FLORIDA DEPARTMENT OF Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32399

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

February 18, 2021

Mr. Keith Rowell
Florida Forest Service
Department of Agriculture and Consumer Services
3125 Conner Boulevard, Room 236
Tallahassee, Florida 32399-1650

RE: Little Big Econ State Forest – Lease No. 3958

Dear Mr. Rowell:

On **February 12, 2021**, the Acquisition and Restoration Council (ARC) recommended approval of the **Little Big Econ State Forest** management plan. Therefore, Division of State Lands, Office of Environmental Services (OES), acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the **Little Big Econ State Forest** management plan. The next management plan update is due February 12, 2031.

Pursuant to s. 253.034(5)(a), F.S., each management plan is required to describe both short-term and long-term management goals and include measurable objectives to achieve those goals. Short-term goals shall be achievable within a 2-year planning period, and long-term goals shall be achievable within a 10-year planning period. Upon completion of short-term goals, please submit a signed letter identifying categories, goals, and results with attached methodology to the Division of State Lands, Office of Environmental Services.

Pursuant to s. 259.032(8)(g), F.S., by July 1 of each year, each governmental agency and each private entity designated to manage lands shall report to the Secretary of Environmental Protection, via the Division of State Lands, on the progress of funding, staffing, and resource management of every project for which the agency or entity is responsible.

Pursuant to s. 259.036(2), F.S., management areas that exceed 1,000 acres in size, shall be scheduled for a land management review at least every 5 years.

Pursuant to s. 259.032, F.S., and Chapter 18-2.021, F.A.C., management plans for areas less than 160 acres may be handled in accordance with the negative response process. This process requires small management plans and management plan amendments be

submitted to the Division of State Lands for review, and the Acquisition and Restoration Council (ARC) for public notification. The Division of State Lands will approve these plans or plan amendments submitted for review through delegated authority unless three or more ARC members request the division place the item on a future council meeting agenda for review. To create better efficiency, improve customer service, and assist members of the ARC, the Division of State Lands will notice negative response items on Thursdays except for weeks that have State or Federal holidays that fall on Thursday or Friday. The Division of State Lands will contact you on the appropriate Friday to inform you if the item is approved via delegated authority or if it will be placed on a future ARC agenda by request of the ARC members.

Conditional approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

Deborah Burr
Office of Environmental Services
Division of State Lands

TEN-YEAR LAND MANAGEMENT PLAN

FOR THE

LITTLE BIG ECON STATE FOREST

SEMINOLE COUNTY

PREPARED BY THE

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FLORIDA FOREST SERVICE

APPROVED ON

FEBRUARY 12, 2021

TEN-YEAR LAND MANAGEMENT PLAN

FOR THE

LITTLE BIG ECON STATE FOREST

Approved by:

Erin Albury, Director
Florida Forest Service

2/25/21
Date

James Roberts, Chief
Forest Management Bureau

2/24/21
Date

TEN-YEAR LAND MANAGEMENT PLAN
LITTLE BIG ECON STATE FOREST
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LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service
COMMON NAME: Little Big Econ State Forest
LOCATION: Seminole County
ACREAGE TOTAL: 10,336.25 acres

Historic Natural Communities*	Approximate Acreage
Floodplain marsh	2,298
Mesic Hammock	2,271
Mesic flatwoods	1,695
Wet Prairie	753
Blackwater Stream	740
Scrubby Flatwoods	496
Wet Flatwoods	487
Hydric Hammock	401
Depression Marsh	274
Scrub	176

Historic Natural Communities*	Approximate Acreage
Baygall	154
Basin Swamp	131
Basin Marsh	128
Sandhill	82
Dome Swamp	72
River Floodplain Lake	26
Floodplain Swamp**	10
Alluvial	6
Xeric Hammock	4

* 100 Acquisition acres have not been mapped
** Includes Floodplain Forest

TIITF LEASE AGREEMENT NUMBER: 3958
USE: Single ___ Multiple __X__

MANAGEMENT AGENCY	RESPONSIBILITY
Florida DACS, Florida Forest Service	General Forest Resource Management
Florida Fish and Wildlife Conservation Commission	Wildlife Resources & Laws
St. Johns River Water Management District	Water Resource Protection & Restoration
Department of State, Division of Historical Resources	Historical & Archaeological Resource Management

DESIGNATED LAND USE: Multiple-Use State Forest
SUBLEASES: None
ENCUMBRANCES: Seminole County
TYPE ACQUISITION: CARL, SOR and Preservation 2000 (P2000)
UNIQUE FEATURES: Econlockhatchee River and St. Johns River, an Outstanding Florida Water (OFW); Mesic flatwoods, sandhill and hydric hammock
ARCHAEOLOGICAL / HISTORICAL: Seventeen (17) known sites and two (2) resource groups
MANAGEMENT NEEDS: Restoration and maintenance of native ecosystems and disturbed site restoration
ACQUISITION NEEDS: Remainder of Econ-St. Johns Ecosystem Project
SURPLUS ACREAGE: None
PUBLIC INVOLVEMENT: Board of County Commissioners of Seminole County, State Forest Liaison Group, Management Plan Advisory Group Public Hearing, St. Johns River Water Management District Governing Board Public Hearing -

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

ARC Approval Date: _____ TIITF Approval Date: _____

Comments:_____

_____

_____

_____

I. Introduction

Little Big Econ State Forest (LBESF) is located in Seminole County with more than 19 different natural community types comprising of approximately 10,336 acres. The forest's unusual name comes from combining the names of the little and big Econlockhatchee Rivers. The Muskogee word Econlockhatchee translates literally to "earth-mound stream," and means the "river of many mounds." Long ago, Native Americans named the river for the multitude of man-made earthen mounds along the waterway.

The earliest major acquisitions of LBESF were completed in 1994 by the State of Florida's Conservation and Recreation Lands and the Save Our Rivers programs. The goal of these programs is to preserve the Econlockhatchee River Basin, protect lands containing flora and fauna unique to the region, and provide critical habitat for many of Florida's native species.

Some of the natural communities found on LBESF include mesic and wet flatwoods, marsh, and a variety of hydric forest types. The forest's most notable feature is the narrow, winding Econlockhatchee River, which flows 17 miles through the forest and empties into the St. Johns River. The Econlockhatchee River is designated as an Outstanding Florida Waterway and is the second largest tributary to the St. Johns River. The natural communities on the forest support a variety of wildlife which includes alligator, Sherman's fox squirrel, gopher tortoise, gopher frog, bald eagle, sandhill crane, and wood stork.

The main recreational activities enjoyed at LBESF include canoeing, hiking, bicycling, hunting, fishing, wildlife viewing, and horseback riding. The forest is an Operation Outdoor Freedom (OOF) program site and provides recreational opportunities to wounded veterans.

A. General Mission and Management Plan Direction

The primary mission of the Florida Forest Service (FFS) is to "protect Florida and its people from the dangers of wildland fire and manage the forest resources through a stewardship ethic to assure they are available for future generations".

Management strategies for LBESF center on the multiple-use concept, as defined in sections 589.04(3) and 253.034(2)(a) F.S. Implementation of this concept will utilize and conserve state forest resources in a harmonious and coordinated combination that will best serve the people of the state of Florida, and that is consistent with the purpose for which the forest was acquired. Multiple-use management for LBESF will be accomplished with the following strategies:

- Practice sustainable forest management for the efficient generation of revenue and in support of state forest management objectives;
- Provide for resource-based outdoor recreation opportunities for multiple interests;
- Restore and manage healthy forests and native ecosystems ensuring the long-term viability of populations and species listed as endangered, threatened, or rare, and other components of biological diversity, including game and non-game wildlife and plants;
- Protect known archaeological, historical, and cultural resources;
- Restore, maintain, and protect hydrological functions, related water resources, and the health of associated wetlands and aquatic communities; and
- Provide research and educational opportunities related to natural resource management.

This management plan is provided according to requirements of Sections 253.034, 259.032, and 373, Florida Statutes (F.S.), and was prepared utilizing guidelines outlined in Section 18-2.021 of the Florida Administrative Code (F.A.C.). It is not an annual work plan or detailed operational plan but provides general guidance for the management of LBESF for the next ten-year period and outlines the major concepts that will guide management activities on the forest.

B. Past Accomplishments

Past management activities and public use on LBESF has been compiled monthly and is available from the forest manager. A table has been prepared for this plan that summarizes the accomplishments for each of the past ten years. See Exhibit A. The table does not attempt to account for all activities on the forest but summarizes major activities. It does not list the multitude of daily activities and public interactions involved in managing the forest. Since the approval of the previous management plan in 2010, there have been several events, developments, and accomplishments. Among the most notable have been the following:

- Conducted prescribed fire on 5,237 acres.
- Sprayed 557 acres for non-native plants.
- Roller chopped 731 acres of floodplain marsh to reduce shrubs and to prepare it for prescribed fire.
- Conducted a 174-acre timber sale to thin the planted longleaf pine stands.
- Conducted a 309-acre fuel wood timber sale to remove fire damaged pines and to remove oaks and sand pines in another area to help restore the sandhill and scrub ecosystems.
- Discovered and documented five new shell middens with Florida Division of Historical Resources.
- Discovered cattle dipping vat on the Yarborough Tract which St. Johns River Water Management District removed after testing for contaminated soil.
- Remodeled the shop building and expanded the shop compound.

C. Goals / Objectives for the Next Ten-Year Period

The following goals and objectives provide direction and focus of management resources for the next ten-year planning period. Funding, agency program priorities, and the potential for wildfire during the planning period will determine the degree to which these objectives can be met. Management activities on LBESF during this management period must serve to conserve, protect, utilize, and enhance the natural and historical resources and manage resource-based public outdoor recreation, which is compatible with the conservation and protection of this forest. Most of the management operations will be conducted by the FFS, although appropriate activities will be contracted to private sector vendors or completed with the cooperation of other agencies. All activities will enhance the property's natural resource or public recreational value.

The management activities listed below will be addressed within the ten-year management period and are defined as short-term goals, long-term goals, or ongoing goals. Short-term goals are goals that are achievable within a two-year planning period, and long-term goals are achievable within a ten-year planning period. Objectives are listed in priority order for each goal. Other activities will be completed with minimal overhead expense and existing staff.

- **<u>GOAL 1</u>: Sustainable Forest Management**

  Objective 1: Continue to update and implement the Five-Year Silviculture Action Plan including reforestation, timber harvesting, prescribed burning, restoration, and timber stand improvement activities and goals. (Ongoing objective)

  Performance Measures:
  - Annual updates of the Five-Year Silviculture Action Plan completed
  - Continued implementation of the Five-Year Silviculture Action Plan (acres treated)

  Objective 2: Continue to implement the FFS process for developing stand descriptions and conducting forest inventory, including maintaining a GIS database containing forest stands, roads, and other attributes (including but not limited to: rare, threatened, and endangered species, archaeological and historical resources, and non-native invasive species locations). (Ongoing objective)

  Performance Measures:
  - Update GIS database and re-inventory all attributes as required by FFS procedures
  - Number of acres inventoried

- **<u>GOAL 2</u>: Public Access and Recreational Opportunities**

  Objective 1: Maintain public access and recreation activities that are compatible with multiple-use management. (Ongoing objective)

  Performance Measure: Number of visitor opportunities per day

  Objective 2: Evaluate additional public access and recreational opportunities that are compatible with multiple-use management. (Short-term objective)

  Performance Measure: Number of additional visitor opportunities evaluated

  Objective 3: Continue to safely integrate human use into LBESF, follow the Five-Year Outdoor Recreation Plan and update annually. (Ongoing objective)

  Performance Measures:
  - Continued implementation of the Five-Year Outdoor Recreation Plan
  - Annual updates of the Five-Year Outdoor Recreation Plan completed

  Objective 4: Continue to involve and meet with the Liaison Committee. The purpose of Liaison Committee meetings is to facilitate communication between the FFS and committee members (and the groups they represent) about state forest management and to obtain feedback from these entities. The Liaison Committee consists of local residents, community leaders, special interest group representatives (vendors, hunters and other recreational users, etc.), environmental group representatives, and other public / private entities. (Ongoing objective)

  Performance Measures:
  - Liaison group remains organized
  - Annual meetings continue

  Objective 5: Recruit volunteers and volunteer organizations to assist with recreation and/or resource management. (Ongoing objective)

Performance Measures:

- Number of volunteers and organizations that assist with projects
- Number of hours provided by volunteers

- **<u>GOAL 3</u>: Habitat Restoration, Improvement, and Fire Management**

Objective 1: The LBESF currently contains approximately 5,101 acres of fire-dependent communities. LBESF staff will plan and conduct prescribed burns in a manner that benefits these fire-dependent natural communities within the forest. To achieve an average fire return interval of two (2) to ten (10) years for most fire-dependent communities, FFS will attempt to prescribe burn an average of approximately 1,275 to 1,700 acres per year. Currently FFS staff estimates 4,502 acres at LBESF are within the desired fire management interval. (Ongoing objective)

Performance Measures:

- Number of acres burned during the dormant and growing seasons
- Number of acres burned within target fire-return interval

Objective 2: Continue to annually update and implement the Five-Year Prescribed Burning Management Plan and the prescribed burning goals. (Ongoing objective)

Performance Measures:

- Annual updates of the Five-Year Prescribed Burning Management Plan completed
- Continued implementation of the Five-Year Prescribed Burning Management Plan (acres treated)

Objective 3: Reduce the threat of wildfire within the wildland urban interface on LBESF and the surrounding community through a comprehensive mitigation strategy that includes evaluating vegetative fuels near residential areas and identifying potential fuel reduction projects. (Ongoing objective)

Performance Measures:

- Evaluation complete
- Should the evaluation determine that fuel reduction is necessary, number of acres treated for fuel reduction

Objective 4: Utilize prescribed fire to enhance restoration of native groundcover. Evaluate areas where native groundcover has been eliminated or heavily impacted from historical land use on a case by case basis for alternative methods to address reestablishment of native groundcover plants. Restore native groundcover where practical or heavily impacted from historical land use. (Long-term objective)

Performance Measure: Number of acres restored

- **<u>GOAL 4</u>: Listed and Rare Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

Objective 1: In cooperation with the FWC, develop a Wildlife Management Strategy addressing the wildlife species for LBESF, with emphasis on imperiled species and associated management prescriptions for their habitats. (Ongoing objective)

Performance Measures:

- Imperiled species management strategy completed

- Baseline listed and rare species list completed for LBESF

Objective 2: In consultation with FWC, implement survey and monitoring protocols, where feasible, for listed and rare species. (Ongoing objective)
Performance Measure: Number of species for which monitoring is ongoing

- **<u>GOAL 5</u>: Non-native Invasive Species Management and Control**
  Objective 1: Continue to follow and annually update the Five-Year Ecological Plan for LBESF, to locate, identify, and control non-native invasive species. (Ongoing objective)
  Performance Measures:
  - Total number of acres identified and successfully treated
  - Annual updates of the Five-Year Ecological Plan completed
  - Continue to maintain LBESF non-native invasive database information annually

- **<u>GOAL 6</u>: Cultural and Historical Resource Management**
  Objective 1: Ensure all known sites are recorded in the Department of State, Division of Historical Resources (DHR) Florida Master Site File. (Ongoing objective)
  Performance Measure: Number of recorded sites

  Objective 2: Monitor recorded sites and send updates to the DHR Florida Master Site File as needed. (Ongoing objective)
  Performance Measure: Number of sites monitored. Reports submitted to DHR

  Objective 3: Maintain at least one (1) qualified staff member as an Archaeological Resource Management (ARM) Monitor. (Ongoing objective)
  Performance Measure: Number of local staff trained as ARM monitors

- **<u>GOAL 7</u>: Hydrological Preservation and Restoration**
  Objective 1: Protect water resources during management activities through the implementation of Silviculture Best Management Practices (BMP) that are applicable to forest road maintenance and construction, construction of pre-suppression fire lines, timber stand improvement activities, sinkholes, etc. (Ongoing objective)
  Performance Measure: Percent compliance with Silviculture BMP

  Objective 2: Close, rehabilitate, or restore those roads, fire lines, and trails that have evidence of erosion into surrounding water bodies causing alterations to the hydrology and / or water quality. (Ongoing objective)
  Performance Measure: Total number of roads, firelines, and trails closed, rehabilitated, and / or restored

  Objective 3: Conduct or obtain a site assessment/study to identify potential hydrological restoration needs. (Short-term objective)
  Performance Measure: Assessment conducted

- **<u>GOAL 8</u>: Capital Facilities and Infrastructure**
  Objective 1: LBESF staff, along with help from volunteers and/or user groups, will continue

maintenance of visitor center, picnic pavilion, primitive camping sites, five parking areas and trailheads, 39.8 miles of trails, and 36.1 miles of primary and service roads. (Ongoing objective)

Performance Measure:

- The number of existing facilities, miles of roads, and miles of trails maintained

Objective 2: Continue to follow the Five-Year Roads and Bridges Management Plan and update annually. (Ongoing objective)

Performance Measures:

- Continued implementation of the Five-Year Roads and Bridges Management Plan
- Annual updates of the Five-Year Roads and Bridges Management Plan completed

Objective 3: Continue to implement the Five-Year Boundary Survey and Maintenance Management Plan and update annually. Approximately 20% of the forest boundary will be evaluated and remarked annually as necessary which includes harrowing, reposting signage, and repainting boundary trees. (Ongoing objective)

Performance Measures:

- Continued implementation of the Five-Year Boundary Survey and Maintenance Management Plan
- Percentage of forest boundary maintained each year
- Annual updates of the Five-Year Boundary Survey and Maintenance Management Plan completed

II. Administration Section

A. Descriptive Information

1. Common Name of Property

The common name of the property is the Little Big Econ State Forest.

2. Legal Description and Acreage

The LBESF is comprised 10,336.25 acres.

LBESF is in Seminole County in central Florida, south of CR 426 and north of CR 419, approximately five miles east of Oviedo. The boundaries and major parcels are identified in Exhibit B. The state forest area proper is in Section 36 of T20S/R32E; Sections 1, 2, 4-13, 15 & 16 of T21S/R32E; Sections 12 & 13 of T21S/R31E; and Sections 4-9 of T21S/R33E.

LBESF is comprised of eight tracts: Demetree, Jones West, Jones East, Spencer Leeper, Rivers Edge, Bothers, and Conley Tracts and are located southeast of CR 426, between Geneva and Chuluota. The Kilbee Tract is approximately three miles northeast of the Demetree Tract and adjoins the south side of SR46 and the west shore of the St. Johns River. The Yarborough Tract is located due south of the Kilbee Tract. Its eastern boundary is the St. Johns River and the tract extends west to connect with the state forest's Rivers Edge Tract. See Exhibit E. Acreage acquired by funding source is identified in Table 1.

A complete legal description of lands owned by the Board of Trustees of the Internal Improvement Trust Fund (TIITF) and the St. Johns River Water Management District (SJRWMD) is on record at the LBESF Forestry Station Office, Florida Department of Environmental Protection (DEP), and the FFS State Office in Tallahassee.

Table 1. TIITF Acreage by Funding Source

Funding Source	Acres
Save Our Rivers	8,521.55
Conservation and Recreation Lands	1,641.13
Preservation 2000	4.70

3. Proximity to Other Public Resources

Lands managed by state, federal, or local government for conservation of natural or cultural resources that are located within approximately 25 miles of the LBESF are included in Exhibit F and Table 2.

Table 2. Nearby Public Conservation Land and Easements

Tract	Agency	Distance
Geneva Wilderness Area	Seminole County	Adjacent N
Buck Lake Conservation Area	SJRWMD	Adjacent E
Charles H. Bronson State Forest	FFS	Adjacent S
Seminole Ranch Conservation Area	SJRWMD	1 mile E
Mills Creek Woodlands	USFS	2 miles SE
Lake Jesup Conservation Area	SJRWMD	3 miles NW
Econ River Wilderness Area	Seminole County	5 miles S
Chuluota Wilderness Area	Seminole County	5 miles SE
Lake Proctor Wilderness Area	Seminole County	5 miles N
Brevard Coastal Scrub Ecosystem CARL Project	FWC	6 miles E
Lake Monroe Conservation Area	SJRWMD	7 miles N
Lake Jesup Wilderness Area	Seminole County	7 miles NW
Spring Hammock Preserve	Seminole County	8 miles NW
Econlockhatchee Sandhills	SJRWMD	8 miles SW
Orlando Wetlands Park	City of Orlando	11 miles SE
Hal Scott Regional Preserve	SJRWMD	12 miles S
Turnbull Hammock Conservation Area	SJRWMD	15 miles NE
Merritt Island National Wildlife Refuge	USFWS	15 miles E
Blackbear Wilderness Area	Seminole County	16 miles NW
Wekiva River Buffer Conservation Area	SJRWMD	16 miles NW
Lower Wekiva River State Preserve	DRP	17 miles NW
Rock Springs Run State Reserve	DRP	17 miles NW
Tosohatchee Wildlife Management Area	FWC	17 miles SE
St. Johns National Wildlife Refuge	USFWS	17 miles SE
Seminole State Forest	FFS	18 miles NW
Wekiwa Springs State Park	DRP	20 miles NW

Tract	Agency	Distance
Canaveral Marshes Conservation Area	SJRWMD	20 miles NE
Canaveral National Seashore	NPS	20 miles NE

DRP – Florida Department of Environmental Protection, Division of Recreation and Parks
FFS – Florida Forest Service
FWC – Florida Fish and Wildlife Conservation Commission
NPS – US National Parks Service
SJRWMD – St. Johns River Water Management District
USFWS – US Fish & Wildlife Service
USFS – US Forest Service

4. Property Acquisition and Land Use Considerations

The LBESF was established on March 24, 1994 by the state Legislature and was purchased under the Save Our Rivers (SOR), Conservation and Recreation Lands (CARL), and Preservation 2000 (P2000) acquisition programs, as part of the Econ-St. Johns Ecosystem Project. The 1,646.83 acres of land owned by the Board of Trustees of the Internal Improvement Trust Fund was purchased through use of CARL funds. The 8,521.55 acres owned by the SJRWMD was purchased with SOR funds and 68.00 acres were acquired through mitigation. These parcels are assigned to the FFS for management under Lease Agreement number 3958. The primary mission of the FFS in managing LBESF is to protect the Econlockhatchee River Basin and surrounding forest uplands through a stewardship ethic to assure these resources will be available for future generations.

