has a Pro Drive SBX 17'x48' boat with a Diamond City trailer. This boat allows for better access to LJAP, especially during periods of low water levels and high vegetative states.

The aquatic preserve also has four kayaks which offers a great opportunity for the LJAP manager to take people out on the aquatic preserve. A trailer is being purchased for transportation and storage for the kayaks. The trailer is large enough to accommodate additional kayaks for future growth of an eco-tourism program.

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Legal Documents

A.1 / Aquatic Preserve Resolution

WHEREAS, the State of Florida, by virtue of its sovereignty, is the owner of the beds of all navigable waters, salt and fresh, lying within its territory, with certain minor exceptions, and is also the owner of certain other lands derived from various sources; and

WHEREAS, title to these sovereignty and certain other lands has been vested by the Florida Legislature in the State of Florida Board of Trustees of the Internal Improvement Trust Fund, to be held, protected and managed for the long range benefit of the people of Florida; and

WHEREAS, the State of Florida Board of Trustees of the Internal Improvement Trust Fund, as a part of its overall management program for Florida's state-owned lands, does desire to insure the perpetual protection, preservation and public enjoyment of certain specific areas of exceptional quality and value by setting aside forever these certain areas as aquatic preserves or sanctuaries; and

WHEREAS, the ad hoc Florida Inter-Agency Advisory Committee on Submerged Land Management has selected through careful study and deliberation a number of specific areas of state-owned land having exceptional biological, aesthetic and scientific value, and has recommended to the State of Florida Board of Trustees of the Internal Improvement Trust Fund that these selected areas be officially recognized and established as the initial elements of a statewide system of aquatic preserves for Florida;

NOW, THEREFORE, BE IT RESOLVED by the State of Florida Board of Trustees of the Internal Improvement Trust Fund:

THAT it does hereby establish a statewide system of aquatic preserves as a means of protecting and preserving in perpetuity certain specially selected areas of state-owned land: and

THAT specifically described, individual areas of state-owned land may from time to time be established as aquatic preserves and included in the statewide system of aquatic preserves by separate resolution of the State of Florida Board of Trustees of the Internal Improvement Trust Fund; and

THAT the statewide system of aquatic preserves and all individual aquatic preserves established thereunder shall be administered and managed, either by the said State of Florida Board of Trustees of the Internal Improvement Trust Fund or its designee as may be specifically provided for in the establishing resolution for each individual aquatic preserve, in accordance with the following management policies and criteria:

- (1) An aquatic preserve is intended to set aside an exceptional area of state-owned land and its associated waters for preservation essentially in their natural or existing condition by reasonable regulation of all human activity which might have an effect on the area.
- (2) An aquatic preserve shall include only lands or water bottoms owned by the State of Florida, and such private lands or water bottoms as may be specifically authorized for inclusion by appropriate instrument from the owner. Any included lands or water bottoms to which a private ownership claim might subsequently be proved shall upon adjudication of private ownership be automatically excluded from the preserve, although such exclusion shall not preclude the State from attempting to negotiate an arrangement with the owner by which such lands or water bottoms might be again included within the preserve.
- (3) No alteration of physical conditions within an aquatic preserve shall be permitted except: (a) minimum dredging and spoiling for authorized public navigation projects, or (b) other approved activity designed to enhance the quality or utility of the preserve itself. It is inherent in the concept of the aquatic preserve that, other than as contemplated above, there be: no dredging and filling to create land, no drilling of oil wells or excavation for shell or minerals, and no erection of structures on stilts or otherwise unless associated with authorized activity, within the confines of a preserve - to the extent these activities can be lawfully prevented.
- (4) Specifically, there shall be no bulkhead lines set within an aquatic preserve. When the boundary of a preserve is intended to be the line of mean high water along a particular shoreline, any bulkhead line subsequently set for that shoreline will also be at the line of mean high water.
- (5) All human activity within an aquatic preserve shall be subject to reasonable rules and regulations promulgated and enforced by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and/or any other specifically designated managing agency. Such rules and regulations shall not interfere unduly with lawful and traditional public uses of the area, such as fishing (both sport and commercial), hunting, boating, swimming and the like.
- (6) Neither the establishment nor the management of an aquatic preserve shall infringe upon the lawful and traditional riparian rights of private property owners adjacent to a preserve. In furtherance of these

rights, reasonable improvement for ingress and egress, mosquito control, shore protection and similar purposes may be permitted by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and other jurisdictional agencies, after review and formal concurrence by any specifically designated managing agency for the preserve in question.

(7) Other uses of an aquatic preserve, or human activity within a preserve, although not originally contemplated, may be permitted by the State of Florida Board of Trustees of the Internal Improvement Trust Fund and other jurisdictional agencies, but only after a formal finding of compatibility made by the said Trustees on the advice of any specifically designated managing agency for the preserve in question.

IN TESTIMONY WHEREOF, the Trustees for and on behalf of the State of Florida Board of Trustees of the Internal Improvement Trust Fund have hereunto subscribed their names and have caused the official seal of said State of Florida Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed, in the City of Tallahassee, Florida, on this the 24th day of November A. D. 1969.

CLAUDE R. KIRK, JR, Governor

TOM ADAMS, Secretary of State

EARL FAIRCLOTH, Attorney General

FRED O. DICKINSON, JR., Comptroller

BROWARD WILLIAMS, Treasurer

FLOYD T. CHRISTIAN, Commissioner of Education

DOYLE CONNER, Commissioner of Agriculture

As and Constituting the State of Florida Board of Trustees of the Internal Improvement Trust Fund

A.2 / Florida Statutes

All the statutes can be found according to number at www.leg.state.fl.us/Statutes

Florida Statutes, Chapter 253: State Lands

Florida Statutes, Chapter 258: State Parks and Preserves
Part II (Aquatic Preserves)

Florida Statutes, Chapter 267 (Historical Resources)

Florida Statutes, Chapter 370: Saltwater Fisheries

Florida Statutes, Chapter 372: Wildlife

Florida Statutes, Chapter 403: Environmental Control
(Statute authorizing the Florida Department of Environmental Protection (DEP) to create Outstanding Florida Waters is at 403.061(27))

Florida Statutes, Chapter 597: Aquaculture

A.3 / Florida Administrative Codes

All rules can be found according to number at www.flrules.org/Default.asp

Florida Administrative Code, Chapter 18-20: Florida Aquatic Preserves
<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-20>

Florida Administrative Code, Chapter 18-21: Sovereignty Submerged Lands Management
<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-21>

Florida Administrative Code, Chapter 62-302: Surface Water Quality Standards
(Rule designating Outstanding Florida Waters is at 62-302.700)
<https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-302>

Resource Data

B.1 / Glossary of Terms

References to these definitions can be found at the end of this list and in Appendix B.2 (References).

aestivation – passing the summer or dry season in a dormant or torpid state (Lincoln, Boxshall, & Clark, 2003).

aquaculture - the cultivation of aquatic organisms (Lincoln et al., 2003).

diversity - a measure of the number of species and their relative abundance in a community (Lincoln et al., 2003).

drainage basin (catchment) - the area from which a surface watercourse or a groundwater system derives its water; watershed (Allaby, 2005).

easement - a right that one may have in another's land (Neufeldt & Sparks, 1990).

ecosystem - a community of organisms and their physical environment interacting as an ecological unit (Lincoln et al., 2003).

ecotone – the boundary or transitional zone between adjacent communities or biomes (Lincoln et al., 2003).

emergent - an aquatic plant having most of the vegetative parts above water; a tree which reaches above the level of the surrounding canopy (Lincoln et al., 2003).

endangered species - an animal or plant species in danger of extinction throughout all or a significant portion of its range (U.S. Fish and Wildlife Service [USFWS], 2015).

endemic - native to, and restricted to, a particular geographical region (Lincoln et al., 2003).

fauna - the animal life of a given region, habitat or geological stratum (Lincoln et al., 2003).

flora - the plant life of a given region, habitat or geological stratum (Lincoln et al., 2003).

geographic information system (GIS) - computer system supporting the collection, storage, manipulation and query of spatially referred data, typically including an interface for displaying geographical maps (Lincoln et al., 2003).

invasive species – introduced species that has spread well beyond its arrival point and that perpetuates itself without human assistance (Simberloff, 2013).

lentic – pertaining to static, calm or slow-moving aquatic habitats (Lincoln et al., 2003).

listed species - a species, subspecies, or distinct population segment that has been added to the Federal list of endangered and threatened wildlife and plants (USFWS, 2015).

mandate - an order or command; the will of constituents expressed to their representative, legislature, etc. (Neufeldt & Sparks, 1990).

population - all individuals of one or more species within a prescribed area. A group of organisms of one species, occupying a defined area and usually isolated to some degree from other similar groups (Lincoln et al., 2003).

runoff - part of precipitation that is not held in the soil but drains freely away (Lincoln et al., 2003).

species - a group of organisms, minerals or other entities formally recognized as distinct from other groups; the basic unit of biological classification (Lincoln et al., 2003).

species of concern - an informal term referring to a species that might be in need of conservation action. This may range from a need for periodic monitoring of populations and threats to the species and its habitat, to the necessity for listing as threatened or endangered. Such species receive no legal protection and use of the term does not necessarily imply that a species will eventually be proposed for listing. A similar term is "species at risk," which is a general term for listed species as well as unlisted ones that are declining in population. Canada uses the term in its new "Species at Risk Act." "Imperiled species" is another general term for listed as well as unlisted species that are declining (USFWS, 2015).

stakeholder - any person or organization who has an interest in the actions discussed or is affected by the resulting outcomes of a project or action (USFWS, 2015).

threatened species - an animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range (USFWS, 2015).

turbid - cloudy; opaque with suspended matter (Lincoln et al., 2003).

ultisol – major category in the classification of soil types; heavily weathered red or yellow soil comprising abundant clay material; further classified according to moisture content (Lincoln et al., 2003).

upland - land elevated above other land (Neufeldt & Sparks, 1990).

vegetation - plant life or cover in an area; also used as a general term for plant life (Lincoln et al., 2003).

water column - the vertical column of water in a sea or lake extending from the surface to the bottom (Lincoln et al., 2003).

watershed - an elevated boundary area separating tributaries draining in to different river systems; drainage basin (Lincoln et al., 2003).

wetland - an area of low lying land, submerged or inundated periodically by fresh or saline water (Lincoln et al., 2003).

wildlife - any undomesticated organisms; wild animals (Allaby, 2005).

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B.3 / Species Lists

B.3.1 / Native Species List

Common Name	Scientific Name	Status
Legend: FT = Federally- and State-Designated Threatened • FE = Federally-and State-Designated Endangered ST = State-Designated Threatened • SE = State-Designated Endangered • (S/A) = listed due to similarity of appearance • BGEPA = Bald and Golden Eagle Protection Act		
Plants		
Red maple	<i>Acer rubrum</i>	
Bluestem	<i>Andropogon</i> spp.	
Carolina mosquitofern	<i>Azolla caroliniana</i>	
Saltbush	<i>Baccharis</i> sp.	
Blue waterhyssop	<i>Bacopa caroliniana</i>	
Water hyssop	<i>Bacopa monnieri</i>	
Smooth beggarticks	<i>Bidens laevis</i>	
Smallfruit beggarticks	<i>Bidens mitis</i>	
Tickseed	<i>Bidens</i> spp.	
False nettle	<i>Boehmeria cylindrica</i>	
Water shield	<i>Brasenia schreberi</i>	
Fanwort	<i>Cabomba caroliniana</i>	
Bandana of the Everglades	<i>Canna flaccida</i>	
Sedge	<i>Carex</i> spp.	
Sugarberry	<i>Celtis laevigata</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	
Hornwort	<i>Ceratophyllum demersum</i>	
Green algae	<i>Chara</i> spp.	
Yellow nutgrass	<i>Cyperus esculentus</i>	
Fragrant flatsedge	<i>Cyperus odoratus</i>	
Sedge	<i>Cyperus</i> spp.	
Titi	<i>Cyrilla racemiflora</i>	
Swamp loosestrife	<i>Decodon verticillatus</i>	
Water hedge	<i>Didiplis diandra</i>	
Virginia buttonweed	<i>Diodia virginiana</i>	
Common persimmon	<i>Diospyros virginiana</i>	
Barnyardgrass	<i>Echinochloa crus-galli</i>	
Coast cockspur	<i>Echinochloa walteri</i>	
Burhead	<i>Echinodorus</i> spp.	
Baldwin's spikerush	<i>Eleocharis baldwinii</i>	
Knotted spikerush	<i>Eleocharis interstincta</i>	
Rush	<i>Eleocharis</i> spp.	
American burnweed	<i>Erechtites hieracifolia</i>	
Flattened pipewort	<i>Eriocaulon compressum</i>	
Tenangle pipewort	<i>Eriocaulon decangulare</i>	
Dogfennel	<i>Eupatorium capillifolium</i>	
Falsefennel	<i>Eupatorium leptophyllum</i>	
Southern umbrella sedge	<i>Fuirena scirpoidea</i>	
Waterspider bog orchid	<i>Habenaria repens</i>	
Crimson-eyed rosemallow	<i>Hibiscus moscheutos</i>	
Water pennywort	<i>Hydrocotyle</i> spp.	
Waterpod	<i>Hydrolea quadrivalvis</i>	
St. John's wort	<i>Hypericum</i> spp.	

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Common rush	<i>Juncus effusus</i>	
Shore rush	<i>Juncus marginatus</i>	
Bighead rush	<i>Juncus megacephalus</i>	
Lesser creeping rush	<i>Juncus repens</i>	
Carolina redroot	<i>Lachnanthes caroliniana</i>	
Southern cutgrass	<i>Leersia hexandra</i>	
Duckweed	<i>Lemna</i> spp.	
Frog bit	<i>Limnobium spongia</i>	
Sweetgum	<i>Liquidambar styraciflua</i>	
Needle leaf	<i>Ludwigia arcuata</i>	
Wingleaf primrosewillow	<i>Ludwigia decurrens</i>	
Mexican primrosewillow	<i>Ludwigia octovalvis</i>	
Marsh seedbox	<i>Ludwigia palustris</i>	
Red ludwigia	<i>Ludwigia repens</i>	
Shrubby primrosewillow	<i>Ludwigia suffruticosa</i>	
Southern watergrass	<i>Luziola fluitans</i>	
Stream bogmoss	<i>Mayaca fluviatilis</i>	
Manatee mudflower	<i>Micranthemum glomeratum</i>	
Shade mudflower	<i>Micranthemum umbrosum</i>	
Climbing hempvine	<i>Mikania scandens</i>	
Twoleaf watermilfoil	<i>Myriophyllum heterophyllum</i>	
Lax watermilfoil	<i>Myriophyllum laxum</i>	
Cutleaf watermilfoil	<i>Myriophyllum pinnatum</i>	
Needleleaf waternymph	<i>Najas filifolia</i>	
Southern waternymph	<i>Najas guadalupensis</i>	
American water lotus	<i>Nelumbo lutea</i>	
Nitella	<i>Nitella</i> spp.	
Yellow pond-lily	<i>Nuphar advena</i>	
Fragrant water lily	<i>Nymphaea odorata</i>	
Banana lily	<i>Nymphoides aquatica</i>	
Maidencane	<i>Panicum hemitomon</i>	
Crowngrass	<i>Paspalum repens</i>	
Vaseygrass	<i>Paspalum urvillei</i>	
Denseflower knotweed	<i>Polygonum glabrum</i>	
Hairy smartweed	<i>Polygonum hirsutum</i>	
Swamp smartweed	<i>Polygonum hydropiperoides</i>	
Dotted smartweed	<i>Polygonum punctatum</i>	
Pickrel weed	<i>Pontederia cordata</i>	
Waterthread pondweed	<i>Potamogeton diversifolius</i>	
Pondweed	<i>Potamogeton pectinatus</i>	
Water oak	<i>Quercus nigra</i>	
Live oak	<i>Quercus virginiana</i>	
Pale meadowbeauty	<i>Rhexia mariana</i>	
White beaksedge	<i>Rhynchospora alba</i>	
Shortbristle horned beaksedge	<i>Rhynchospora corniculata</i>	
Narrowfruit horned beaksedge	<i>Rhynchospora inundata</i>	
Purple-fringed riccia	<i>Ricciocarpus natans</i>	

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Dock	<i>Rumex</i> sp.	
American cupscale	<i>Sacciolepis striata</i>	
Threadleaf arrowhead	<i>Sagittaria filiformis</i>	
Arrowhead	<i>Sagittaria gracillima</i>	
Arrowhead	<i>Sagittaria graminea</i>	
Quillwort arrowhead	<i>Sagittaria isoetiformis</i>	
Strap-leaf sagittaria	<i>Sagittaria kurziana</i>	
Bulltongue arrowhead	<i>Sagittaria lancifolia</i>	
Broadleaf arrowhead	<i>Sagittaria latifolia</i>	
Coastalplain willow	<i>Salix caroliniana</i>	
Black willow	<i>Salix nigra</i>	
Elderberry	<i>Sambucus nigra</i>	
California bulrush	<i>Schoenoplectus californicus</i>	
Bulrush	<i>Schoenoplectus</i> spp.	
Woolgrass	<i>Scirpus cyperinus</i>	
Bulrush	<i>Scirpus</i> spp.	
Danglepod	<i>Sesbania herbacea</i>	
Goldenrod	<i>Solidago</i> sp.	
Filamentous algae	Species unknown	
Duckweed	<i>Spirodela</i> spp.	
Cypress	<i>Taxodium</i> sp.	
Cattail	<i>Typha</i> spp.	
American elm	<i>Ulmus americana</i>	
Florida yellow bladderwort	<i>Utricularia floridana</i>	
Leafy bladderwort	<i>Utricularia foliosa</i>	
Humped bladderwort	<i>Utricularia gibba</i>	
Swollen bladderwort	<i>Utricularia inflata</i>	
Eastern purple bladderwort	<i>Utricularia purpurea</i>	
American eelgrass	<i>Vallisneria americana</i>	
Duckweed	<i>Wolffia</i> spp.	
Duckweed	<i>Wolffiella</i> spp.	
Yellow-eyed grass	<i>Xyris</i> sp.	
Annual wildrice	<i>Zizania aquatica</i>	
Fish		
Yellow bullhead	<i>Ameriurus natalis</i>	
Brown bullhead	<i>Ameiurus nebulosus</i>	
Bowfin	<i>Amia calva</i>	
Flier	<i>Centrarchus macropterus</i>	
Grass carp	<i>Ctenopharyngodon idella</i>	
Threadfin shad	<i>Dorosoma petenense</i>	
Blue-spotted sunfish	<i>Enneacanthus gloriosus</i>	
Lake chubsucker	<i>Erimyzon sucetta</i>	
Chain pickerel	<i>Esox niger</i>	
Swamp darter	<i>Etheostoma fusiforme</i>	
Golden topminnow	<i>Fundulus Chrysotus</i>	
Lined topminnow	<i>Fundulus lineolatus</i>	

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Eastern mosquitofish	<i>Gambusia holbrooki</i>	
Least killifish	<i>Heterandria formosa</i>	
Channel catfish	<i>Ictalurus punctatus</i>	
Brook silverside	<i>Labidesthes sicculus</i>	
Florida gar	<i>Lepisosteus platyrhincus</i>	
Warmouth	<i>Lepomis gulosus</i>	
Bluegill	<i>Lepomis macrochirus</i>	
Redear sunfish	<i>Lepomis microlophus</i>	
Largemouth bass	<i>Micropterus salmoides</i>	
Golden shiner	<i>Notemigonus crysoleucas</i>	
Taillight shiner	<i>Notropis maculatis</i>	
Black crappie	<i>Pomoxis nigromaculatus</i>	

Birds		
Cooper's hawk	<i>Accipiter cooperii</i>	
Sharp-shinned hawk	<i>Accipiter striatus</i>	
Spotted sandpiper	<i>Actitis macularius</i>	
Red-winged blackbird	<i>Agelaius phoeniceus</i>	
Bachman's sparrow	<i>Aimophila aestivalis</i>	
Wood duck	<i>Aix sponsa</i>	
Henslow's sparrow	<i>Ammodramus henslowii</i>	
Nelson's sparrow	<i>Ammodramus nelsoni</i>	
Grasshopper sparrow	<i>Ammodramus savannarum</i>	
Northern pintail	<i>Anas acuta</i>	
American wigeon	<i>Anas americana</i>	
Green-winged teal	<i>Anas carolinensis</i>	
Northern shoveler	<i>Anas clypeata</i>	
Cinnamon teal	<i>Anas cyanoptera</i>	
Blue-winged teal	<i>Anas discors</i>	
Mallard	<i>Anas platyrhynchos</i>	
Gadwall	<i>Anas strepera</i>	
Anhinga	<i>Anhinga anhinga</i>	
American Pipit	<i>Anthus rubescens</i>	
Limpkin	<i>Aramus guarauna</i>	
Black-chinned hummingbird	<i>Archilochus alexandri</i>	
Ruby-throated hummingbird	<i>Archilochus colubris</i>	
Great egret	<i>Ardea alba</i>	
Great blue heron	<i>Ardea herodias</i>	
Short-eared owl	<i>Asio flammeus</i>	
Lesser scaup	<i>Aythya affinis</i>	
Redhead	<i>Aythya americana</i>	
Ring-necked duck	<i>Aythya collaris</i>	
Greater scaup	<i>Aythya marila</i>	
Canvasback	<i>Aythya valisneria</i>	
Tufted titmouse	<i>Baeolophus bicolor</i>	
Cedar waxwing	<i>Bombycilla cedrorum</i>	
American bittern	<i>Botaurus lentiginosus</i>	