Table 3. Parcel Acquisition

Parcel Name	Lease Date	Lease No.	Acres
Demetree	10/13/1993	WMD	1,100.04
Kilbee	10/13/1993	WMD	1,600.00
Jones	9/14/1994	WMD	513.61
Demetree	10/3/1994	3958	1,019.56
Spencer Leeper	8/18/1995	WMD	120.00
Bothers	12/18/1995	3958	493.25
River's Edge	10/29/1997	3958	133.02
Spencer Leeper	9/6/2001	WMD	68.00
Yarborough	6/30/2008	WMD	5,187.90
Conley	6/19/2019	WMD	100.87

WMD – St. Johns River Water Management District

B. Management Authority, Purpose, and Constraints

1. Purpose for Acquisition / Management Prospectus

Management is conducted by FDACS, FFS, with assistance, as warranted, from other agencies. FFS is the manager of forest resources, recreation, water resource protection, watershed protection, and land use planning on LBESF.

Multiple-use management for LBESF will be accomplished through the integration of the following strategies:

- Practice sustainable forest management for the efficient generation of revenue and in support of state forest management objectives;
- Provide for resource-based outdoor recreation opportunities for multiple interests;
  Restore and manage healthy forests and native ecosystems ensuring the long-term

viability of populations and species listed as endangered, threatened, or rare, and other components of biological diversity, including game and non-game wildlife and plants;
- Protect known archaeological, historical, and cultural resources;
- Restore, maintain and protect hydrological functions related water resources and the health of associated wetlands and aquatic communities; and
- Provide research and educational opportunities related to natural resource management.

2. Degree of Title Interest Held by the Board

The TIITF holds fee simple title to 1,646.83 acres. The St. Johns River Water Management District (SJRWMD) holds a portion of the fee simple title to 8,589.55 acres.

3. Designated Single or Multiple-Use Management

LBESF is managed under a multiple-use concept by the FFS, under the authority of Chapters 253 and 589, F.S. The FFS is the lead managing agency as stated in TIITF Management Lease Number 3958.

Multiple-use management is the harmonious and coordinated management of timber, recreation, conservation of fish and wildlife, forage, archaeological and historic sites, habitat and other biological resources, and water resources so they are utilized in the combination that will best serve the people of the state, making the most judicious use of the land for some or all these resources and considering the relative values of the various resources. Local demands, acquisition objectives, and other factors influence the array of uses that are compatible with and allowed on any specific area of the forest. This management approach is believed to provide for the greatest public benefit, by allowing compatible uses while protecting overall forest health, native ecosystems, and the functions and values associated with them.

4. Revenue Producing Activities

Numerous activities on LBESF provide for multiple-use as well as generate revenue to offset management costs. Revenue producing activities will be considered when they have been determined to be financially feasible and will not adversely impact management of the forest. Current and potential revenue producing activities for the LBESF include, but are not limited to:

- Timber harvests – Timber harvests on LBESF will be conducted to improve forest health, promote wildlife habitat, restore plant communities, and provide additional benefits.
- Cattle grazing leases – Currently there is an FFS cattle lease on the Kilbee Tract, with a duration of 5 to 10 years, and a SJRWMD cattle lease on the Yarborough Tract with a duration of 10 years.
- Apiary leases – There are currently no apiary leases on LBESF. The feasibility of pursuing and establishing apiary leases on LBESF in areas where appropriate will be evaluated in accordance with guidelines stated in the State Forest Handbook.
- Fire wood – LBESF staff may consider issuance of fuel wood permits as requested.
- Recreation Fees – Fees are currently collected for day use activities, camping, annual passes, and vendor / special use permits.

- Privately sponsored recreational events:
  - Florida Orienteering Club holds events a few times a year.
  - Battle at Snow Hill coordinates annual bicycle races.
  - FLX Adventures sponsors annual run, bike, and paddle events.

5. Conformation to State Lands Management Plan

Management of the forest under the multiple-use concept complies with the State Lands Management Plan and provides optimum balanced public utilization of the property. Specific authority for the FFS's management of public land is derived from Chapters 253, 259 and 589 F.S.

6. Legislative or Executive Constraints

There are no known legislative or executive constraints specifically directed toward LBESF.

FFS makes every effort to comply with applicable statutes, rules, and ordinances when managing the forest. For example, when public facilities are developed on state forests, every effort is made to comply with Public Law 101-336, the Americans with Disabilities Act. As new facilities are developed, the universal access requirements of this law are followed in all cases except where the law allows reasonable exceptions (e.g., where handicap access is structurally impractical or where providing such access would change the fundamental character of the facility being provided).

7. Aquatic Preserve / Area of Critical State Concern

This area is not within an aquatic preserve or an area of critical state concern, nor is it in an area under study for such designation.

C. Capital Facilities and Infrastructure

1. Property Boundaries Establishment and Preservation

LBESF boundary lines, 42.5 miles in total, are managed by state forest personnel in accordance with the guidelines of the State Forest Handbook. There are 42 gates throughout LBESF that require periodic maintenance. The state forest boundary lines are to be maintained by periodic clearing, repainting and reposting, and placement of state forest boundary signs by FFS personnel.

2. Improvements

Buildings / Recreation infrastructure present on the LBESF include:

a. Office/visitor center, 1,655 sq. ft.
b. Community room with seating for thirty, 610 sq. ft.
c. Public restroom, 410 sq. ft.
d. Shop building, 2,500 sq. ft.
e. Two (2) Pole barns for equipment storage, 2,500 sq. ft. and 3,000 sq. ft.
f. Pump house/storage building, 50 sq. ft.
g. Shed/storage building, 1,200 sq. ft.
h. Pavilion near LBESF office/visitor center.
i. Pavilion on the north side of the Econlockhatchee River on the Yarborough Tract.

j. Restroom at the Jones East Trailhead.
k. Bike cleaning station at the Jones East Trailhead.
l. Pump house at the Jones East Trailhead, 50 sq. ft.
m. Six (6) campsites at the West Camp on the Demetree Tract.

See Exhibit D for a map of the buildings and improvements at LBESF.

3. On-Site Housing

There are no residences located on LBESF.

FFS may establish on-site housing (mobile / manufactured home) on LBESF if deemed necessary to alleviate security and management issues. The need and feasibility for the state forest will be evaluated and established if considered appropriate by the District Manager and approved by the FFS Director. Prior to the occurrence of any ground disturbing activity for establishing on-site housing, a notification will be sent to the DHR and Florida Natural Areas Inventory (FNAI) for review and recommendations. This type of housing will not exceed three homes per location with the possibility of more than one on-site housing location occurring if considered necessary by the District Manager and approved by the Director.

4. Operations Infrastructure

a. Operations Budget

For Fiscal Year 2018-2019 the total annual budget for LBESF was $184,862. This amount includes salaries, expenses, contractual services, OPS, etc. A summary budget for LBESF is contained in Exhibit W. Implementation of any of the activities within this management plan is contingent on availability of funding, other resources, and other statewide priorities.

b. Equipment

To carry out the mission of the FFS, equipment assigned to the LBESF includes: 2 pick-up trucks, 1 brush truck, 1 dump truck, 1 road grader, 1 ATV, 3 farm tractors, 4 trailers, 1 fuel trailer, 3 brush hogs, 1 lawn mower, 1 box blade, 2 tree cutters, 4 discs, 1 forklift, 1 RTV mule, 2 utility vehicles and 1 roller chopper.

c. Staffing

Three (3) individuals are assigned to LBESF: one (1) Forester, one (1) Staff Assistant, and one (1) OPS Park Ranger. There are seven (7) additional staff stationed at the LBESF: one (1) Forest Area Supervisor, two (2) Senior Forest Rangers, three (3) Forest Rangers, and one (1) OPS Park Ranger. Other personnel from the Orlando District are occasionally used to assist with management activities at LBESF.

The Forester will work to achieve the goals outlined in this management plan. Recreation planning and management activities as well as resource management and planning activities, such as trail flagging/identification, recreational facility placement, timber cruising, and sale administration, etc., are the responsibility of the Forester under the direction of the Forest Area Supervisor and District Manager. Forest operations, such as

road maintenance, operations/recreational facility maintenance, prescribed burning, etc., are the responsibility of the Forest Area Supervisor under the direction of the District Manager.

To supplement the staff assigned to LBESF, the Forest Area Supervisor is responsible for recruiting interested volunteers that can bring needed experience and skills to assist with the management of the forest recreation program as well as the resource management activities. The Florida Trail Association and Southern Off-road Bicycle Association (SORBA) Orlando have been used for working on hiking and bicycle trail maintenance.

Also, a state forest Liaison Committee of private citizens and representatives of forest user groups have been meeting biannually to provide input on forest management activities and share their ideas to FFS staff to improve the state forest.

D. Additional Acquisitions and Land Use Considerations

1. Alternate Uses Considered

No alternate uses are being considered at this time. Alternate uses will be considered as requests are made and will be accommodated as appropriate if they are determined to be compatible with existing uses and with the management goals and objectives of the forest. Uses determined as incompatible include but are not limited to: water resource development projects, water supply projects, storm-water management projects, sewage treatment facilities, linear facilities, off highway vehicle use, dumping, mining, and oil well stimulation (e.g. hydraulic fracturing/fracking), or as determined by law, regulation, or other incompatible uses as described elsewhere in the management plan. Deadhead logging is not compatible and is not considered an appropriate use within or adjacent to the state forest boundaries. Although no water resource projects are being considered at this time on SJRWMD-owned lands within LBESF, they should not be precluded.

2. Additional Land Needs

There are four (4) parcels of land comprised of 1,918 acres adjacent to the property which should receive priority for acquisition because they would benefit the management of the property. The FFS will work with these property owners, on a willing seller basis, to acquire these parcels.

Purchasing of additional land within the optimal management boundary would facilitate restoration, protection, maintenance, and management of the natural resources on LBESF. See Exhibit C.

3. Surplus Land Assessment

On conservation lands where FFS is the lead manager, FFS assesses and identifies areas for potential surplus land. This consists of an examination of: resource and operational management needs, public access and recreational use, and GIS modeling and analysis.

The evaluation of LBESF by FFS has determined that all portions of the area are being managed and operated for the original purposes of acquisition, as well as, center on the multiple-use concept, as defined in sections 589.04(3) and 253.034(2)(a) F.S. Implementation of this concept will utilize and conserve state forest resources in a

harmonious and coordinated combination that will best serve the people of the state of Florida. Therefore, no portion of the LBESF is recommended for potential surplus.

4. **Adjacent Conflicting Uses**

Residential and commercial development adjacent to and within several miles of the LBESF boundary may hinder prescribed burning due to smoke management concerns.

Currently the Edward Yarborough Ranches Inc. property north of the LBESF boundary is platted for 300 homes and is called Creek Side Acres.

FFS will cooperate with adjacent property owners, prospective owners, or prospective developers to discuss methods to minimize negative impacts on management, resources, facilities, roads, recreation, etc., and discuss ways to minimize encroachment onto the forest.

5. **Compliance with Comprehensive Plan**

This plan was submitted to the Board of County Commissioners in Seminole County for review and compliance with their local comprehensive plans. See Exhibit U.

6. **Utility Corridors and Easements**

FFS does not favor the fragmentation of natural communities with linear facilities. Consequently, easements for such uses will be discouraged to the greatest extent practical. Currently there is an electrical power line crossing on the Yarborough Tract. The FFS does not consider LBESF suitable for any new linear facilities.

When such encroachments are unavoidable, previously disturbed sites will be the preferred location. The objectives, when identifying possible locations for new linear facilities, will be to minimize damage to sensitive resources (e.g., listed species and archaeological sites), minimize habitat fragmentation, limit disruption of management activities, including prescribed burns, and limit disruption of resource-based multiple use activities such as recreation.

Collocation of new linear facilities with existing corridors will be considered but will be used only where expansion of existing corridors does not increase the level of habitat fragmentation and disruption of management and multiple-use activities. FFS will further encourage the use of underground cable where scenic considerations are desirable. Easements for such utilities are subject to the review and approval of the TIITF and the SJRWMD. Requests for linear facility uses will be handled according to the Governor and the Cabinet's linear facilities policy.

E. Agency & Public Involvement

1. **Responsibilities of Managing Agencies**

FFS is the lead managing agency, responsible for overall forest management and public recreation activities, as stated in TIITF Management Lease number 3958. Pursuant to the management lease, the lead managing agency may enter into further agreements or to subleases on any part of the forest.

FFS will cooperate with the DHR regarding appropriate management practices on historical or archaeological sites on the property as stated in Section 267.061, F.S. FFS will consult DHR prior to the initiation of ground disturbing activities as required per DHR guidelines.

FWC assumes law enforcement responsibilities, enforces hunting regulations, cooperatively sets hunting season dates with FFS, and conducts other wildlife management activities with input from FFS. FWC has established a Wildlife Management Area on the Kilbee and Yarborough Tracts of the LBESF.

The SJRWMD will be consulted and involved in matters relating to water resources and hydrological restoration as appropriate.

2. Law Enforcement

Primary law enforcement responsibilities will be handled by FWC law enforcement officers. Rules governing the use of LBESF are stated in Chapter 5I-4, F.A.C. FWC will enforce fish and wildlife regulations and aid in enforcing state forest rules. FWC does not currently have an officer dedicated to patrolling and enforcement on LBESF. This task is shared among multiple FWC officers who also patrol and enforce laws on properties and waterways outside of LBESF.

The FDACS Office of Agricultural Law Enforcement (OALE) will assist with open burning and wildfire investigations as needed. The Seminole County Sheriff's Office provides additional assistance as needed.

Special rules under Chapter 5I-4, F.A.C. were promulgated for FDACS, FFS, to manage the use of state lands and better control traffic, camping, and other uses on LBESF.

3. Wildland Fire

The FFS has the primary responsibility for prevention, detection, and suppression of wildfires wherever they may occur. The FFS shall provide leadership and direction in the evaluation, coordination, allocation of resources, and monitoring of wildfire management and protection (F.S. 590.01). The FFS also has the responsibility of authorizing prescribed burns (F.S. 590.02 [1][i]).

4. Public and Local Government Involvement

This plan has been prepared by FFS and will be carried out primarily by the FFS. FFS responds to public involvement through liaison panels, management plan advisory groups, public hearings, and through ongoing direct contact with user groups. Land Management Review Teams, as coordinated by the Division of State Lands, have conducted reviews of management plan implementation in 2009 and 2015. See Exhibit T. The review team's recommendations were addressed in this plan, as appropriate.

The plan was developed with input from the LBESF Management Plan Advisory Group and was reviewed at a public hearing on October 28, 2020. A summary of the advisory group's meetings and discussions, as well as written comments received on the plan, are

included in Exhibit V. The Acquisition and Restoration Council (ARC) public hearing and meeting serve as an additional forum for public input and review of the plan. This plan will be submitted to the SJRWMD's Governing Board after ARC approval according to Rule 40C-9.110, F.A.C.

5. Volunteers

Volunteers are important assets to LBESF. Volunteer activities may occur as one-time events or in association with long-term recurring projects and routine maintenance. Additional volunteer recruitment will continue to assist furthering the FFS's mission.

6. Friends of Florida State Forest

Friends of Florida State Forests Inc. (FFSF) is a Direct Support Organization (DSO) of the Florida Forest Service. FFSF supports management activities and projects on Florida's state forests. FFSF is established by Florida Statute, supports programs within Florida's state forests and is governed by a board of directors representing all areas of the state. Through community support, FFSF assists the FFS to expand opportunities for recreation, environmental education, fire prevention, and forest management within Florida's state forests.

The FFSF program is referenced in Chapter 589.012, F.S. For more information visit: www.floridastateforests.org.

III. Archaeological/Cultural Resources and Protection

A. Past Uses

Based on reports prepared by DHR's Bureau of Archaeological Research, Native American camps and turpentine camps are believed to have been on portions of the property. According to local historians, an old military road between Fort Mellon and Fort Christmas paralleled what is now Snow Hill Road. At one time, a railway (Florida East Coast Railway) traversed the property; that alignment is now used as a recreation trail managed by Seminole County and maintained by the Florida Trail Association. A substantial portion of the Demetree, Yarborough parcels, and parts of the Kilbee and Bothers parcels were cleared and planted with improved pasture grasses. Cattle operations were active on these parcels prior to SJRWMD and State acquisition. Bahia sod and timber were harvested from the property. No other previous agricultural or silvicultural uses are known. Land uses surrounding the site include cattle and horse farms to the north and south. The Edward Yarborough Ranches Inc. property that is located across the street from the LBESF headquarters is already planned to be converted to residential housing.

B. Archaeological and Historical Resources

A review of information contained in the Florida Department of State, DHR, Florida Master Site File has determined there are seventeen (17) recorded archeological sites and two (2) resource groups found within the designated area for LBESF. See Exhibit H for a cultural resource roster and Table 4.

Table 4. Historical Sites on LBESF

Site ID	Site Name	Site Type
SE00019	Cabin Mound	Archaeological
SE00020	Tozzer	Archaeological
SE00021	Buzzard Roost/Heffer Mound	Archaeological
SE01165	Great Kilbee Mound	Archaeological
SE01166	Yarborough Isolate	Archaeological
SE01167	Pig Island Mound	Archaeological
SE01168	Hog Island mound	Archaeological
SE01169	Catfish Mound	Archaeological
SE01170	Yarborough Mound	Archaeological
SE01173	Twin Tree Mound	Archaeological
SE01722	Norris Survey Mound	Archaeological
SE01749	Long Celery Farm	Archaeological
SE02770	Stephen Stipkovits Shell Midden	Archaeological
SE02797	Kadle Shell Midden	Archaeological
SE02798	Dead Alligator Shell Midden	Archaeological
SE02799	Spiritual Eagle's Shell Midden	Archaeological
SE02826	Wild Turkey Shell Midden	Archaeological
SE01748	Florida East Coast Railway	Resource Group
SE01953	State Road 46	Resource Group

C. Ground Disturbing Activities

Representatives of DHR and FNAI will be consulted prior to the initiation of proposed ground disturbing activity as required per DHR guidelines. FFS will make every effort to protect known archaeological and historical resources. FFS will follow the "Management Procedures for Archaeological and Historical Sites and Properties on State Owned or Controlled Lands" and will comply with all appropriate provisions of Section 267.061(2)(a,b), F.S. (Exhibit I). Any significant ground disturbing activity proposal will be submitted to DHR's Compliance and Review office for review prior to undertakings and allow the Division a reasonable opportunity to comment. Ground disturbing activities not specifically covered by this plan will be conducted under the parameters of the "List of ARC / Division of State Lands Approved Interim Management Activities".

D. Survey and Monitoring

Currently two (2) local district FFS staff are trained by DHR as Archaeological Resource Management (ARM) monitors. FFS will pursue opportunities for additional personnel to receive ARM Monitor training. FFS will consult with public lands archaeologists at DHR as necessary to determine an appropriate priority and frequency of monitoring at each of the listed sites, and any protection measures that might be required. Unless required on a more frequent basis, all archaeological and historical sites within the state forest will be monitored at least annually. FFS field staff will monitor the listed sites to note condition and any existing or potential threats.

Any known archaeological and historical sites will be identified on maps to aid state forest and if necessary, law enforcement personnel in patrolling and protecting sites. Applicable surveys will be conducted by ARM monitors or contracted archaeologists during the process of planning and implementing multiple-use management activities. FFS personnel will remain alert for any environmentally significant resources and protective actions will be taken as necessary. In addition, FFS will seek the advice and recommendations of DHR regarding any additional archaeological survey needs. Trained monitors may oversee limited types of ground disturbing activities in which DHR recommends monitoring. FFS will utilize the services of DHR Public Lands archaeologists, when available, to locate and evaluate unknown resources, and to make recommendations in the management of known resources.

IV. Natural Resources and Protection

The primary purpose for FFS management of LBESF is protection of the Econlockhatchee River Basin and the surrounding forest uplands through a stewardship ethic to assure these resources will be available for future generations. Management activities will be executed in a manner to minimize soil erosion and maintain and protect/enhance the hydrological resources on LBESF. If problems arise, corrective action will be implemented by FFS staff under the direction of FFS's Forest Hydrology Section. Efforts will be made to monitor and protect LBESF's waterbodies and their associated water quality and native plants and animals.

LBESF falls within the jurisdiction of the SJRWMD. FFS will coordinate with SJRWMD and / or DEP, as necessary, on activities pertaining to water resource protection and management. Any activities requiring water management district permits will be handled accordingly. FFS will work with SJRWMD to ensure that levels and quality of ground and surface water resources are appropriately monitored.

A. Soils and Geologic Resources

1. Resources

Soil information for LBESF was obtained from the United States Department of Agriculture Natural Resources Conservation Service (NRCS). LBESF contains 22 different soils. The predominant soils listed by the NRCS include: Manatee, Floridana, and Holopaw soils; Pompano, Myakka, EauGallie, Basinger, and Smyrna fine sands. Detailed information on all soils present on the state forest may be found in Exhibit J.

2. Soil Protection

Currently there are no major or significant soil erosion problems on LBESF. Management activities will be executed in a manner to minimize soil erosion. As problems arise, corrective action will be implemented by FFS staff under the direction of the FFS Forest Hydrology section in conjunction with recommendations as contained in the most current version of the Florida Silviculture BMP Manual.

B. Water Resources

The water resources on LBESF perform essential roles in the protection of water quality, groundwater recharge, flood control, and aquatic habitat preservation. In the interest of maintaining these valuable resource functions, state forest management personnel will work

with the FFS Hydrology Section to incorporate wetlands restoration into the overall resource management program as opportunities arise, particularly where wetlands systems have been impaired or negatively impacted by previous management activities or natural disasters. See Exhibit L for map of the water resources on LBESF.

1. **Resources**
   Approximately 17 miles of the Econlockhatchee River, a blackwater stream, bisects the state forest. The St. Johns River borders the east boundary of the Kilbee Tract and the Yarborough Tract.

2. **Water Classification**
   The Florida Department of Environmental Protection, Standards Development Section reports that there are no waters on or near the forest listed as exceptions to Class III in subparagraph 62-302.400(17)(b)59, F.A.C.; therefore, all of the surface waters on or adjacent to the site are classified as Class III waters which is the statewide default classification under subsection 62-302.400(15), F.A.C. According to subsection 62-302.700(9), F.A.C., the forest along the Econlockhatchee River in Seminole County is almost entirely within areas that have been designated as OFW under subparagraph 62-302.700(9)(i)11, F.A.C., or as part of the Lower Econlockhatchee OFW under subparagraph 62-302.700(9)(f)36, F.A.C. See Exhibit K.

3. **Water Protection**
   An objective for the acquisition and management of this public land was to optimize ecological restoration, protect and manage existing natural resources, and facilitate sensible public use. Concern over a continuous usable source of fresh water requires emphasis on protecting this vital resource. Water resource protection measures, at a minimum, will be accomplished using BMPs as described in the most current version of Silviculture BMP Manual.

   There are four ground water monitoring wells that are located on the Demetree, Jones East and Kilbee Tracts. The monitoring wells are maintained by SJRWMD.

4. **Swamps, Marshes, and Other Wetlands**
   In addition to the waterways, LBESF contains approximately 3,391 acres in seven (7) hydric communities: floodplain marsh, wet prairie, depression marsh, basin swamp, basin marsh, dome swamp, and floodplain swamp. Maintenance of naturally occurring wetlands communities is a high priority and will be accomplished through appropriate management activities, including prescribed fire when necessary, and adherence to Silviculture BMP.

5. **Wetlands Restoration**
   Wetlands restoration objectives on the state forest include erosion control, restoration of hydrology and/or hydroperiod, and restoration of wetlands plant and animal communities. To achieve these objectives, restoration activities may involve road and soil stabilization, water level control structure removal or installation, non-native invasive species control, site preparation and re-vegetation with native wetlands

species, and project monitoring. These activities may be conducted individually or concurrently; implemented by FFS personnel or by non-FFS personnel under mitigation or grant contractual agreements. Wetlands restoration projects should be conducted in conjunction with other restoration activities indicated elsewhere in this plan.

Where applicable, LBESF, with the assistance from the FFS Forest Management Bureau, may pursue funding to develop and implement wetlands restoration projects. Additionally, cooperative research among FFS, other state agencies, and the federal government will provide valuable information in determining future management objectives of wetlands restoration.

Wetlands restoration will be coordinated with the SJRWMD. Any activities requiring permits from the FDEP and/or SJRWMDwill be handled accordingly and will follow the latest edition of the FFS's Silviculture Best Management Practices Manual.

6. Florida Department of Environmental Protection Basin Management Action Plans (BMAP)

A Basin Management Action Plan is a "blueprint" for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a Total Maximum Daily Load (TMDL). It represents a comprehensive set of strategies, including, but not limited to: permit limits on wastewater facilities, urban and agricultural best management practices, conservation programs, financial assistance and revenue generating activities, all designed to implement the pollutant reductions established by the TMDL. These broad-based plans are developed with local stakeholders, as they rely on local input and local commitment, and are adopted by Secretarial Order to be enforceable.

LBESF resides in the Middle St. Johns River Basin Main Stem BMAP. It was developed as part of DEP's TMDL Program and represents the collaborative efforts of stakeholders to identify current and planned management actions to achieve pollutant load reductions required by the TMDL.

The BMAP provides for phased implementation under Subparagraph 403.067(7)(a)1, F.S. The phased BMAP approach allows for the implementation of projects designed to achieve incremental reductions, while simultaneously monitoring and conducting studies to better understand the water quality dynamics (sources and response variables) in the watershed.

C. Floral and Faunal Resources

1. Rare, Endangered, and Threatened Species

The intent of FFS is to manage LBESF in a manner that will minimize the potential for wildlife species to become imperiled. FFS employees continually monitor the forest for threatened or endangered species while conducting management activities. Specialized management techniques may be used, as necessary, to protect or increase protection of rare, threatened, and endangered species, as applicable for both plants and animals. See Table 5.

Table 5. Rare, Endangered, and Threatened Species Documented on LBESF

Scientific Name	Common Name	FNAI Global Rank	FNAI State Rank	Federal Status	State Status
Hydroptila berneri	Berner's microcaddisfly	G4G5	S3	N	N
Acrostichum aureum	Golden leather fern	G5	S3	N	ST
Garberia heterophylla	Garberia			N	ST
Lechea cernua	Nodding pinweed	G3	S3	N	ST
Lilium catesbaei	Catesby's lily			N	ST
Ophioglossum palmatum	Hand fern	G4	S2	N	E
Pecluma plumula	Plume polypody	G5	S2	N	E
Pteroglossapsis ecristata	Giant orchid	G2G3	S2	N	ST
Pycnanthemum floridanum	Florida mountain-mint	G3	S3	N	ST
Sarracenia minor	Hooded pitcher plant			N	ST
Sacoila lanceolate var lanceolata	Leafless beak orchid			N	N
Zephyranthes atamasco	Rain lily			N	ST
Epidendrum conopseum	Green-fly orchid			N	CE
Encyclia tampensis	Butterfly orchid			N	CE
Osmunda cinnamomea	Cinnamon fern			N	CE
Osmunda regalis	Royal fern			N	CE
Rhapidophyllum hystrix	Needle palm			N	CE
Serenoa repens	Saw palmetto			N	CE
Lithobates capito	Gopher frog	G3	S3	N	N
Alligator mississippiensis	American alligator	G5	S4	SAT	FT(S/A)
Crotalus adamanteus	Eastern diamondback rattlesnake	G4	S3	N	N
Drymarchon couperi	Eastern indigo snake	G3	S3	T	FT
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Antigone canadensis pratensis	Florida sandhill crane	G5T2	S2	N	ST
Aramus guarauna	Limpkin	G5	S3	N	N
Caracara cheriway	Crested caracara	G5	S2	T	FT
Egretta caerulea	Little blue heron	G5	S4	N	ST
Egretta thula	Snowy egret	G5	S3	N	N
Eudocimus albus	White Ibis	G5	S4	N	N
Falco columbarius	Merlin	G5	S2	N	N
Falco peregrinus	Peregrine falcon	G4	S2	N	N
Falco sparverius paulus	Southeastern American kestrel	G5T4	S3	N	ST
Haliaeetus leucocephalus	Bald eagle	G5	S3	N	N
Hydroprogne caspia	Caspian tern	G5	S2	N	N

Scientific Name	Common Name	FNAI Global Rank	FNAI State Rank	Federal Status	State Status
Mycteria americana	Wood stork	G4	S2	T	FT
Nyctanassa violacea	Yellow-crowned night-heron	G5	S3	N	N
Nycticorax nycticorax	Black-crowned night-heron	G5	S3	N	N
Pandion haliaetus	Osprey	G5	S3S4	N	N
Peucaea aestivalis	Bachman's sparrow	G3	S3	N	N
Platalea ajaja	Roseate spoonbill	G5	S2	N	ST
Plegadis falcinellus	Glossy ibis	G5	S3	N	N
Rynchops niger	Black skimmer	G5	S3	N	ST
Setophaga ruticilla	American redstart	G5	S2	N	N
Sternula antillarum	Least tern	G4	S3	N	ST
Puma concolor coryi	Florida panther	G5T1	S1	E	FE
Sciurus niger	Southeastern fox squirrel	G5T5	S3	N	N
Trichechus manatus	West Indian manatee	G2	S2	T	FT
Ursus americanus floridanus	Florida black bear	G5T4	S4	N	N

* STATUS/RANK KEY

Federal Status (USFWS): LE= Listed Endangered, LT= Listed Threatened, N= Not currently listed, C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened. SAT, T(S/A) = threatened due to similarity of appearance. A species that is threatened due to similarity of appearance with another listed species and is listed for its protection. Species listed as T(S/A) are not biologically endangered or threatened and are not subject to Section 7 consultation

State Status (FWC): Animals: FE = Listed as Endangered Species at the Federal level by the USFWS, FT = Listed as Threatened Species at the Federal level by the USFWS, F(XN) = Federal listed as an experimental population in Florida, FT(S/A) = Federal Threatened due to similarity of appearance, ST = State population listed as Threatened by the FWC, SSC = Listed as Species of Special Concern by the FWC, N = Not currently listed, nor currently being considered for listing.

Plants: LE = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act; LT = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered; CE = Commercially Exploited; N = Not currently listed, nor currently being considered for listing.

FNAI Global Rank: G1= Critically Imperiled, G2 = Imperiled, G3= Very Rare, G4= Apparently Secure, G5= Demonstrably Secure, GNR = Element not yet ranked (temporary), G#? = Tentative rank, T#= Taxonomic Subgroup; numbers have same definition as G#'s.

FNAI State Rank: S1= Critically Imperiled, S2= Imperiled, S3= Very Rare, S4= Apparently Secure, S5 = Demonstrably secure in Florida, S#?= Tentative Rank.

2. Florida Natural Areas Inventory

The Florida Natural Areas Inventory (FNAI) is the single most comprehensive source of information available on the locations of rare species and significant ecological resources. FNAI has reported the following:

a. Element Occurrences

FNAI reports several documented Element Occurrences of rare or endangered species within the vicinity of the property.

Documented habitat includes: alluvial forest, mesic hammock, wet prairie, mesic

flatwoods, floodplain marsh, scrubby flatwoods, scrub, hydric hammock, basin swamp, pasture, scrubby flatwoods, baygall, prairie hammock, depression marsh, wet flatwoods, basin marsh, xeric hammock, blackwater stream, sandhill, floodplain swamp, dome swamp, and river floodplain lake.

b. Likely and Potential Habitat for Rare Species
In addition to documented occurrences, other rare species and natural communities may be identified on or near LBESF. See Exhibit M.

c. Land Acquisition Projects
Portions of the site are within the Wekiva-Ocala Greenway Florida Forever Project. This is part of the State of Florida's Conservation and Recreation Lands Acquisition Program. See Exhibit S.

Other Florida Forever Projects within the area include the Maytown Flatwoods Project in Brevard County. See Exhibit G.

FNAI recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species before expansions or alterations are made to any facilities.

3. <u>Florida Fish and Wildlife Conservation Commission</u>
The FWC Fish and Wildlife Research Institute (FWRI) reports numerous records of listed species occurrences or critical habitats within the confines of the property. This includes state and federally listed endangered or threatened species.

Other findings by the FWC include:
- **a.** The property is located adjacent to a Strategic Habitat Conservation Area for bald eagle (*Haliaeetus leucoceplalus*), Florida scrub jay (*Aphelocoma coerulescens*), and Eastern indigo snake (*Drymarchon corais couperi*).
- **b.** LBESF is located within an area of low Species Richness which is the number of species within a given sample, community, or area.
- **c.** Multiple Priority Wetlands are located on and in close proximity to LBESF.
- **d.** FWC's response includes a map indicating multiple species locations.

These data represent only those occurrences recorded by FWC staff and other affiliated researchers. The database does not necessarily contain records of all listed species that may occur in a given area. Also, data on certain species are not entered into the database on a site-specific basis. Therefore, one should not assume that an absence of occurrences in their database indicates that species of significance do not occur in the area. See Exhibit N.

The FWC recommends the review of management guidelines in the published FWC Gopher Tortoise Species Management Plan to guide management actions for the gopher tortoise (*Gopherus polyphemus*) on the forest. The FWC Gopher Tortoise Species Management Plan provides beneficial resource guidelines for habitat management and

monitoring of the gopher tortoise. For reference, the FWC Gopher Tortoise Species Management Plan can be accessed at MyFWC.com.

The FWC recommends the review of management guidelines in FWC's published Species Action Plans for the management of imperiled, rare, and focal bird species. The FWC Species Action Plans provide beneficial resource guidelines for habitat management and monitoring of the respective species. For reference, the FWC Species Action Plans can be accessed at MyFWC.com.

4. Game Species and Other Wildlife

Wildlife management plays an important role in the management of resources on the forest. FWC provides cooperative technical assistance in managing the wildlife and fish populations, setting hunting seasons, establishing bag and season limits, and overall wildlife and fish law enforcement on the forest.

LBESF has an FWC Wildlife Management Area (WMA) known as the LBESF Wildlife Management Area (LBESFWMA). Management of this area will be directed to the production of biological diversity and species composition consistent with existing natural community types. Such communities will be restored and/or maintained through habitat management. All biological resources will be managed to maintain diversity.

Notable wildlife species documented on LBESF include white-tailed deer (*Odocoileus virginianus*), wild turkey (*Meleagris gallopavo*), red shouldered hawk (*Buteo lineatus*), bobcat (*Lynx rufus*), rabbit (*Sylvilagus* sp.), gray squirrel (*Sciurus carolinensis)*, and bobwhite quail (*Colinus virginianus*). Obtaining a quota permit is extremely competitive, and a highly sought-after commodity. Hunting is regulated by permit only (during archery, muzzleloading, general gun, and spring turkey), thus the reason why it remains a high-quality area. LBESF also supports a moderate population of wild hogs (*Sus scrofa*). Hunter harvest pressure on wild hogs and nuisance trapping helps to control this population. The bobwhite quail (*Colinus virginianus)* population has rebounded due to continued habitat restoration as a result of controlled burning. A prescribed burn regime is essential for future management of quail and numerous other species of flora and fauna.

Non-game species will be managed and protected through the restoration and maintenance of native ecosystems found on the forest. The current State Forest Handbook gives additional details for such things as snag management and retention.

5. Survey and Monitoring

FFS will implement species-specific management plans developed by FWC and other agencies as applicable. FFS will cooperate with FWC and other agencies in the development of new wildlife management plans and monitoring protocols, as necessary. Such plans will be consistent with rule and statute promulgated for the management of such species.

a. Gopher Tortoises

In 2017, the FFS participated in an interagency Survey Prioritization activity for gopher

tortoises on state-owned conservation lands. At that time, the LBESF was prioritized as a tier 4 property (1 – 10 scale, with one as the highest priority) for survey. The prioritization activity estimated that there were 1,108 acres of potential gopher tortoise habitat in scrubby flatwoods, scrub, and mesic flatwoods communities. To date, the property still has not received a survey from FWC. Other surveys for gopher tortoise burrows have been conducted by FFS and FWC staff intermittently, as needed. All surveys are done in cooperation with FWC.

b. Florida Black Bear

FFS will continue to cooperate with FWC to implement FWC's state-wide Florida Black Bear Management Plan, with an emphasis on establishing and maintaining connectivity.

c. Listed Plant Species

All known locations of listed or rare flora are GIS mapped and location data are shared with FNAI.

d. Other Rare Biota Surveys

Surveys are done as time and staffing allow. High quality plant communities continue to incur ad hoc surveys for both invasive plants and animals.

Most of the isolated LBESF wetlands have received a cursory biological survey, with rare and significant plant and animal species observed and documented. Assistance will be offered to FWC for gopher tortoise burrow commensals monitoring, as well as monitoring for other rare species, as appropriate.

During routine management activities, incidental sightings of rare animals and plants are GIS mapped by FFS staff. All rare species data is collected and sent to FNAI annually.

D. Sustainable Forest Resources

FFS practices sustainable multiple-use forestry to meet the forest resource needs and values of the present without compromising the similar capability of the future. Sustainable forestry involves practicing a land stewardship ethic that integrates the reforestation, managing, growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, wildlife and fish habitat, and aesthetics. This is accomplished by maintaining and updating accurate estimates of standing timber in order to assure that the timber resources retain their sustainability. Forest inventories will be updated on a continual basis according to guidelines established by the FFS Forest Management Bureau.

E. Beaches and Dune Resources

No beaches or dunes occur on the LBESF.

F. Mineral Resources

No mineral deposits of commercial value are known to exist on this property.

G. Unique Natural Features and Outstanding Native Landscapes

The primary natural feature on the forest is the Econlockhatchee River which is an

Outstanding Florida Water (OFW) and flows for 17 miles through the property. The St. Johns River is adjacent to the Kilbee and Yarborough Tracts and has been designated by Presidential Executive Order as an American Heritage River.

The LBESF contains approximately 196 acres of sand pine scrub and sandhill, which are rapidly disappearing natural communities.

H. Research Projects / Specimen Collection

Research projects may be performed on the forest on a temporary or permanent basis for the purpose of obtaining information that furthers the knowledge of forestry and related fields. FFS cooperates with other governmental agencies, non-profit organizations, and educational institutions, whenever feasible, on this type of research. FFS will consider assisting with research projects when funds and manpower are available.

All research to be considered on LBESF must be considered in accordance with the guidelines stated in the State Forest Handbook. Any requests for research should be submitted in writing to the appropriate field staff to be forwarded to the Forest Management Bureau for approval. Requests must include: a letter outlining the purpose, scope, methodology, and location of the proposed research. Requests are subject to review by FFS Foresters, Biologists, the Forest Health Section, and the Forest Hydrology Section, as appropriate. Authorization to conduct research will require that the investigator provide copies of any reports or studies generated from any research to the FFS and the LBESF staff. Other special conditions may be applicable, and the authorization may be terminated at any point if the study is not in compliance.

Research projects / specimen collections that have been initiated on the property include:

- Research on the status, distribution and reproductive success of the gopher frog on LBESF.
- Research to identify threats to sandhill crane populations on both suburban and public conservation areas and determine productivity and survivorship in these unstudied habitat types.
- Research on the below ground ecology of subterranean ants on LBESF.
- Research on parasite – host interactions with carpenter ants on LBESF.

I. Ground Disturbing Activities

Although the FFS's approach to handling ground disturbing activities is identified in other sections of this plan, the FFS's overall approach to this issue is summarized here. FFS recognizes the importance of managing and protecting sensitive resources and will take steps to ensure that such resources are not adversely impacted by ground disturbing activities. Sensitive resources include areas such as known sensitive species locations; archaeological, fossil, and historical sites; ecotones, wetlands, and water resources. The process for evaluating and obtaining approval for ground disturbing activities is outlined in Appendix 2.A.6. of the State Forest Handbook.

When new pre-suppression firelines, recreational trails, or other low-impact recreational site enhancements are necessary, their placement will be reviewed by state forest field staff to

avoid sensitive areas. For ground disturbing activities such as construction of buildings, parking lots, and new roads, the FFS will consult with FNAI, DHR, SJRWMD, and the Acquisition and Restoration Council (ARC), as appropriate.

V. Public Access and Recreation

The primary recreation objective is to provide the public with dispersed outdoor recreational activities that are dependent on the natural environment. FFS will continue to promote and encourage public access and recreational use by the public while protecting resources and practicing multiple-use management.

Periodic evaluations will be conducted by FFS staff to monitor recreational impacts on resources. Modifications to recreational uses will be implemented should significant negative impacts be identified. New recreation opportunities and facilities, which are compatible with the primary goals and responsibilities of the FFS, will be considered only after FFS determines their compatibility with other forest uses and forest resources. Assessment of visitor impacts, outdoor recreation opportunities and facilities, and proposed changes will all be addressed in the Five-Year Outdoor Recreation Plan updates.

A. Existing

A wide variety of recreational opportunities are available on the forest. Visitors can enjoy picnicking, canoeing, kayaking, hiking, camping, bicycling, fishing, hunting, nature study, wildlife viewing, and horseback riding. LBESF is part of the Florida National Scenic Trail, the Great Florida Birding and Wildlife Trail, the Econlockhatchee River Paddling Trail, the FFS Trailwalker Program, and the FFS Trailtrotter Program. See Exhibit D for a map of the Recreation, Facilities and Improvements.

1. Hiking Trails – LBESF provides access to three (3) hiking trails which total to 14.96 miles of which 7.91 miles is the Florida National Scenic Trail. Most of the trails can be accessed from the Barr Street Trailhead. The other sections of the trails connect to and can be accessed from the Charles H. Bronson State Forest. The Florida Trail Association assists in maintaining LBESF hiking trails. The American Hiking Society has named LBESF one of the country's most family-friendly hikes.
2. Paddling Trail – The Econlockhatchee River Paddling Trail was designated by the Florida Department of Environmental Protection. Along the 20-mile trail there is one day-use pavilion.
3. Primitive Camping – The LBESF offers camping opportunities in the West Camp and East Camp Zone. The West Camp is located near the Barr Street hiking trailhead and can be accessed only from the hiking trail. The East Camp Zone can be accessed only by canoe and kayak from the Econlockhatchee River Paddling Trail.
4. Horse Trail – The forest has 9.3 miles of horse trails that can be accessed from the Equestrian Trailhead on Snow Hill Road.
5. Bicycle Trail – The LBESF has 12.1 miles of bicycle trails that can be accessed at the Jones East Trailhead on Snow Hill Road. SORBA Orlando assists in maintaining the LBESF biking trails.
6. Hunting and Fishing – The Kilbee and Yarborough Tracts of the LBESF are open for hunting and are part of the Little Big Econ Wildlife Management Area, which is managed

cooperatively with the FWC.

7. Great Florida Birding and Wildlife Trail – The Demetree and Kilbee Tracts of the LBESF are part of the Great Florida Birding and Wildlife Trail. LBESF has over 150 documented bird species.
8. Visitor Center – The center serves as the main entrance to the state forest and includes a 30-seat community room and education exhibits about land management, recreation, wildlife, and history.

B. Planned

FFS will continue to assess plans for additional recreational opportunities based on demand, carrying capacity, demographics, and impact to the resources on the forest. All planned improvements may be completed as staff and funding permits. Both terrestrial and aquatic resources and relative activities will be evaluated. Any plans will be incorporated into the Five-Year Outdoor Recreational Plan on file at LBESF.

1. Public Access and Parking

Current parking areas and forest access points will continually be evaluated for improvements.

During this ten-year planning period we will assess the feasibility of paving the LBESF headquarter road and parking lot.

During this ten-year planning period we will assess the feasibility of installing a new trailhead at the end of Brumley Road to access the existing horse and hiking trails that are on the south Yarborough Tract of LBESF. The horse and hiking trails start on the Charles H. Bronson State Forest and connect to the LBESF. The FFS will work cooperatively with Seminole County to evaluate the feasibility of constructing a crossing to connect trails across Snow Hill Road.

During this ten-year planning period we will assess the feasibility of installing a handicap accessible restroom with running water, electric and a septic tank at the Barr Street trailhead. The FFS will continue to assess the need for restroom facilities at other trailheads and recreation areas.

2. Recreational Trails

Within this ten-year planning cycle, the U.S. Forest Service plans to construct a hiking trail suspension bridge across the Econlockhatchee River and plans to reroute the Florida National Scenic Trail.

3. Environmental Education

Currently environmental education programs are done by request.

During this ten-year planning period we will be installing four new kiosks with informative information at our trailheads. This includes information on forest management, prescribed fire, wildlife and plants.

4. **Bird Watching**
   LBESF is a member of The Great Florida Birding and Wildlife Trail. Information on the website and brochure will be updated as needed.

5. **Equestrian, Hiker, Biker and Hunter Education**
   FFS will continue communicating our needs and concerns with our user groups, cooperators, and our visitors.

6. **Pavilion**
   During this ten-year planning period we will assess the feasibility of installing an approximate 32 feet X 24 feet handicap accessible pavilion with electric, picnic tables and grills at the Barr Street trailhead.

   During this ten-year planning period we will assess the feasibility of installing an approximate 32 feet X 24 feet handicap accessible pavilion with electric, picnic tables and grills at the Jones East trailhead.

   During this ten-year planning period we will assess the feasibility of installing an approximate 32 feet X 24 feet handicap accessible pavilion with electric, picnic tables and grills at the Equestrian trailhead.