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Canada goose	<i>Branta canadensis</i>	
Great horned owl	<i>Bubo virginianus</i>	
Cattle egret	<i>Bubulcus ibis</i>	
Bufflehead	<i>Bucephala albeola</i>	
Common goldeneye	<i>Bucephala clangula</i>	
Red-tailed hawk	<i>Buteo jamaicensis</i>	
Red-shouldered hawk	<i>Buteo lineatus</i>	
Broad-winged hawk	<i>Buteo platypterus</i>	
Green heron	<i>Butorides virescens</i>	
Muscovy duck	<i>Cairina moschata</i>	
Dunlin	<i>Calidris alpina</i>	
White-rumped sandpiper	<i>Calidris fuscicollis</i>	
Stilt sandpiper	<i>Calidris himantopus</i>	
Pectoral sandpiper	<i>Calidris melanotos</i>	
Least sandpiper	<i>Calidris minutilla</i>	
Semipalmated sandpiper	<i>Calidris pusilla</i>	
Chuck-wills-widow	<i>Caprimulgus carolinensis</i>	
Eastern whip-poor-will	<i>Caprimulgus vociferous</i>	
Wilson's warbler	<i>Cardellina pusilla</i>	
Northern cardinal	<i>Cardinalis cardinalis</i>	
American goldfinch	<i>Carduelis tristis</i>	
House finch	<i>Carpodacus mexicanus</i>	
Turkey vulture	<i>Cathartes aura</i>	
Veery	<i>Catharus fuscescens</i>	
Hermit thrush	<i>Catharus gattatus</i>	
Gray-cheeked thrush	<i>Catharus minimus</i>	
Swainson's thrush	<i>Catharus ustulatus</i>	
Brown creeper	<i>Certhia americana</i>	
Chimney swift	<i>Chaetura pelagica</i>	
Semipalmated plover	<i>Charadrius semipalmatus</i>	
Killdeer	<i>Charadrius vociferous</i>	
Snow goose	<i>Chen caerulescens</i>	
Black tern	<i>Chlidonias niger</i>	
Common night hawk	<i>Chordeiles minor</i>	
Bonaparte's gull	<i>Chroicocephalus philadelphia</i>	
Northern harrier	<i>Circus cyaneus</i>	
Marsh wren	<i>Cistothorus palustris</i>	
Sedge wren	<i>Cistothorus platensis</i>	
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	
Northern flicker	<i>Colaptes auratus</i>	
Northern bobwhite	<i>Colinus virginianus</i>	
Rock dove	<i>Columba livia</i>	
Common ground-dove	<i>Columbina passerine</i>	
Eastern wood-pewee	<i>Contopus virens</i>	
Black vulture	<i>Coragyps atratus</i>	
American crow	<i>Corvus cryptoleucus</i>	

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Fish crow	<i>Covus ossifragus</i>	
Blue grosbeak	<i>Cuiraca caerulea</i>	
Blue jay	<i>Cyanocitta cristata</i>	
Black-bellied whistling duck	<i>Dendrocygna autumnalis</i>	
Bobolink	<i>Dolichonyx oryzivorus</i>	
Downy woodpecker	<i>Dryobates pubescens</i>	
Hairy woodpecker	<i>Dryobates villosus</i>	
Pileated woodpecker	<i>Dryocopus pileatus</i>	
Grey catbird	<i>Dumetella carolinensis</i>	
Little blue heron	<i>Egretta caerulea</i>	ST
Snowy egret	<i>Egretta thula</i>	
Tricolored heron	<i>Egretta tricolor</i>	ST
Swallow-tailed Kite	<i>Elanoides forficatus</i>	
Alder flycatcher	<i>Empidonax alnorum</i>	
Acadian flycatcher	<i>Empidonax virescens</i>	
White ibis	<i>Eudocimus albus</i>	
Merlin	<i>Falco colimbarius</i>	
Peregrine falcon	<i>Falco peregrinus</i>	
American kestrel	<i>Falco sparverius</i>	
Magnificent frigatebird	<i>Fregata magnificens</i>	
American coot	<i>Fulica americana</i>	
Wilson's snipe	<i>Gallinago delicata</i>	
Common gallinule	<i>Gallinula galeata</i>	
Common loon	<i>Gavia immer</i>	
Red-throated loon	<i>Gavia stellata</i>	
Gull-billed tern	<i>Gelochelidon nilotica</i>	
Common yellowthroat	<i>Geothlypis trichas</i>	
Florida sandhill crane	<i>Grus canadensis pratensis</i>	ST
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
Black-necked stilt	<i>Himantopus mexicanus</i>	
Barn swallow	<i>Hiurndo rustica</i>	
Caspian tern	<i>Hydroprogne caspia</i>	
Wood thrush	<i>Hylocichla mustelina</i>	
Yellow-breasted chat	<i>Icteria virens</i>	
Baltimore oriole	<i>Icterus galbula</i>	
Orchard oriole	<i>Icterus spurius</i>	
Mississippi kite	<i>Ictinia mississippiensis</i>	
Least bittern	<i>Ixobrychus exilis</i>	
Dark-eyed junco	<i>Junco hyemalis</i>	
Loggerhead shrike	<i>Lanius ludovicianus</i>	
Herring gull	<i>Larus argentatus</i>	
Ring-billed gull	<i>Larus delawarensis</i>	
Nashville warbler	<i>Leiothlypis ruficapilla</i>	
Laughing gull	<i>Leucophaeus atricilla</i>	
Franklin's gull	<i>Leucophaeus pipixcan</i>	
Short-billed dowitcher	<i>Limnodromus griseus</i>	
Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	

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Hooded merganser	<i>Lophodytes cucullatus</i>	
Belted kingfisher	<i>Megasceryle alcyon</i>	
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	
Red-headed woodpecker	<i>Melanerpes erthrocephalus</i>	
White-winged scoter	<i>Melanittadeglandi</i>	
Wild turkey	<i>Meleagris gallopavo</i>	
Swamp sparrow	<i>Melospiza georgiana</i>	
Lincoln's sparrow	<i>Melospiza lincolni</i>	
Song sparrow	<i>Melospiza melodia</i>	
Red-breasted merganser	<i>Mergus serrator</i>	
Northern mockingbird	<i>Mimus polyglottos</i>	
Black-and-white warbler	<i>Mniotilta varia</i>	
Brown-headed cowbird	<i>Molothrus ater</i>	
Wood stork	<i>Mycteria americana</i>	FT
Great crested flycatcher	<i>Myiarchus crinitus</i>	
Yellow-crowned night heron	<i>Nyctanassa violacea</i>	
Black-crowned night heron	<i>Nycticorax nycticorax</i>	
Bridled tern	<i>Onychoprion anaethetus</i>	
Sooty tern	<i>Onychoprion fuscatus</i>	
Eastern screech owl	<i>Otus asio</i>	
Ruddy duck	<i>Oxyura jamaicensis</i>	
Osprey	<i>Pandion haliaetus</i>	
Northern waterthrush	<i>Parkesia noveboracensis</i>	
Northern parula	<i>Parula americana</i>	
House sparrow	<i>Passer domesticus</i>	
Savannah sparrow	<i>Passerculus sandwichensis</i>	
Painting bunting	<i>Passerina ciris</i>	
Indigo bunting	<i>Passerina cyanea</i>	
American white pelican	<i>Pelecanus erythrorhynchos</i>	
Brown pelican	<i>Pelecanus occidentalis</i>	
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	
Double-crested cormorant	<i>Phalacrocorax auritus</i>	
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	
Eastern towhee	<i>Pipilo erythrophthalmus</i>	
Scarlet tanager	<i>Piranga olivacea</i>	
Summer tanager	<i>Piranga rubra</i>	
Roseate spoonbill	<i>Platalea ajaja</i>	
White-faced ibis	<i>Plegadis chihi</i>	
Glossy ibis	<i>Plegadis falcinellus</i>	
Black-bellied plover	<i>Pluvialis squatarola</i>	
Horned grebe	<i>Podiceps auritus</i>	
Red-necked grebe	<i>Podiceps grisegena</i>	
Eared grebe	<i>Podiceps nigricollis</i>	
Pied-billed grebe	<i>Podilymbus podiceps</i>	
Carolina chickadee	<i>Poecile carolinensis</i>	
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	
Vesper sparrow	<i>Poocetes gramineus</i>	

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Purple gallinule	<i>Porphyrio martinicus</i>	
Sora	<i>Porzana carolina</i>	
Purple martin	<i>Progne subis</i>	
Prothonotary warbler	<i>Prionotaria citrea</i>	
Black-capped petrel	<i>Pterodroma hasitata</i>	
Vermilion flycatcher	<i>Pyrocephalus rubinus</i>	
Boat-tailed grackle	<i>Quiscalus major</i>	
Common grackle	<i>Quiscalus quiscula</i>	
Virginia rail	<i>Rallus limicola</i>	
Ruby-crowned kinglet	<i>Regulus calendula</i>	
Golden-crowned kinglet	<i>Regulus satrapa</i>	
Bank swallow	<i>Riparia riparia</i>	
Snail kite	<i>Rostrhamus sociabilis</i>	
Black skimmer	<i>Rynchops niger</i>	ST
Eastern phoebe	<i>Sayornis phoebe</i>	
American woodcock	<i>Scolopax minor</i>	
Ovenbird	<i>Seiurus aurocapillus</i>	
Louisiana waterthrush	<i>Seiurus motacilla</i>	
Rufous hummingbird	<i>Selasphorus rufus</i>	
Black-throated blue warbler	<i>Setophaga caerulescens</i>	
Bay-breasted warbler	<i>Setophaga castanea</i>	
Yellow-rumped warbler	<i>Setophaga coronata</i>	
Prairie warbler	<i>Setophaga discolor</i>	
Yellow-throated warbler	<i>Setophaga dominica</i>	
Blackburnian warbler	<i>Setophaga fusca</i>	
Magnolia warbler	<i>Setophaga magnolia</i>	
Palm warbler	<i>Setophaga palmarum</i>	
Chestnut-sided warbler	<i>Setophaga pensylvanica</i>	
Yellow warbler	<i>Setophaga petechia</i>	
Pine warbler	<i>Setophaga pinus</i>	
American redstart	<i>Setophaga ruticilla</i>	
Blackpoll warbler	<i>Setophaga striata</i>	
Cape May warbler	<i>Setophaga tigrina</i>	
Black-throated green warbler	<i>Setophaga virens</i>	
Eastern bluebird	<i>Sialia sialis</i>	
White-breasted nuthatch	<i>Sitta carolinensis</i>	
Brown-headed nuthatch	<i>Sitta pusilla</i>	
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	
Pine siskin	<i>Spinus pinus</i>	
Clay-colored sparrow	<i>Spizella pallida</i>	
Chipping sparrow	<i>Spizella passerina</i>	
Field sparrow	<i>Spizella pusilla</i>	
Northern rough winged swallow	<i>Stelgidopteryx serripennis</i>	
Pomarine jaeger	<i>Stercorarius pomarinus</i>	
Forster's tern	<i>Sterna forsteri</i>	
Common tern	<i>Sterna hirundo</i>	
Least tern	<i>Sternula antillarum</i>	ST

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Eurasian collared-dove	<i>Streptopelia decaocto</i>	
Barred owl	<i>Strix varia</i>	
Eastern meadowlark	<i>Sturnella magna</i>	
European Starling	<i>Sturnus vulgaris</i>	
Tree swallow	<i>Tachycineta bicolor</i>	
Violet-green swallow	<i>Tachycineta thalassina</i>	
Royal tern	<i>Thalasseus maximus</i>	
Sandwich tern	<i>Thalasseus sandvicensis</i>	
Carolina wren	<i>Thryothorus ludovicianus</i>	
Brown thrasher	<i>Toxostoma rufum</i>	
Lesser yellowlegs	<i>Tringa flavipes</i>	
Greater yellowlegs	<i>Tringa melanoleuca</i>	
Willet	<i>Tringa semipalmata</i>	
House wren	<i>Troglodytes aedon</i>	
Winter wren	<i>Troglodytes hiemalis</i>	
Eastern kingbird	<i>Tryannus tryannus</i>	
American robin	<i>Turdus migratorius</i>	
Western kingbird	<i>Tyrannus verticalis</i>	
Barn owl	<i>Tyto alba</i>	
Orange-crowned warbler	<i>Vermivora celata</i>	
Golden-winged warbler	<i>Vermivora chrysoptera</i>	
Blue-winged warbler	<i>Vermivora cyanoptera</i>	
Tennessee warbler	<i>Vermivora peregrine</i>	
Yellow-throated vireo	<i>Vireo flavifrons</i>	
White-eyed vireo	<i>Vireo griseus</i>	
Red-eyed vireo	<i>Vireo olivaceus</i>	
Blue-headed vireo	<i>Vireo solitaries</i>	
Hooded warbler	<i>Wilsonia citrina</i>	
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	
White winged-dove	<i>Zenaida asiatica</i>	
Mourning dove	<i>Zenaida macroura</i>	
White-throated sparrow	<i>Zonotrichia albicollis</i>	
White-crowned sparrow	<i>Zonotrichia leucophrys</i>	
Mammals		
Coyote	<i>Canis latrans</i>	
Beaver	<i>Castor canadensis</i>	
Nine-banded armadillo	<i>Dasypus novemcinctus</i>	
Opossum	<i>Didelphis virginiana</i>	
River otter	<i>Lontra canadensis</i>	
Bobcat	<i>Lynx rufus</i>	
Eastern woodrat	<i>Neotoma floridana</i>	
White-tailed deer	<i>Odocoileus virginianus</i>	
Marsh rice rat	<i>Oryzomys palustris</i>	
Oldfield mouse	<i>Peromyscus polionotus</i>	
Raccoon	<i>Procyon lotor</i>	
Gray squirrel	<i>Sciurus carolinensis</i>	

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Cotton rat	<i>Sigmodon hispidus</i>	
Marsh rabbit	<i>Sylvilagus palustris</i>	
Gray fox	<i>Urocyon cinereoargenteus</i>	
Red fox	<i>Vulpes vulpes</i>	
Amphibians		
Florida cricket frog	<i>Acris gryllus</i>	
Two-toed ampuia	<i>Amphiuma means</i>	
Southern toad	<i>Bufo terrestris</i>	
Narrowmouthed toad	<i>Gastrophryne carolinensis</i>	
Southern gray treefrog	<i>Hyla chrysoscelis</i>	
Green tree frog	<i>Hyla cinerea</i>	
Barking treefrog	<i>Hyla gratiosa</i>	
Squirrel tree frog	<i>Hyla squirella</i>	
Central newt	<i>Notophthalmus viridescens</i>	
Bullfrog	<i>Rana catesbeiana</i>	
Pig frog	<i>Rana grylio</i>	
Leopard frog	<i>Rana sphenoccephala</i>	
Eastern spadefoot toad	<i>Scaphiopus holbrookii</i>	
Lesser siren	<i>Siren intermedia</i>	
Greater siren	<i>Siren lacertina</i>	
Reptiles		
Cottonmouth	<i>Agkistrodon piscivorus</i>	
American alligator	<i>Alligator mississippiensis</i>	FT(S/A)
Green anole	<i>Anolis carolinensis</i>	
Florida softshell	<i>Apalone ferox</i>	
Scarlet snake	<i>Cemaphora coccinea copei</i>	
Common snapping turtle	<i>Chelydra serpentina</i>	
Six-lined racerunner	<i>Cnemidophorus sexlineatus</i>	
Black racer	<i>Coluber constrictor</i>	
Chicken turtle	<i>Deirochelys reticularia</i>	
Ringneck snake	<i>Diadophis punctatus</i>	
Corn snake	<i>Elaphe guttata</i>	
Gray rat snake	<i>Elaphe obsoleta spiloides</i>	
Five-lined skink	<i>Eumeces fasciatus</i>	
Mud snake	<i>Farancia abacura</i>	
Eastern mud turtle	<i>Kinosternon subrubrum</i>	
Eastern kingsnake	<i>Lampropeltis getulus</i>	
Coachwhip	<i>Masticophis flagellum</i>	
Banded water snake	<i>Nerodia fasciata</i>	
Florida green water snake	<i>Nerodia floridana</i>	
Rough green snake	<i>Opheodrys aestivus</i>	
Eastern glass lizard	<i>Ophisaurus ventralis</i>	
Suwannee cooter	<i>Pseudemys concinna</i>	
Florida cooter	<i>Pseudemys floridana</i>	
Ground skink	<i>Scincella lateralis</i>	

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Black swamp snake	<i>Seminatrix pygaea</i>	
Musk turtle	<i>Sternotherus odoratus</i>	
Red-bellied snake	<i>Storeria occipitomaculata</i>	
Box turtle	<i>Terrapene carolina</i>	
Ribbon snake	<i>Thamnophis sauritis</i>	
Garter snake	<i>Thamnophis sirtalis</i>	
Yellow-bellied slider	<i>Trachemys scripta</i>	
Mollusks		
Florida apple Snail	<i>Pomacea paludosa</i>	
Peaclam	<i>Pisidium</i> spp.	
Other mollusks occur but identification is necessary		

B.3.2 / Listed Species

Common Name	Scientific Name	Status
Birds		
Little blue heron	<i>Egretta caerulea</i>	ST
Tricolored heron	<i>Egretta tricolor</i>	ST
Florida sandhill crane	<i>Grus canadensis pratensis</i>	ST
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA
Wood stork	<i>Mycteria americana</i>	FT
Black skimmer	<i>Rynchops niger</i>	ST
Least tern	<i>Sternula antillarum</i>	ST
Reptiles		
American alligator	<i>Alligator mississippiensis</i>	FT(S/A)

B.3.3 / Invasive Non-native and/or Problem Species

Species Name	Binomial Name	Plants (FLEPPC* Category) Others (Invasive Status)
Vascular Plants		
Mimosa	<i>Albizia julibrissin</i>	I
Alligator weed	<i>Alternanthera philoxeroides</i>	II
Coral ardisia	<i>Ardisia crenata</i>	I
Paper mulberry	<i>Broussonetia papyrifera</i>	II
Wild canna	<i>Canna</i> spp.	
Camphor tree	<i>Cinnamomum camphora</i>	I
Wild taro	<i>Colocasia esculenta</i>	I
Showy rattlebox	<i>Crotalaria spectabilis</i>	
Air potato	<i>Dioscorea bulbifera</i>	I
Water hyacinth	<i>Eichhornia crassipes</i>	I
Brazilian waterweed	<i>Egeria densa</i>	
Hydrilla	<i>Hydrilla verticillata</i>	I
Cogon grass	<i>Imperata cylindrica</i>	I

Species Name	Binomial Name	Plants (FLEPPC* Category) Others (Invasive Status)
Crape myrtle	<i>Lagerstronemia indica</i>	
Lantana	<i>Lantana camara</i>	I
Japanese honeysuckle	<i>Lonica japonica</i>	I
Peruvian primrosewillow	<i>Ludwigia peruviana</i>	I
Japanese climbing fern	<i>Lygodium japonicum</i>	I
Parrot's feather	<i>Myriophyllum aquaticum</i>	
Cuban bulrush	<i>Oxycarum cubense</i>	
Torpedo grass	<i>Panicum repens</i>	I
Water lettuce	<i>Pistia statiotes</i>	I
Water spangles	<i>Salvinia minima</i>	I
Small-leaf spiderwort	<i>Tradescantia fluminensis</i>	I
Chinese tallow tree	<i>Triadica sebifera</i>	I
Rattlebox	<i>Sesbania punicea</i>	II
Para grass	<i>Urochloa mutica</i>	I

Birds

Cattle egret	<i>Bubulcus ibis</i>
Eurasian collared-dove	<i>Streptopelia decaocto</i>
European starling	<i>Sturnus vulgaris</i>

Mammals

Wild boar	<i>Sus scrofa</i>
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Invertebrates

Asian clam	<i>Corbicula fluminea</i>
Channeled apple snail	<i>Pomacea canaliculata</i>
Island apple snail	<i>Pomacea maculata</i>

*Florida Exotic Pest Plant Council (FLEPPC) categorizes invasive exotic plants as Category I (plants that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives) or Category II (plants that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species).

B.4 / Arthropod Control Plan

Spatial data (e.g. shapefiles) for the boundaries of the aquatic preserve have been made accessible to the appropriate mosquito control district. The aquatic preserve is deemed highly productive and environmentally sensitive. By policy of DEP since 1987, aerial adulticiding is not allowed, but larviciding and ground adulticiding (truck spraying in public use areas) is typically allowed. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor's Emergency Proclamation. Mosquito control plans are typically proposed by local mosquito control agencies when they desire to treat on public lands.

B.5 / Archaeological and Historical Sites Associated with Lake Jackson Aquatic Preserve

The list below was derived from shapefiles obtained from the Florida Department of State, Division of Historical Resources on November 20, 2018, and includes sites within 0.25 miles of Lake Jackson Aquatic Preserve.

Site ID	Site Name	Description	Location
LE00001	Lake Jackson Mound State Arch. Site	Habitation (prehistoric); Prehistoric burial mound(s); Prehistoric platform mound; Listed 5/6/71	Within LJAP
LE00003	Rollins	Prehistoric mound(s)	Within 0.25 miles of LJAP
LE00012	NN	Habitation (prehistoric)	Within LJAP
LE00067	Faulk	Artifact scatter-low density (< 2 per sq meter)	Within LJAP
LE00070	Miller's	Prehistoric mound(s)	Within 0.25 miles of LJAP
LE00091	NN	Historic refuse / dump	Within 0.25 miles of LJAP
LE00360	NN	Artifact scatter-low density (< 2 per sq meter)	Within LJAP
LE00363	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00364	NN	Artifact scatter-low density (< 2 per sq meter)	Within 0.25 miles of LJAP
LE00365	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00366	NN	Artifact scatter-low density (< 2 per sq meter)	Within 0.25 miles of LJAP
LE00367	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00368	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00369	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00373	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00374	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00379	NN	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE00545	NN	Artifact scatter-low density (< 2 per sq meter)	Within 0.25 miles of LJAP
LE00658	NN	Habitation (prehistoric)	Within LJAP
LE01124	Sharon Savell		Within 0.25 miles of LJAP
LE01422	NN	Farmstead	Within 0.25 miles of LJAP
LE01423	NN	Farmstead	Within 0.25 miles of LJAP
LE01445	Old Bainbridge Park	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE01698	New Development	Farmstead; Prehistoric midden(s)	Within 0.25 miles of LJAP
LE01949	Lakeside	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE02003	Phipps Plantation	Prehistoric midden(s)	Within 0.25 miles of LJAP
LE05120	Rhoden	Habitation (prehistoric)	Within 0.25 miles of LJAP
LE05722	Jaxview Site	Habitation (prehistoric)	Within LJAP
LE06120	Rhoden Cove	Lake/Pond-lacustrine	Within LJAP
LE00618	Ayavalla	Agricultural, built circa 1940	Within 0.25 miles of LJAP
LE00625	Orchard Pond Mansion	Private residence, built circa 1929	Within 0.25 miles of LJAP
LE04263	Rollins House	Private residence, built 1876	Within 0.25 miles of LJAP
LE05316	4867 US Hwy 27N	Commercial, built circa 1950	Within 0.25 miles of LJAP
LE05317	4800 US Hwy 27N	Private residence, built circa 1950	Within 0.25 miles of LJAP
LE05975	Brick Entrance	Built circa 1860	Within 0.25 miles of LJAP
LE05976	Orchard Pond Road	Orchard Pond Road is a 15-20' wide dirt road between Meridian Road and Old Bainbridge Road, north of Lake Jackson and south of Lake Iamonia in Leon County.	Within 0.25 miles of LJAP
LE06152	Old Bainbridge Road	Old Bainbridge Road was recorded in a 1952 GLO map as "Main Road". This road served as the primary northern route in Tallahassee.	Within 0.25 miles of LJAP

Public Involvement

C.1 / Advisory Committee

The following appendices contain information about the advisory committee meeting which was held in order to obtain input from the Lake Jackson Aquatic Preserve Management Plan Advisory Committee regarding the draft management plan.

C.1.1 / List of members and their affiliations

Name	Affiliation
Sherry Carpenter	LJAP manager
Ken Espy	City of Tallahassee
Johnny Richardson	Leon County Engineering Services
Jeff Smith	Local Land Owner
Alex Dew	FWC
Alan Niederoda	Friends of Lake Jackson
Sophie Wacongne-Speer	Friends of Lake Jackson
Stephen Hodges	Tallahassee-Leon County Planning Department
Julie Espy	DEAR
Nia Wellendorf	DEAR
Paul Thorpe	NWFMD
Rick Minor	Leon County Commissioner
Josh McSwain	Leon County Parks & Recreation
Brian Lee	Leon Soil & Water Conservation District 4
Evan Martin	Lake Jackson Archaeological Mounds State Park
Edgar Welch	FWC
Jordan Hults	FWC
Albert Was de Czege	FWC
Derek Fussell	FWC
Andy Strickland	FWC
Tommy Thompson	American Canoe Association

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BOARD OF TRUSTEES OF INTERNAL IMPROVEMENT TRUST FUND

The Florida Department of Environmental Protection, Florida Coastal Office announces a public meeting to which all persons are invited.

DATE AND TIME: Wednesday, December 5, 2018, 6:00 p.m.
PLACE: Lake Jackson Community Center, 3840 N. Monroe Street #301, Tallahassee, FL 32303

GENERAL SUBJECT MATTER TO BE CONSIDERED: A draft Lake Jackson Aquatic Preserve Management Plan has been prepared by the Florida Coastal Office. The draft plan is available for viewing or download at <http://publicfiles.dep.state.fl.us/CAMA/plans/Lake-Jackson-AP-Management-Plan.pdf>. The Florida Coastal Office seeks public comment on the draft. Members of the Lake Jackson Aquatic Preserve Management Plan Advisory Committee have also been invited to attend and listen to comments.

A copy of the agenda may be obtained by contacting: Aquatic Preserve Manager, Sherry Carpenter at Sherry.Carpenter@FloridaDEP.gov or (850)245-2105.

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PLACE: Lake Jackson Community Center, 3840 N. Monroe Street, #301, Tallahassee, FL 32303

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PUBLIC SERVICE COMMISSION

FAR NOTICE OF EMERGENCY COMMISSIONER MEETING

The FLORIDA PUBLIC SERVICE COMMISSION announces an emergency Public Service Commission meeting in the following docket to which all persons are invited.

DATE AND TIME: Monday, November 5, 2018, 1:00 p.m.

PLACE: Hearing Room 148, Betty Easley Conference Center, 4075 Esplanade Way, Tallahassee, FL

GENERAL SUBJECT MATTER TO BE CONSIDERED: Docket No. 20180203-EI, In re: Petition for approval of temporary electric restoration payment program on expedited basis, by Florida Public Utilities Company.

The purpose of the meeting is to afford the Commission an opportunity to review and consider the Petition for Approval of Temporary Electric Restoration Payment Program on an Expedited Basis filed by Florida Public Utilities Company (FPUC) on November 1, 2018, in Docket No. 20180203-EI. In its petition, FPUC is offering temporary financial assistance to all of its residential customers within Jackson, Calhoun, and Liberty Counties, who are unable to take electric service from FPUC as a result of damage sustained to customer-owned equipment as a result of Hurricane Michael. This meeting is being held on an emergency basis pursuant to subsection 120.525(3), Florida Statutes. Due to the catastrophic effects of Hurricane Michael, a substantial number of FPUC's customers in Jackson, Calhoun, and Liberty Counties are unable to take electric service from FPUC. The proposed optional payment plan is intended to assist these customers in expediting the



FLORIDA DEPARTMENT OF Environmental Protection

**Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 235
Tallahassee, FL 32399**

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

Lake Jackson Aquatic Preserve Draft Management Plan Advisory Committee Meeting

Thursday, Dec. 6, 2018
9 a.m.

Lake Jackson Community Center
3840 N. Monroe St., #301
Tallahassee, FL 32303

Advisory Attendees: Ken Espy, Johnny Richardson, Jeff Smith, Alex Dew, Alan Niedoroda, Sophie Wacongne-Speer, Stephen Hodge, Julie Espy, Nia Wellendorf

Staff: Earl Pearson, Kim Wren, Sherry Carpenter

Earl welcomed the attendees and introductions were done around the room. A brief recap from the public meeting was given and comments from each station were read.

The floor was open for discussion regarding the identified issue and any other issues. Where applicable, the discussions have been summarized and categorized below under the four issues (water and sediment quality, wildlife protection and habitat restoration, public involvement, and sustainable public use and access). When discussion overlapped categories, it was placed where it seemed to fit best.

Issue 1: Water and Sediment Quality

- Comments (FOLJ) (Alan Niedoroda, President): The FOLJ prepared for the meeting differently and will submit written comments and questions to FCO.
- DEAR (Nia Wellendorf): Where did the issues come from? It's not clear where the chosen issues came from.
 - Sherry: Issues are somewhat mainstreamed throughout the AP program. They are chosen based on priority/major topics) and specific goals/objectives chosen are site specific.

- FOLJ (Alan): Will all comments and their responses be made public in the appendix of the plan?
 - Earl: No, but a spreadsheet with all updates will/can be sent to folks.
- FOLJ (Alan): It's important to consolidate data and have links available on website. There have been concerns over finding available data such as what are the trends/status. Public need more guidance on where to find WQ data.
- County (Johnny Richardson) and city (Ken Espy): The county and city also monitor water quality within the AP.
- DEAR (Nia): STORET has been replaced by the Water Information Network (WIN) – the place where all these data come together. DEAR already has WQ standards, and Lake Jackson is measured against the state standards every five years. DEAR has a rotating basin approach around the state and will verify if impaired. There is no need to assign additional water quality standards because some are already in place. DEAR already compiles data for nitrogen, phosphorous, and other analytes. DEAR can provide the impairment status for Lake Jackson and where the data are located.
 - Is there a need for more improvements?
 - There is historical data showing what the water quality been through time. In the 80s people were concerned about the water quality, and planned stormwater improvement projects. The management plan needs to include this information and talk about if these projects have led to water quality improvements through time. County and city and water management district have lists of all projects that have been done.
- FOLJ (Alan): There was a toxic algae bloom – microcystin? They went to the county to discuss. Their understanding that the state does not monitor for blue green algae but relies on the citizens.
 - There was an algae bloom (*Lyngbya* and *Microcystis*), but it tested negative for any toxins.
- DEAR (Julie Espy): This is incorrect. The state does monitoring and looks for blue-green algae, but also relies on the public for alerts. There is a system in place to get the information out to the public if there is a bloom, but no way to eliminate the blooms.
- County (Johnny Richardson): Blooms can be reported on the DEP website. DOH does not want to be involved. DEP and county will collect samples.
- FOLJ (Alan): Toxic algae blooms is a major concern. There is a need to increase public awareness. It felt like nothing was done and folks had no information. There is no signage. Maybe information could be included on Aquatic Preserve website such as links and how to report. Maybe kiosks/newsletter or Facebook could be used. It's worth mentioning

information in the plan and provide links where additional information can be found. Is the aquatic preserve in three separate WBIDs?

- DEAR: No, only one WBID. The main lake is one for DEAR assessment purposes.
- DEAR: DOH has jurisdiction over the signs and may do public announcement. There needs to be signage at public boat ramps (i.e. if you see this, don't swim, report, etc.)
- This is a relevant topic that should be mentioned in the plan for public awareness as well.
- County (Johnny): The county has requested funding for kiosks to go up at all boat ramps and will include this kind of information. Maybe Sherry can coordinate with them to get some AP info in kiosk.
- FWC (Alex): Re: baseline data. How hard would it be to compile the historical data?
- DEAR: It's not hard to get. The data are already in database. It would also be useful to split up areas of the lake- east and west areas and show the changes over time.
- FWC: There has been lots of talk about TMDL. What is the process;
 - DEAR (Julie): The TMDL prioritization process was last done in 2017 to put together and prioritize a list of waterbodies that need TMDLs. DEAR looked at how poor the WQ is and how long has the water body been impaired. They also included socioeconomic factors - how important is the waterbody. From the list of ranked water bodies, they selected a number of them to develop TMDLs for through 2022. They will be doing a mid-period review looking at this list again after the beginning of the year. Lake Jackson is not on the priority list. DEAR will take recommendations for waterbodies that need a TMDL. Based on the water quality assessment that DEAR is doing now, Lake Jackson is not impaired. Chlorophyll is at a 7 µg/L which is on the low end. (The threshold for impairment is 6 µg/L.) Many waterbodies are much higher.
 - FOLJ commented that they have written recommendation/supportive letters to revisit setting a TMDL because they have gotten numbers a lot higher with LAKEWATCH data.
 - DEAR (Julie): The average chlorophyll level at Lake Jackson is on the low end, but there is temporal and spatial variance.
- Steve: Include a description of how the data and when is collected and when and include a summary. (Who collects the data and where do you go to get data?) The management plan is a record of what has been happening. Skip Livingston's 1987 report is a good example. He would like to have document they can pull off the shelf and learn about the history of the preserve.

- County: The plan should mention what the TMDL program is. It gives a snapshot at what is happening at this time. Explaining how the TMDL program works and that is being updated would be beneficial.
- City: It is important to understand how the criteria was developed. The TMDL program was not prepared with this area in mind (the hydrologic process of the lake - drain, refill, drain, equalize). The plan should include info explaining that it doesn't fit how the state came up with their protocol.
- FOLJ: Information about how TMDL's are established should be included in the plan.

Issue 2: Habitat Restoration and Resource Protection

- Excess nutrients are driving excess growth of native vegetation.
- Impacts of water quality should be studied.
- Sherry: She has invited folks from agencies to talk about what has been done in the past and what they'd like done in the future. These are things that we can do if the lake goes down again. It's not a comprehensive list but does discuss potential funding sources. There is a drawdown document that lists who would want to be involved and what the projects involve. Sherry would be happy to send document to advisory committee and can reference in the plan
 - The committee recommends including the drawdown plan as a technical report in the appendix.
 - The county can send links to last sediment removal if needed.
 - Aquatic Preserve used a lot of that initial information.
- County: Prescribed burning of the lake bottom muck is something that is not going to happen, and city don't think it needs to be done. Peat will smoke for weeks and it's too close to airport. It's not a good idea. FWC has burned a vegetated area on east end a decade ago. Burning is mentioned in the draw down plan. Sherry will update the plan to make it clearer on where burning may be useful and where it will not occur.
- FWC: Lake Vegetation Index (LVI) does not give enough information. FWC/FWRI fresh water division does a bio-volume report which measures the volume of vegetation in the water column and plant cover index from satellite imagery. This can supplement the LVI.
- LVI is not a more comprehensive report. It is a rapid assessment technique. Sherry may include more information on the technique process. FWC also takes point intercept data at specific points every 150'

- County: The species list is lacking some vegetation that is present (for example, red maple). The plan needs to expand on what different agencies are doing
- FOLJ: Tim Lynch economic impact study in 2015 requested by FOLJ was done on a pro-bono basis and didn't collect any new data. It went back to Lee study in 1992 to look at usage – how many people are out there with outboards, how many hotels were used, etc. It's not appropriate to say that Lake Jackson is producing \$25 million a year based on its current level of public use. It could if it was functioning at same level that is was in 1992. This comment is not accurate in the management plan; but this shows that restoration is needed to get back. The document is very well laid out and includes good information/easy to read.
- New development would probably require a buffer plan. Special development zones should be included in the management plan. They're in the county comp plan. These zones regulate the amount of land clearing in those areas. There should be a brief mention so that people are aware that they are out there.
- County: Lake Munson has a wash down facility. Maybe this could be incorporated at Lake Jackson. The county might be able to include with kiosk project. The county is trying to standardize kiosks at all ramps/kayak launches and will coordinate with Sherry on info to include in these kiosks. Rick Minor, County Commissioner attended last night and is supportive of these ideas. The county supports additional wash down stations and feels that those, along with including aquatic preserve information on kiosks, would have a huge impact.
- FWC can assist with invasive plant removal. Signage is at public ramps. Some signage has gone missing. The signs are aluminum; people take to scrap;
- Invasive animals:
 - Apple snails: Management is of invasive apple snails is unrealistic. The limpkin population can help control the snail population. Apple snails are mainly seen on the south side. On the north side, you only see them at concrete areas. FWC has not gone after them because the snail kites have made a comeback. FWC may reach a point when they need to make a move if native populations start to take a dive. County has explored many methods to remove. At Lake Munson, they have reached naturalization. The county is not really seeing a huge effect right now. Lake Carolyn was infested and overnight it seemed like the population crashed.

- FOLJ (Sophie): They have been observing fewer and fewer limpkins nesting in the areas.
- Status of animal carcass dumping:
 - One site has been especially problematic. Sherry is talking to the county to convert the site to canoe launch only. Gardner Landing is closed; but now people have better access due to FDLE investigation. Cleanup efforts seem to be controlling the problem somewhat. Sherry sees fish carcasses mostly. Dumping (including other trash) isn't just a Lake Jackson problem. It's very hard to enforce this. The county has trash cans at every landing. There needs to be a management strategy to coordinate with the county on dumping.
 - Sherry: The county is great. She calls and they come out to pick up immediately. They also developed a dumping app for the public to report trash. If it's gone public, they may need to increase awareness of the app, but it may still be in the testing phase.
- Sherry will go back through and make it clearer in the plan where folks can locate resources.

Issue 3- Public Involvement

- County: Someone needs to decide how we are going to use the lake. The county is stuck in the middle. Some people want all vegetation/trees removed; some folks want to be able to hunt. It is an aquatic preserve. The county is happy to include aquatic preserve literature with kiosks, but needs to be an end goal. What are we going to do with the lake? The county wants to be sure that it meets water quality standards. Continuing to remove native vegetation could result in additional algal blooms because there isn't enough vegetation to absorb nutrients. FOLJ have proposed to remove vegetation. FWC has sprayed native species to remove for vegetation for navigation purposes.
- County: Removing native veg will be a problem for county/city if this continues. Travel lanes have been expanded to 300 feet from 150 feet. Hydrilla is blooming in the south part of the lake. We don't usually see this bad.
- City: Better interagency communication is needed.
 - FWC needs to let know AP and city/county know when they are going to spray for invasives.
 - FWC should let everyone know what they are doing.
 - FWC: There is a schedule of operation that is weekly that on their website with a map and a calendar.
 - FWC (Alex): I believe that FWC also has an email list which is sent notices.
- FOLJ (Sophie): People want to get rid of vegetation because they want to use their boats. The FOLJ includes people on both sides of the debate.

There are additional comments included in pdf that will be submitted by FOLJ. They would like to see Aquatic Preserve and agencies working together to determine how the public would like to see the lake used, but very clear that people have different ideas of what this lake is for. How do you assess what is reasonable? We have a leadership role in this because it is an AP and an OFW. It's a very difficult balancing act. I don't think yesterday at the public meeting gave the public an opportunity to discuss general concerns of homeowners because of the meeting format.

- County: It's even more important to figure out what is the primary use. Do the aquatic preserve and OFW designations provide any additional protections and how do we go about enforcing them? Guidance is general.
- Julie: That is what the management plan is for. All APs have certain uses for which they must manage. The state is trying to maintain it as an OFW – so that it has good water quality and is monitored. We must balance public use and protect the resources.
- FOLJ: We may be able to put uses in the plan, promoting low impact recreation. The user group is varied - some want to see the lake completely opened and some don't. People can't do the same recreational activities that they did 30 years ago. It's clear that the fewer nutrients coming into the lake the better. Managers should continue to educate people on fertilizer and storm water runoff and continue to promote lake friendly landscaping.
- FWC: The pressure to remove native vegetation has diminished since the monthly lecture series was started
- Steve: Is there any information in the management plan regarding fencing off the sink holes or filling in?
 - Fencing or filling in the sinkholes is against the AP rule because it would be considered fill.
 - You may want to think about including rule as an appendix.
 - There is a link to it in the plan - F.A.C. 18-20, but not the text of the rule.
 - Sherry: Some specific info on Lake Jackson in the rule.
 - Earl: The management plan includes "do not impede the natural cycle" as an objective on page 39.
- Outreach:
 - There have been lots of new activities. The city encourages events. One recent event was cancelled due to weather but had approximately 80 people wanting to participate. AP is very interested in doing more education and outreach programs, but it only a team of one.
- FOLJ: Sherry sends all programming to group- monthly lecture series- Sherry invites local agency experts to give information to local landowners; group consensus to keep these series going; has seen an increase in the # of participants.

- County: They have not received the funding yet for kiosks but are hoping it is coming.
 - Can they put Lake Jackson AP information?
 - The county will work with AP to include info, etc. It will also have maintenance \$ for vandalism, etc. Communication will be key.
- There are so many boat access points on Lake Jackson. FOLJ can also relay this information.
- Sherry has created brochure about AP; recommended that these be placed at kiosks/boat ramps.