   During this ten-year planning period we will assess the feasibility of installing an approximate 32 feet X 24 feet handicap accessible pavilion with picnic tables and grills at the proposed trailhead at the end of Brumley Road.

7. **Camping**
   During this ten-year planning period we will assess the feasibility of adding more primitive campsites based upon the reroute of the Florida National Scenic Trail. Campsites would be placed at strategic locations to support multi-day hikes. At a minimum each campsite will have a picnic table and ground grill.

   During this ten-year planning period we will assess the feasibility of installing a full-facility camping to accommodate RVs, trailers, and tents to encompass more public demand for camping.

The Florida Forest Service will handle permitting requests for recreational activities.

C. Hunter Access

LBESF is open to regulated hunting. The FWC manages hunting on LBESF. Hunting season dates, limits, and methods are established annually by FWC, in cooperation with FFS. LBESFWMA regulations are updated annually and are identified in the current WMA brochure provided by FWC at MyFWC.com.

Non-hunting recreation users are encouraged to check the WMA regulations and season dates before visiting LBESF.

D. Education

FFS may create partnerships with local K-12 schools and/or universities for the development and implementation of educational opportunities on LBESF. Once developed, the Five-Year Outdoor Recreation Plan may lend more insight to management activities as they pertain to future educational opportunities LBESF may provide to the public.

VI. Forest Management Practices

A. Prescribed Fire

Forest management practices on LBESF are important in the restoration and maintenance of forest ecosystems and provide a variety of socio-economic benefits to Floridians. Management practices on LBESF include a prescribed fire program which is an effective tool in controlling the encroachment of shrubs and off-site hardwoods, stimulating the recovery of native herbaceous groundcover, and promoting the regeneration of native pines.

FFS utilizes a fire management program on state forests that includes wildfire prevention, detection and suppression, and prescribed burning. This program is the responsibility of FFS's Orlando District and is detailed in the Five-Year Prescribed Burning Management Plan. Emphasis will be placed on prescribed burning, wildfire prevention, and education to help reduce wildfire occurrence on the forest.

A Fire History chart detailing the recent history of prescribed burns and wildfires at LBESF is available in Exhibit O.

FFS has one (1) fire tower, (1) brush truck and two (2) tractor-plow units located in Seminole County. Additional support is available from neighboring counties. Personnel and equipment stationed at LBESF will be used for pre-suppression practices, establishment of firebreaks, rehabilitation of existing firelines, construction of new firelines, maintenance of perimeter firebreaks, and prescribed burning.

The annual forest prescribed burning program produces multiple benefits. The purposes of prescribed burning on LBESF are to facilitate forest management operations; enhance wildlife and listed species habitat; decrease fuel loading; enhance public safety; and restore, maintain, and protect all native ecosystems, ecotones, and their ecological processes. FFS personnel are responsible for planning and implementing the annual prescribed burn program for LBESF, which will consist of dormant and growing season burns. An update to the Five-Year Prescribed Burning Management Plan is developed each year by FFS staff. All burns conducted on LBESF are executed by Florida Certified Prescribed Burn Managers in accordance with Chapters 590.125, F.S. and 5I-2 F.A.C.

According to FNAI, historic, fire dependent natural communities on LBESF are estimated to have occupied approximately 6,333 acres and to have burned at approximately 2 to 10-year intervals. Current fire dependent communities encompass 5,101 acres. Some historically fire dependent communities have been altered through past land use practices, which inhibits the ability to meet objectives with prescribed fire alone. Based on current conditions and management objectives, LBESF will plan for 1,275 to 1,700 acres to be prescribed burned annually. Priority ranking of burn units is used to keep fire return intervals maintained while slowly adding additional acreage. Meeting prescribed fire goals will be largely dependent on

weather conditions, available personnel, and statewide emergency situations such as wildfires, hurricanes, and other natural disaster response and relief. Currently it is estimated that approximately 4,502 acres of LBESF are within the desired fire return interval.

1. Fire Management

The fire management plan will serve as a working tool and an informational document for LBESF. The plan will provide guidelines regarding wildfire suppression and prescribed fire management. It will specify burn units, burn unit prescriptions, appropriate fire return intervals, and fire pre-suppression planning. The plan may be reviewed and amended as necessary.

The use of prescribed fire in the management of timber, wildlife, and ecological resources on LBESF is necessary if the FFS is to fulfill the goals and objectives stated in this plan including: enhancing and restoring native plant communities, managing protected species, managing timber, recreation, historical, and other resource values. The fire management plan and its objectives shall reflect and incorporate these multiple-resource objectives.

a. Prescribed Fire: Prescribed fire is the most important land management tool, both ecologically and economically, for managing vegetation and natural communities and perpetuating existing wildlife populations in Florida. Forest operation records and staff experience should be combined with the FNAI inventory and assessment (2016) to identify areas that may require mechanical or chemical treatments in conjunction with prescribed fire to restore a more natural vegetative structure.

b. Burn Unit Plans: Each prescribed fire will be conducted in accordance with FFS regulations and state law (Rule Chapter 5I-2 F.A.C., Chapter 590 F.S.) and have a burn unit plan (or prescription). Each prescription will contain, at a minimum, the information, as required by Section 590.125(3), F.S., needed to complete the FFS Prescribed Burn Plan Form FDACS 11461.

Aerial ignition may be considered for large burn units where this tactic can be cost effective for higher burn acreages. Consideration should be given to rotating burn units between dormant and growing season burns over time. Fire return intervals for a burn unit are recommended to fall within the natural, historic range for the dominant natural community or communities within a given burn unit.

Based upon available species survey data, burn units within a prescription that have listed wildlife species shall explicitly state their presence and any restrictions or requirements relative to prescribed burning in proximity to these species or habitats. These may include time of year, pre-burn preparation, fire return intervals, and other burn parameters.

B. Wildfires, Prevention, Fire / Prescribed Fire Strategies

FFS utilizes a comprehensive wildfire management approach on state forests that includes an ongoing program of wildfire prevention, detection and suppression, and prescribed burning. Implementation of this program is the responsibility of FFS's Orlando District. Emphasis will be placed on consistent accomplishment of prescribed burning goals and community outreach

to increase public understanding of wildfire prevention and the benefits of prescribed fire.

FFS has three paramount considerations regarding wildfires, and these are listed in priority order:

1) Protection of human lives
2) Protection of improvements
3) Protection of natural resources

All procedures regarding wildfire will follow the State Forest Handbook and the LBESF Fire Management Plan.

1. Suppression Strategies

If a wildfire occurs on LBESF there are two (2) alternative suppression strategies as defined below:

a. Contain and Control is defined as a suppression strategy where a fire is restricted to a certain area by using existing natural or constructed barriers that stop the fires spread under the prevailing and forecasted weather until it is out. This strategy allows the use of environmentally sensitive tactics based on fuels, fire behavior, and weather conditions that keep a wildfire from burning a large area or for a long duration.

b. Direct Suppression is defined as a suppression strategy where aggressive suppression tactics are used to establish firelines around a fire to halt its spread and to extinguish all hotspots. This alternative is used whenever there is a threat to human life, property, private lands, and/or critical natural or cultural resources. This strategy should also be used when the total district fire load dictates that crews not be involved with individual fires for any longer than absolutely necessary.

Appropriate suppression action will be that which provides for the most reasonable probability of minimizing fire suppression cost and critical resource damage, consistent with probable fire behavior, total fire load, potential resource and environmental impacts, safety, and smoke management considerations. The Incident Command System (ICS) will be used for all suppression actions.

2. Smoke Management

Caution will be exercised to prevent a public safety or health hazard from the smoke of any prescribed burn or wildfire. Prescribed burns must pass the smoke screening procedure and be conducted by a certified burner. If smoke threatens to cause a safety hazard, then direct, immediate suppression action will be taken.

3. Fire Breaks and Firelines

A system of permanent fire breaks will be developed and maintained around and within the boundaries of LBESF to guard against fires escaping from and entering the forest. Such fire breaks will consist of natural barriers, roads, trails, permanent grass strips and where appropriate, well maintained harrowed lines. All pre-suppression fire breaks will meet the established Silvicultural BMP criteria.

During wildfire suppression, the use of water and foam, permanent fire breaks, natural barriers, and existing roads and trails for firelines can be used when human life, safety, property, and resource considerations allow. Plowed and/or bladed lines will be used for initial installation of firelines in heavy fuels and in cases where it's considered necessary to protect life, property, or resources and/or to minimize threats to firefighters. Plowed and bladed lines will be rehabilitated, and BMP implemented as soon as practical after the fire is suppressed.

4. **Sensitive Areas**

   LBESF retains on file in the state forest headquarters an Environmentally Sensitive Area Map that identifies protected sites such as critical wetlands and archaeological and historical sites known to occur on the state forest. FFS personnel are aware of these areas in the event of a wildfire. Special precautions will be followed when prescribed burning in sensitive areas on LBESF. When possible, fire staff will avoid line construction in wetlands ecotones throughout the forest.

5. **Firewise Communities**

   FFS has implemented a Firewise community approach for prevention statewide. Specifically, in the area adjacent to or nearby LBESF, efforts in this regard will continue to identify communities at risk and to contact their representatives.

6. **Adjacent Neighbor Contacts**

   The staff at LBESF maintains a list of neighbors that have requested they be notified in advance of prescribed burns. These families are contacted by telephone or email with potential sites and dates of anticipated prescribed burns.

7. **Post-Burn Evaluations**

   A post-burn evaluation is required for each wildfire and prescribed burn on the state forest to assess impacts on timber and habitat. Based on the evaluations, decisions will be made on the effectiveness of the prescribed burn and improvements that can be made in the future. A historical fire record for all fires and prescribed burns will be maintained. This will be accomplished using completed burn plans and the maintenance of GIS data. These records are intended to provide data for future management decisions.

C. Sustainable Forestry & Silviculture

Timber is a valuable economic and ecological resource, and timber harvesting for the purposes of generating revenue, improving stand viability, forest health, wildlife, and ecological restoration and maintenance is critical to the silvicultural objectives on the state forest.

1. **Strategies**

   The following silvicultural strategies will apply to silvicultural practices on LBESF:

   a. To restore and maintain forest health and vigor through timber harvesting, prescribed burning, and reforestation, both naturally and artificially, with species native to the site.

   b. To create, through natural or artificial regeneration, uneven-aged, and even-aged management, a forest with both young and old growth components that yields sustainable economic, ecological, and social benefits.

2. **Silvicultural Operations**

Silvicultural operations on LBESF will be directed toward improving forest health, wildlife habitat, ecological and economical sustainability, as well as toward recovery from past management practices that are not in accordance with the objectives of this plan. Stands of off-site species with merchantable volume will be scheduled for harvest, followed by reforestation with the appropriate tree species. Herbicide applications may be necessary to control woody competition and to re-establish desired natural species of both overstory and groundcover. Site preparation methods may include prescribed fire, mechanical vegetation control, and / or herbicide applications. Herbicides used will be registered for forestry use by the U.S. Environmental Protection Agency (EPA) and will not adversely affect water resources.

Prescribed fire is the most desirable method of vegetation control in fire-dependent ecosystems. However, due to the existence of areas where fuel loads have reached dangerous levels or urban interface dictates prescribed fire is not suitable, mechanical or chemical vegetation control may be used. Mechanical and / or chemical vegetation control will be utilized where appropriate as determined by FFS staff for wildlife enhancement, fuel mitigation, and reforestation.

Maintenance and restoration of timber stands and natural communities through timber harvesting will include thinning for maintenance, regeneration harvests applicable to the species present, and clear-cutting to remove off-site species.

All silvicultural activities, including timber harvesting and reforestation, will meet or exceed the standards in FFS's Silviculture BMPs and the State Forest Handbook, and will follow the Five-Year Silviculture Action Plan.

3. **Forest Inventory**

The purpose of a forest inventory is to provide FFS resource managers with information and tools for short and long-range resource management and planning. Ten percent (10%) of LBESF forest will be re-inventoried annually to provide an accurate estimation of the standing timber and to ensure that stands will be managed sustainably.

Timber / forestry resources available on the property include loblolly, longleaf, slash, and small pockets of sand pine. In addition, there are mixed hardwoods found throughout the forest.

4. **Timber Sales**

Timber sales are generally advertised for competitive bids and sold on a per unit or lump sum basis. All timber sales are conducted according to guidelines specified in the State Forest Handbook.

5. **Cattle Grazing**

Cattle grazing activities assist in maintaining pastures and controlling non-native plants, support the maintenance of fences and gates, and provide a source of income to the

LBESF.

Currently there are two (2) cattle leases on LBESF. The cattle lease on the Kilbee Tract is managed by the Florida Forest Service and has a duration of five (5) to ten (10) years. The cattle lease on the Yarborough Tract is managed by the SJRWMD which has a duration of ten (10) years.

D. Non-Native Invasive Species Control

FFS employees continually monitor the forest for non-native invasive species while conducting management activities. FFS will locate, identify, and apply control measures with the intent to eradicate or control non-native invasive species. Table 6 lists the general treatment strategy, acres impacted, and population stability trend for non-native invasive plant species occurring on LBESF. Also see Exhibit P.

On-going maintenance and monitoring strategies are outlined in the Five-Year Ecological Management Plan which is developed to locate, identify, and control non-native invasive plant species. Occurrences of non-native invasive species are recorded in the LBESF GIS database and are monitored and treated annually as funding permits. The GIS database is updated as new infestations are discovered.

Adjacent landowners who are known to have these species on their property will be approached to cooperate on control measures. FFS works to control the spread of non-native invasive species by decontaminating agency equipment and equipment used by private contractors according to the State Forest Handbook.

FFS will enlist support from FWC in efforts to control non-native invasive animals. Feral hogs (*Sus scrofa*) are present on LBESF but are not believed to occur in significant numbers at this time. FWC has issued a feral hog control permit to FFS for all state forests and FFS will allow for feral hog removal on LBESF through trapping and hunting as necessary.

Training in the identification and control of invasive species will be scheduled for personnel as time and resources permit. Training concerning non-native invasive plants will be coordinated with the Forest Management Bureau's Forest Health Section. Control of non-native invasive species will be target specific and use a variety of methods including appropriately labeled and efficacious herbicides.

Table 6. Non-Native Invasive Plant Species Occurring on LBESF

Scientific Name	Common Name	Treatment Strategy	Acres Impacted	Increasing /Decreasing
Sapium sebiferum	Chinese tallow tree	Spot Treatment with herbicide	Scattered plants	Stable
Schinus terebinthifolius	Brazilian Pepper	Spot Treatment with herbicide	Scattered plants	Increasing
Imperata cylindrica	Cogon grass	Spot Treatment with herbicide	Scattered plants	Increasing
Urena lobata	Caesar Weed	Spot Treatment with herbicide	Scattered plants	Increasing

Scientific Name	Common Name	Treatment Strategy	Acres Impacted	Increasing /Decreasing
Dioscorea bulbifera	Air potato	Spot Treatment with herbicide	Scattered plants	Decreasing
Cinnamomum camphora	Camphor Tree	Spot Treatment with herbicide	Scattered plants	Decreasing
Ardisia crenata	Coral Ardisia	Spot Treatment with herbicide	Scattered plants	Stable
Psidium guajava	Guava	Spot Treatment with herbicide	Scattered plants	Stable
Lygodium japonicum	Japanese Climbing Fern	Spot Treatment with herbicide	Scattered plants	Stable
Lantana camara	Lantana	Spot Treatment with herbicide	Scattered plants	Decreasing
Lygodium microphyllum	Old World Climbing Fern	Spot Treatment with herbicide	Scattered plants	Decreasing
Urochloa mutica	Para Grass	Spot Treatment with herbicide	Scattered plants	Decreasing
Nephrolepis cordifolia	Sword fern	Spot Treatment with herbicide	Scattered plants	Decreasing
Solanum viarum	Tropical Soda Apple	Spot Treatment with herbicide	Scattered plants	Stable
Colocasia esculenta	Wild taro	Spot Treatment with herbicide	Scattered plants	Stable

E. Insects, Disease and Forest Health

Currently there are no significant insect or disease problems on LBESF. In the event of a forest pest outbreak, LBESF resource managers will consult with the Forest Management Bureau's Forest Health Section to formulate an appropriate and effective response.

In compliance with Section 388.4111, F.S. and in Section 5E-13.042, F.A.C., all lands have been evaluated and subsequently designated as environmentally sensitive and biologically highly productive. Such designation is appropriate and consistent with the previously documented natural resources and ecosystem values and affords the appropriate protection for these resources from arthropod control practices that would impose a potential hazard to fish, wildlife, and other natural resources existing on this property. The local arthropod control agencies in Seminole County will be notified of the approval of this plan documenting this designation.

As a result, prior to conducting any arthropod control activities on LBESF, the local agency must prepare a public lands control plan that addresses all concerns that FFS may have for protecting the natural resources and ecosystem values on the state forest. In this regard, FFS will provide the local agency details on the management objectives for LBESF. This public lands control plan must be in compliance with FDACS guidelines and using the appropriate FDACS form. The plan must then be approved and mutually adopted by the county, FFS, and FDACS, prior to initiation of any mosquito control work. Should the local mosquito control district not propose any mosquito control operations on the property, no arthropod control plan is required. See Exhibit X.

F. Use of Private Land Contractors

The forest manager makes ongoing evaluations of the use of private contractors and consultants to facilitate the total resource management activities of this state forest. The opportunities for outsourcing land management work include, or are anticipated to include:

1. Herbicide applications
2. Restoration activities
3. Reforestation
4. Timber harvesting
5. Biological assessments and mapping

VII. Proposed Management Activities for Natural Communities

In 2016, FNAI completed an inventory and natural community mapping project on LBESF. Current and historic natural community cover types can be found in Exhibits Q and R, and Table 7. The inventory included altered community types which are habitats that have been impacted by humans and do not fit into FNAI's Natural Community Classification. See Tables 8 and 9. The discrepancy between the acreage listed at the beginning of this plan and what is described in Table 7 is due to differing interpretations of the boundary with the St. Johns River.

Table 7. Natural Community Types

Community Type	Historic acres*	Current acres*	Acres in Restoration*
Alluvial forest	6	14	N/A
Basin marsh	128	130	N/A
Basin swamp**	131	136	N/A
Baygall	154	141	N/A
Blackwater stream**	740	750	N/A
Depression marsh	274	256	N/A
Dome swamp	72	65	N/A
Floodplain marsh	2,298	2,254	N/A
Floodplain swamp**	10	11	N/A
Hydric hammock**	401	476	N/A
Mesic flatwoods	1,695	529	690
Mesic hammock	2,271	2,367	N/A
River floodplain lake	26	26	N/A
Sandhill	82	48	20
Scrub	176	128	N/A
Scrubby flatwoods	496	271	48
Wet flatwoods	487	219	N/A
Wet prairie	753	539	34
Xeric hammock	4	109	N/A
TOTAL	10,204	9,412	792

* Note rounding errors exist

** Inclusions in bottomland forest and mesic hammock
*** See Table 8

Table 8. Managed Community Types

Community Type*	Current acres**
Pasture – improved	585
Pasture – semi-improved	168

* Protocol as described in Appendix 2 of FNAI's "Guide to the Natural Communities of Florida", 2010 Edition.
* Note rounding errors exist

Table 9. Altered Landcover Types

Landcover Type*	Current Acres**
Abandoned field	20
Artificial pond	4
Canal/ditch	16
Clearing/regeneration	<1
Developed	13
Road	60
Spoil area	2
Successional hardwood forest	73
TOTAL	190

*Protocol as described in Appendix 2 of FNAI's "Guide to the Natural Communities of Florida", 2010 Edition.
** Note rounding errors exist.

For the purposes of this management plan, restoration is defined as the process of returning ecosystems to the appropriate structure and species composition, based on soil type. Management during this ten-year period will begin with a forest-wide assessment of the fuel loading, timber densities, reforestation needs, and groundcover in order to develop a five-year comprehensive operational plan for prescribed burning and other management activities across the forest. Strategies may include thinning pine plantations, mowing or chopping in areas of heavy fuel buildup, application of both dormant and growing season fires, and/or the use of herbicides to control hardwoods and/or hardwood regeneration. Site preparation and reforestation may be required to increase pine stocking in stands with very poor stocking or in restoration efforts. Fire return intervals are included as a guide and may vary depending upon specific conditions and are intended to attain desired forest and resource management goals. See Table 10.

Table 10. Prescribed Fire Interval Guide on LBESF

Habitat Type	Historic Fire Return Intervals**	LBESF Fire Frequency Goal (Local)	Comments
Alluvial forest	N/A	N/A	Not a fire dependent community.

Habitat Type	Historic Fire Return Intervals**	LBESF Fire Frequency Goal (Local)	Comments
Basin marsh	Varies	3 - 4	Fire intervals are highly variable, with natural fires more possible at the end of the dry season. [Continued] Frequency of fire varies depending on the hydrology of the marsh and its exposure to fire from surrounding areas.
Basin swamp	Varies	3 - 4	Fire intervals are highly variable. Ecotones often burn in conjunction with the adjacent uplands, and these may burn as frequently as every 3 to 4 years.
Baygall	Varies	3 - 4	Ecotones burned per frequency of adjacent upland habitat type.
Blackwater stream	N/A	N/A	Not a fire dependent community.
Depression marsh	1 - 10	3 - 4	Ecotones burned per frequency of adjacent upland habitat type. Interior portions of this community type will have longer return intervals.
Dome swamp	3 - 5	3 - 4	Ecotones burned per frequency of adjacent upland habitat type. Interior portions of this community type will have longer return intervals (100-150 years).
Floodplain marsh	1 - 5	2 - 3	Require frequent fires to maintain groundcover and minimize woody vegetation encroachment.
Floodplain swamp	N/A	N/A	Not a fire dependent community.
Hydric hammock	N/A	N/A	Hydric hammocks rarely burn. However, prescribed fires should be allowed to burn up to the edge of these communities to discourage shrubby encroachment into the ecotone with pyrogenic communities
Mesic flatwoods	2 - 4	2 - 4	Depends on pine species, density, age, and fuel conditions.
Mesic hammock	N/A	N/A	Will be burned with the majority community type it falls within – majority of mesic hammock stands are found contained within other community types.
Pasture – improved		N/A	Not a fire dependent community.
Pasture – semi-improved		2 - 3	Return intervals in general will match surrounding community types.
River floodplain lake	N/A	N/A	Not a fire dependent community.
Sandhill	1 - 3	1 - 3	Frequent low intensity fire preferably within the growing season to reduce hardwood competition and perpetuate pines and grasses.
Scrub	6 - 19	3-15	Return intervals in general will match surrounding community types. Fire is important in maintaining ecotones.
Scrubby flatwoods	3 - 15	3 - 15	Return intervals in general will match surrounding community types. Fire is important in maintaining ecotones. Most of the scrubby flatwoods are surrounded by mesic flatwoods.

Habitat Type	Historic Fire Return Intervals**	LBESF Fire Frequency Goal (Local)	Comments
Wet flatwoods	3 - 10	3 - 5	Depends on pine species, density, age, and fuel conditions.
Wet prairie	2 - 3	2 - 3	Require frequent, low intensity ground fires to maintain groundcover and minimize woody vegetation encroachment.
Xeric hammock	N/A	3 - 4	Return intervals in general will match surrounding community types. Fire is important in maintaining ecotones.

* Includes restoration community acreage / ** As determined by FNAI

The following community descriptions, existing condition descriptions, and management recommendations are taken from a 2016 FNAI mapping project report and the Guide to the Natural Communities of Florida (FNAI 2010), as well as from the knowledge and experience gained by FFS during forest inventory efforts and routine field work on LBESF.

To achieve the objectives outlined in this plan, the following management activities will be performed in the natural and managed communities at LBESF during the next ten-year planning period. Goals, desired conditions, standards, and guidelines provide management area direction. These goals and desired conditions may take many planning cycles to attain.

A. Alluvial Forest

Description:

Alluvial forests are hardwood forests occurring on drier soils at slight elevations within floodplains, such as on levees, ridges, and terraces. They are usually flooded for a portion of the growing season and often subject to sedimentation of alluvial materials from rivers, however, they are drier than floodplain swamps. These forests may be formed by point bar aggradation where disturbance and flood tolerant trees become established after the sediments are initially colonized by herbs. Alluvial forests at LBESF are restricted to point bars and areas immediately surrounding the floodplain swamps occupying old oxbows of the river. Blackwater rivers such as the Econlockhatchee River carry little inorganic alluvium, and so do not generally form extensive flats of alluvial forests. These forests are the byproduct of a shifting river and may succeed to hammock if completely cut off from river flooding. The closed canopy is dominated by water hickory (*Carya aquatica*), water locust (*Gleditsia aquatica*), sweetgum (*Liquidambar styraciflua*), and diamond-leaved oak (*Quercus laurifolia*). Carolina ash (*Fraxinus caroliniana*) and coastalplain willow (*Salix caroliniana*) are both present in the subcanopy and shrub layers. Herbs are few and include fireweed (*Erechtites hieraciifolius*), climbing hempvine (*Mikania scandens*), *Panicum* sp., mock bishopsweed (*Ptilimnium capillaceum*), and *Rhynchospora* sp. Epiphytes such as Bartram's air-plant (*Tillandsia bartramii*) and Spanish moss (*Tillandsia usneoides*) are occasional.

The Econlockhatchee River has shifted its course somewhat since the 1940 aerial photographs were recorded. The aggrading point bars are clear, particularly when the current and historic photographs are compared. Point bars present in 1940 are smoother and lighter in signature than the surrounding hammock.

Current Conditions:
Most alluvial forests were similar to desired conditions with a closed canopy dominated by water hickory, water locust, sweetgum, and diamond-leaved oak. Carolina ash and coastalplain willow are both present in the subcanopy and shrub layers. Herbs are few and include fireweed, climbing hempvine, *Panicum* sp., mock bishopsweed, and *Rhynchospora* sp. Epiphytes such as Bartram's air-plant and Spanish moss are occasional.

The primary disturbance to this community noted at LBESF was one area in the Demetree Tract where a ruderal area of pasture grasses occupies a presumed historic alluvial forest at a public access to the river. There has been some expansion of this community as the river has shifted and material has built out into the old river bed.

Fire Regimes:
Alluvial forests are not maintained by fire.

Management Needs:
Alluvial forests are sensitive to hydrologic alteration, since the trees characteristic of these communities are not tolerant of dry conditions. Since these forests often immediately border the river, impacts from recreational use of the river should be minimized. Monitoring and treatment of non-native invasive plants may be required.

B. Basin Marsh

Description:
Basin marshes are depressional, non-forested wetlands that are typically large and/or embedded in a non-pyrogenic community and thus are not heavily influenced by frequent fires in the surrounding landscape. This type of marsh usually develops in large solution depressions that were formerly shallow lakes. The soils are generally acidic, nutrient-poor peats overlying an impervious soil layer. This community type is dominated by herbs or occasionally shrubs that can withstand inundation for most or all of the year.

Trees are sparse, usually only occupying higher areas in the marsh or around the edge. These can include typical swamp species such as pond cypress (*Taxodium ascendens*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), red maple (*Acer rubrum*), loblolly bay (*Gordonia lasianthus*), swamp bay (*Persea palustris*), sweetbay (*Magnolia virginiana*), or slash pine (*Pinus elliottii*).

Basin marshes are present on LBESF as deeper depressions within hammocks, and also in mesic and scrubby flatwoods in the Bothers, Jones East, and Demetree Tracts, often adjacent to baygall communities. Grasses and sedges such as soft rush (*Juncus effusus* subsp. *solutus*), needle rush (*Juncus roemerianus*), maidencane (*Panicum hemitomon*), and sand cordgrass (*Spartina bakeri*) dominate the vegetative cover in all but the deepest areas of marsh where sawgrass (*Cladium jamaicense*), or pickerelweed (*Pontederia cordata*) may be present. Woody components around the edge are much fewer in marshes embedded in a flatwoods matrix where fires may burn into the edges.

Basin marshes appear on the 1940 aerial photographs as smooth gray or black patches.

Current Conditions:
Some basin marshes at LBESF remain in good condition, especially the large marshes found on the Kilbee and Yarborough Tracts as deeper depressions within the large hammocks along the St. John's and Econlockhatchee River floodplains. A few other basin marshes are located in mesic and scrubby flatwoods in the Bothers, Jones East, and Demetree Tracts. Many of the marshes in the Demetree Tract have been heavily impacted by the conversion of flatwoods to pasture, and these often have a high cover of weedy species due in part to altered hydrology from numerous ditches evident on the historic photographs. There has been a small overall reduction in the number of historic acres of basin marsh versus the current acreage. This is mainly due to an apparent expansion of open marsh into areas that were once forested on the Demetree Tract.

The dominant graminoids in basin marshes include bluestems (*Andropogon* sp.), sawgrass, soft rush, needle rush, maidencane, and sand cordgrass. Other herbaceous species are toothed midsorus fern (*Blechnum serrulatum*), spadeleaf (*Centella asiatica*), fireweed, dogfennel (*Eupatorium capillifolium*), manyflower marshpennywort (*Hydrocotyle umbellata*), prairie iris (*Iris hexagona*), dotted duckweed (*Landoltia punctata*), climbing hempvine, dotted smartweed (*Polygonum punctatum*), pickerelweed, bulltongue arrowhead (*Sagittaria lancifolia*), lizard's tail (*Saururus cernuus*), broadleaf cattail (*Typha latifolia*), horned bladderwort (*Utricularia cornuta*), and Virginia chain fern (*Woodwardia virginica*). A few scattered trees and shrubs may be present; they include red maple, pond cypress, cabbage palm (*Sabal palmetto*), coastalplain willow, groundsel tree (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), and peelbark St. John's wort (*Hypericum fasciculatum*). In one location in 2007, the state-listed threatened hooded pitcherplant (*Sarracenia minor*) was found growing on the edge of a basin marsh.

Fire Regimes:
Fire intervals in basin marshes are highly variable, with natural fires more possible at the end of the dry season. Dense sawgrass and maidencane marshes will burn even when there is standing water. Frequency of fire varies depending on the hydrology of the marsh and its exposure to fire from surrounding areas.

Management Needs:
Natural fires are presumed to have rarely burned across the deep marshes on the property; they likely extinguished just within shallow peripheral areas or the adjacent ecotonal hardwood areas. Restoring historic hydrological regimes and applying fire to adjacent uplands (where appropriate) is a recommended focus for forest management. Occasional fires within the basin marshes are necessary to remove encroaching woody vegetation and reduce the buildup of organic soils. Removing feral hogs is desirable in areas where these animals are impacting basin marshes and other wetlands. Control of invasive plants would also greatly benefit the basin marshes on LBESF.

C. Basin Swamp

Description:
Basin swamps are forested depressions that are typically large and/or embedded in a non-pyrogenic community and thus are not heavily influenced by frequent fires in the surrounding

landscape. The soils are generally acidic, nutrient-poor peats overlying an impervious soil layer. This community type is dominated by hydrophytic trees and shrubs that can withstand inundation for most or all of the year, including bald cypress (*Taxodium distichum*), pond cypress (*Taxodium ascendens*), and/or swamp tupelo. Slash pine may infrequently be found on hummocks within the swamp. Basin swamps have variable shrub layers and sparse to dense herbaceous species cover. A mature canopy is usually closed and dominated by pond cypress, swamp tupelo, slash pine, and to a lesser extent, red maple, green ash (*Fraxinus pennsylvanicus*), diamond-leaved oak, loblolly bay, swamp bay, and sweetbay. In most cases, shrubs do not form a dense layer below the canopy or in the ecotones of the swamps, but are typically scattered throughout the swamp. In densely forested portions of basin swamps, herbs are sparse. Epiphytes and vines may be common.

Basin swamps on LBESF are found either as depressions in mesic and hydric hammocks or in flatwoods where they are part of slow seepage drains into the Econlockhatchee River. Basin swamps appear much the same as baygall and hammock communities on the 1940 aerial photographs, as medium to dark gray forested patches. Survey notes taken in the mid-1800s indicate the presence of "dry ponds" and "thick bushy swamps" within the broad hydric hammock on the western boundary of the Kilbee Tract.

Current Conditions:
Many basin swamps found on LBESF have experienced hydrological alteration from ditching. Some of the swamps found within hammock communities are similar to bottomland forest, as they seem to be drier than typical swamp communities. The basin swamp found on the Bothers Tract has an edge of flatwoods encroached with baygall species, probably encouraged by fire exclusion, as a road around the swamp prohibits natural and prescribed burning.

Basin swamps on the forest have an open to moderately dense canopy dominated either by a mixture of swamp tupelo, red maple, sweetgum, and diamond-leaved oak, or by pond cypress with an understory mixture of the previous species. In addition to saplings of the canopy species, cabbage palm may be present in the subcanopy. The shrub cover is sparse and dominated by common buttonbush (*Cephalanthus occidentalis*) and wax myrtle. Herbaceous cover is generally patchy. Deeper areas of the basin swamp lack herbs while areas with slightly higher elevation can have a dense groundcover. Common species found include toothed midsorus fern, false nettle (*Boehmeria cylindrica*), bandana-of-the-Everglades (*Canna flaccida*), clustered sedge (*Carex glaucescens*), manyflower marshpennywort, *Iris* sp., soft rush, *Ludwigia* sp., climbing hempvine, *Polygonum* sp., pickerelweed, *Rhynchospora* sp., lizard's tail, Canadian germander (*Teucrium canadense*), and Virginia chain fern. Vines are occasional and include eastern poison ivy (*Toxicodendron radicans*).

Fire Regimes:
Fire intervals in basin swamps are highly variable. The lowest portions of basin swamps rarely, if ever, burn. Graminoid-dominated ecotones often burn in conjunction with the adjacent uplands, and these may burn as frequently as every 2 to 5 years.

Fire is more frequent in cypress dominated swamps and may be absent or rare in hardwood swamps. Slash pine, pond pine, and cypress can establish in these areas immediately after a

fire, benefiting from ample sunlight and available bare mineral soils; they are also tolerant of moderate fires once past a certain size, thus systems dominated by these two species may have been subjected to fires, every 10 to 20 years.

Management Needs:
Little active management should be required for this community type. Infrequent low intensity ground fires within basin swamps are necessary to maintain the cypress component. Swamp tupelo and other hardwoods dominate areas that burn less often. If hydrology has been altered (i.e. ditches/canals), normal hydroperiod should be restored if possible, since shortened hydroperiods can also allow devastating fire to enter, potentially altering the community. Due to rutting that may alter the micro-hydrology of the ecotone. The use of heavy equipment, if necessary, should be limited to dry seasons. This community is thought to be very stable as long as hydrological conditions and water quality are maintained.

D. <u>Baygall</u>

Description:
Baygall is an evergreen, forested wetlands typically at the base of sandy slopes where water seepage maintains a saturated peat substrate. It may form an ecotone between uplands and swamps, or it may develop as a larger bay swamp in isolated basins or broad areas of seepage. These forests are dominated by a tall canopy of abundant loblolly bay, sweetbay, and slash pine, with swamp bay and fetterbush (*Lyonia lucida*) often forming a dense thicket in the understory. At LBESF, several areas of baygall are present in the Bothers, Jones East, Yarborough, and Demetree Tracts. Most are small depressions or edges of swamps; however, two large bay swamps are present in the Bothers Tract.

Baygall, swamp, and hammocks all have a similar appearance on the 1940 aerial photographs, although baygalls tend to be somewhat darker.

Current Conditions:
The vegetation of several baygalls, particularly those found in the Bothers Tract is intermediate with basin swamp, but cypress and tupelo are widely scattered. A few possibly historic baygalls occurring in old pasture planted with pines on the Demetree Tract are now open marshes, despite appearing forested on historic photographs. Baygall vegetation is also becoming dominant in several flatwoods edges, particularly in the Bothers Tract. These edges are still dominated by pines with saw palmetto (*Serenoa repens*) in the understory, but loblolly bay has become abundant in the subcanopy due to fire exclusion. While these were generally included with mesic flatwoods community in the accompanying natural community map, continued fire exclusion may lead to further conversion to baygall.

Most of the baygall on LBESF has a closed canopy with a variable mixture of loblolly bay, sweetbay, swamp tupelo, red maple, sweetgum, diamond-leaved oak, and pond cypress, with slash pine and pond pine (*Pinus serotina*) frequent in transitions to flatwoods. Shrubs are often very dense with wax myrtle, swamp bay, fetterbush, highbush blueberry (*Vaccinium corymbosum*), common buttonbush, and maleberry (*Lyonia ligustrina* var. *foliosiflora*) frequently found. The herbaceous groundcover frequently includes hydrophytes such as toothed midsorus fern, cinnamon fern (*Osmunda cinnamomea*), green arrow arum (*Peltandra*

virginica), bracken fern (*Pteridium aquilinum*), lizard's tail, *Sphagnum* sp., netted chain fern (*Woodwardia areolata*), and Virginia chain fern. Vines may be frequent and include laurel greenbrier (*Smilax laurifolia*) and eastern poison ivy.

In one location in 2007, the state listed threatened hooded pitcherplant was seen near an open baygall edge being maintained in part by a road.

Fire Regimes:
Baygall should burn infrequently, perhaps only a few times each century in the deepest baygalls. Although the saturated soils and humid conditions within baygalls typically inhibit fire, droughts may create conditions that allow them to burn catastrophically. These fires not only destroy the canopy, but also may ignite the deep peat layers that can smolder for weeks, or even months.

Management Needs:
If it can be done safely, prescribed fires in adjacent uplands should be allowed to burn into baygall edges to maintain grassy ecotones and to kill bay shrubs encroaching into the uplands. Plowed firebreaks and ditches should be restored and hydrology should be returned to its natural state where possible.

E. <u>Blackwater Stream</u>

Description:
The Econlockhatchee and St Johns Rivers are blackwater streams; perennial, seasonal watercourses with a sandy bottom originating deep in sandy lowlands. The tea-colored waters are laden with tannins derived from swamps and marshes, and are generally acidic. Emergent and floating aquatic vegetation growth is often reduced because of typically steep banks and considerable seasonal fluctuations in water level. Plant communities along these blackwater streams in the central peninsula are usually floodplain swamps or hammocks. Most of the Econlockhatchee River is lined with steep banks supporting a mesic hammock with some hydric hammock inclusions. The St Johns River flows through a broad swath of floodplain marsh with low banks. Blackwater streams are mostly free of vegetation except for occasional emergent herbs, submersed macrophytes and algae.

Current Conditions:
Existing conditions are similar to desired future condition. The course of the river has apparently undergone some changes and does not always align with the current photographs. Areas of aggrading point bars have been colonized with alluvial forest or floodplain marsh vegetation.

Fire Regimes:
Fire is not a component of this community.

Management Needs:
Blackwater streams in the forest are major recreation areas, so management should focus on reducing impacts from these activities and monitoring water quality. Periodic monitoring and treatment of non-native invasive plants is recommended.

F. Depression Marsh

Description:

Depression marshes are isolated, non-forested wetlands basins that are imbedded in a pyrogenic matrix community such as pine flatwoods or sandhill. These marshes typically have concentric zones of vegetation related to the length of hydroperiod and depth of flooding. Depression marshes are distinguished from basin marshes principally by their landscape position which subjects them to more frequent fires.

Depression marshes at LBESF are found both in the large wet prairie and wet flatwoods of the Kilbee and Yarborough Tract and in the mesic and scrubby flatwoods of the other tracts. Conditions for a depression marsh is a diverse herb dominated community where grasses, sedges, and emergent broadleaf herbs such as soft rush, Carolina redroot (*Lachnanthes caroliana*), maidencane, swamp smartweed (*Polygonum hydropiperoides*), and pickerelweed dominate. Shrub cover is typically very low and trees are found only on edges.

On the 1940 aerial photographs, depression marshes appear as darker smooth circular patches set into the flatwoods and prairies which are a lighter gray.

Current Conditions:

Most depression marshes are in good condition with a high cover of herbs including blue maidencane (*Amphicarpum muhlenbergianum*), bushy bluestem (*Andropogon glomeratus*), broomsedge bluestem (*Andropogon virginicus*), lemon bacopa (*Bacopa caroliniana*), sawgrass, Virginia buttonweed (*Diodia virginiana*), tenangle pipewort (*Eriocaulon decangulare*), semaphore thoroughwort (*Eupatorium mikanioides*), flattop goldenrod (*Euthamia graminifolia* var. *hirtipes*), *Hydrocotyle* sp., clustered bushmint (*Hyptis alata*), prairie iris, soft rush, Carolina redroot, taperleaf waterhorehound (*Lycopus rubellus*), maidencane, swamp smartweed, pickerelweed, fascicled beaksedge (*Rhynchospora fascicularis*), sugarcane plumegrass (*Saccharum giganteum*), bulltongue arrowhead, giant bulrush (*Scirpus californicus*), sand cordgrass, broadleaf cattail, and Virginia chain fern. A canopy is generally absent, but may include an occasional slash pine, pond pine, loblolly bay, swamp tupelo, sweetgum, cabbage palm, or red maple. The shrub layer is also sparse but shrubs may encroach with fire exclusion. Shrubs present include groundsel tree, common buttonbush, coastalplain St. John's wort (*Hypericum brachyphyllum*), roundpod St. John's wort (*Hypericum cistifolium*), peelbark St. John's wort, christmasberry (*Lycium carolinianum*), wax myrtle, and swamp bay.

Many of the marshes in current pastures and pine plantations of the Demetree Tract are weedy and have experienced hydrological alteration. These typically have a prominent weedy cover of dogfennel. A few marshes in the Kilbee Tract contained the non-native invasive Brazilian pepper (*Schinus terebinthifolius*). A few historic depression marshes appear to have been converted to either ruderal communities (pasture or artificial ponds), drier flatwoods (presumably from hydrology alteration), or now contain either swamp or hammock vegetation. Many of these changes are difficult to be certain of, since alterations had already been made to the landscape by 1940.

Fire Regimes:
Fire is an important factor in maintaining a depression marsh. Without fire, shrubs and trees can encroach and peat can accumulate. Fire frequency is generally greater around the edges of the marsh and lesser toward the center of the marsh. Depression marshes likely burned irregularly every 1 to 10 years depending on water levels in the marsh and when neighboring communities burned. Fires generally occurred early (April-June) in the lightning season when water was low and surrounding communities were dry.

Management Needs:
Prescribed burns in adjacent uplands should be allowed to burn into depression marshes. Early growing season burns are recommended to control shrub encroachment.

If the hydrology has been altered, natural hydrology should be restored if possible. This can be accomplished by blocking or filling canals/ditches and redesigning trails or roads to avoid altering the hydrology. Soil disturbance in the marsh and surrounding ecotone should be avoided.

G. Dome Swamp

Description:
Dome swamps are isolated, shallow, forested wetlands basins that are imbedded in a pyrogenic matrix community such as pine flatwoods. These swamps often have domed profiles resulting from smaller trees growing around the edges and larger trees growing in the interior. Dome swamps have peat soils that are thickest toward the center and are generally underlain with acidic soils. Dome swamps are distinguished from basin swamps principally by their often more circular shape, smaller size, and higher historical fire frequency due to landscape position.

The mature canopy is dominated by pond cypress and/or swamp tupelo and may also have a mixture of bay species such as sweetbay. The midstory consists of scattered tall shrubs including dahoon (*Ilex cassine*), fetterbush, wax myrtle, and swamp bay. The herbaceous layer is sparse in the interior, becoming denser on the edges, and dominated by various hydrophytic herbs. Species composition and hydroperiods are similar to basin swamps, but generally with fewer shrubs and greater herbaceous cover and diversity. Dome swamps usually have a diverse herbaceous ecotone with the surrounding pine dominated community, created through frequent fires that extinguish naturally along the edge of the dome.

Current Conditions:
The dome swamps on LBESF are relatively undisturbed although one has been surrounded by pasture for some time. Dome swamps are often inundated. The canopy is usually dominated by pond cypress and swamp tupelo with red maple and sweetbay also common. The subcanopy/tall shrub layer consists of loblolly bay, dahoon, fetterbush, wax myrtle, swamp bay, sweetbay, diamond-leaved oak, and cabbage palm. Herbs are sparse to common with midsorus fern, *Carex* sp., spadeleaf, tenangle pipewort, dogfennel, manyflower marshpennywort, taperleaf waterhorehound, cinnamon fern, *Rubus* sp., lizard's tail, *Sphagnum* sp., netted chain fern, and Virginia chain fern. Spanish moss is a common epiphyte found on the cypress trees.

Fire Regimes:
Fire is essential for the maintenance of dome swamps, limiting hardwood encroachment and peat buildup while encouraging herbaceous growth. The fire frequency is greatest at the periphery of the dome swamp where a normal fire cycle might be as short as 3 to 5 years. The interior of large dome swamps may burn less frequently as a result of standing water or soil saturation.

Management Needs:
Prescribed fires from neighboring flatwoods should be allowed to burn into dome swamps and extinguish naturally at the ecotone or burn through the swamp, as conditions permit. Fires maintain diverse ecotone and interior herbaceous cover. Unnecessary fire breaks in or around dome swamps should be rehabilitated, if possible, so that fires can carry across them.