Issue 4: Sustainable Public Use/Access

- Who oversees what? Need an org chart; High Priority! Who does what??
- Who oversees lake bottom?
 - County maintains concrete ramp.
 - Water comes up and down, but who maintains the lake bottom below the ramp?
- AP has no problem with folks accessing the lake. At Crowder Landing, the county has plans to fix the storm water section because it is crumbling.
 - AP is ok with folks accessing the bay if folks aren't doing donuts like at Faulks or Miller. Those areas are super shallow.
- County: Identify areas that are appropriate for various kinds of use - motor boats, kayaking, etc. FWC would be in control of enforcing. Make this information available to public; Aquatic Preserve and county/city can put this information with links on their websites.
- Trails at Lake Jackson?
 - There is too much private land along the lake. There have been several conservation land purchases around the lake – in particular Elinor Klapp-Phipps. There may be opportunities to purchase additional land. Does the management plan mention the Lake Jackson Blueways Paddling Trail? The plan needs to show that one has been established by the county and is part of state's trail system. There is the potential to add one to Carr Lake, but it hasn't been possible since 1999. A paddler can get from Carr Lake to Mallard Pond; might consider mentioning this info for future trail plans;
- Jeff Smith: In 1994, you could run an outboard to Carr Lake from Lake Jackson.
- Carr Lake is troll motor only; Lake Jackson is open to any motor size.
- Hunting is only allowed on certain days during the week. You may want to reference FWC guides in plan to direct folks to regulations.

- Who is in charge? Is the Aquatic Preserve ready to become the lead coordinator in these efforts?
 - Sherry: This will happen over time. There wasn't anyone in this position for a long time.
- Steve: I would recommend adding stronger language on coordination efforts that are needed. The current strategy leaves it very general. It needs to be more specific. Add "coordinate with all stakeholders, including local governments" as a Performance Measure. Examples 1.2.2.
- Sherry is already talking to the county regarding making Faulk a paddle craft only site.

Earl explained the next steps in the management plan process: revisions will be made to the plan before it goes to the Acquisition and Restoration Council for a public meeting in Tallahassee. The plan will go to the Governor and Cabinet for final approval. Comments can still be submitted on or before Dec 18, 2018. The advisory committee members were thanked for their time and input.

The meeting was adjourned

C.2 / Formal Public Meeting

The following appendices contain information about the Formal Public Meeting(s) which was held in order to obtain input from the public about the Lake Jackson Aquatic Preserve Draft Management Plan.

C.2.1 / Florida Administrative Register Posting

Florida Administrative Register

Volume 44, Number 216, November 5, 2018

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PUBLIC SERVICE COMMISSION

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DATE AND TIME: Monday, November 5, 2018, 1:00 p.m.
PLACE: Hearing Room 148, Betty Easley Conference Center, 4075 Esplanade Way, Tallahassee, FL

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Lake Jackson Aquatic Preserve Management Plan

Public Meeting

Wednesday, December 5, 2018
6:00 pm - 7:30 pm

Lake Jackson Community Center
3840 N. Monroe Street, #301
Tallahassee, FL 32303

To view the draft plan, please visit:
<http://publicfiles.dep.state.fl.us/CAMA/plans/Lake-Jackson-AP-Management-Plan.pdf>

The Department of Environmental Protection's Florida Coastal Office coordinates the protection of the state's natural, cultural and economic coastal resources. DEP manages more than 4 million acres of submerged lands and coastal uplands. With support from NOAA, the Florida Coastal Office manages the Florida Coastal Management Program, 41 aquatic preserves, three National Estuarine Research Reserves, the Florida Coral Reef Conservation Program and the Florida Resilient Coastlines Program.

Meeting objectives:

1. Review purpose and process for revising the Lake Jackson Aquatic Preserve management plan.
2. Present current draft plan with a focus on issues, goals, objectives and strategies.
3. Receive input on the draft management plan.

The information from the meeting will be compiled and used by FCO in the revision of the draft management plan.

Please contact Sherry Carpenter, (850)245-2105, Sherry.Carpenter@FloridaDEP.gov or visit our website at <https://floridadep.gov/fco/aquatic-preserve/locations/lake-jackson-aquatic-preserve> for more information or to request a written copy of the plan. Written comments are welcome and can be submitted by mail or email FloridaCoasts@FloridaDEP.gov on or before December 19, 2018.

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C.2.3 / Newspaper Advertisement

The following advertisement was placed in the Tallahassee Democrat on 11/28/18.

BOARD OF TRUSTEES OF INTERNAL IMPROVEMENT TRUST FUND

The Florida Department of Environmental Protection, Florida Coastal Office announces two public meetings to which all persons are invited.

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GENERAL SUBJECT MATTER TO BE CONSIDERED: The Lake Jackson Aquatic Preserve Management Plan Advisory Committee will meet to discuss possible revisions to the draft Lake Jackson Aquatic Preserve Management Plan and comments received at the public meeting scheduled for Dec. 5, 2018 and noticed above.

A copy of the agendas may be obtained by contacting: Aquatic Preserve Manager, Sherry Carpenter at Sherry.Carpenter@FloridaDEP.gov or 850-245-2105.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Sherry Carpenter at Sherry.Carpenter@FloridaDEP.gov. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1-800-955-8771 (TDD) or 1-800-955-8770 (Voice).

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FLORIDA DEPARTMENT OF Environmental Protection

Lake Jackson Aquatic Preserve
3900 Commonwealth Boulevard
Tallahassee, Florida 32399

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

Lake Jackson Aquatic Preserve Draft Management Plan Public Meeting

Wednesday, Dec 5, 2018
6 -7:30 p.m.

Lake Jackson Community Center
3840 North Monroe Street #301
Tallahassee, FL 32303

Attendees: Johnny Richardson, Paul Thorpe, Jeff Smith, Evan Martin, Jeff O'Connell, Steve Mirowitz, Nia Wellendorf, Penny Isom, Ken Espy, Alan Niedoroda, Alex Dew, Emily Fritz, Jodi Wilkof, Jason Storrs, Sophie Wacongne-Speer, Calvin Sherman, Rick Minor, George E Lewis II, Marcus Winchester, Wilson Wright, Leisa Wiseman, Bob Wolfe

Staff: Whitney Gray, Jessie Kanes, Ann Lazar, Earl Pearson, Kim Wren

Earl welcomed everyone, gave a brief introduction about the purpose of the meeting, and introduced staff from the Florida Coastal Office.

Kim gave a PowerPoint presentation about Lake Jackson Aquatic Preserve, the management plan structure, and issues identified in the plan.

After the presentation, Earl explained the commenting process. The room was set up so that there were four stations – one for each of the four issues identified in the management plan. The attendees were split into two groups, and staff were stationed with each of the groups to provide background on the issues and record comments from the public.

Issue #1 – Water and Sediment Quality

- What standards are being used? Should be in the MP.
- What is the baseline? Should be in the MP.
- City and county water quality reports include Lake Jackson. Add links to website.
- FOLJ could be included in water quality reporting.
 - Seconded.
- County does sediment sampling; can provide.
- Additional partners can include the Florida Lake Management Society, Florida Storm Water Association, Aquatic Plant Management Society.
- Grow water quality monitoring team / coordinate.
- Identify the conditions under which permitted projects affect the lake.

- Identify who is in charge of what.
- Have a draw down plan.
- Need a TMDL program for the lake.
- DEP needs to accept LAKEWATCH sampling results.
- What are the impacts from Phipps Corp. (Steve Van Cour) land uses?
 - Coordinate with them on BMPs.
 - Could be open to that.
- Is there "ammo" in the OFW designation.
- Leverage permit conditions for water quality efforts.
- Include projects that are in progress in the plan. (Update.)
- Keep legislature and public better informed.
- Identify and quantify where nutrients are coming from and water budget.

Issue #2 – Habitat Restoration and Resource Protection

- Excess nutrients are driving native vegetation.
- Continue coordination for habitat restoration and resource protection.
- The LVI (Lake Vegetation Index) – start incorporating volume and cover.
- Activities on the lake overall and their effect on the habitat.
- Management to decrease illegal dumping on the lake/shoreline.
- Suggest signage and enforcement to reduce illegal dumping, and dumping animal carcasses.
- Quantitative measure of the northern and southern areas' vegetation incorporating 12-point sampling from the LVI.
- Have a draw down plan with public input.
- Prescribed burning – look into the impacts of when lake is drawn down.
- Develop educational material about impacts to habitats from nutrients with focus on lake shore owners.
- Buffer for lakefront – enforcement
- Outreach to lawn care companies about impacts
 - Seconded.
- Land use transition to cattle – study impacts of runoff to water quality
- Water quality monitoring at different/additional sites.
- Ensure boats are cleaned to remove invasive plants.
- Fishing gear disposal receptacles.
- Coordination for habitat restoration among stakeholders (like NERT).
- Include invasive animal species management.

Issue #3 – Public Involvement

- Increase outreach about aquatic preserve.
- One page information sheets to distribute.
- Boat ramp signs mentioning the aquatic preserve.
- Offer more educational programs.
- Activities for children including hands-on educational programs.
- Newspaper, tv, social media outreach partnering with Leon County.
- Community events encouraging art, photography and poetry to highlight awareness of the aquatic preserve.
- Recycling programs that encourage the community to recycle.
- Nature center or other building to provide educational outreach.
 - Seconded.

- Use community service to remove weeds.
- Ongoing monthly paddling events, regular schedule
- Kayak/canoe tours
- Literature about invasive species.
- Develop educational material about impacts to habitat from nutrients, with focus on lake shore owners.
 - Seconded.
- Outreach to lawn care companies about impacts.
- More educational programs and outreach featuring the aquatic preserve.
- Articles in the Democrat.
- Coordination among agencies and community.
- Broaden outreach efforts using a variety of media.
- Lake View Park education center project idea involving Leon County.
- Develop funding sources for environmental education and outreach.
- Social media geocoding around the aquatic preserve (Facebook ads)
- Encourage continuing the annual event with more publicity.
- Improve lake viewing access points for the public so the view is less obstructed.
- Improve canoe/kayak access points.
- Coordination of lake management among agencies & stakeholders.

Issue #4 – Sustainable Public Use and Access

- Obj. 2 – Produce a short video (science/effects) or app that could publicize events like drawdowns.
- Refer to video on signs.
- Add info on FOLJ social media sites as well.
- Make sure lake neighbors have contact info for law enforcement.
- Obj. 1 – Add paddlecraft launches.
- Status of Miller Landing – any plan to provide a better ramp?
- Erosion problems at Crowder Landing. Stormwater improvement at access points. Who's in charge? Water needs to be redirected.
- 1.2.2 – Measure number of results of education re: driving on the lake bed.
- Look into limiting motor size during duck hunting season.
- Faulk Landing could be designated for paddlecraft. Use fencing to prevent driving all the way out into lake (or a boulder).
- Any development would negatively impact habitat quality – keep it primitive.
- Utilize county inmates for clean ups.
- Put law enforcement info in brochures.
- Signage warning about potential to stuck.
- Could neighbor law enforcement come out quicker?
- Use of game camera to monitor (wi-fi)
- Are trails around the lake possible?

After the comments were received, Earl explained the next steps in the management plan process: an advisory committee meeting, Acquisition and Restoration Council meeting (also a public meeting) in Tallahassee, and a Governor and Cabinet meeting. The public was reminded the comments could still be submitted on or before Dec 18., 2018. They were thanked for attending.

The meeting was adjourned.

Leon County

Page numbers refer to PDF page numbers.

Page 3 – Last sentence the word “its” needs to be on one line

Acquisition and Restoration Council Management Plan Compliance Checklist – Should the Pg#/App column be removed? There is currently nothing in that column.

Page 18 – First paragraph. Along with Lake Miccosukee, Lake Iamonia needs to be included as a local karst lake that has water fluctuations similar to Lakes Jackson and Miccosukee.

Page 18 – Third paragraph. Leon County was one of the main project managers of the sediment removal project, and contributed significant funds (\$4,460,250 through a County Stormwater Bond Issue and Reallocation of Existing County Stormwater Bond Funds). Project partners included:

- Leon County
- Florida Fish and Wildlife Conservation Commission
- Northwest Florida Water Management District
- Florida Department of Environmental Protection
- Friends of Lake Jackson

Below you'll find the links to the sediment removal reports.

<https://www.leoncountyfl.gov/Home/Departments/Public-Works/Engineering-Services/Stormwater-Maintenance/Lake-Jackson-Restoration/Status-Report>

Final report is here:

<https://www.leoncountyfl.gov/Portals/0/publicworks/engservices/docs/Lake%20Jackson%20Final%20Report%20Agenda.pdf>

Natural Communities (starting on page 20). There is no mention of the Lake Vegetation Index Surveys that Leon County staff completed in: 2010, 2014, 2015, 2016, 2017, and 2018. These surveys are used by the Florida Department of Environmental Protection to determine possible biological impairment.

Page 23 – Listed species. Do wood storks and Florida sand hill cranes use Lake Jackson as a nesting site? The wording in the 2nd paragraph suggests that they do.

Page 23 – Invasive Non-native Species. The taxonomy and the identification of the nonnative apple snails continue to evolve. While the current population of the exotic apple snail appears to be *P. maculata* (synonym *P. insularum*), with any snails being identified as *P. canaliculata* being misidentified *P. maculate*. As a possible alternative, it would also be appropriate to refer to the snails as “the nonindigenous apple snail *Pomacea* spp.” The FWC webpage that is cited is out of date (based on a 2000 article). I would suggest both of the following links for your review and possible use for citing. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1919357/> And here: <https://invasions.si.edu/nemesis/browseDB/SpeciesSummary.jsp?TSN=-503>

Page 24 – Second and third paragraph. Invasive vegetation is increasing in Lake Jackson. The southern part of the lake is of October 2018 completely covered in hydrilla. FWC’s current strategies appear to be ineffective.

Page 27 – Section 3.5. So, the Friends of Lake Jackson is not considered a Citizen Support Organization (CSO)?

Page 27 – Section 3.6 and Page 42 – Section 4.2.2 (Land Acquisition) regarding references to Okeeheepkee Prairie Park. At the December Board meeting the Board will consider changing the park’s name to the Parwez “P. A.” Alam Park. Our Director of Parks and Recreation has every reason to believe this name change will be adopted. She would recommend, then, that the plan reference Parwez “P. A.” Alam Park (formerly known as Okeeheepkee Prairie Park).

Page 29 – Section 3.6 last paragraph beginning “More information on the Leon County” That statement is correct with regard to Leon County Parks. However, the website and index will not provide information on all the parks that are listed in the section just above (specifically, Phipps Park, Farm’s Eden Conservation Easement, Lake Jackson Mounds, Maclay Gardens, and Ochlockonee River WMA). Would it be beneficial to provide links to these other properties?

Pages 29 through 31 – Section 3.7. The last paragraph on page 31 appears to focus only on I-10 as the pollution load source and just refers to the adjacent infrastructure as having impacts on the LJP. It’s important to note that when we (Leon County) permitted the six-laning of I-10, we did a major retrofit and provided water quality treatment for many areas of I-10 that never had treatment. The focus of the pollution source(s) should be on the south side of I-10 covering all the impervious in the incorporated area that includes the old Tallahassee Mall.

Page 34, section 4.1.1 1st paragraph, last sentence. The sentence is unclear and needs to be reworded. Most of the compiled data is obtained by quarterly surveys by Leon County, and is not funded by SWIM. Is the author implying that SWIM provides funding to all of the mentioned entities?

Page 34, section 4.1.1 2nd paragraph. The “a” in “chlorophyll a” needs to be italicized.

Page 34, section 4.1.1 2nd paragraph. Leon County staff have and continues to provide water quality reports starting in 2007. The latest report can be found online at:

<https://tlogis.maps.arcgis.com/apps/MapJournal/index.html?appid=473405799db34fbf8153492a17e50609>

Page 36. 4.1.2 Water Quality Monitoring – Sentence that states; “In 2006, McGlynn Labs found that current data indicates that the water quality in this section of Lake Jackson is dominated by the drainages to the east of the lake.” No, the data that Dr. McGlynn was looking at was from 2006, so it is not current data.

Page 37. 4.1.2 Sedimentation – Older references are being used to describe current conditions. The latest reference to sedimentation was from 1974. As for the statement “Water is turbid and of low quality”, please state your source of information.

Page 37. 4.1.2 Mapping – More specific and recent mapping has been conducted (2015-2016). Florida Department of Environmental Protection’s Florida Land Use Land Cover data is available for the area http://geodata.dep.state.fl.us/datasets/2f0e5f9a180a412fbd77dc5628f28de3_3

Page 43 – Objective Four, Integrated Strategy One. Is the intent to have the monofilament line depositories truly at each access point, even Faulk and Fuller or do we want to exclude those?

Page 44 – Objective Four, Integrated Strategy Three. Under Performance Measures, replace no. 1 with: “1. Organize or partner on at least two clean-up events each year for the public and public groups.”

Page 47 – 4.4.2 Current Status of Public Use. Second paragraph regarding discussion of boat landings. Jackson View Boat Landing should simply be referenced as Jackson View Landing (please delete the word Boat when referencing this landing).

Page 47 – 4.4.2 fourth paragraph. There is a reference to Cedar Landing, but the map identifies it as Cedar Hill Landing. I would suggest we make the language consistent to Cedar Hill Landing.

Page 48 – Map 11. The Gardner Landing has been left off the map and the discussion of the boat landings, in general. Was this an intentional decision by or simply an oversight.

Page 51 – Photo description does not match photo.

Page 62-63. Native species list. Plant list is not complete. For example red maple (*Acer rubrum*) is an extremely common tree around Lake Jackson and is not included in the plant list. FDEP has Leon County’s LVI plant lists (excluding 2018) from our years of sampling. Please incorporate the Leon County LVI information into the plant list.

Page 70-71. Under the invasive invertebrates list. *P. canaliculata* should be removed from the list or remove both *Pomacea* spp. from the list and replace with “nonindigenous apple snail *Pomacea* spp.”

The Friends of Lake Jackson

Lake Jackson Aquatic Preserve Management Plan (Comments for “ljap-mp-print.pdf”) Page numbers below here are the actual page numbers in the plan					
Pg.	Sec.	Para.	Line	Highlighted Text	Comment
9	3.1 Historical Background	2	2-3	evidence that the lake’s unusual tendency to drain and refill its water supply through sinkholes was apparent to settlers of the region dating back centuries ago (Nowak, 2017).	It does not “refill its water supply through sink holes.” The primary determinant of water level is a balance between rainfall and evaporation.
14	3.3 Resource Description	3	11-15	Lake Jackson watershed, water quality is likely to be negatively impacted. Local growth patterns and expected population increase for the county are important factors when developing a comprehensive lake management plan for the aquatic preserve. Cooperation and partnership between residents, developers, and government agencies will help to facilitate responsible growth practices that will help to restore the environment within the aquatic preserve.	Partnership between residents, developers & government agencies.
16	Geology	1	2-3	ability to drain the lake within days of becoming active	This is not true. The Lime sink has very little leakage and the measured discharge the Porter Hole Sink only amounts to an annual loss of about 9 inches over the whole area of the lake.

Lake Jackson Aquatic Preserve Management Plan (Comments for "ljap-mp-print.pdf")

Page numbers below here are the actual page numbers in the plan

Pg.	Sec.	Para.	Line	Highlighted Text	Comment
18	Hydrology and Watershed	1	3	Lime Sink and Porter Hole -	I'm pretty sure that there is good agreement that Lime Sink is no longer active. In the last draw down it retained it's water as an ever shrink puddle. If it leaks now it is at a much lower rate than the relative small flow at Porter Hole. Also, there are probably other sinks that are leaking. Michael Hill (retired from FWC) showed an oblique air photo taken during the drawdown at the Speaker Event that the LJAP organized at few months ago. You could see a number of suspiciously circular 'puddles' lined up to either side of Lime Sink. Sandco almost lost a backhoe in a muddy sink in Church Cove during the drawdown. There are stories of a school bus and other junk being used to clog a sink hole at the bottom of Meginnis Arm back in the '50s.
20	Climate	1	3	sinkholes in a matter of days	Remember, when the lake is at, or near, it's normal pool so that it covers about 4,000 acres the annual leakage through Porter Hole only accounts for a water level change of about 9 inches. Only when a prolong dry period with evaporation dominating over rainfall occurs does the lake shrink to a pool around Porter Hole. It is under these conditions that the last bit of the water goes down in a matter of days. Please let's not created the impression that the whole lake drains away in a sudden cataclysm.
27	3.4 Values	1	5-6	70,000 people visited Lake Jackson each year with a total impact of \$26 million (Lynch & Lee, 2016)	This isn't quite what it says. If the lake were returned to the conditions existing in 1993 it would have this level of usage and economic input. In 1993 the lake was clear of the excess vegetation that covers it today. There is no evidence that we are seeing this level of use or economic impact. Please modify this text to more accurately represent the current situation.
27	3.5 Citizen Support Organizations & Other Working Groups	1	6-9	However, the non-profit organization, Friends of Lake Jackson, was formed to preserve the Lake Jackson ecosystem and promote responsible recreational and economic use by working with local, regional and state agencies (Friends of Lake Jackson, n.d.)	In stating that there is NO citizen support organization for LJAP you create an impression of citizen disinterest. This is unfair and a one-sentence reference to the Friends of Lake Jackson is certainly not generous. I recommend that you revise this section and give more credit to the Friends of Lake Jackson as well as Audubon, Tall Timbers, Big Bend Environmental Forum, Sierra Club and others in this area. Also note that Leon Co. actively supports LJAP events. In short, there is good local government and citizens group supports for the LJAP. Then mention that the LJAP has been dormant from when it was authorized in 1973 until just two years ago. CSO have only started in 2014. So that's why there is not CSO at this time - - not because citizens are not interested in supporting the LJAP . As you well know, they show up at all the LJAP events.