If hydrology has been altered (i.e. ditches/canals), normal hydroperiods should be restored if possible. This can be accomplished by blocking or filling ditches/canals and redesigning trails to avoid altering the hydrology. Change in hydrology can promote invasion of mesic species, which can eventually allow hardwoods to replace cypress and swamp tupelo.

H. Floodplain Marsh

Description:
Floodplain marshes are wetlands of herbaceous vegetation and low shrubs that occur in river floodplains, mainly in central Florida and along the St. Johns, Kissimmee and Myakka Rivers, on sandy alluvial soils with considerable peat accumulation. These marshes are flooded with flowing water for a portion of the year. Floodplain marshes at LBESF occur primarily along the St. Johns River (Killbee Tract), although a few similar marshes may be found in isolated pockets in the Econlockhatchee River floodplain. The marshes along the St. John's River gradually grade into a large wet prairie to the west.

Floodplain marshes in this area are influenced by groundwater that is mildly saline, and a few tidal marsh plants may be found growing in these conditions. Cabbage palm is a common tree and shrub scattered in the marsh, however, these become less frequent in the deeper marsh nearer to the river. A few other shrubs such as groundsel tree and christmasberry are occasional; however, herbs form the dominant layer of this community. These are primarily sand cordgrass and soft rush, along with a diverse mixture of other herbs including saltwort (*Batis maritima*), bushy seaside oxeye (*Borrichia frutescens*), spadeleaf, *Coreopsis* sp., *Fuirena* sp., butterweed (*Packera glabella*), seashore paspalum (*Paspalum vaginatum*), turkey tangle frogfruit (*Phyla nodiflora*), pineland pimpernel (*Samolus valerandi* subsp. *parviflorus*), and perennial glasswort (*Sarcocornia perennis*).

Floodplain marshes appear in the 1940 aerial photographs as smooth expanses of light gray in the St. John's River floodplain, and in pockets along the Econlockhatchee River. These are difficult to distinguish from adjacent wet prairie, and historically all of this area may have been longer period marsh rather than prairie.

Current Conditions:
Overall, the current condition of floodplain marsh on LBESF is similar to the desired future condition. The non-native invasive plants Caesar's weed (*Urena lobata*) and para grass (*Urochloa mutica*) were noted as severe problems in a few areas of the marsh in 2007, primarily along the road and fence which run roughly north/south through the Kilbee Tract, as well as near spoil areas. However, these populations appear to have been drastically reduced through management. No large areas of para grass were seen in 2016, and Caesar's weed was only occasional to common, but not abundant. The smaller floodplain marshes near the Econlockhatchee River in the Demetree Tract have been partially converted to hydric hammock, probably due to hydrologic alteration.

Fire Regimes:
The natural fire return interval in floodplain marshes may vary widely from one situation to the next, but fire has been shown to be a useful tool for improving wildlife habitat and reducing fuel loads. Floodplain marshes may burn as frequently as every 1 to 5 years.

Management Needs:
In addition to prescribed burns, management of this community should attempt to maintain natural flooding regimes in order to prevent shrubby encroachment. Artificially shortened hydroperiods will permit invasion by shrubs and subsequent loss of the marsh. Roads and spoil from development may impede water flow, and this effect should be reduced where possible. Efforts to control the spread of non-native invasive plants, especially Caesar's weed, para grass, and Brazilian pepper, appear to be very effective on the Kilbee Tract, and should be continued.

I. Floodplain Swamp

Description:
Floodplain swamp is a closed-canopy forest of hydrophytic trees occurring on frequently or permanently flooded hydric soils adjacent to stream and river channels and in depressions and oxbows within floodplains. Dominant trees are usually buttressed hydrophytic trees such as cypress and tupelo and the understory and groundcover are generally very sparse. The Econlockhatchee River does not have a large expanse of floodplain swamp along the main channel; rather, floodplain swamps occur along the abandoned oxbows that are occasional within the large mesic hammock that borders the river. These oxbows are cut off from flowing water during much of the year and several have standing water in them, and so could possibly be classified as river floodplain lakes. The floodplain swamps are associated with slightly higher floodplain forests, and these have some species overlap.

The canopy is dominated by pond cypress and bald cypress with diamond-leaved oak occasional. A sparse shrub layer usually occurring on buttresses or elevated mounds and bare ground or layers of leaf litter and debris is common with Carolina ash, water locust, common buttonbush, cabbage palm, coastalplain willow, and small-leaf viburnum (*Viburnum obovatum*). Herbs are sparse with royal fern (*Osmunda regalis* var. *spectabilis*), and dotted smartweed. In areas of standing water, floating marshpennywort (*Hydrocotyle ranunculoides*) and water spangles (*Salvinia minima*) are common floating aquatics. Epiphytes such as Bartram's air-plant and Spanish moss are frequent on cypress trees.

Floodplain swamps are difficult to distinguish from other communities along the river, however, several oxbows can be seen on the 1940 aerial photographs, and it is presumed that these are floodplain swamps.

Current Conditions:
The current condition of floodplain swamp in LBESF is similar to the desired condition. The canopy is dominated by pond cypress and bald cypress with diamond-leaved oak occasionally. A sparse shrub layer usually occurring on buttresses or elevated mounds and bare ground or layers of leaf litter and debris is common with Carolina ash, water locust, common buttonbush, cabbage palm, coastalplain willow, and small-leaf viburnum. Herbs are sparse with royal fern, and dotted smartweed. In areas of standing water, floating marshpennywort and water spangles are common floating aquatics. Epiphytes such as Bartram's air-plant and Spanish moss are frequent on cypress trees.

Fire Regimes:
Fire is not necessary to maintain floodplain swamp. This community is typically too wet to carry a fire.

Management Needs:
Maintenance of natural hydroperiods and water quality is critical to floodplain swamps. Disruption or alteration of natural fluctuations in water level can be detrimental to the reproduction of many native floodplain swamp plant species. The removal of feral hogs is desirable in areas where wetlands are being impacted.

J. <u>Hydric Hammock</u>

Description:
Hydric hammock is characterized as a well-developed hardwood and cabbage palm forest with a variable understory often dominated by palms and ferns. These forests develop on poorly drained shelly soils or where limestone is near the surface. Hydric hammocks typically have a closed canopy of mixed deciduous and evergreen hardwood tree species and a ground layer of grasses, sedges, and ferns. The normal hydroperiod is rarely over 60 days per year, although soils may remain saturated for a large portion of the year. LBESF has a few extensive hydric hammocks. One large area on the west side of the Kilbee and Yarborough Tracts occurs roughly between the mostly mesic flatwoods to the west and wet flatwoods/prairie to the east. Hammocks close to the St. Johns River on these tracts are also more hydric. Those patches occurring in open floodplain areas are generally exposed to more frequent fires and thus are considered to be a "prairie hammock" variant. Inclusions of mesic hammock and basin swamp are common in these forests, and the classification of a hammock as either hydric or mesic is not always clear due to a continuum of hydrology regimes. Smaller inclusions of hydric hammock are also scattered throughout the large expanse of mesic hammock that occurs along most of the Econlockhatchee River.

Hydric hammocks have a canopy dominated by a mixture of diamond-leaved oak, live oak (*Quercus virginiana*), and cabbage palm, with other hardwoods occasional. The subcanopy and tall shrub layers are well-developed and include young canopy species and often red cedar

(*Juniperus virginiana*). Short shrubs are usually not dense, often leading to an open, parklike appearance. The common species found in this layer include common persimmon (*Diospyros virginiana*), St. Andrew's cross (*Hypericum hypericoides*), and wax myrtle. Herbs form a sparse to moderate cover and may include longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), sour paspalum (*Paspalum conjugatum*), *Dichanthelium* sp., and fireweed. The oaks and palms support a great diversity of epiphytes. Vines are occasional.

Hydric hammocks are impossible to distinguish from mesic hammocks and basin swamps on the 1940 aerial photographs, as all of these appear as dark forested signatures. Prairie hammocks in the St. Johns floodplain are visible on the 1940 aerial photographs as darker clumps of trees amidst the open light gray marsh. Surveyor notes in the mid-1800s describe this area as marshy with abundant cabbage palms.

Current Conditions:
Overall, hydric hammocks on LBESF are similar to desired conditions with a diverse canopy dominated by a mixture of diamond-leaved oak, live oak, and cabbage palm, sweetgum, and occasionally sweetbay. The subcanopy and tall shrub layers are well-developed and include American hornbeam (*Carpinus caroliniana*), red cedar, sweetgum, loblolly pine (*Pinus taeda*), cabbage palm, and American elm (*Ulmus americana*), smallflower pawpaw (*Asimina parviflora*), dwarf hawthorn (*Crataegus uniflora*), and yaupon (*Ilex vomitoria*). Short shrubs are usually not dense, often leading to an open, parklike appearance. The common species found in this layer include common persimmon, St. Andrew's cross, wax myrtle, and dwarf palmetto (*Sabal minor*). Herbs form a sparse to moderate cover and include spadeleaf, longleaf woodoats, *Dichanthelium* sp., fireweed, partridgeberry (*Mitchella repens*), sour paspalum, and common blue violet (*Viola sororia*). The oaks and palms support a great diversity of epiphytes with green fly orchid (*Epidendrum conopseum*), golden polypody (*Phlebodium aureum*), resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*), Bartram's air-plant, ballmoss (*Tillandsia recurvata*), southern needleleaf (*Tillandsia setacea*), Spanish moss, and giant air-plant (*Tillandsia utriculata*) commonly found. Vines are occasional and include peppervine (*Ampelopsis arborea*), rattan vine (*Berchemia scandens*), yellow jessamine (*Gelsemium sempervirens*), eastern poison ivy, and muscadine (*Vitis rotundifolia*).

There appears to have been some conversion from floodplain marsh and wet prairie to hydric hammock in the St. Johns floodplain and on the Demetree Tract based on the 1940 aerial photographs. Ditching has affected many of the wetlands in the Demetree tract. Caesar's weed, a non-native invasive weed, was found in many of the hydric hammocks surveyed.

Fire Regimes:
Hydric hammocks rarely burn. However, prescribed fires should be allowed to burn up to the edge of these communities to discourage shrubby encroachment into the ecotone with pyrogenic communities. Prairie hammocks tolerate occasional fires that burn in from surrounding habitats. Cabbage palm is highly tolerant of ground fires, but these fires may damage red cedar trees.

Management Needs:
Management of prairie hammocks at LBESF should focus on removal of non-native invasive plants. If hydrology has been altered (i.e. ditches/canals), normal hydroperiods should be restored if possible. A lowering of the water table will result in succession to mesic hammock, while more frequent inundation will result in the transition to a more swamp-like habitat. Feral hogs should also be controlled.

K. Mesic Flatwoods (including restoration areas)

Description:
Mesic flatwoods are forests generally comprised of longleaf pine (*Pinus palustris*) and other southern yellow pine species. Slash pine is present more frequently in transitions to adjacent wetlands or on more calcareous soils. There is little or no subcanopy and tall shrub layer other than pine recruitment. The shrub layer is moderately dense with an average height that does not generally exceed four feet. Typical species include saw palmetto, gallberry (*Ilex glabra*), tarflower (*Bejaria racemosa*), coastalplain staggerbush (*Lyonia fruticosa*), wax myrtle, winged sumac (*Rhus copallinum*), netted pawpaw (*Asimina reticulata*), running oak (*Quercus elliottii*), dwarf live oak (*Quercus minima*), shiny blueberry (*Vaccinium myrsinites*), and a diversity of other low shrubs. Herb cover is also moderately dense and dominated by grasses which may carry frequent fires, especially wiregrass (*Aristida stricta* var. *beyrichiana*). Herbaceous species diversity is high in good quality mesic flatwoods. Vines occur rarely. Community types embedded within mesic flatwoods include dome swamp, basin swamp, depression marshes, wet flatwoods, and hydric hammocks.

Mesic flatwoods were historically widespread on all the tracts except for the Kilbee Tract and eastern Yarborough Tract, where only a few patches occur. These flatwoods appear on the 1940 aerial photographs as a medium gray, mostly smooth signature with darker trees dotted across the landscape. As these photos were undoubtedly taken post-logging, it is difficult to determine the actual density of pines, but they would have most likely been open enough to allow for dense groundcover. The even shrub cover (most likely saw palmetto) is apparent in many of these photos. Surveyors' notes from the mid-1800s call this 3rd rate pine land.

Current Conditions:
The best examples of mesic flatwoods at LBESF occur on the Bothers, River's Edge, and Jones East Tracts. These areas are subject to prescribed burning and maintain an intact groundcover that includes wiregrass. The majority of these flatwoods have a low shrub layer, although a few are more fire excluded with taller shrubs and more vines. Both longleaf pine and slash pine are common canopy trees, although pond pine also occurs in a few locations. Typical shrub species include saw palmetto, gallberry, tarflower, St. Andrew's cross, rusty staggerbush (*Lyonia ferruginea*), coastalplain staggerbush, fetterbush, wax myrtle, winged sumac, netted pawpaw, dwarf huckleberry (*Gaylussacia dumosa*), blue huckleberry (*Gaylussacia frondosa* var. *tomentosa*), Atlantic St. John's wort (*Hypericum reductum*), fourpetal St. John's wort (*Hypericum tetrapetalum*), Piedmont staggerbush (*Lyonia mariana*), running oak, dwarf live oak, and shiny blueberry. Herb cover is also moderately dense and dominated by grasses which may carry frequent fires, especially wiregrass. Other frequent herbs include bottlebrush threeawn (*Aristida spiciformis*), broomsedge bluestem, coastalplain

chaffhead (*Carphephorus corymbosus*), *Dichanthelium* sp., *Eragrostis* sp., dogfennel, roundleaf thoroughwort (*Eupatorium rotundifolium*), Elliott's milkpea (*Galactia elliottii*), rough hedgehyssop (*Gratiola hispida*), pinebarren frostweed (*Helianthemum corymbosum*), *Helianthemum* sp., Piedmont pinweed (*Lechea torreyi*), beaked panicum (*Panicum anceps*), bracken fern, blackroot (*Pterocaulon pycnostachyum*), *Rhynchospora* sp., whitetop aster (*Sericocarpus tortifolius*), sweet goldenrod (*Solidago odora*), lopsided indiangrass (*Sorghastrum secundum*), and Walter's aster (*Symphyotrichum walteri*). Vines occur rarely and include yellow jessamine, laurel greenbrier, lanceleaf greenbrier (*Smilax smallii*), and muscadine.

The majority of historic mesic flatwoods that occurred on the Demetree Tract and the western side of the Yarborough Tract were converted to pastures many years ago. Scrubby flatwoods with a moderate cover of scrubby oaks may have been part of this conversion. In recent years, the FFS has planted large areas of former pasture on the Demetree Tract with longleaf pines and are managing these areas with fire. Although the understory of these stands remains highly disturbed and weedy, management is moving the community towards a multi-aged stand of longleaf pine and the stands could be considered restoration areas.

Mesic flatwoods at the edges of baygalls and swamps in the Bothers Tract are usually invaded by loblolly bay. Areas that are infrequently burned have a subcanopy of loblolly bay, sweetgum, water oak (*Quercus nigra*), and/or live oak as well as a greater frequency of vines.

Fire Regimes:
Mesic flatwoods depend on frequent, low-intensity fires to maintain a diverse herbaceous layer and provide mineral soil for longleaf pine regeneration. Repeated applications of growing season fires on a 2 to 4-year cycle are critical to preserving high quality flatwoods.

Management Needs:
Much of the former mesic flatwoods on the forest has been converted to pasture, and many of these areas have been planted in pine. Intensive groundcover restoration would be required for these areas to be returned to a natural flatwoods state. Herbaceous groundcover is a major key to restoration of mesic flatwoods. The re-establishment of wiregrass can be difficult or expensive but is vital. Ideally, wiregrass should be planted or seeded throughout the disturbed mesic flatwoods. Reduction of weedy herbaceous species, like broomsedge bluestem, bushy bluestem, and purple bluestem (*ogon glomeratus* var. *glaucopsis*), is important for the establishment of wiregrass, as well as other native, mesic flatwoods species. Soil disturbances should be minimized to restore and promote wiregrass cover to its desired abundance. Areas that have been clear-cut should be replanted with longleaf pine.

Widespread mechanical disturbances such as roller chopping should be avoided in areas that support wiregrass and other native non-weedy groundcover species. Roller chopping can increase weedy species and reduce natural groundcover including the wiregrass.

A regular fire regime of every two to four years during the early thunderstorm season (April - June) is recommended. These growing season burns will have the greatest effect on hardwood encroachment and encourage seed set of herbaceous species. However,

opportunities to burn during the dormant season should not be passed over in anticipation of the growing season.

L. Mesic Hammock

Description:

Mesic hammocks are closed canopy forests dominated by oaks and palms with a mixture of other mesic temperate hardwood species in the canopy. They occur on moderately poorly drained soils in areas that receive infrequent fire. These hammocks are drier than hydric hammocks, and often have a moderate to dense cover of saw palmetto. The many oaks support an abundance of epiphytes.

At LBESF, mesic hammock occurs primarily along the Econlockhatchee River. These hammocks have many inclusions of swamps, hydric hammocks, and floodplain forests, but in most instances, a dense cover of saw palmetto extends right to the high bank of the river. The Jones East and Spencer Leeper Tracts also have a large area of mesic or hydric hammock that is connected to the Econlockhatchee River floodplain.

The canopy is dominated by live oak and/or cabbage palm, but several other trees may be mixed in the canopy including pignut hickory (*Carya glabra*), red cedar, sweetgum, southern magnolia (*Magnolia grandiflora*). The shrub layer is typically dominated by saw palmetto with American beautyberry (*Callicarpa americana*), St. Andrew's cross, *Hypericum* sp., yaupon, and wild coffee (*Psychotria nervosa*) also common. The herbaceous layer is variable in density and composition, depending on hydrology and location. Common herbs include longleaf woodoats, tall elephantsfoot (*Elephantopus elatus*), and partridgeberry. Vines are occasional. Epiphytes are abundant on oaks and palms and include a diversity of orchids, air plants, and ferns.

Mesic hammock is impossible to distinguish from hydric hammock and basin swamp on the 1940 aerial photographs, as all of these appear as dark forested signatures.

Current Conditions:

The current condition is similar to the desired condition with a canopy dominated by live oak and/or cabbage palm, with a few other trees including red cedar, sweetgum, southern magnolia, slash pine, diamond-leaved oak, and water oak. The shrub layer is typically dominated by saw palmetto with American beautyberry, St. Andrew's cross, yaupon, and wild coffee also common. The herbaceous layer is variable in density and composition, depending on hydrology and location. Common herbs include longleaf woodoats, tall elephantsfoot, *Habenaria* sp., partridgeberry, clustered mille graines (*Oldenlandia uniflora*), and Virginia chain fern. Vines are occasional and include yellow jessamine, earleaf greenbrier (*Smilax auriculata*), laurel greenbrier, sarsaparilla vine (*Smilax pumila*), bristly greenbrier (*Smilax tamnoides*), and muscadine. Epiphytes are abundant on oaks and palms and include Florida butterfly orchid (*Encyclia tampensis*), green fly orchid, golden polypody, resurrection fern, Bartram's air-plant, ballmoss, southern needleleaf, Spanish moss, and shoestring fern (*Vittaria lineata*).

A few citrus trees were naturalized and two non-native invasive plants, Caesar’s weed and

camphor tree (*Cinnamomum camphora*), were noted in the mesic hammock community. Also, a large ditch in the Jones East and Spencer Leeper Tracts bisects the historic hammock. This hammock has also been subject to disturbance from past agriculture practices.

Fire Regimes:
Fire is infrequent in mesic hammock. In most cases leaf litter and mesic conditions retard fires throughout the year.

Management Needs:
Management in mesic hammocks should be focused on removal of non-native invasive species. Feral hogs should be controlled where possible. The oak mast produced by hammocks attracts feral hogs, which can cause serious soil and vegetation disturbance. Prescribed burns in the adjacent flatwoods should be allowed to naturally extinguish along the hammock edge. Firebreaks should be discouraged to allow a development of a natural ecotone and to help minimize invasion by weedy or non-native species.

M. River Floodplain Lake

Description:
River floodplain lakes are shallow open water zones, with or without floating and submerged aquatic plants, that are surrounded by floodplain swamp. They are generally permanent water bodies, although water levels often fluctuate substantially, and they may become completely dry during extreme droughts. These lakes often originate along former stream channels as oxbows that have been isolated when new channels cut across a meander loop in the river. River floodplain lakes occur along the Econlockhatchee River as old oxbows that can be seen on the 1940 aerial photographs. There are also a few lakes found in open floodplain marsh that are also included in this category, although they could also be characterized as "marsh lakes."

Current Condition:
The current condition of river floodplain lakes is similar to the historic. In the case of lakes along the Econlockhatchee River, it is difficult to distinguish these lakes from the surrounding hammock and swamp.

Fire Regimes:
Fire is not a component of this community.

Management Needs:
Maintenance of natural hydroperiods and water quality is critical to river floodplain lakes. Disruption or alteration of natural fluctuations in water level can be detrimental to the reproduction of many native floodplain plant species.

N. Sandhill (including restoration areas)

Description:
Sandhills are well-drained pine forests generally dominated by longleaf pine with a sparse understory of deciduous oaks, in particular turkey oak (*Quercus laevis*). Shrubs are sparse and include scrub oaks, turkey oak, gopher apple (*Licania michauxii*), and pricklypear

(*Opuntia humifusa*). Herbs are dense and diverse dominated by wiregrass. Sandhills get their name from the gently rolling hills of sand on which they are located. Their soils are composed of deep, well drained sands. Two historic sandhills were mapped in the Bothers Tract on LBESF.

Sandhills have a distinct signature that distinguishes them on the 1940 aerial photographs. The open shrub layer shows up as a mottled white and gray area as opposed to the smoother gray signature of flatwoods.

Current Conditions:
The smaller of the historic sandhills on LBESF is currently a xeric hammock dominated by sand live oak. Approximately half of the larger sandhill remains intact, but has suffered fire exclusion and has a sparse herb cover that includes wiregrass. The other half had become xeric hammock after years of fire exclusion. Recent management by FFS has cut out most of the canopy oaks in this area, leaving only those around an old clearing and along a trail. This area of cut oaks is designated as "restoration sandhill" in the current map. The ground cover in this area is disturbed and has been heavily suppressed by shading.

In the remaining intact sandhill, longleaf pine is dominant with a moderate understory of deciduous oaks, in particular turkey oak. Shrubs are sparse to moderate and include Chapman's oak (*Quercus chapmanii*), sand live oak, turkey oak, sparkleberry (*Vaccinium arboreum*), tarflower, longleaf pine, shiny blueberry, gopher apple, pricklypear, myrtle oak, and saw palmetto. Herbs are dominated by wiregrass, although this is not a dense layer. The rare giant orchid (*Pteroglossaspis ecristata*) was seen in sandhill at LBESF in 2007.

Fire Regimes:
Historically, sandhill burned from wild fires ignited by lightning during the early thunderstorm season (April - June) every 1 to 3 years. Low intensity surface fires are required to maintain a healthy sandhill community. These fires reduce hardwood encroachment as well as stimulate regeneration of longleaf pines and seed germination of herbs. Without frequent fires, sandhills will succeed to xeric hammock.

Management Needs:
Management of sandhill should focus on the use of frequent prescribed fire and the maintenance of wiregrass to carry the fire. Existing longleaf pine should be retained to allow for natural regeneration and needle cast that will help carry fire. Frequent, low-intensity fires maintain a diverse herbaceous layer and provide mineral soils for longleaf pine regeneration. Prescribed fires, primarily in April – June, should be initiated as soon as fuel levels allow, every one to three years. Areas of cut sand live oaks will require more frequent growing season burns to suppress root sprouting.

Widespread soil disturbance such as roller chopping should be avoided in sandhills because of the susceptibility of native groundcover to soil disturbance, and because such disturbance promotes weedy invasion.

O. Scrub

Description:

Scrub is generally found on sandy, acidic, well-drained soils. Scrub occurs in various forms. There may or may not be a canopy of sand pine (*Pinus clausa*). Both the tall and short shrub layers are moderate to dense and dominated by scrub oaks: sand live oak, Chapman's oak, and myrtle oak. The overall height is below six feet, and patches of bare sand are common. A diversity of other xerophytic shrubs may be present. The herbaceous layer, though sparse, consists primarily of sandyfield beaksedge (*Rhynchospora megalocarpa*). Vines are infrequent. Several areas of scrub are present on the Demetree, Jones East, and Jones West Tracts.

Scrub appears on the 1940 historic aerial photographs as a mostly treeless light gray area that is slightly rougher in texture than the nearby flatwoods.

Current Conditions:

Most of the scrub at LBESF is similar to desired future conditions with a sparse canopy, a dense tall and short shrub layer, and a sparse herbaceous component. However, shrubs are taller than would be found in optimal habitat for scrub jays. Sand pine forms a sparse canopy in some areas. Both the tall and short shrub layers are moderate to dense and dominated by scrub oaks: sand live oak, Chapman's oak, and myrtle oak. Sand holly (*Ilex ambigua*), rusty staggerbush, wild olive (*Osmanthus americanus*), scrub wild olive (*Osmanthus megacarpus*), silk bay (*Persea borbonia* var. *humilis*), saw palmetto, sparkleberry, garberia (*Garberia heterophylla*), dwarf huckleberry, and deerberry (*Vaccinium stamineum*) are also common. The herbaceous layer, though sparse, consists primarily of sandyfield beaksedge with wild pennyroyal (*Piloblephis rigida*), coastalplain honeycomb-head (*Balduina angustifolia*), capillary hairsedge (*Bulbostylis ciliatifolia*), coastalplain chaffhead, rough hedgehyssop, pinebarren frostweed, and bracken fern occasional. Vines are infrequent and include earleaf greenbrier, sarsaparilla vine, and muscadine. A few areas of scrub have tall oaks that are beginning to form a canopy, and at least one historic scrub located on the Bothers Tract appears to have been converted to xeric hammock, although recently sand live oak has been removed from some of this area.

Fire Regimes:

Scrub fire regimes are highly variable, depending on landscape settings and dominant vegetation. Current scientific research suggests oak-dominated scrub would have naturally burned every 6 to 19 years. More frequent fires maintain optimal shrub heights for scrub jay habitat. Scrub fires are often high intensity and require careful application.

Management Needs:

A mosaic of scrub of varying shrub heights would be desirable. Encourage fires from adjacent mesic flatwoods and scrubby flatwoods to burn into the scrub. A fire prescription targeting the scrub should be used if shrub height or density, or bare soil percentage are outside of desired ranges. Mechanical treatments should be used only if necessary to burn safely or achieve desired conditions. Although chopping may reduce shrub cover in problem areas, it also reduces native groundcover and increases weedy species.

P. Scrubby Flatwoods (including restoration areas)

Description:

Scrubby flatwoods are a well-drained pine-dominated community intermediate between scrub and mesic flatwoods. These communities are characterized by a canopy of pine trees with a sparse shrubby understory and areas of open white sand. The vegetation consists of a combination of scrub and mesic flatwoods species.

Scrubby flatwoods have a canopy generally dominated by longleaf pine and/or slash pine growing over a shrub stratum dominated by scrub species such as sand live oak, rusty staggerbush, Chapman's oak, and myrtle oak mixed with typical mesic flatwoods species including saw palmetto, and a diversity of other low mesic shrubs. The herbaceous groundcover is patchy and usually has some wiregrass, and a mix of other herbs. Vines are occasional.

There are a few examples of scrubby flatwoods at LBESF. Occurrences are found on the Demetree, Jones East, River's Edge, and Bothers Tracts. Historically there was a large area of scrubby flatwoods on the western half of the Yarborough Tract, but this has mostly been converted to pasture or succeeded to xeric hammock.

Scrubby flatwoods appear in the 1940 aerial photographs as a medium to light gray area with a small amount of texture and more open white sand than in adjacent mesic flatwoods.

Current Conditions:

Intact scrubby flatwoods at LBESF are similar to desired future conditions with widely spaced longleaf pine or slash pine growing over a shrub stratum dominated by sand live oak, rusty staggerbush, Chapman's oak, and myrtle oak. Other typical mesic flatwoods species are common including saw palmetto, winged sumac, tarflower, dwarf huckleberry, blue huckleberry, Atlantic St. John's wort, fourpetal St. John's wort, fetterbush, running oak, dwarf live oak, and shiny blueberry. The herbaceous groundcover is patchy and usually has some wiregrass. Other common herbs include *Agalinis* sp., broomsedge bluestem, bottlebrush threeawn, coastalplain honeycomb-head, capillary hairsedge, coastalplain chaffhead, hairy chaffhead (*Carphephorus paniculatus*), *Dichanthelium* sp., dogfennel, Elliott's milkpea, rough hedgehyssop, pinebarren frostweed, Piedmont pinweed, slender gayfeather (*Liatris gracilis*), rustweed, bracken fern, blackroot, *Rhynchospora* sp., sweet goldenrod, and lopsided indiangrass. Vines are occasional including earleaf greenbrier, laurel greenbrier, and muscadine.

On the Demetree and Yarborough Tracts, much of the historic scrubby flatwoods has been converted to pasture or succeeded to xeric hammock. Pastures on the Demetree Tract have been planted with longleaf pine and are being managed with prescribed fire. Although these areas retain a very weedy understory with few structural components of scrubby flatwoods, management is moving the habitat towards a multi-aged stand maintain by frequent burning. These stands are defined as "restoration" areas in the current natural community map.

Fire Regimes:
Scrubby flatwoods natural fire regime ranges from three to fifteen years, and prescribed fire regimes generally range from 3 to 8 years. In LBESF, scrubby flatwoods likely burned along with the adjacent mesic flatwoods, sandhill, or scrub. Sparse groundcover and incombustible scrub oak leaf litter may reduce the occurrence of fires leading to a slightly longer average fire return interval than is the case for mesic flatwoods. Variability in season and frequency of prescribed fires should produce a mosaic of burned and unburned patches desirable for maintaining high biotic diversity in this community.

Management Needs:
Fire from adjacent mesic flatwoods should be allowed to burn into the scrubby flatwoods. A fire prescription targeting the scrubby flatwoods should be considered if this natural community does not burn after repeated fires in the adjacent mesic flatwoods. If the scrubby flatwoods are invaded by undesirable hardwoods a hot summer burn would be best. For flatwoods that have been converted to pastures, intensive groundcover may be required to return these areas to a natural state.

Q. Wet Flatwoods (including restoration areas)

Description:
Wet flatwoods are characterized as relatively open-canopy forests of pines with a thick shrubby understory and very sparse groundcover, or a fire maintained, sparse understory and a dense groundcover of hydrophytic herbs and shrubs. On LBESF, a few areas of wet flatwoods were identified. These were primarily in the Kilbee Tract where they occur mixed with wet prairie and mesic flatwoods. The vegetation of these is the "cabbage palm" variant typical of many wet flatwoods in the St. John's River area with frequent cabbage palms under a canopy of slash pine with a sparse herbaceous layer. Two other wet flatwoods found at the Bothers Tract are small areas of hydrophytic herbs such as blue maidencane, southern umbrellasedge (*Fuirena scirpoidea*), and water cowbane (*Oxypolis filiformis*), and sparse shrubs under an open canopy of slash pine.

Wet flatwoods are slightly lighter in appearance than mesic flatwoods in the 1940 aerial photographs. These areas are quite difficult to distinguish from wet prairie, as the impacts of possible logging are not fully known. In the Kilbee Tract, surveyor notes from the mid-1800s mention very little pine in this tract, and so most of this tract is presumed to have been wet prairie or floodplain marsh in pre-settlement days, but by the mid-1900s, pine had become a major component of the habitat.

Current Conditions:
Some wet flatwoods in the Kilbee Tract on LBESF appear to have been replaced with either semi-improved pasture or planted pine stands. Although the planted pine stand on the Kilbee Tract should be thinned, prescribed burns are helping to restore this area to more natural conditions. This stand is mapped as "restoration wet flatwoods" on the current natural community map. One of the wet flatwoods in the Bothers Tract is disturbed, probably by hydrologic alteration, and the hydrophytic graminoids are partly replaced by bushy bluestem. Caesar's weed, a non-native invasive weed, was found in a few wet flatwoods areas.

In the better examples of wet flatwoods on the Kilbee Tract, frequent cabbage palms grow under a canopy of slash pine with a sparse herbaceous layer. The one higher quality wet flatwoods surveyed in the Bothers Tract also has a canopy of slash pine, but no cabbage palm. Instead, herbs form a dominant cover with blue maidencane, southern umbrellasedge, *Rhexia* sp., *Rhynchospora* sp., and water cowbane commonly occurring.

Fire Regimes:
Historically, natural fires may have occurred every three to ten years in wet flatwoods communities. For management purposes, prescribed fires may be more advisable on a two to four year cycle. This reduces woody encroachment, sustains herbaceous species, and aids in preventing heavy fuel loads that can lead to catastrophic wildfires.

Management Needs:
For existing wet flatwoods, prescribed burns of the surrounding mesic flatwoods should be allowed to burn across these areas every two to four years, primarily in April - June. Use of heavy equipment should be avoided as this can eliminate herbaceous groundcover and alter hydrology.

For wet flatwoods that have been converted to pasture or planted with dense pine may require groundcover restoration if the goal is to return these to a natural state. Herbaceous groundcover is virtually non-existent in the present planted pine areas.

R. Wet Prairie

Description:
Wet prairie is an herbaceous community found on continuously wet, but not inundated, soils on somewhat flat or gentle slopes between lower lying depression marshes, shrub bogs, or dome swamps and slightly higher wet or mesic flatwoods. Trees and shrubs are absent or very sparse. These communities are often dominated by wiregrass but may be composed of other graminoids as is the case at LBESF.

Wet prairie occurs as a large flat plain in the Kilbee Tract that is drier than the neighboring floodplain marsh. These two communities gradually intergrade, and the wet prairie contains numerous depression marshes. To the west, the prairie becomes intermixed with wet flatwoods. Herbs form the primary cover with a mix of species that includes sand cordgrass, bushy bluestem, broomsedge bluestem, toothed midsorus fern, bushy seaside oxeye, *Dichanthelium* sp., flattop goldenrod, *Fimbristylis* sp., toothpetal false rein orchid (*Habenaria floribunda*), soft rush, climbing hempvine, *Rhynchospora* sp., pineland pimpernel, *Setaria* sp., annual saltmarsh aster (*Symphyotrichum subulatum*), and white crownbeard are common. Cabbage palm is frequent along with a few other sparse shrubs such as groundsel tree, wax myrtle, bushy seaside oxeye, American beautyberry, bigleaf sumpweed (*Iva frutescens*), and sawtooth blackberry.

The 1940 aerial photographs show an open smooth expanse of light gray dotted presumably with cabbage palms. These are similar to the floodplain marsh, although slightly lighter. Surveyor notes from the mid-1800s indicate a broad marshy area with abundant cabbage palms and few pines noted in the entire Kilbee Tract.

Current Conditions:
Some of the historic wet prairie has been partially converted to pasture (see Pasture – semi-improved), and disturbance to the soil in the south-central area of the Kilbee Tract can be seen in the 1940 aerial photographs. In the intact wet prairies, herbs form the primary cover with a mix of herbs including sand cordgrass, bushy bluestem, broomsedge bluestem, toothed midsorus fern, bushy seaside oxeye, *Dichanthelium* sp., flattop goldenrod, *Fimbristylis* sp., toothpetal false rein orchid, soft rush, climbing hempvine, *Rhynchospora* sp., pineland pimpernel, *Setaria* sp., annual saltmarsh aster, and white crownbeard are common. Cabbage palm is frequent along with a few other sparse shrubs such as groundsel tree, wax myrtle, bushy seaside oxeye, American beautyberry, bigleaf sumpweed, and sawtooth blackberry.

One rare giant orchid was found in wet prairie in 2007. The non-native invasive plants Caesar's weed and Brazilian pepper were both found in wet prairie.

Fire Regimes:
Wet prairie naturally burns on a frequency similar to that of wet and mesic flatwoods, every 2 to 3 years during the months of April – June. Wet prairies require frequent, low intensity ground fires to maintain graminoid groundcover and minimize woody vegetation encroachment. The fine fuels that dominate this community, especially sand cordgrass, are highly flammable and carry fire quickly across the landscape.

Management Needs:
As with the flatwoods, management goals for the wet prairies at LBESF should focus on restoring areas through frequent prescribed fires, groundcover restoration, and returning hydrology to natural conditions. Fire at short intervals (every two to three years) is important to maintain the diversity of these communities and prevent shrub encroachment. Timing of fires ideally should be during the early lightning season (April – June) or as close to this period a practicable. Frequent prescribed fires should also be applied to disturbed areas (mostly old agriculture areas) to reduce the dense shrub cover and encourage native species recruitment and colonization.

S. Xeric Hammock

Description:
Xeric hammock is characterized as a scrubby, closed-canopied forest with little understory other than saw palmetto. It is often considered an advanced successional stage of scrub or sandhill. The variation in vegetation structure is predominantly due to the original community from which it developed. Xeric hammocks at LBESF are closed canopy forests dominated by sand live oak. These hammocks typically have an open parklike aspect. Two areas mapped as historic xeric hammock may have been disturbed prior to 1940 or may be naturally fire shadowed, allowing for oak dominance.

The historic xeric hammocks mapped at LBESF appear in the 1940 aerial photographs to be dense areas of oaks.

Current Conditions:
For the most part, xeric hammocks seem to have developed in response to fire exclusion in sandhills and scrubby communities. In addition to the canopy of sand live oak, other common species include longleaf pine, live oak, Chapman's oak, laurel oak (*Quercus hemisphaerica*), bluejack oak (*Quercus incana*), rusty staggerbush, turkey oak, myrtle oak, saw palmetto, garberia, scrub holly (*Ilex opaca* var. *arenicola*), gopher apple, sparkleberry, and deerberry. The sparse herb layer includes broomsedge bluestem, wiregrass, *Desmodium* sp., *Dichanthelium* sp., sandyfield beaksedge, and lopsided indiangrass. Epiphytes are occasionally found and include Bartram's air-plant, ballmoss, southern needleleaf, Spanish moss, and giant air-plant.

Fire Regimes:
The sparsity of herbs and the relatively incombustible oak litter preclude most fires from invading xeric hammock. When fire does occur, it is nearly always catastrophic and may convert xeric hammock into another community type. Xeric hammock only develops on sites that have been protected from fire for 30 or more years.

Management Needs:
If the goal is to return current xeric hammock to scrub or sandhill, measures should be taken to introduce fire into the hammock. This may also require other measures to reduce oak dominance such as mechanical removal or herbicide treatment.

T. Managed Community Types

Pine plantations and pastures represent vegetative communities that the FFS manages as integral components of the agency's multi-use management approach. These managed communities provide both ecological benefits, such as wildlife habitat and ground and surface water filtration, as well as opportunities for generating revenue that can be used to help offset management costs. Management of plantations and pastures within the state forests is conducted at a low-level of intensity that further ensures compatibility with other management goals and objectives.

1. Pasture - Improved

Description:
Improved pastures have been cleared of their native vegetation. Most improved pastures in Florida are planted with bahiagrass (*Paspalum notatum*) and to a lesser extent with Bermudagrass (*Cynodon dactylon*) or pangolagrass (*Digitaria eriantha*). Weedy native species are often common in improved pastures in Florida and include dogfennel, many species of flatsedge (*Cyperus* spp.), carpetgrasses (*Axonopus* spp.), crabgrasses (*Digitaria* spp.), and rustweed (*Polypremum procumbens*) among many others.

Current Conditions:
The LBLSF has several large areas of improved pasture that probably began to be converted in the early 1900s. These pastures are dominated by pasture grasses such as bahiagrass, but many other herbs, particularly weedy species, are present such as bushy bluestem, purple bluestem (*Andropogon glomeratus* var. *glaucopsis*), broomsedge bluestem, common carpetgrass (*Axonopus fissifolius*), big carpetgrass (*Axonopus*

furcatus), Mexican tea (*Chenopodium ambrosioides*), dogfennel, yankeeweed (*Eupatorium compositifolium*), slender flattop goldenrod (*Euthamia caroliniana*), pinebarren frostweed, rustweed, blackroot, licoriceweed (*Scoparia dulcis*), Florida betony (*Stachys floridana*), and forked bluecurls (*Trichostema dichotomum*). Depending on recent management and time elapsed since the area was last grazed, shrubs may be scattered including sand blackberry (*Rubus cuneifolius*), groundsel tree, common persimmon, and wax myrtle.

Many of the pastures at LBESF have been planted in pine and are being burned regularly. Since the goal of management is to move the areas towards a multi-aged stand with a fire-maintained understory, these stands are classified as "restoration" areas.

Fire Regimes:
Not a fire dependent community.

Management Needs:
Improved pastures have undergone enormous alteration from the natural state. Intensive groundcover restoration would be needed if the goal is to return these to mesic flatwoods. See pine flatwoods descriptions. Currently the improved pastures are part of the cattle leases on the forest and are maintained by cattle grazing, mowing and non-native plant control.

2. <u>Pasture – Semi-improved</u>

Description:
Dominated by a mix of planted non-native or domesticated native forage species and native groundcover, due to an incomplete conversion to pasture, not regeneration. Semi-improved pastures have been cleared of a significant percentage of their native vegetation and planted in non-native or domesticated native forage species, but still retain scattered patches of native vegetation with natural species composition and structure (most often small areas of mesic flatwoods) among the pastured areas. The planted areas are usually dominated by bahiagrass and can resemble improved pastures. Seeding of bahiagrass can also occur within areas of native groundcover.

Current Conditions:
LBSF has a few areas of semi-improved pasture. These are areas that have a considerable cover of pasture grasses, notably bahiagrass, but which are mixed with small areas of native groundcover. The largest section of semi-improved pasture occurs on the Kilbee Tract in areas of former wet prairie and wet flatwoods.

The wet prairies and marshes along the St. John's River have been utilized for cattle grazing for many years. In addition to pockets of bahiagrass, many native herbaceous species persist such as sand cordgrass, queensdelight (*Stillingia sylvatica*), wiregrass, *Fimbristylis* sp., and white crownbeard (*Verbesina virginica*). Weeds are very common including bushy bluestem, broomsedge bluestem, dogfennel, yankeeweed, and slender flattop goldenrod. Shrubs and trees are scattered throughout and are indicative of the historic natural community. These may include slash pine, longleaf pine, sand live oak

(*Quercus geminata*), cabbage palm, wax myrtle, Piedmont staggerbush, gallberry, dwarf live oak, myrtle oak (*Quercus myrtifolia*), shiny blueberry, Adam's needle (*Yucca filamentosa*), and saw palmetto. Weedy blackberries, sawtooth blackberry (*Rubus argutus*) and sand blackberry, are frequent. Many of these pastures are invaded with the non-native Caesar's weed and Brazilian pepper.

Fire Regimes:
See mesic flatwoods, wet flatwoods, and wet prairie natural community descriptions.

Management Needs:
Semi-improved pastures have been much altered from their original state, but they retain some natural components that make restoration more achievable than improved pastures. Currently the semi-improved pastures are managed with the same fire regime as required by the historic community, to maintain existing native species.

U. Other Altered Landcover Types

Description:
Altered landcover types are areas where the natural community has been overwhelmingly altered as a result of human activity. Pine plantation and restoration natural communities are described in separate sections of this report.

The altered landcover types described in this section are often not appropriate areas for restoration. If restoration is desired, the target future condition of the ruderal habitat is dependent on the historic community. Please refer to the appropriate community type for a more specific explanation of the desired future condition.

Current Conditions:
Altered landcover types on the forest comprise abandoned fields, artificial ponds, canals/ditches, clearing/regeneration, developed areas, roads, spoil areas, and successional hardwood forest.

Abandoned field (20 acres) – A large rectangular area of historic oak hammock in the Spencer Leeper Tract was cleared, apparently for agriculture, prior to the 1940s aerial photograph. This area is undergoing natural succession back to a hammock community.

Artificial pond (4 acres) – There are two artificial ponds mapped on the Kilbee Tract of LBESF. Both are in the St. Johns River floodplain. The larger pond near Old Mims Road was constructed in an area of historic wet prairie/flatwoods. The smaller pond occupies a former depression marsh that has been dug further to retain more water for cattle. Both ponds have standing water.

Canal/ditch (16 acres) – LBESF has two large ditches. The largest is on the Jones East Tract and connects the Econlockhatchee River to an old abandoned field to the south. A smaller ditch runs south to the Econlockhatchee River through the Rivers Edge tract.

Clearing/regeneration (<1 acre) – A small cleared area by the Econlockhatchee River is

located adjacent to a restoration area on the Demetree tract.

Developed (13 acres) – A developed area off of Snow Hill Road is the site of the FFS office and maintenance complex, associated lawns and drives, as well as a parking area for visitors. Nearby, a small area of the Econlockhatchee riverbank is also maintained for visitors.

Road (60 acres) – LBESF has a network of lime rock roads and other vehicle trails, particularly in the Demetree tract. Roads ≥5 meters wide are delineated on the current natural community map.