Lake Jackson Aquatic Preserve Management Plan (Comments for "ljap-mp-print.pdf")

Page numbers below here are the actual page numbers in the plan

Pg.	Sec.	Para.	Line	Highlighted Text	Comment
29	3.6 Adjacent Public Lands and Designated Resources	3	all	Ochlockonee River Wildlife Management Area - Ochlockonee River Wildlife Management Area (WMA) is just south of Lake Jackson off Stoneler Road and is maintained by FWC. The 2,000-acre area is part of the Lake Talquin State Forest and has a mix of pine and hardwoods that borders the Ochlockonee River. Within Ochlockonee River WMA, there are trails that offer scenic hiking down improved roads or game trails. Ochlockonee River WMA provides likely opportunities to spot bobcats (<i>Lynx rufus</i>), coyotes (<i>Canis latrans</i>), and red-shouldered hawks (<i>Buteo lineatus</i>) in their natural habitat. Ochlockonee River WMA is popular with hunters seeking white-tailed deer (<i>Odocoileus virginianus</i>), turkey (<i>Meleagris gallopavo</i>), and gray squirrel (<i>Sciurus carolinensis</i>). The habitat within Ochlockonee River WMA holds a good concentration of native flora and fauna (FWC, n.d.-d). For more information on Ochlockonee River WMA visit: http://myfwc.com/viewing/recreation/wmas/cooperative/ochlockonee-river More information on the Leon County parks is available at http://www.leoncountyfl.gov/parks/park_index.asp .	Is this relevant to Lake Jackson and its watershed ? If so please state why.
30	3.7 Land Use	2	4-5	40 percent of the property (City of Tallahassee, n.d.-b)	This is not the present regulation. First it is necessary to distinguish between the Lake Protection District and the nodal zoning for the 4 nodes. The present cluster regulation allows 2 units per all of the acres in the lot. So if the lot is 10 acres then 20 units are allowed provided they are clustered on 4 of the acres. This is a substantial increase from the original cluster provision and is become increasingly a issue.
34	Chapter 4	3	5	Management	Which "management" is this ? Management of the LJ Aquatic Preserve or management of Florida Coastal Office in FDEP or some other management ?

Lake Jackson Aquatic Preserve Management Plan (Comments for "ljap-mp-print.pdf")

Page numbers below here are the actual page numbers in the plan

Pg.	Sec.	Para.	Line	Highlighted Text	Comment
34	Chapter 4	3	6	administrative staff to process grants and contracts to expand its ability to pursue outside funding. 4.1 / The Ecosystem Science Management Program	Before addressing the four issue-oriented components of this management plan it is necessary to add a new heading. According to documents such as "The Lake and Reservoir Restoration Guidance Manual" (EPA, 1988, 440/5-88-002) a fundamental element of a management plan is a clear unambiguous statement of THE DESIRED LAKE USES and the LAKE'S CAPACITY TO SATISFY THESE DESIRES. The FoLJ have given great consideration to this question and we support A MULTI-USE DESIGNATION that includes boating recreation, fishing, hunting, sailing, skiing while balancing these uses with sustainment of the natural ecological balances and restoration of Class III Water Quality. This is the current use and this balance must be maintained even though it is challenging. It is important to have a statement like this because some regard the lake from one use (eg. hunting) to the exclusion of all others. If FDEP do not support the FoLJ Multi-Use Designation then it must state what USES it is managing the lake to provide.
34	4.1.1 Background of Ecosystem Science ...	2	9 (last)	Water Quality Report in June 2011	the latest report is dated 2018
34	4.1.1 Background of Ecosystem Science ...	4	2	daily	Not "daily" -- this should be "continuous". They take a reading every quarter hour.
36	4.1.2 Current Status of Ecosystem Science ...	1	7	input	stormwater and leaking septic system inputs
36	4.1.2 Current Status of Ecosystem Science ...	1	9	managed	THEY can be managed meaning "SUCH ISSUES can be managed"? We would welcome "remedied" as well last paragraph "maintain": how about "restored and maintained"
36	Water Quality Monitoring	1	last	Meginnis Creek (McGlynn, 2006)	A few sentences discussing the role of leaking septic systems needs to be added because they contribute significantly to excess nutrients concentrations in the lake. Harbinwood Estates and Harbinwood Creek have long been identified as a significant source and there is a TMDL for this creek. The neighborhoods in the drainages leading to Fords Arm are also decades old and are known to have septic tank discharges that feed to the lake. Lake front properties are also on individual septic systems and it is questionable whether these below-ground discharges travel sufficient distances to properly reduce the nitrogen loads. It would also be well to mention the Comprehensive Wastewater Treatment Facilities Project currently being initiated by the county and its expected contribution to future planning and regulating of new and retrofit nitrogen reducing septic systems when the study concludes in about two years.

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Pg.	Sec.	Para.	Line	Highlighted Text	Comment
37	Sedimentation	2	10-11 (last two)	Water in this area and of low quality. This area should be considered for closer monitoring.	It should also be stated that lake sediments sequester nutrients seasonally from rooted aquatic plants. Nutrients travel into the sediments as the plants die back in winter and are then recovered in the spring. Overall, this leads to a build up of nutrient concentrations in the sediments. If periodic muck removal or lake floor exposure is not carried out this sediment nutrient load provides an additional difficulty to engineering reductions in the long term nutrient concentrations in the water column of the lake.
37	Issue One: Water and Sediment Quality	1	5	stormwater runoff	Please reword to say ...due to stormwater runoff and septic system discharges in developed area>"
38	Obj. 1 Strategy 2, PM 1	1	1	1. A report is produced that assesses the status and trends of water and sediment quality.	state schedule/timeline for implementation and completion
39	Obj. 2 Strategy 1, PM 1	1	1	LJAP is created.	state the schedule / timeline
39	Obj. 2 Strategy 2 PM 1	1	1	within LJAP is created.	state the schedule/timeline
39	Obj. 4 Strategy 1 PM 1	1	1	Hold at least one meeting to discuss initial plans and ideas.	state the schedule/timeline
40	4.2.2 Current Status of Resource Mgmt...	2	2-3	Focus and efforts are primarily on prevention of further decline	The focus and effort needs to be directed at both prevention of future decline and restoration of water quality to conditions of the 1970 when Lake Jackson was designated as an Outstanding Florida Water. This was mandated by the Florida legislature and in also a goal in the Comprehensive Plan. Not just arrest the decline but actively resorting to these previous conditions.
41	Habitat restoration/mitigation	1	2-3	substantially decreased the amount of stormwater input to the lake	Do you actually mean that the volume of stormwater has been reduced ? Probably not. You probably either mean that the volume of untreated stormwater has been reduced or perhaps that pollutant load due to stormwater has been reduced.
42	Invasive vegetation	1	4	and resource management.	The need to manage excessive native vegetations need to be addressed. As stated earlier, in order to attain the \$25 M annual contribution to our local economy the lake needs to be restored to the conditions of the early 1990s when the original economic impact analysis was done. At that time the lake was characterized by open water, not the narrow and plant-clogged boat paths of today. FWC is authorized to manage/treat the lake for both excess native plants and exotic species. An Aquatic Plant Management Plan is needed to identify where it is essential to maintain some of the native communities and where more open water can be provided, especially in the warm seasons, to promote better fishing and more recreational use of the lake.
42	Issue Two, Goal One, Obj. 1, Strategy 1	1	1-2	Coordinate with FWC's Invasive Plant Management Section to determine needs of aquatic invasive plant control.	This should include control of both invasive and excessive native aquatic plants.

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Pg.	Sec.	Para.	Line	Highlighted Text	Comment
47	4.2.2 Current Status of Public Use ...	1	3-4	Tourists and locals who visit Lake Jackson annually generate on average more than \$25 million for the local economy (Lynch & Lee, 2016)	As stated this is not true ! If you go to the Lynch & Lee report you will see that they clearly state that the lake can produce \$25 M annually if it is restored to the conditions that existed at the time of the original 1993-94 economic study by Dr. F. Bell. This was done in the early 1990s with extensive surveys and other data gathering that was not repeated in the Lynch & Lee study. They simply updated the economic figures assuming that the lake would be restored to the open waters conditions of the early 1990's when fishing and boating was much heavier than it is today. Kindly correct this sentence .
49	Issue Four: Sustainable Public Use and Access	2	7-9	A rule was passed in 2008 that prohibits waterfowl hunting from or within 30 yards of any permanent blind on several lakes in Leon and Jefferson counties, including Lake Jackson and Carr Lake.	Permanent blinds are not allowed on Lake Jackson so this 2008 rule is pretty meaningless. Curiously, there no limit to how close to shore hunters can set up their floating blinds - or to shoot.
49	Issue Four: Sustainable Public use and Access, Goal One	1	1	Goal One	Goal one should be to develop a public consensus and a written statement about the total range of desired uses. Some want only paddle craft, others just duck hunting and yet others only fishing. It is essential to have a well publicized consensus on the sustainable public uses. This is both especially important and especially difficult to develop for Lake Jackson because historically it supports a wide range of uses. Other lakes in the area are clearly valued for their beauty and ecology as well as hunting and fishing. Lake Jackson supports a much more diverse set of values and uses. These need to spelled out and agree upon.

The Friends of Lake Jackson

Lake Jackson Management plan comments:

- Page 12, Section 3.2- **The DEAR integrate report has current data to better support these statements of Florida's water resources.** https://floridadep.gov/sites/default/files/2018_integrated_report.pdf
- Page 13, last paragraph of section 3.2, before location/boundaries- **many organizations are listed for establishing management plans, but I believe some of them already do or have projects that have the same goals as the LJAP, therefore we recommend you list them or at least link to the plans as a reference.**
- Page 14, Section 3.3, 3rd paragraph- **The McGlynn 2006 reference seems outdated and would recommend using a more recent reference to report on water quality.**
- Page 14, Section 3.3, "The north end of the lake is currently minimally developed, but is facing pressure from a growing Leon County population"-**How is this statement possible if a Lake Protection District was established in 1990? Are they no longer active?**
- Page 14 last sentence on the page "...pollution-laden water from neighboring developments gets washed into the lake more readily than it would if the surrounding terrain was flat."- **Don't disagree with this statement, but is this fact supported for the local watershed? Are these areas under an MS4 permit, or other AP/OFW BMPs?**
- Page 17, "Stormwater treatment facilities and retention ponds have been constructed to capture stormwater before it flows into the aquatic preserve. Although the current treatment has improved the quality of water entering the system, there is a need for more treatment areas within the watershed."- **Where are these treatment facilities areas? Recommend adding a map or table to list what is currently been completed and the type of structure. What facts brought you to the conclusion that more treatment areas are needed? I don't disagree but would elaborate more on why and where based on what has been done to date.**
- P. 18 - I recommend including data from the NFWFMD water level gauge in the Hydrology section.
- Page 21, top of page, "Even though LJAP has high nutrient levels, it does..."- **Could you define "high nutrient levels"? high compared to what? Based on lakes throughout Florida the period of record data does not constitute high levels, but they are elevated. Consider wordsmithing or provide references.**
- P. 24 – Please check on the status of alligator weed, as the text looks outdated. Has *Myriophyllum spicatum* really been seen in the lake? There's definitely *Myriophyllum aquaticum*, but I wouldn't expect *M. spicatum*.
- P. 27 – What are the results of the angler surveys?
- P. 28 – Regarding the Farm's Eden Conservation Easement, the easement is *held* by Tall Timbers, but Tall Timbers does not *manage* the property.
- Page 31, "The growing population of Tallahassee has been attempting to expand into the watershed, but the Lake Protection district has set standards intended to preserve Lake Jackson." – **This is a great response but it contradicts statement on page 14 section 3.3 (see bullet above).**
- P. 33, 2nd paragraph, last sentence – did you mean to give an example of Public Use?
- P. 34, section 4.1.1 – Paragraph 1 -The SWIM program is no longer active, or at least not managed by DEP. Paragraph 2 – Leon County staff are approved to do Stream Condition Index sampling, but the Stream Condition Index does not apply to the Lake Jackson AP.
- Page 35, top of page- **DEAR has more recent LVI data that could be provided to produce more comprehensive information for the biology of the lake.**
- Page 36, top of page- **add reference to FDEP SOPs for the method you are describing.**
- Page 36, section 4.1.2, first sentence under water quality, "The decrease in water quality over the years has lowered the recreational..."- **Can you add WQ graphs to prove this statement? What WQ parameters are you speaking of? Is there a statistical downward trend in the WQ data?**
- Page 36, "However, a high concentration of chlorophylls, bacteria, and nutrients were found to be present in the water leading into the lake via Meginnis Creek (McGlynn, 2006)." - **I have not seen this report and the data associated with it, but I would like to see "high concentrations" of CHL, Bacteria and nutrients defined. How does the data in the 2006 publication compare to today? Would recommend adding that info to show the current state. DEAR would be more than happy to provide this data.**
- Page 37, Mapping section last sentence-**The WMD updates landuse on a regular basis. I would think that FDEP DEAR could help with this and provide the new(er) layers.**
- Page 38, Integrated strategy one, "existing WQ and Sediment data.." - **STORET, GWIS, and WIN are all great resources for this data and DEAR would be more than happy to provide this information.**
- Page 38, Integrated strategy two- **What statistics are planned for this analysis? Have you identified the minimum data requirements for the analysis? DEAR could provide some details from the trend workgroup. Is there going to be a QA/QC of data provided? Did they follow SOPs? Did the data go to a NELAC lab?**

- Page 39, objective two- **I don't see any measure to meet this. And the monitoring is just to show change, but what about source identification studies? partner with local agencies to assist.**
- Page 39, integrate strategy one- **These waters already have WQ standards. I would add the NNC reference to this text and make the strategy how to meet them.**
- Page 39, object three, performance measure 1. - **What about adding a task to list all of the projects and a way to allow access database/website/map? DEAR has resources to aid with this task.**
- Page 39, Objective Four, Integrated Strategy One- **Who are the key stakeholders to have on the working group? This could be a great success if you have the right diversity on the team and set clear goals and outcomes.**
- Page 40, Section 4.2.2, "Due to the continued decline..."- **decline is what? please be more specific. Is it recent decline or a small slope over decades? or did we see a decline and now it has leveled or improving? See previous comments on this topic.**
- P. 43 - Integrated Strategy 2 of Issue 2, Goal 1, Objective 3 mentions the "Bioblitz" as a way to catalog living species present on the lake. While I think that is a great education event, there are better sources of data for cataloging the species in the lake. Lake Vegetation Index data and FWC plant surveys will provide more comprehensive plants lists. Does FWC have any fish population data that could be included in this report, or acknowledged as a data source?
- Page 75, Objective 2- **This is a huge topic throughout the whole report, yet there is no funding. I think using what is already available would reduce this cost and allow funds to focus on the issue.**

Dr. Marc Freeman

Unless otherwise noted, all comments are from Dr. Marc Freeman.

- Quite a metamorphosis of the lake since 1984. Much more open water back then; can barely get a boat in the water now.
- The recommendations at the end of the management plan are right on.
- However, one big thing is missing. The recommendations should be prioritized.
 - Example: In the 1990s, when the lake disappeared, NFWFMD secured funding to scrape the bottom of the lake, but only had funding for the Rhoden Cove side and scraped about a third of the lake. Dan Winchester said that they ran out of money. So things need to be prioritized.
- Two most important goals:
 - Objective Four (of Issue One): Habitat restoration and condition should be the top priority. The lake needs to be brought back to 1976 condition.
 - A ready funding source is needed to implement a drawdown plan.
 - Objective Two (of Issue One): Reduce nutrients going into the lake;
 - Mayor Dailey reported that all new construction on the lake needs to be accompanied by modern septic tanks.
- Come up with a plan with some funding to for the construction of new septic for existing homeowners.
- Most practical is a sewage system, but even more expensive so stick with what's doable.
- The aquatic preserve really needs to have more productive notices than the articles in the Democrat.
- FSU should be involved in lake management and research. Contact the chair of the department to get professors out there and participate as advisors.
- Page 24 – hydrilla. One way to control is grass carp. Have they been used recently?
 - Sherry Carpenter: Getting ordered soon. Will take about a year from then to show an effect.
- What is the status of herbicide use?
 - Sherry Carpenter: FWC uses contractors who are specially certified for aquatic vegetation, but FWC has just one biologist for the region. FWC prioritizes treatment of invasive plants.
- One of the most disappointing things is the absence of boats on the lake. Even with appropriate water depth, but there is too much vegetation.
- Faculty of FSU and similar would be great advisors for writing grants, not writing the grants themselves.
- Page 34 – NFWFMD doesn't actively monitor WQ. Who does?
 - Sherry Carpenter: Leon County
- Endocrine disruptors – either block or over-activate. Levels of these chemicals are too high (e.g. arsenic).
- Lake Jackson needs to be sampled more stringently.
- It's about the standards. Some of the levels are too high (allowing too much pollution).
- Prioritize issues and start with the source of the problem. Scraping the lake is only a temporary solution if there are still too many nutrients.

Northwest Florida Water Management District

Review Comments

- Page 9 paragraph 1 refers to “FS 18-20.004.” Believe that should refer to FAC (Florida Administrative Code) rather than Florida Statutes.
- Page 11, paragraph 3 – states that the Legislature established the Preserve in 1974. Paragraph on page 9 indicated 1973.
- Page 13 (paragraph 1) refers to “Outstanding Florida Waterbody.” Recommend “Waterbody” be revised to “Water.”
- Recommend that the most recent SWIM plan^[1] be included in the references and, if appropriate, cited in lieu of earlier SWIM plans.
- Page 14 states “water quality in Megginnis Arm and surrounding areas is the poorest in the lake.” Is this still a current assessment based on more recent data? Leon County and/or Tallahassee may have more recent data analyses.
- Page 17 states “Groundwater is transported via tributaries to a main water body, such as a large lake, from any location within its drainage basin.” Perhaps it was meant to say surface water – or to state that seepage from groundwater is transported via tributaries, as we don’t typically think of a groundwater tributary.
- Page 17 also reports five natural springs west of Megginnis Arm (Cairns & Macmillan, 1989). The current definition of spring might exclude those features, and they are not included in springs inventory. It would be correct to state there are seepage systems, though.
- Page 27 references the Ochlockonee SWIM Plan.” This should be revised to read “Ochlockonee River and Bay SWIM Plan.” Suggest reviewing the plan and appendices for additional discussion of the lake and basin characteristics.
- Updating of the water quality information might be helpful to understand the big picture. Page 36 addresses the Current Status of Ecosystem Science at LJAP, and includes a water quality monitoring section, but it doesn’t seem to recognize the recent efforts by Leon County. Rather, it references a 2006 study. That study reports Megginnis Arm has the poorest water quality of the lake. It might be valuable to add whether more current studies corroborate that information. On page 34, a 2011 water quality report is referenced, for example. Did it conclude the same thing?

The ecosystem science section references the water quality monitoring efforts by the county. This includes 39 water quality parameters. Suggest that conclusions from this monitoring be referenced.

Specific Comments (excerpted text)

Topography and Geomorphology (Physiography)

Lake Jackson Aquatic Preserve is located within the northern boundaries of the Tallahassee Hills physiographic province. The Tallahassee Hills physiographic province covers a 24-mile wide strip of uplands spanning five counties in northwest Florida (Cairns & Macmillan, 1989). The region extends from the Withlacoochee River, west to the Apalachicola River. The steep hills associated with the Tallahassee Hills form the sub-basins that give Lake Jackson its irregular shape. The rolling topography found within the aquatic preserve and surrounding uplands has a varied elevation of 200 to 230 feet above sea level.

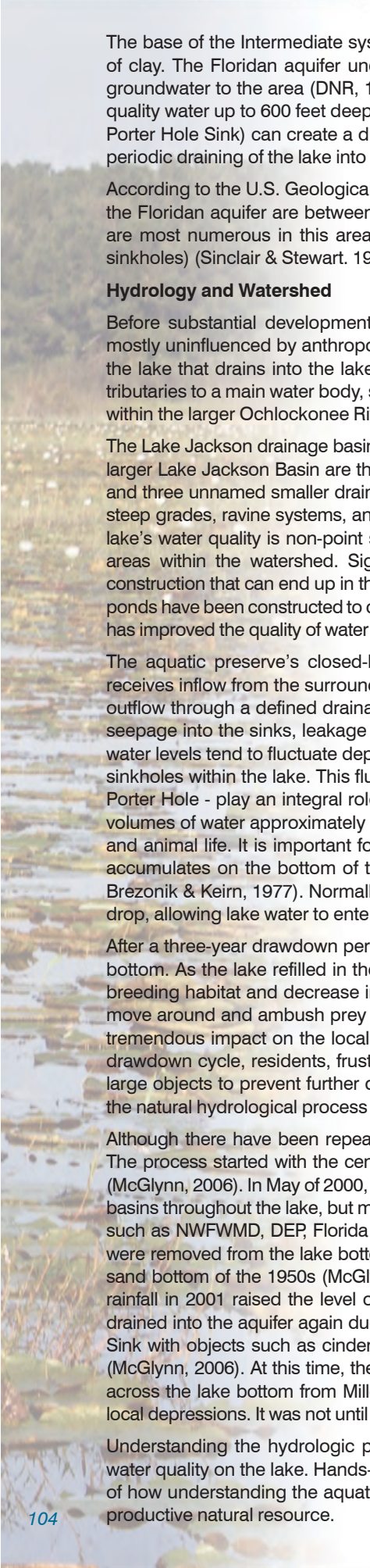
The landforms associated with the Tallahassee Hills region evolved over a long period of time in response to past sea level fluctuations and erosional and depositional processes. It was not until recently when anthropogenic changes to the natural landscape began contributing to the degradation of the lake’s undisturbed ecosystem. The steep sloped hills are an important aspect to the aquatic preserve because during periods of high rainfall, pollutants can be transported from neighboring developments into the lake at a higher rate than it would if the surrounding terrain was flat.

Geology

Some of the unique characteristics of LJAP can be better understood by examining the subsurface geology. Lake Jackson is a flat-bottomed water body that has an average depth of six feet except for two known major depressions that have a localized depth of about 28 feet (Florida Department of Natural Resources [DNR], 1991). These depressions are thought to be caused by sinkholes (Cite). The lake was formed through the dissolution of limestone over a long period of time which caused a depression on the surface that is now the lake (Cairns & Macmillan, 1989). Limestone dissolution also produced the two major sinkholes located on Lake Jackson that have the capability to drain the lake of its water within days of reopening (Cite).

There are three hydrogeologic units adjacent to or underlying Lake Jackson. The surficial or water table aquifer is the uppermost hydrogeologic unit that is present in the higher elevations surrounding the lake. The yellowish-red sand and clay of the Miccosukee Formation act as a water table aquifer. Downward flow of groundwater into deeper units is restricted by the less permeable intermediate confining unit or intermediate aquifer system. The intermediate system extends 100 feet below the lake level. It consists of quartz sands and fine-grained limestone at the base of the system.

¹ [1] Northwest Florida Water Management District. 2017. Ochlockonee River and Bay Surface Water Improvement and Management Plan. Northwest Florida Water Management District. Program Development Series 17-02, September 2017.



The base of the Intermediate system has low permeability and separates the Floridan aquifer system with 10 to 20 feet of clay. The Floridan aquifer underlies Lake Jackson along with all of Leon County and is the source of most of the groundwater to the area (DNR, 1991). The Floridan aquifer is composed of limestone and dolostone and contains high quality water up to 600 feet deep (DNR, 1972). The Floridan aquifer below Lake Jackson's two sinkholes (Lime Sink and Porter Hole Sink) can create a direct route for water from the lake to enter the aquifer (DNR, 1972). Because of this, the periodic draining of the lake into sinkholes has the potential to deliver large quantities of water into the Floridan aquifer.

According to the U.S. Geological Survey, LJAP resides in the Area III sinkhole classification, where sediments that overly the Floridan aquifer are between 30' to 200' thick and consists mainly of cohesive clays of low permeability. Sinkholes are most numerous in this area, are of varying size, and have the potential to develop abruptly (e.g. cover-collapse sinkholes) (Sinclair & Stewart, 1985) (see Map 3 / Geomorphology of Lake Jackson Aquatic Preserve).

Hydrology and Watershed

Before substantial development occurred within the aquatic preserve's watershed, its hydrological processes were mostly uninfluenced by anthropogenic disturbances. The watershed or basin of a lake refers to the area encompassing the lake that drains into the lake due to the gradient of the surrounding topography. Surface water flows overland via tributaries to a main water body, such as a large lake, from any location within its drainage basin. Lake Jackson is located within the larger Ochlockonee River basin that starts in Georgia and ends in Florida's Gulf Coast.

The Lake Jackson drainage basin is 43.2 square miles and surrounds the aquatic preserve (Map 5). The sub-basins of the larger Lake Jackson Basin are the Lake Overstreet drain, Timberlane Run, Meginnis Arm Run, Harbinwood Estates Drain and three unnamed smaller drains. The area west of Meginnis Arm is especially environmentally sensitive because of the steep grades, ravine systems, and five natural springs (Cairns & Macmillan, 1989). The most imminent issue affecting the lake's water quality is non-point source pollution being transported to the aquatic preserve from surrounding developed areas within the watershed. Significant rainfall events transport sediment from roads, residential areas, and nearby construction that can end up in the aquatic preserve and impact water quality. Stormwater treatment facilities and retention ponds have been constructed to capture stormwater before it flows into the aquatic preserve. Although the current treatment has improved the quality of water entering the system, there is a need for more treatment areas within the watershed.

The aquatic preserve's closed-basin contributes to the effects of non-point source pollution. The aquatic preserve receives inflow from the surrounding basins mentioned above; however, being a closed-basin system, the water has no outflow through a defined drainage way such as a river or stream. Water can only exit the system through evaporation, seepage into the sinks, leakage through the lake's bottom, and transpiration by vegetation (DNR, 1991). Lake Jackson water levels tend to fluctuate depending on the amount of rainfall within the basin and the magnitude of leakage through sinkholes within the lake. This fluctuation is typical of karst lakes. The two currently known active sinks - Lime Sink and Porter Hole - play an integral role in maintaining the aquatic preserve's ecological integrity. The natural cycling of large volumes of water approximately every 25 years has historically created an ecosystem with rich soils and abundant plant and animal life. It is important for the ecology of the lake for it to drain occasionally; it allows the organic material that accumulates on the bottom of the lake to oxidize and return nutrients back to the lake bottom (McGlynn, 2006; Fox, Brézonik & Keirn, 1977). Normally, the sinkholes are plugged with sediments, but will collapse when groundwater levels drop, allowing lake water to enter the aquifer, and often dramatically lowering the water level.

After a three-year drawdown period that started in 1956, the oxidization of organic sediments exposed sand on the lake bottom. As the lake refilled in the 1960s, the largemouth bass population increased significantly due to the increase in breeding habitat and decrease in submerged vegetation throughout the water column allowing more areas for bass to move around and ambush prey (McGlynn, 2006). The proliferation of the largemouth bass on Lake Jackson has had a tremendous impact on the local economy throughout the years. However, in 1959 while the lake was still in its natural drawdown cycle, residents, frustrated with the lake's lack of water, loaded the sinkholes with scrap car parts and other large objects to prevent further draining and preserve the lake's recreational viability. The blockage of the sinks altered the natural hydrological process of the lake and may have impeded the sinks' function (McGlynn, 2006).

Although there have been repeated attempts to block both sinks, in 1999 the lake completely drained in a year's time. The process started with the central portion of the lake draining into Porter Hole Sink, exposing 750 acres of sediments (McGlynn, 2006). In May of 2000, Lime Sink drained the north portion of the lake leaving some water trapped in smaller sub-basins throughout the lake, but most of the lake bed was exposed. With the combined efforts of government organizations, such as NFWFMD, DEP, Florida Legislature, FWC, and private parties, an excess of two million cubic yards of sediment were removed from the lake bottom in a massive muck removal project costing more than \$8 million to restore the lake's sand bottom of the 1950s (McGlynn, 2006). Since the muck removal project, the lake has refilled significantly. Increased rainfall in 2001 raised the level of Lake Jackson to between 80 and 81 feet above sea level. In 2006, the lake partially drained into the aquifer again due to low aquifer levels (McGlynn, 2006). Again, locals attempted to block the Porter Hole Sink with objects such as cinderblocks and sediment. However, this caused two more small sinks to open to the north (McGlynn, 2006). At this time, the lake was dry in most places and it was not uncommon to see trucks and ATV's driving across the lake bottom from Millers Landing to Faulk Drive. There were some areas where water was concentrated into local depressions. It was not until early 2008 that Lake Jackson filled up due to a three-day period of heavy rainfall.

Understanding the hydrologic processes of LJAP is crucial to developing management techniques aimed to restore water quality on the lake. Hands-on restoration projects, such as the muck removal project of 1999, are a good example of how understanding the aquatic preserve's hydrological processes can lead to an increase in the lake's viability as a productive natural resource.

18 December 2018

Mr. Kevin Claridge
Director, Florida Coastal Office
Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Dear Mr. Claridge,

We are writing to provide comments on the draft Lake Jackson Aquatic Preserve Management Plan.

1. On Page 18 of the section “Hydrology and Watershed” there is a discussion of the sediment removal projects that were conducted in 1999-2001. While these projects have generally been described as positive to Lake Jackson, the mechanical removal of muck from the lake bottom using heavy equipment causes significant disturbance to the lake ecosystem. The organic material (muck) that accumulates on the bottom of Lake Jackson is a result of decaying macrophytes. While some parts of the lake historically had a sandy bottom, other areas of the lake clearly had an organic (muck) bottom, as evidenced by the depth (> 6 feet) of the muck and black organic soils observed during sediment removal. In fact, the equipment operators were instructed to remove organic sediment until they reached sand but in many area of the lake bottom sand could never be reached. Therefore, it is not correct to characterize the natural condition of entire lake bottom as sand. During drought and natural drydowns of the lake, numerous species of amphibians and reptiles use the organic sediment to aestivate until the lake refills (e.g., *Amphiuma*, *Siren*, *Farancia*, *Kinosternon*). Large-scale removal of the organic sediment not only removes aestivation habitat but also causes direct mortality of thousands of amphibians and reptiles. MJA spent hundreds of hours monitoring and recording the effects of the muck removal on reptiles and amphibians in 1999-2001 and the results were reported in Aresco and Gunzburger, 2004 (see reference below and attached manuscript). Given the potential for future such large-scale sediment removal projects at Lake Jackson and the implications they will have on the entire ecosystem, there should be some discussion of these results in the management plan and a clear statement that retaining muck on the lake bottom is crucial for many species.

Aresco, M. J., and M. S. Gunzburger. 2004. Effects of large-scale sediment removal on herpetofauna in Florida wetlands. *Journal of Herpetology* 38(2):275-279.

2. In the “Natural Communities” section, there should be a paragraph that describes the Lake Jackson food web. Our research conducted at Lake Jackson (Aresco et al, 2015) is the most comprehensive published study of the food web of a lake in the southeastern U.S.

Aresco, M.J., J. Travis, and P. S. D. MacRae. 2015. Trophic interactions of turtles in a north Florida lake food web: prevalence of omnivory. *Copeia*: 2015(2).

Aresco, M. J., and F. C. James. 2005. Ecological relationships of turtles in northern Florida lakes: a study of omnivory and the structure of a lake food web. Final Report. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.

We examined the trophic structure, energy pathways, and sources of primary production in the food web of Lake Jackson using stable isotope analysis. Despite the apparent dominance of macrophyte standing crops at Lake Jackson (which range from 6,000 to 17,000 g/m², Aresco and James, 2005), macroalgae (filamentous mats, periphyton, and littoral particulate organic matter) were, proportionately, a much greater source of primary production than macrophytes, macrophyte-based detritus, and open-water phytoplankton. To understand the structure and complexity of the Lake Jackson food web, we analyzed stable isotopes of invertebrates and vertebrates including 15 species of fish, 5 species of turtles, 5 species of snakes, 2 species of aquatic salamanders, 6 species of frogs, and alligator. We found that the food web is complex and is dominated by omnivory, with many direct and indirect interactions among fish, reptiles, and amphibians. Turtles play a vital role in the Lake Jackson food web, as their longevity, high densities, and high total biomass make them an important component of the system's overall energy flow and nutrient cycling. Lake management practices must consider the role of reptiles and amphibians in the food web and the important resources such macroalgae and organic substrates that support these populations.

3. One of the potential threats to the Lake Jackson ecosystem is the continuous lobbying effort by some property owners along Lake Jackson to berm or plug the sinkholes in order to stabilize water levels. The management plan should provide a more detailed discussion of how stabilized water levels would negatively affect Lake Jackson. It is important to explain that the lake ecosystem is adapted to fluctuating water levels that contribute to species diversity and high quality fish and wildlife habitat. Clearly, any intervention to change the hydroperiod of the lake and the subsequent alteration of the wetlands would adversely affect fish and wildlife.
4. The vegetation cover in the shallow littoral zone is critical for supporting the small fish species and juvenile stages of frogs, sunfish, bass, and others. They are the foundation of the food web for larger species. While a tangle of littoral zone vegetation is often regarded as a nuisance for recreation, a healthy amount of submersed and emergent vegetation creates the habitat complexity that is important for the numbers of small vertebrates in any lake (e.g. Dionne and Folt 1991, *Canad. J. Fish. Aquatic Sci.* 48:123ff; Chick et al. 1992, *J. Freshwater Ecology*

7:353ff; Richardson et al. 2006, Oecologia 147:596ff, among many others). We think the plan ought to give explicit consideration to ensuring a healthy littoral zone.

5. Water quality monitoring is often done by several groups at different locations and times of day. In some cases, this can result in a haphazard sampling that does not provide the uniform standard of sampling over the long term that is necessary for adequate monitoring and management. The plan should be clear in how water quality is to be measured and describe a standardized sampling scheme that can be sustained across a period of years.
6. Species List – There are several additions that should be made to the amphibian list based on our observations.

Greater siren, *Siren lacertina*

Lesser siren, *Siren intermedia*

Barking treefrog, *Hyla gratiosa*

Southern gray treefrog, *Hyla chrysoscelis*

Thank you for the opportunity to provide these comments. Please let us know if you need any additional information to help with this plan.

Sincerely,

Matthew J. Aresco, PhD.

Director, Nokuse Plantation

13292 County Highway 3280, Bruce, FL 32455

Phone 850-585-5415, Email: matthewjaresco@gmail.com

Joseph Travis, Robert O. Lawton

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December 19, 2018

Sherry Carpenter, Lake Jackson Aquatic Preserve Manager
Florida Coastal Office
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Re: Draft Lake Jackson Aquatic Preserve Management Plan

Sent Via Email to: FloridaCoasts@FloridaDEP.gov

Dear Ms. Sherry Carpenter,

The Stormwater Management section of the City of Tallahassee (City) appreciates the opportunity to comment on the Draft Lake Jackson Aquatic Preserve Management Plan. We believe these comments will assist the Florida Coastal Office of the Department of Environmental Protection (DEP) in developing a cohesive management plan that allows DEP to continue moving forward with the stated mission that includes protection and enhancement, restoration, community engagement and science-based management.

The Lake Jackson stakeholders have made great strides toward protecting and improving the water quality of Lake Jackson with projects and initiatives directly aligned with the mission of DEP. These accomplishments should be highlighted and documented as a success story within the Aquatic Preserve Management Plan. In a 2016 editorial, the governing board of the Northwest Florida Water Management District (NFWFMD) highlighted more than \$19 million dollars of structural improvements to address stormwater runoff, which is generally viewed as the greatest threat to Lake Jackson. Additionally, the City and County recently implemented a Lake Jackson Special Development Zone defined in the Tallahassee - Leon County comprehensive plan and codified in ordinance. This special development zone, along with more stringent stormwater and development standards, provide for an improved, planned growth into the future. These structural and non-structural improvements have been and continue to be the key to a declining trend in the nutrient levels of Lake Jackson. In fact, the nutrient levels today are some of the lowest values recorded since data collection began in the 1960s. The City looks forward to working with DEP and Lake Jackson stakeholders on continued water quality improvements.

We appreciate your consideration of these comments and look forward to working with Department staff to finalize the Lake Jackson Aquatic Management Plan. In the interim, should you have any questions, please do not hesitate to contact Mark Heidecker at 891-6825.

Respectfully submitted,



Mark Heidecker
Interim Planning Chief, Water Quality Enhancement
Stormwater Management

cc: Jodie Cahoon, Manager – Stormwater Management, City of Tallahassee
Julie Espy, Florida Department of Environmental Protection

Enclosure: Comments on the Draft Lake Jackson Aquatic Preserve Management Plan

Summary Comments on Draft Lake Jackson Aquatic Management Plan

Page	Section	Paragraph	From the Draft Management Plan	Comment
14	3.3	2	<i>The draft management plan describes the creation of the Lake Jackson Protection District in 1990 by Leon County BOCC.</i>	The management plan doesn't mention or cite the local Lake Jackson stormwater standards, which exceed the state water quality treatment standards and provide for retaining runoff volumes in excess of the pre-development runoff volume for all storm events up to a 100-year, 24-hour duration storm.
14	3.3	5	<i>This physical attribute is an important aspect to the aquatic preserve because during periods of increased rainfall, pollution-laden water from neighboring developments gets washed into the lake more readily than it would if the surrounding terrain was flat.</i>	The suggestion is to clarify these two sentences. It may be more prudent to highlight the correlation between Tallahassee's hilly topography, the increased erosion potential and the nutrient content of the sediment.
17	3.3	5	<i>The management plan highlights issues surrounding non-point source pollution and states "although the current treatment has improved the quality of water entering the system, there is a need for more treatment areas within the watershed."</i>	This statement is quite vague, the plan should highlight basin retrofits that have been completed and documented. A useful source for this is a 2016 NWFVMD governing board editorial, provided as attachment 1 , that highlights (since 2005) more than \$19 million dollars that has been spent to lessen the impact of stormwater runoff to Lake Jackson. Additional ongoing projects, in addition to the stringent stormwater standards, makes this statement in the management plan now obsolete.

Page	Section	Paragraph	From the Draft Management Plan	Comment
24	3.3	2	<i>A drawdown in 1999 nearly eradicated the large hydrilla mats and allowed for easier management of the remaining concentrations.</i>	It should be emphasized that the "drawdown" was natural and due to the opening of Porter and Lime sinks.
31	3.7	2	<i>Interstate 10 runs over Meginnis Creek and contributes a pollution load to the lake that is detrimental to the water quality of the entire Meginnis Arm area.</i>	The runoff from Interstate 10 is directed into stormwater management facilities, such as the NWFVMD facility that was constructed in 1983. There is a misconception that the water quality within Meginnis Arm is detrimental to Lake Jackson; however, it should be noted that the latest assessment by DEP demonstrates that Meginnis Arm is not impaired for nutrients. Additionally, using the DEP trend tool contained within Run 55 of the IWR Report, the City has provided five-year trend plots for data within the Meginnis Arm as attachment 2 . The City suggests the inclusion of historical water quality data within the management plan to highlight efforts of the State, County and City as successful in improving the water quality of Lake Jackson and the contributing basins.
34	4.1.1	–	<i>The management plan mentions multiple agencies that collect water quality samples applicable to the Lake Jackson system.</i>	The City is absent from this listing and narrative description of sampling efforts. However, the City conducts quarterly monitoring of two locations within Lake Jackson and performs water chemistry analyses similar to Leon County. Additionally, the City of Tallahassee conducts bi-monthly monitoring at the discharge of the NWFVMD facility into Meginnis Arm, which characterizes the discharge of the City's MS4.

Page	Section	Paragraph	From the Draft Management Plan	Comment
36-37	4.1.2	-	<i>The management plan references multiple sources from the 1970's, 1980's and early 1990's.</i>	The City suggests that these sources be closely evaluated to determine if they are obsolete. Additionally, any reference to water quality data should be updated to reflect the latest conditions. For example, the current data doesn't indicate high concentrations of nutrients and chlorophyll being discharged from Meginnis Creek and Ford's Arm. In fact, these streams meet the DEP numeric nutrient thresholds for healthy streams of 0.15 mg/L (TP) and 1.03 mg/L (TN).
37	4.1.3	1	<i>Water quality in the southern portion of the lake has degraded due to stormwater runoff from developed areas. The relatively good water quality in the northern portion of the lake may also be threatened due to increasing development. Stormwater runoff has been directly linked to degraded conditions, particularly in southern portions of the lake that include Meginnis and Fords arms (NWWFMD, 1993).</i>	As previously highlighted, since 2005 at least \$19 million dollars has been spent to address stormwater runoff to Lake Jackson. These improvements, in addition to stringent stormwater standards have provided real water quality benefits to the lake system. One could deduce that septic tanks are a major contributor to Lake Jackson nutrient loading. The City completed a GIS analysis of parcels containing septic tanks surrounding Lake Jackson. That analysis provided as attachment 3 , reveals that 2,187 parcels containing septic systems reside within ½ mile of Lake Jackson, with the majority densely populated at the southern portion of the lake. The management plan should be updated to reflect current water quality conditions within Meginnis and Fords arm, highlight the successful projects that have resulted in water quality improvements and identify septic tanks as a threat to Lake Jackson water quality.

Page	Section	Paragraph	From the Draft Management Plan	Comment
39	4.1.3	Objective 2	<i>Identify nutrients, sediments and other pollutants entering the lake and coordinate with other agencies to develop appropriate response strategies to these issues and reduce the amounts entering LJAP.</i>	A nutrient balance for the lake should be completed that identifies all inputs and sources to the lake, including stormwater runoff, seepage, sediment and the relative contribution from individual sources including septic tanks.
39	4.1.3	Objective 5	<i>Performance measure two mentions the City of Tallahassee Talk about Personal Pollution (TAPP) program</i>	Please be advised that the TAPP acronym stands for Think About Personal Pollution.
40	4.2.2	Habitat Restoration/Mitigation	<i>In multiple locations of the management plan it is stated that the water quality of Lake Jackson is "declining" or "degraded"</i>	Extensive monitoring data for Lake Jackson exists back to the 1960s and indicate a trend of lowering nutrient concentrations. In fact, TP & TN concentrations are lower today than they were 55 years ago. Using the DEP trend tool contained within Run 55 of the IWR Report, the City has provided five-year trend plots for data within Lake Jackson as attachment 4 . Again, the City suggests the inclusion of historical water quality data within the management plan to highlight efforts of the State, County and City as successful in improving the water quality of Lake Jackson.

Governing Board editorial: Future bright for Lake Jackson

June 5, 2018, 1:49 PM

By Jon Costello and Marc Dunbar
Governing Board members



One of our greatest concerns as Leon County's representatives on the Governing Board of the Northwest Florida Water Management District is the health of Lake Jackson, and we are pleased to be a part of the latest chapter of the lake's restoration and protection story.

It's a success story that began more than 30 years ago – and it is one worth sharing.

Urban and suburban development within the southern portion of the lake's watershed began causing much of Lake Jackson's troubles as early as the 1970s. Major development projects, including the construction of the Tallahassee Mall and the construction of I-10 across the Meginnis Arm drainage area, contributed a significant amount of sediment runoff into the lake.

In 1976, the EPA funded a research project to identify solutions to the influx of excess nutrients and sediments and, by 1983, the Northwest Florida Water Management District had teamed with the EPA and DEP (Department of Natural Resources) to construct the Meginnis Arm Stormwater Treatment Facility. This was the first of many strides toward restoring and protecting the lake from the impacts of urban stormwater.

At the time, the \$2.6 million facility was one of the more innovative stormwater treatment projects in the country. The facility was expanded in 1990 to treat even more stormwater before it entered the lake.

As development continued to expand through the 1980s and beyond, so did the construction of additional stormwater treatment facilities throughout the lake's basin. And the District's partners were there the entire time.

In cooperation with Leon County and the City of Tallahassee, regional stormwater treatment facilities have been constructed or restored at Yorktown Pond (in 1995), Boone Boulevard (2005), the Okeahopee Basin (2007 and 2010), Harbinwood Estates (2008), and Sharer Road (2009).

In fact, since 2005 alone, more than \$19 million has been spent to lessen the impact of stormwater runoff into Lake Jackson.

In addition to well-planned stormwater treatment projects, sometimes a beneficial project presents itself when you don't expect it.

When Lake Jackson went dry due to its rather infamous sinkhole in 1999, the District joined forces with Leon County, the Florida Legislature, DEP, and FWC to remove more than two million cubic yards of nutrient-laden, organic muck from the lake's bottom. The \$8.2 million project took nearly two years to complete, and the benefit to the resource was enormous.

The District made another significant investment toward protecting Lake Jackson by purchasing more than 500 acres of land within Elinor Klapp-Phillips Park in 1992.

The District owns the land on the eastern shore of the lake, but manages the property through a cooperative arrangement with the City of Tallahassee. The city purchased an additional 162 acres adjacent to the park to complement the District's project and further protect the lake.

All told, more than \$42 million has been invested into Lake Jackson since 1983. This money has come from a variety of partners, including the Florida Legislature, DEP, FWC, FDOT, Leon County, the City of Tallahassee, and the District.

That investment has paid off.

In 2014, the most recent year for which data is available, the levels of *Chlorophyll a*, Total Nitrogen, and Total Phosphorus in the lake were well within the state's Numeric Nutrient Criteria. A long-term view of the lake's nutrient levels shows it trending in the right direction. Lake Jackson's vegetative community registered as "healthy" in the most recent sampling data. In fact, the vast majority of the vegetation in the lake is native.

This is all good news, and it did not happen overnight. No single entity and no single project improved the lake's water quality on its own. But each partner and each project has added another chapter to the lake's success story.

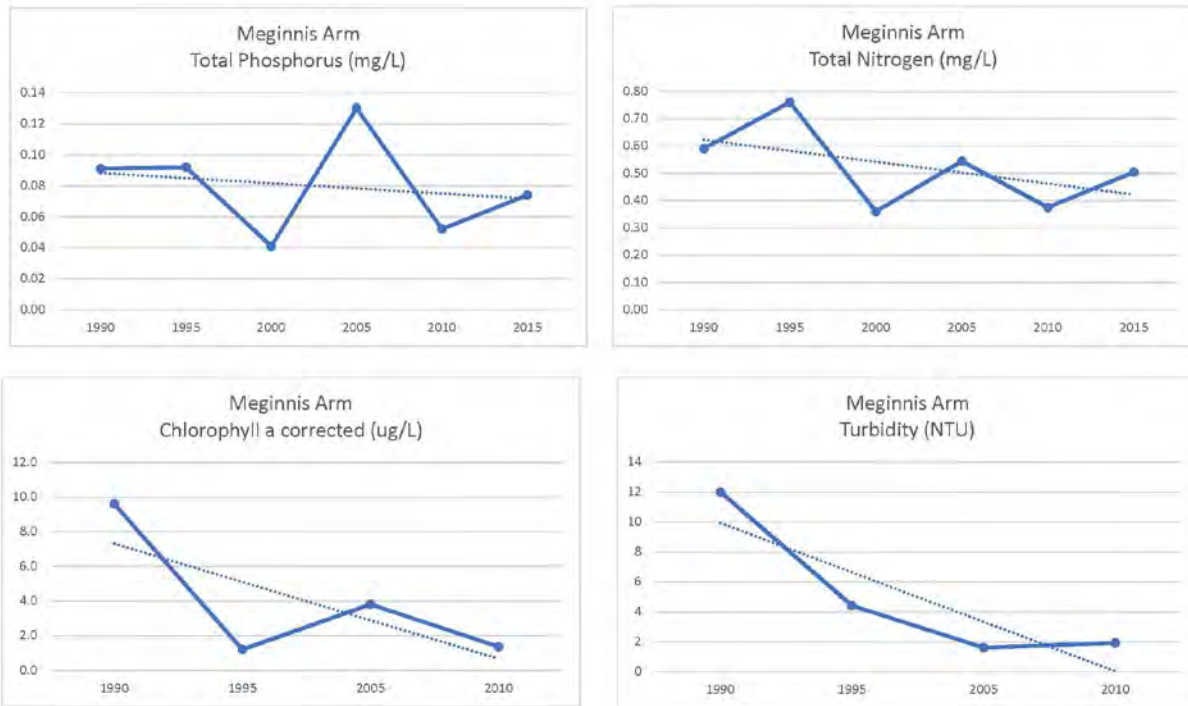
Now 30 years after the initial investment, the District and its partners are planning for what's next.

We are in the early stages of updating the District's Surface Water Improvement and Management plan for the Ochlockonee River and Bay watershed that will focus on the long-term health of Lake Jackson and other natural resources in the region.

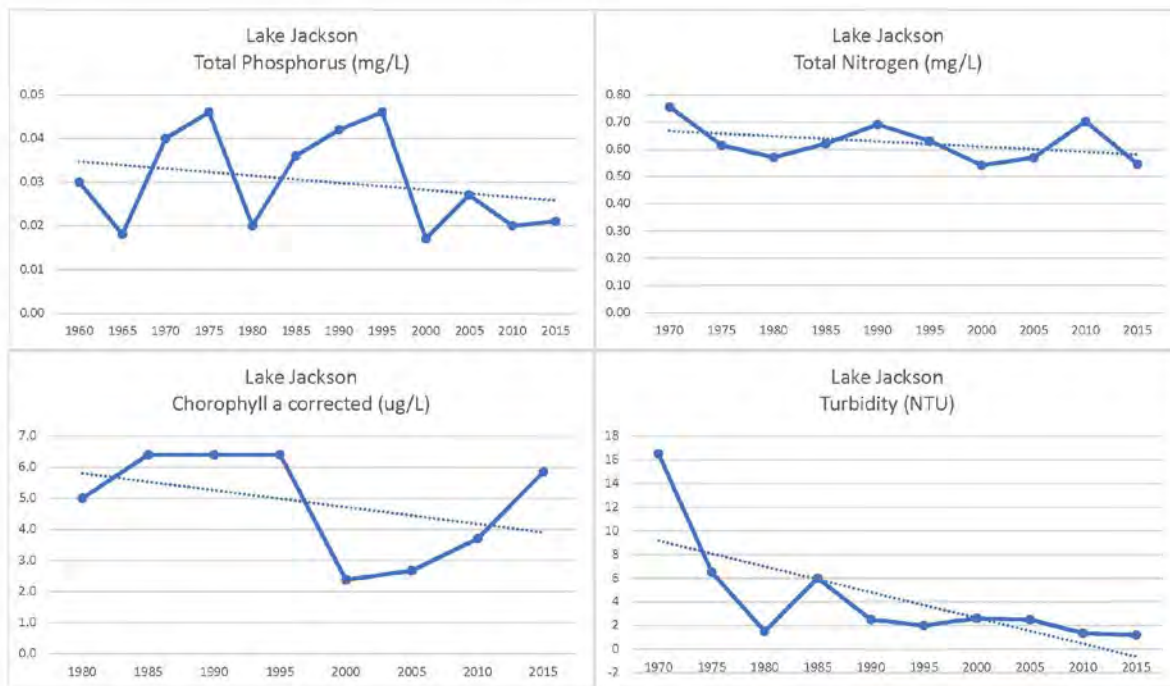
As a part of this process, the District will continue to work with a technical advisory committee representing local governments and resource agencies, as well as other stakeholder groups, to identify projects needed for the continued restoration and protection of the lake.

We are truly excited about what the future holds for Lake Jackson and the other natural resources in our special region of the state, and we look forward to working with our partners to make this story one still worth sharing in the generations to come.

Meginnis Arm 5-Year Median Trend Plots



Lake Jackson 5-Year Median Trend Plots



Lake Jackson Aquatic Preserve

Septic Tanks (OSTDS)

Half-Mile Buffer Lake Jackson

2187 - Parcels w/OSTDS - half-mile buffer.
3566 - Total Number of Parcels.
61% - Parcels have OSTDS - half-mile buffer.

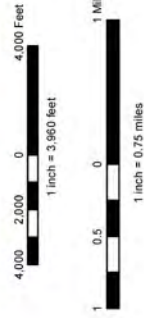


Legend

- Lake Jackson Aquatic Preserve 1/2 mile Buffer
- Waterbody
- Lake Jackson_AP_Septic
- Septic_Well_Inventory
- City
- County



City of Tallahassee
Your Own Utilities™



DISCLAIMER:
This product has been compiled from the most accurate source data from Leon County, the City of Tallahassee, and the Leon County Property Appraiser's Office. However, this product is for informational purposes only and should not be used for legal or financial decisions. Any reliance on the information contained herein is at the user's own risk. Leon County, the City of Tallahassee, and the Leon County Property Appraiser's Office assume no responsibility for any use of the information contained herein or any loss resulting therefrom. THE INFORMATION CONTAINED HEREIN IS PROVIDED "AS IS" WITHOUT WARRANTY. ANY INFORMATION FROM THIS DOCUMENT SHOULD BE VERIFIED BY INDEPENDENT ANALYSES.

Author: Chris Gudeman, GISP GIS Analyst, Stormwater Planning, City of Tallahassee
Date Saved: Friday, December 14, 2018
Location: g:\tallahassee\gis\stormwater\GIS\OSTDS_Lake Jackson_halfmile.aprx_20181214_11x11.mxd



Goals, Objectives, and Strategies

D.1 / Current Goals, Objectives and Strategies Table

The following table provides a cost estimate for conducting the management activities identified in this plan. The data is organized by year and Management Program with subtotals for each program and year. The following represents the actual budgetary needs for managing the resources of the aquatic preserve. This budget was developed using data from the Office of Resilience and Coastal Protection (RCP) and other cooperating entities, and is based on actual costs for management activities, equipment purchases and maintenance, and for development of fixed capital facilities. This budget assumes optimal staffing levels to accomplish these strategies, and includes the costs associated with staffing such as salary or benefits. Budget categories identified correlate with the RCP Management Program Areas. The Funding Source column depicts the source of funds with "S" designated for state, "F" for federal, and "O" for other funding sources (e.g. non-profit groups, etc.). Dollar figures in red font indicate funding not available at this time.

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Issue 1: Water and Sediment Quality															
Goal 1: Maintain and improve water and sediment quality within and adjacent to LJAP for preservation of environmental services, fisheries and recreational activities.															
Objective 1: Determine status and trends of water and sediment quality within and adjacent to LJAP to identify potential impacts to natural resources and provide quality scientific data and recommendations to address such issues.															
Strategy 1: Compile existing sediment quality data including that from Leon County, Lakewatch, NFWMD and other entities that collect sediment data to create long-term monitoring program that includes both biotic and abiotic parameters.	Ecosystem Science	2018-19	5 years	\$300	F	\$300	\$300	\$300	\$300	\$300	\$0	\$0	\$0	\$0	0
Strategy 2: Evaluate compiled data to identify status, trends and information gaps. Continue to coordinate and collaborate with other agencies and convene a working group to close gaps, if appropriate.	Ecosystem Science	2020-21	8 years	\$500	F	\$0	\$0	\$500	\$500	\$500	\$500	\$500	\$500	\$500	500
Strategy 3: Inform other entities, managers and the public about water and sediment quality conditions.	Ecosystem Science	2018-19	Recurring	\$500	F	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Strategy 4: Attend or participate in conferences and meetings that focus on water and land management topics to increase and enhance knowledge of new and improved management techniques for LJAP.	Ecosystem Science	2018-19	Recurring	\$2,000		\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Strategy 5: Review all permit applications for projects within the aquatic preserve especially those that could alter hydrology or water quality.	Ecosystem Science	2018-19	Recurring	\$200	F	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
Objective 2: Identify nutrients, sediments and other pollutants entering the lake, their sources, and coordinate with other agencies to develop appropriate response strategies to these issues and reduce the amounts entering LJAP.															
Strategy 1: Monitor water quality.	Ecosystem Science	2018-19	Recurring	\$1,500		\$6,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Strategy 2: Evaluate sediment quality and monitor sediments.	Ecosystem Science	2018-19	Recurring	\$1,500		\$6,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Objective 3: Support efforts of regulatory programs, local government and land owners to reduce the impacts from development in the watershed.															
Strategy 1: Support projects to enhance storm water and sewage treatment within LJAP's watershed.	Ecosystem Science	2018-19	Recurring	\$500	F	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Strategy 2: Support local government comprehensive growth management plans and land development rules and ordinances that enhance abatement of nonpoint source pollutants.	Ecosystem Science	2018-19	Recurring	\$500	F	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Strategy 3: Give recommendations on homeowner's growth and land development needs.	Ecosystem Science	2018-19	Recurring	\$500	F	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Objective 4: Coordinate with regulatory programs and local government to develop a prioritized work plan for potential lake drawdown actions.															
Strategy 1: Convene a working group and create and implement a drawdown work plan.	Ecosystem Science	2018-19	1 year		F	\$200	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Objective 5: Ensure that management activities and public use do not impede the natural cycle.															
Strategy 1: Provide public awareness opportunities to help adjacent homeowners avoid altering the aquatic preserve with excess nutrients.	Education & Outreach	2018-19	Recurring	\$400	F	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Issue 2: Habitat Restoration and Resource Protection															
Goal 1: Maintain, improve and increase healthy habitat within LJAP.															
Objective 1: Reduce invasive aquatic vegetation in LJAP.															
Strategy 1: Coordinate with FWC's Invasive Plant Management Section to determine needs of aquatic invasive plant control.	Resource Mgt.	2018-19	Recurring	\$1,000		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Strategy 2: Look at existing data and track trends as to increases and decreases of aquatic invasive plant species.	Resource Mgt.	2018-19	3 years	\$200	F	\$200	\$200	\$200	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Objective 2: Reduce invasive upland and wetland vegetation around LJAP.															
Strategy 1: Coordinate with multiple agencies to determine needs of upland invasive plant control.	Resource Mgt.	2018-19	Recurring	\$10,000		\$1,000	\$19,000	\$5,000	\$15,000	\$5,000	\$15,000	\$5,000	\$15,000	\$5,000	\$15,000
Objective 3: Improve habitat in LJAP for species diversity.															
Strategy 1: Assist in the restoration efforts of Carr Lake, Mallard Pond and Lake Jackson.	Resource Mgt.	2018-19	Recurring	\$10,000		\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Strategy 2: Identify and track species diversity of LJAP.	Resource Mgt.	2018-19	Recurring	\$500	F	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Objective 4: Reduce the amount of debris in the aquatic preserve.															
Strategy 1: Ensure that appropriate access points to the aquatic preserve have monofilament line depositories and trash receptacles.	Resource Mgt.	2018-19	5 years	\$100	F	\$100	\$100	\$100	\$100	\$100	\$0	\$0	\$0	\$0	\$0
Strategy 2: Encourage managers of local parks, launch sites and other facilities to erect informational signage that promotes "Leave No Trace" and "Pack it in, Pack it Out" No Trace stewardship.	Resource Mgt.	2018-19	Recurring	\$1,000		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Strategy 3: Organize public cleanup events to reduce debris.	Resource Mgt.	2018-19	Recurring	\$1,000	F	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Objective 5: Encourage an increase in the amount and frequency of law enforcement around Lake Jackson.															
Strategy 1: Facilitate regular communication with law enforcement for rapid response to illegal activities.	Resource Mgt.	2018-19	Recurring	\$200	F	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
Objective 6: Protect cultural and historical resources of LJAP.															
Strategy 1: Locate and identify unknown archaeological and historical resources.	Resource Mgt.	2019-20	Recurring	included in other strategies	S		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Strategy 2: Monitor existing archaeological and historical resources.	Resource Mgt.	2019-20	Recurring	\$250	S		\$500		\$500		\$500		\$500		\$500
Issue 3: Public Involvement															
Goal 1: Increase awareness of the presence of the aquatic preserve, the work conducted in it and the significance of that work.															
Objective 1: Promote awareness of the aquatic preserve and its significance to residents.															
Strategy 1: Install signage at access points about the aquatic preserve.	Education & Outreach	2018-19	7 years	\$1,500		\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$0	\$0	\$0
Strategy 2: Provide educational boat and kayak tours to inform the public about the effect of watershed practices on the aquatic preserve's natural resources (education and outreach).	Education & Outreach	2018-19	Recurring	\$1,200		\$1,500	\$1,500	\$1,500	\$1,500	\$1,000	\$1,000	\$500	\$500	\$500	\$500
Strategy 3: Provide education events and opportunities for the public to learn about the aquatic preserve.	Education & Outreach	2018-19	Recurring	\$1,000		\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Strategy 4: Create and promote a homeowner's guide to living on LJAP.	Education & Outreach	2018-19	3 years	\$600		\$2,000	\$2,000	\$2,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Objective Two: Educate visitors, residents and users about actions they can take to conserve and restore resources in LJAP.															
Strategy 1: Provide educational materials (kiosks, brochures, etc.) and opportunities to inform the public and user groups about the value of the resources of LJAP and efforts to conserve and restore these resources.	Education & Outreach	2018-19	Recurring	\$500		\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500
Goal 2: Increase public awareness and education on invasive species issues.															
Objective 1: Increase public capacity to assist in controlling invasive species as well as avoiding introduction of new invasive species.															
Strategy 1: Provide interpretive exhibits at boat ramps and information pamphlets to inform the public on the value of native species.	Education & Outreach	2018-19	7 years	\$1,500		\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$0	\$0	\$0
Issue 4: Sustainable Public Use and Access															
Goal 1: Encourage user experiences and public recreation opportunities consistent with natural resources conservation.															
Objective 1: Increase public access and low impact recreational opportunities on LJAP.															
Strategy 1: Support the addition of paddlecraft launches on public lands.	Public Use	2021-24	4 years	\$2,000		\$0	\$0	\$10,000	\$0	\$0	\$10,000	\$0	\$0	\$0	\$0
Objective 2: Ensure appropriate recreational use on the lake bottom during times of low lake levels.															
Strategy 1: Hold informational meetings and post signage during low lake levels to educate the public about the natural cycle of drawdown and impacts from driving on the lake bed during this time.	Public Use	2018-19	Recurring	\$300		\$400	\$200	\$200	\$200	\$400	\$400	\$600	\$200	\$200	\$200
Strategy 2: Improve enforcement and coordination of FWC law enforcement with DEP and the public about allowable uses to improve FWC enforcement of ordinance rules.	Public Use	2018-19	Recurring	\$200	F	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200

Goals, Objectives & Integrated Strategies	Mgmt. Program	Implement. Date (Planned)	Length of Initiative	Est. Avg. Yearly Cost	Funding	18-19	19-20	20-21	21-22	22-23	23-24	24-25	25-26	26-27	27-28
Strategy 3: Examine public use patterns and trends within LJAP to proactively identify potential resource/public use conflicts and work with key stakeholders to develop conservation strategies to minimize damage to the natural resource.	Public Use	2023-24	5 years	\$500		\$0	\$0	\$0	\$0	\$0	\$500	\$500	\$500	\$500	\$500
Objective 3: Provide user education about hunting and fishing regulations and debris issues with LJAP.															
Strategy 1: Coordinate with other agencies to provide education and awareness opportunities about debris problems in LJAP.	Public Use	2018-19	Recurring	\$300	F	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300
Strategy 2: Coordinate with other agencies to provide brochures and informational materials about regulations regarding the use of duck blinds and hunting and fishing regulations.	Public Use	2018-19	Recurring	\$200	F	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
Strategy 3: Improve enforcement and coordination of FWC law enforcement with DEP and the public about allowable uses to improve FWC enforcement of ordinance rules.	Public Use	2018-19	Recurring	\$200	F	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200	\$200
Objective 4: Inventory and assess cumulative impacts on the natural resources from human activities.															
Strategy 1: Survey and record boat launching and activity for impacted shoreline and signs of pollution.	Public Use	2018-19	Recurring	\$500	F	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500

D.2 / Budget Summary Table

The following table provides a summary of cost estimates for conducting the management activities identified in this plan.

Fiscal Year	Ecosystem Science	Resource Management	Education & Outreach	Public Use	Annual Total
2018-2019	\$16,700	\$15,000	\$8,400	\$1,800	\$41,900
2019-2020	\$6,500	\$33,500	\$8,400	\$1,600	\$50,000
2020-2021	\$7,000	\$19,000	\$8,400	\$11,600	\$46,000
2021-2022	\$7,000	\$29,300	\$6,400	\$1,600	\$44,300
2022-2023	\$7,000	\$18,800	\$5,900	\$1,800	\$33,500
2023-2024	\$6,700	\$29,200	\$5,900	\$12,300	\$54,100
2024-2025	\$6,700	\$18,700	\$5,400	\$2,500	\$33,300
2025-2026	\$6,700	\$29,200	\$2,400	\$2,100	\$40,400
2026-2027	\$6,700	\$18,700	\$2,400	\$2,100	\$29,900
2027-2028	\$6,700	\$29,200	\$2,400	\$2,100	\$40,400
Ten Year Totals	\$77,700	\$240,600	\$56,000	\$39,500	\$413,800

D.3 / Major Accomplishments Since the Approval of the Previous Plan

Since the approval of the previous Lake Jackson Aquatic Preserve (LJAP) management plan in June of 1991, there have been several major accomplishments. The first of which is implementing successful strategies to get and keep control of several invasive plants. In 1995, hydrilla covered roughly 1700 acres of the lake. Annual surveys by the Florida Fish and Wildlife Conservation Commission show the coverage by hydrilla to be averaging currently around 265 acres. This has been accomplished by biological controls as well as planned herbicide treatments.

Another major accomplishment was muck removal. During the drawdown event of late 1999-2000, more than eight million dollars was spent removing 50 years of muck accumulation (more than two million cubic yards of sediment) from the lake bottom. Three areas were targeted for this restoration - the mouths of Meginnis and Fords arms; sinks and karst depressions between Crowder Landing and Faulk Drive Landing; and Church Cove. The effects of this massive undertaking are still clearly visible today at the lake.

Public access has also been significantly improved. Jackson View Landing went through an enhancement project that was completed in 2017 which included new signage, better defined parking, the addition of an aluminum, floating dock; and rehabilitation to the boat ramp. The installation of a unisex/family restroom ("drop-toilet") was added, along with a completely new deck structure and observation pier and the picnic tables and grills were replaced with new ones. Parwez "P. A." Alam Park, formerly known as Okeeheepkee Prairie Park was completed with a stormwater pond to improve water quality, as well as boardwalks and trails for the public to enjoy.

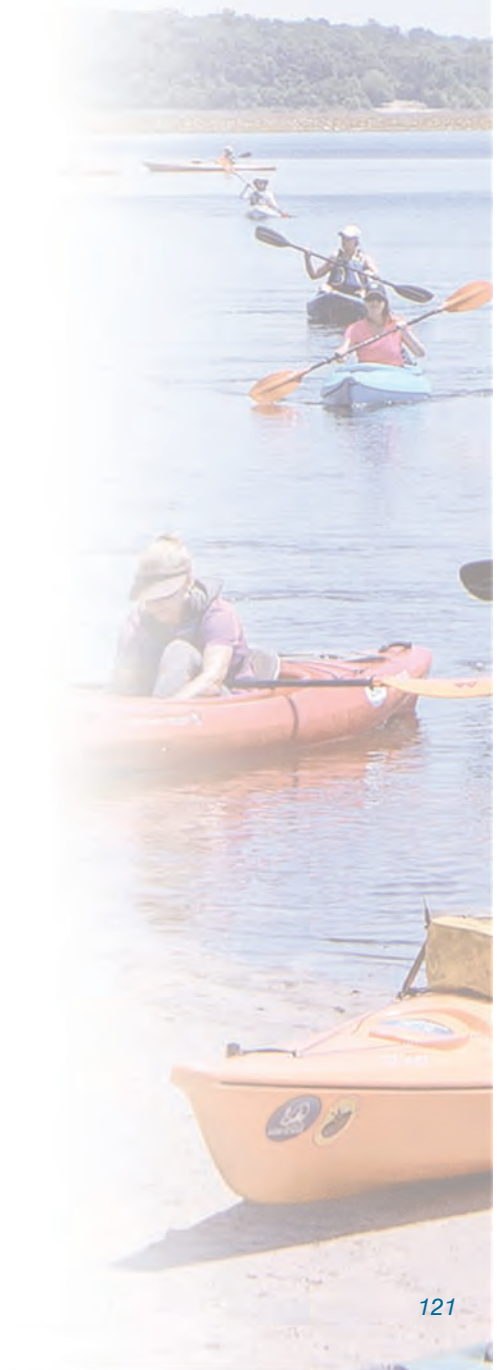
Since April 2017, there has been an increase in public education and outreach. The LJAP program has a monthly lecture series called the Explore-Learn-Connect LJAP Lecture Series. Each month a different lecturer is invited to speak about varying topics that impact LJAP. These topics have included "Fish and Fisheries of Lake Jackson", "Florida Friendly Landscaping", "Common Plants of LJAP", "Spring into Action with TAPP", "Aquatic Plant Permits", "Macroinvertebrates" and "The Geology of the Lake Jackson Basin". The inaugural Lake Jackson Fun Paddle occurred in April 2018. These events have reached more than 1,000 people.

Since November 2017, public cleanup events have become a regular occurrence for the LJAP program. These events encourage citizens to come out and give back to the community by cleaning LJAP. Our dedicated volunteers have worked more than 300 hours and collected approximately 1,900 pounds of debris. Leon County funded and installed cigarette butt containers at Sunset Landing to reduce cigarette trash in a heavily trafficked area.

In 2018, LJAP staff began taking steps to reduce exotic invasive species and increasing native wildlife habitat through LJAP. In September 2018 with the help of Leon County and the Aquatic Preserve Society, LJAP contracted Kestrel Ecological Services to treat five acres of Chinese tallow and several other exotic invasive species at Faulk Drive Landing.

The Florida Lake Management Society awarded a grant to LJAP to install plants in an eroded area at Jackson View Landing. This restoration project was completed in January 2019 and replanted two small areas totaling approximately 7,700 square feet on the Lake Jackson shoreline. These areas were planted with more than 200 trees of eight different species: overcup oak (*Quercus lyrata*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), common persimmon (*Diospyros virginiana*), bald cypress (*Taxodium distichum*), buttonbush (*Cephalanthus occidentalis*), hackberry (*Celtis occidentalis*), and muhly grass (*Muhlenbergia capillaris*). Other native species will also propagate from the existing seed bank of the area over time. T-posts were installed so cars would no longer have access to the area and educational signs were posted at both locations. The signs explain the project and teach people how they can protect their water resources in their own yards. This project will have many benefits for years to come; the new habitat will provide food and shelter for habitat and the root systems of these trees will help stabilize the bank and decrease erosion. Along with the help of the Florida Lake Management Society, Leon County provided many services for the completion of this project. There have been some collaborations between Leon County and the LJAP program which have been very beneficial to the resource needs of the aquatic preserve. Leon County is providing funds to treat a five-acre area that has been dominated by the exotic invasive Chinese tallow tree.

The aquatic preserve has been getting significant publicity from the Tallahassee Democrat and The Florida Channel. LJAP has been featured twice in the Tallahassee Democrat and twice on The Florida Channel. This publicity helps highlight what the LJAP program is doing and what the public can do to help protect its water bodies.



Other Requirements

E.1 / Acquisition and Restoration Council Management Plan Compliance Checklist

Land Management Plan Compliance Checklist Required for State-owned conservation lands over 160 acres			
Item #	Requirement	Statute/Rule	Pg#/App
Section A: Acquisition Information Items			
1	The common name of the property.	18-2.018 & 18-2.021	Ex. Sum.
2	The land acquisition program, if any, under which the property was acquired.	18-2.018 & 18-2.021	p. 1
3	Degree of title interest held by the Board, including reservations and encumbrances such as leases.	18-2.021	p. 1, 6-8
4	The legal description and acreage of the property.	18-2.018 & 18-2.021	Ex. Sum & p. 12-13
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	p. 12
6	An assessment as to whether the property, or any portion, should be declared surplus. <i>Provide Information regarding assessment and analysis in the plan, and provide corresponding map.</i>	18-2.021	N/A
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. <i>Please clearly indicate parcels on a map.</i>	18-2.021	N/A
8	Identification of adjacent land uses that conflict with the planned use of the property, if any.	18-2.021	p. 27-29
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)	p. 6
10	Proximity of property to other significant State, local or federal land or water resources.	18-2.021	p. 17-19
Section B: Use Items			
11	The designated single use or multiple use management for the property, including use by other managing entities.	18-2.018 & 18-2.021	p. 11-13
12	A description of past and existing uses, including any unauthorized uses of the property.	18-2.018 & 18-2.021	p. 9-11, 25-26, 48-52
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	N/A
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	p. 6-8, 27-52
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	p. 25, 42, App. E.2
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	p. 27-29, 42-44, 48-50
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)	p. 48-52
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	p. 6-8
19	Letter of compliance from the local government stating that the LMP is in compliance with the Local Government Comprehensive Plan.	BOT requirement	App. E.3

**Land Management Plan Compliance Checklist
Required for State-owned conservation lands over 160 acres**

Item #	Requirement	Statute/Rule	Pg#/App
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	p. 12-19, 31-52
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	N/A
23	A statement regarding incompatible use in reference to Ch. 253.034(10).	253.034(10)	p. 48-50

*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

24	A statement concerning the extent of public involvement and local government participation in the development of the plan, if any.	18-2.021	App. C
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)	N/A
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. <i>Include the advisory group members and their affiliations, as well as the date and location of the advisory group meeting.</i>	259.032(10)	App. C
27	Summary of comments and concerns expressed by the advisory group for parcels over 160 acres	18-2.021	App. C
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. <i>Include a copy of each County's advertisements and announcements (meeting minutes will suffice to indicate an announcement) in the management plan.</i>	253.034(5) & 259.032(10)	App. C
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. <i>Include manager's replies to the team's findings and recommendations.</i>	259.036	N/A
30	Summary of comments and concerns expressed by the management review team, if required by Section 259.036, F.S.	18-2.021	N/A

**Land Management Plan Compliance Checklist
Required for State-owned conservation lands over 160 acres**

Item #	Requirement	Statute/Rule	Pg#/App
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	N/A
Section D: Natural Resources			
32	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding soil types. <i>Use brief descriptions and include USDA maps when available.</i>	18-2.021	p. 15-16
33	Insert FNAI based natural community maps when available.	ARC consensus	p. 22
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	Ex. Sum
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	p. 15-22
36	Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding beaches and dunes.	18-2.021	N/A
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	p. 15-16
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	p. 20-26, App. B.3.1
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	p. 20-23, App. B.3.2
40	The identification or resources on the property that are listed in the Natural Areas Inventory. <i>Include letter from FNAI or consultant where appropriate.</i>	18-2.021	p. 20-22
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)	p. 25-26, 42, 45, App. E.2
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.	259.032(10) & 253.034(5)	p. 20-26, 32-52
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.	259.032(10) & 253.034(5)	App. D.1
42-C.	The associated measurable objectives to achieve the goals.	259.032(10) & 253.034(5)	p. 38-52, App. D.1
42-D.	The related activities that are to be performed to meet the land management objectives and their associated measures. <i>Include fire management plans - they can be in plan body or an appendix.</i>	259.032(10) & 253.034(5)	App. D.1
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.	259.032(10) & 253.034(5)	App. D.1
43	***Quantitative data description of the land regarding an inventory of forest and other natural resources and associated acreage. <i>See footnote.</i>	253.034(5)	Ex. Sum, p. 20

**Land Management Plan Compliance Checklist
Required for State-owned conservation lands over 160 acres**

Item #	Requirement	Statute/Rule	Pg#/App
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).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-C.	Measurable objectives (see requirement for #42-C).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-D.	Related activities (see requirement for #42-D).	18-2.021, 253.034(5) & 259.032(10)	N/A
44-E.	Budgets (see requirement for #42-E).	18-2.021, 253.034(5) & 259.032(10)	N/A
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).	259.032(10) & 253.034(5)	p. 23-25, 42-45
45-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
45-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 44-45, App. D.1
45-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
45-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
46	***Quantitative data description of the land regarding an inventory of exotic and invasive plants and associated acreage. <i>See footnote.</i>	253.034(5)	p. 23-25, 42-44, App. B.3.2
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 required via lease language	App. B.4
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).	259.032(10) & 253.034(5)	p. 23-25, 42-45, App. D.1
48-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 44-45, App. D.1
48-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 44-45, App. D.1
48-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 23-25, 42-45, App. D.1
48-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
Section E: Water Resources			
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. <i>If yes, provide a list of the appropriate managing agencies that have been notified of the proposed plan.</i>	18-2.018 & 18-2.021	p. 1-4

**Land Management Plan Compliance Checklist
Required for State-owned conservation lands over 160 acres**

Item #	Requirement	Statute/Rule	Pg#/App
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	p. 1-4, 12-13
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	p. 20-22
52	***Quantitative description of the land regarding an inventory of hydrological features and associated acreage. <i>See footnote.</i>	253.034(5)	Ex. Sum
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).	259.032(10) & 253.034(5)	p. 32-52, App. D.1
53-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 38-52, App. D.1
53-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 38-52, App. D.1
53-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 32-52, App. D.1
53-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1

Section F: Historical, Archaeological and Cultural Resources

54	**Location and description of known and reasonably identifiable renewable and non-renewable resources of the property regarding archeological and historical resources. <i>Include maps of all cultural resources except Native American sites, unless such sites are major points of interest that are open to public visitation.</i>	18-2.018, 18-2.021 & per DHR's request	Ex. Sum, p. 25-26, App. B.5
55	***Quantitative data description of the land regarding an inventory of significant land, cultural or historical features and associated acreage.	253.034(5)	Ex. Sum, p. 25-26
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	p. 42, 45, App. D.1, App. E.2
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).	259.032(10) & 253.034(5)	p. 24-25, 42, 45, App. D.1, App. E.2
57-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 45, App. D.1, App. E.2
57-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 45, App. D.1, App. E.2
57-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 45, App. D.1, App. E.2
57-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1

**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.

**Land Management Plan Compliance Checklist
Required for State-owned conservation lands over 160 acres**

Item #	Requirement	Statute/Rule	Pg#/App
Section G: Facilities (Infrastructure, Access, Recreation)			
58	***Quantitative data description of the land regarding an inventory of infrastructure and associated acreage. <i>See footnote.</i>	253.034(5)	p. 55
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).	259.032(10) & 253.034(5)	p. 55, App. D.1
59-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	App. D.1
59-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	App. D.1
59-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	App. D.1
59-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	App. D.1
60	*** Quantitative data description of the land regarding an inventory of recreational facilities and associated acreage.	253.034(5)	p. 48-52
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).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-B.	Detailed description of both short and long-term management goals (see requirement for # 42-B).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-C.	Measurable objectives (see requirement for #42-C).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-D.	Related activities (see requirement for #42-D).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
61-E.	Budgets (see requirement for #42-E).	259.032(10) & 253.034(5)	p. 48-52, App. D.1
Section H: Other/ Managing Agency Tools			
62	Place this LMP Compliance Checklist at the front of the plan.	ARC & managing agency consensus	Front & App. E.1
63	Place the Executive Summary at the front of the LMP. Include a physical description of the land.	ARC & 253.034(5)	Ex. Sum
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	App. D.3
65	Key management activities necessary to achieve the desired outcomes regarding other appropriate resource management.	259.032(10)	p. 32-52
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)	App. D.1
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)	App. D.1
68	A statement of gross income generated, net income and expenses.	18-2.018	N/A
*** = 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.			

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *'Historic property' or 'historic resource' means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state.'*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at: www.flheritage.com/preservation/compliance/guidelines.cfm

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf.

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward

Division of Historical Resources, Bureau of Historic Preservation, Compliance and Review Section

R. A. Gray Building, 500 South Bronough Street

Tallahassee, FL 32399-0250

Phone: (850) 245-6425, Toll Free: (800) 847-7278, Fax: (850) 245-6435



FLORIDA DEPARTMENT OF Environmental Protection

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Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

June 2019

Artie White, Comprehensive Plan Administrator
Tallahassee-Leon County Planning Department
Frenchtown Renaissance Center, Third Floor
435 N. Macomb Street
Tallahassee, FL 32301

Dear Mr. White:

Attached is a copy of the draft Lake Jackson Aquatic Preserve Management Plan. (The plan can also be found at <https://floridadep.gov/rcp/rcp/content/site-management-plans>.) The plan was developed with input from the public and the Lake Jackson Management Plan Advisory Group. We anticipate that the plan will be reviewed by the Acquisition and Restoration Council at their October 2019 meeting in Tallahassee (<https://floridadep.gov/lands/environmental-services/content/acquisition-and-restoration-council-arc>). We respectfully request, within 30 days of receipt of this letter, your review of this aquatic preserve management plan for its compliance with the Tallahassee-Leon County Comprehensive Plan. Please reply to the physical address at the top of the letter (or e-mail address) regarding whether the Lake Jackson Aquatic Preserve Management Plan is in compliance with the county's comprehensive plan. Thank you in advance for your time and effort in this matter.

If you have any questions, please don't hesitate to contact me at (850)245-2104 or Earl.Pearson@FloridaDEP.gov.

Sincerely,

A handwritten signature in dark ink, appearing to read "Earl Pearson", written over a horizontal line.

Earl Pearson
Planning Manager
Florida Department of Environmental Protection
Office of Resilience and Coastal Protection

E.4 / Division of State Lands Management Plan Approval Letter

(This information will be provided in the final draft of this management plan.)





Lake Jackson Aquatic Preserve Management Plan

Florida Department of Environmental Protection
Office of Resilience and Coastal Protection
3900 Commonwealth Blvd., MS #235
Tallahassee, FL 32399 • www.aquaticpreserves.org