Spoil area (2 acres) – This is a square area of fill located on the Kilbee Tract adjacent to the St. Johns River and State Road 46.

Successional hardwood forest (73 acres) – These are areas of former flatwoods that have either been cleared in the past or have experienced significant fire exclusion that has led to a dominance of weedy canopy hardwoods, particularly laurel oak and sweetgum (*Liguidambar styraciflua*). This community may be very similar to mesic hammock, and the two may intergrade.

Fire Regimes:
Not a fire dependent community.

Management Needs:
How ruderal areas should be managed depends on the specific site under consideration. These areas may be useful for placement of support facilities, or may be targeted for restoration of the historic natural community. If left alone, most of these areas are likely to remain in a ruderal state. The large abandoned field located within hydric hammock in the Spencer Leeper Tract may eventually return to a semi-natural state if left undisturbed. Some of the successional hardwood forests may benefit from increased fire and removal of canopy hardwoods. Other clearings in flatwoods or prairies would require intensive groundcover restoration. It may not be practical or desirable to restore some of the altered landcover types (e.g., developed land, roads, etc.) to the historic natural community.

VIII. References

Florida Department of State, Division of Historical Resources. Revised 2013. Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Lands. Department of the State, Division of Historical Resources. Tallahassee, Florida.

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Florida Natural Areas Inventory (FNAI). 2017. Guide to the natural communities of Florida: 2010 Edition. Florida Natural Areas Inventory, Tallahassee, Florida.

Florida Department of Environmental Protection. 2019. Water Quality Assessments, TMDLs, and BMAPs retrieved from https://fdep.maps.arcgis.com/home/webmap/viewer.html

IX. Glossary of Abbreviations

ARC .....Acquisition and Restoration Council
BMP .....Best Management Practice
CARL.....Conservation and Recreation Lands
DEP.....Department of Environmental Protection
DHR .....Division of Historical Resources
DRP.....Division of Recreation and Parks
F.A.C.....Florida Administrative Code
FDACS.....Florida Department of Agriculture and Consumer Services
FFS.....Florida Forest Service
FNAI .....Florida Natural Areas Inventory
F.S. .....Florida Statutes
FWC.....Florida Fish and Wildlife Conservation Commission
LBESF.....Little Big Econ State Forest
NRCS .....Natural Resources Conservation Service
SJRWMD .....St. Johns River Water Management District
SOR .....Save Our Rivers
SORBA .....Southern Off-road Bicycle Association
OALE.....DACS Office of Agricultural Law Enforcement
OFW.....Outstanding Florida Waters
P2000 .....Preservation 2000
TIITF.....Board of Trustees of the Internal Improvement Trust Fund
USFS.....United States Forest Service
USFWS .....United States Fish and Wildlife Service
WMA .....Wildlife Management Area

LITTLE BIG ECON STATE FOREST
2021 LAND MANGEMENT PLAN

EXHIBITS

Exhibit A

Ten Year Management Accomplishment Summary

Timber Stand Improvement	Mowing	Acres	62
	Chopping	Acres	918

Timber Sales	Marking	Acres	131
	Cruising	Acres	180
	Harvest	Acres	434

Timber Inventory	Inventory Update	Acres	7,874
	Plots	Acres	14

Invasive Control	Chinese Tallow	Acres	452
	Brazilian Pepper	Acres	315
	Cogon Grass	Acres	218
	Caesar Weed	Acres	38
	Air Potato	Acres	9
	Coral Ardisia	Acres	6
	Japanese Climbing Fern	Acres	3
	Camphor Tree	Acres	3
	Wild Tarrow	Acres	1
	Tropical Soda Apple	Acres	<1
	Old World Climbing Fern	Acres	<1
	Rattle Box	Acres	<1
	Johnson Grass	Acres	<1
	Sword Fern	Acres	<1
	Lantana	Acres	<1
	Guava	Acres	<1
	Peruvian Primrose-willow	Acres	<1
	China Berry	Acres	<1
	Mimosa	Acres	<1
	Natal Grass	Acres	<1

Fire	Wildfire	No.	3
		Acres	1,954
	Prescribed Burning	Acres	7,327
	Disked fire breaks	Acres	82

Recreation	Day Use Estimated Forest Visitors	No.	172,147
	Overnight Camping	No.	10,420
	Annual Entrance Pass	No.	70
	State Forest Use Permit	No.	715

Roadwork	Roads Constructed	Miles	1
	Roads Graded	Miles	3
	Roads Recapped	Feet	382
	Bridge Built	No.	1
	Bridge Repaired	No.	1
	Culverts Installed	No.	32
	Low Water Crossing	No.	23

Boundary Maintenance	Maintenance/Marking	Miles	61

I&E Activities	Programs/Tours	No.	6
	Education/Research	No.	3

Other Activities	Tract Mowed	Acres	1,654
	Trails Mowed	Miles	313
	Field Mowed	Acres	727
	Firelines Mowed	Miles	1
	Firelines Disked	Miles	4
	GPS Firelines	Miles	18
	GPS Horse Trail	Miles	10
	Horse Trail marked	Miles	5
	Archaeological Sites Recorded	No.	5
	Archaeological Sites Monitored	No.	15
	Install Campsite	No.	6
	Replace State Forest Signs	No.	6
	Hogs Trapped	No.	1,277
	Apiary Permits	No.	1
	Cattle Leases	No.	2

Exhibit B

Boundary and Road Maps


Florida Forest Service
Little Big Econ State Forest
Boundary Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS)
from the US Army Corps of Engineers
46
419
420
420
50
LEGEND
Little Big Econ
State Forest
Boundary
N
W
E
S
0.5 0.25 0 0.5 1
Miles
1,000 500 0 1,000 2,000 3,000 4,000
Yards
Map Month/Year: May 2020

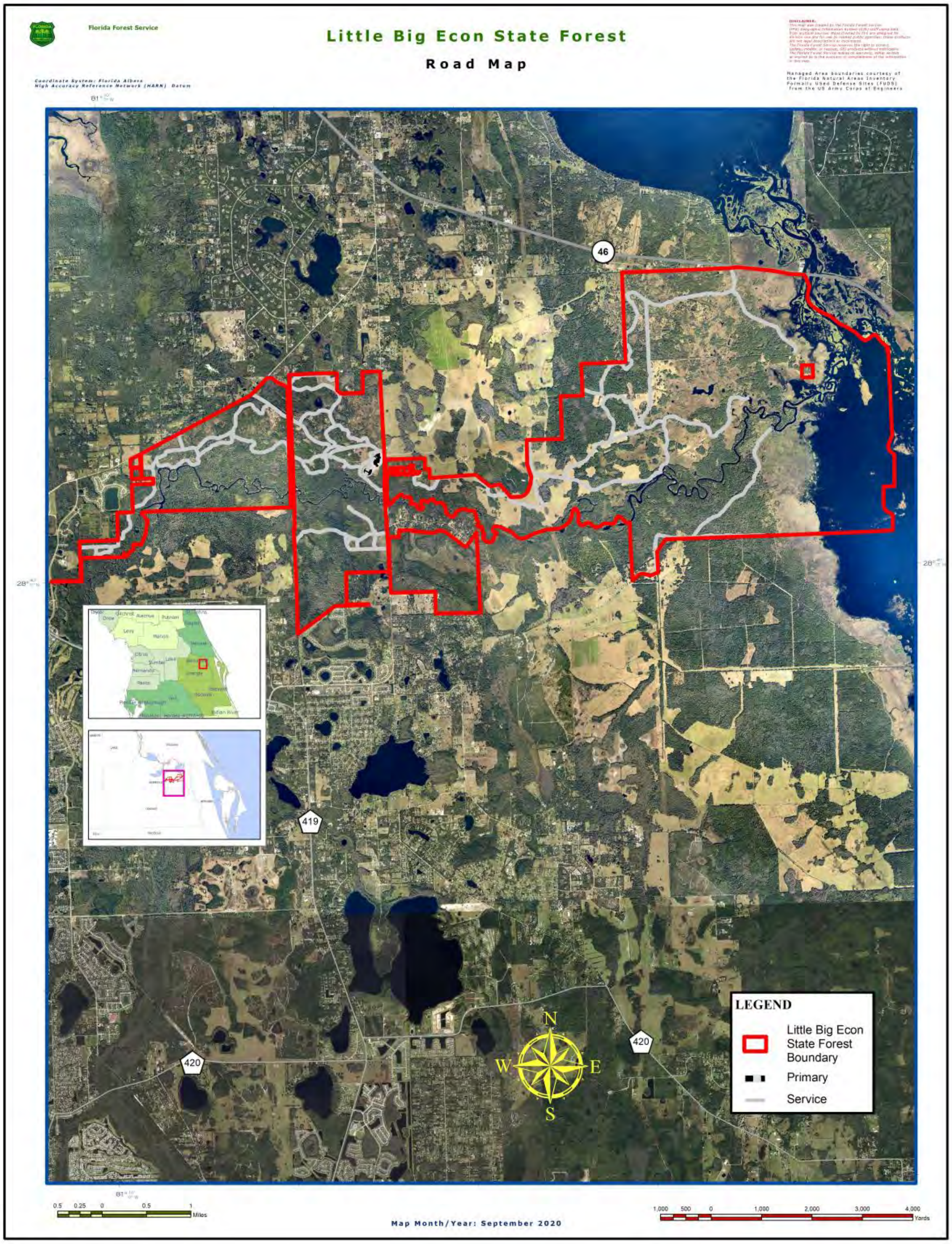
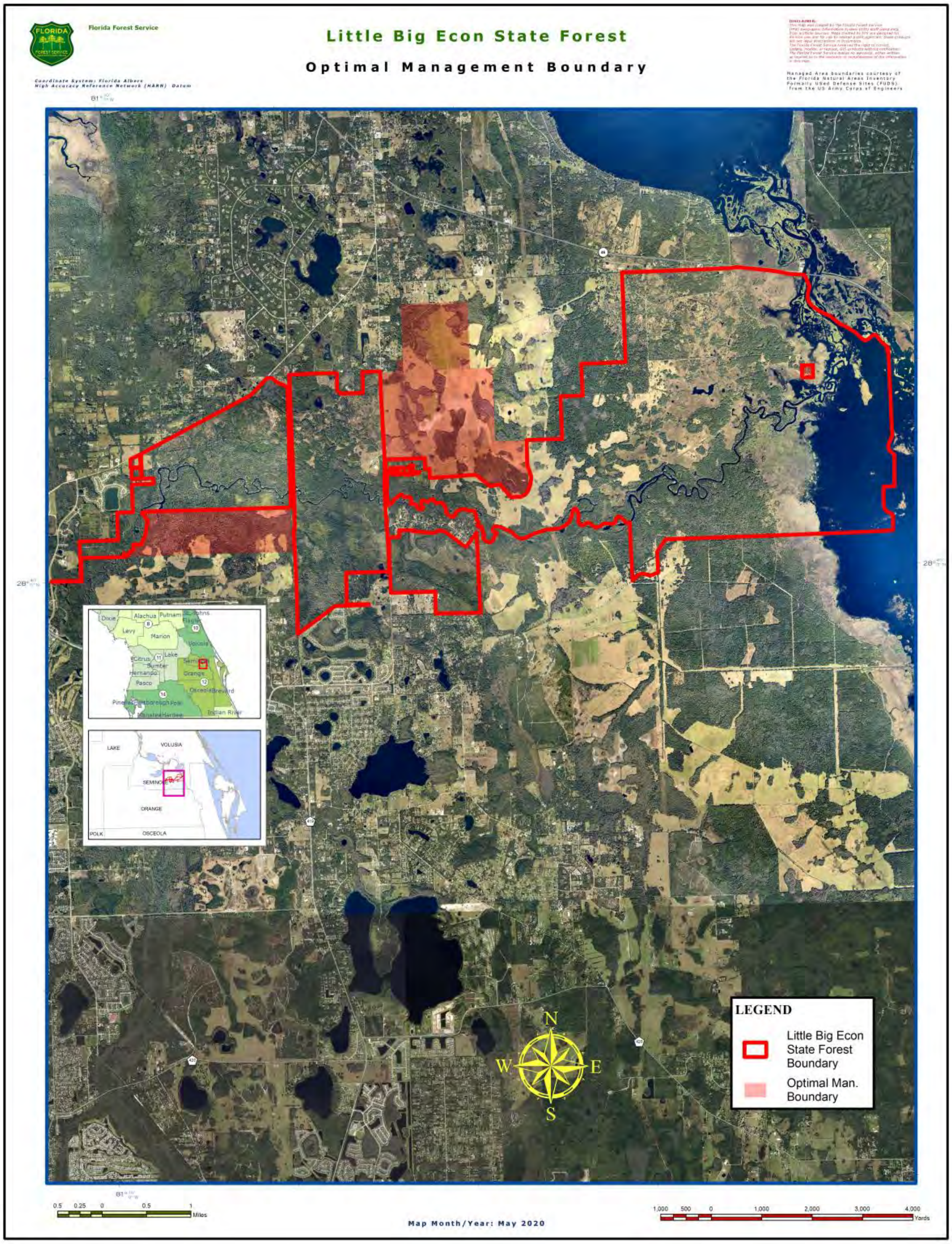

Florida Forest Service
Little Big Econ State Forest
Road Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally Used Defense Sites (FUDS)
from the US Army Corps of Engineers
46
419
420
420
N
W
E
S
LEGEND
Little Big Econ State Forest Boundary
Primary
Service
0.5 0.25 0 0.5 1
Miles
1,000 500 0 1,000 2,000 3,000 4,000
Yards
Map Month/Year: September 2020

Exhibit C

Optimal Management Boundary Map



Florida Forest Service
Little Big Econ State Forest
Optimal Management Boundary
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
DISCLAIMER:
Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS)
from the US Army Corps of Engineers
LAKE
VOLUSIA
SEMINOLE
ORANGE
POLK
OSCEOLA
LEGEND
Little Big Econ State Forest Boundary
Optimal Man. Boundary
N
W
E
S
Miles
Yards
Map Month/Year: May 2020

Exhibit D

Facilities, Recreation, and Improvements Map

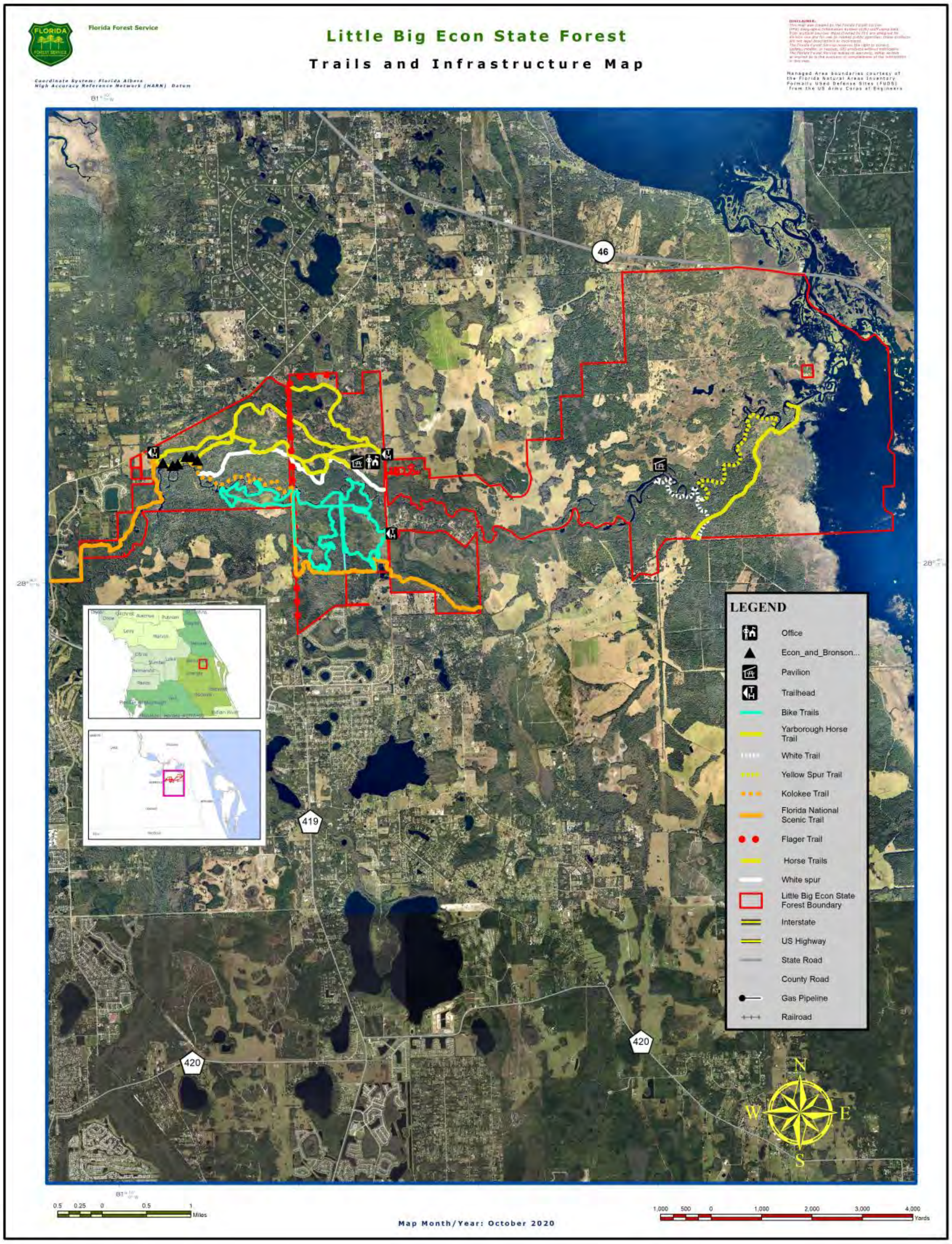

Florida Forest Service
Little Big Econ State Forest
Trails and Infrastructure Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally Used Defense Sites (FUDS)
from the US Army Corps of Engineers
46
419
420
420
LEGEND
Office
Econ_and_Bronson...
Pavilion
Trailhead
Bike Trails
Yarborough Horse Trail
White Trail
Yellow Spur Trail
Kolokee Trail
Florida National Scenic Trail
Flager Trail
Horse Trails
White spur
Little Big Econ State Forest Boundary
Interstate
US Highway
State Road
County Road
Gas Pipeline
Railroad
N
E
S
W
0.5 0.25 0 0.5 1
Miles
1,000 500 0 1,000 2,000 3,000 4,000
Yards
Map Month/Year: October 2020

Exhibit E

Tract Map

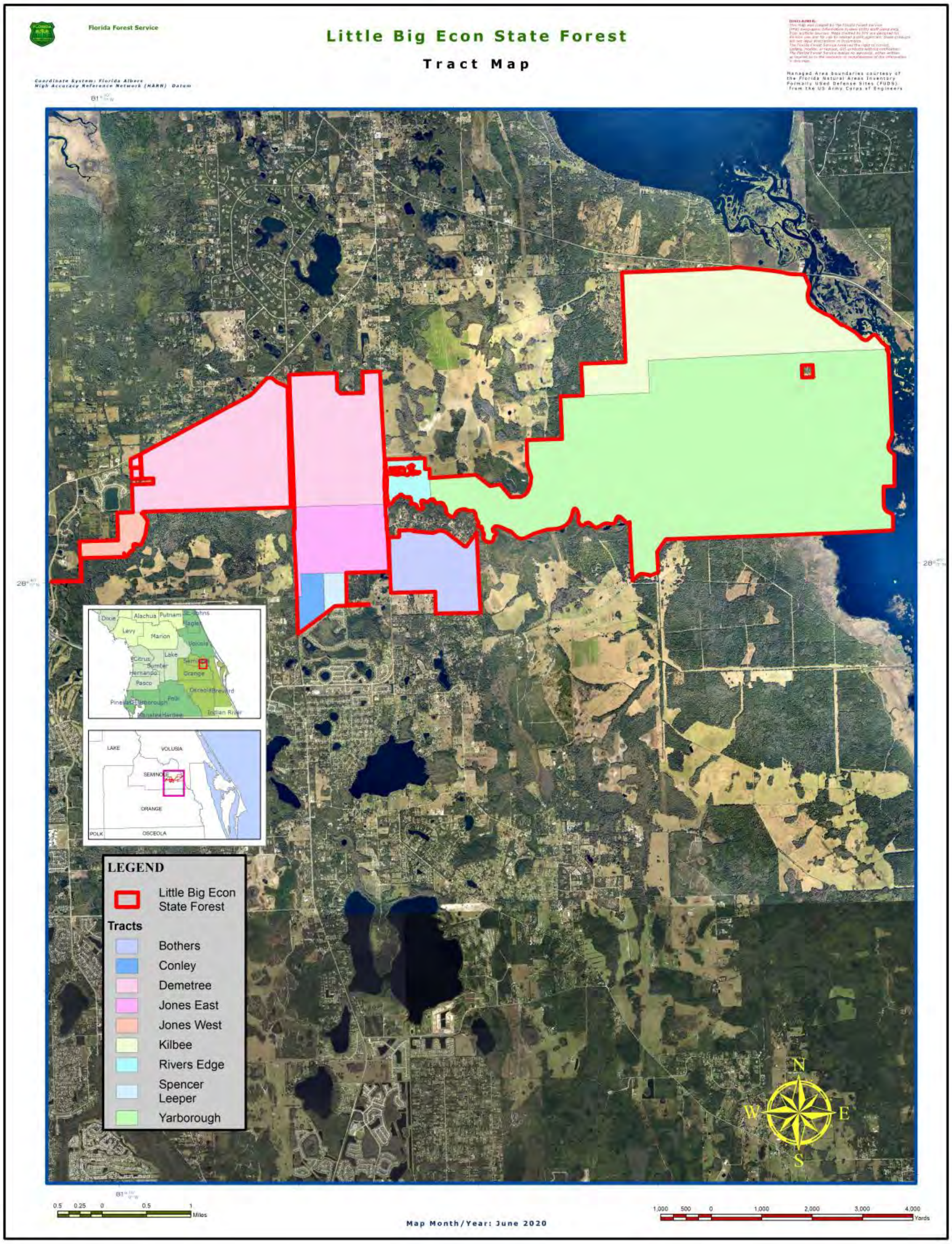

Florida Forest Service
Little Big Econ State Forest
Tract Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
DISCLAIMER:
Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS)
from the US Army Corps of Engineers
LEGEND
Little Big Econ State Forest
Tracts
Bothers
Conley
Demetree
Jones East
Jones West
Kilbee
Rivers Edge
Spencer Leeper
Yarborough
LAKE
VOLUSIA
SEMINOLE
ORANGE
POLK
OSCEOLA
N
W
E
S
0.5 0.25 0 0.5 1
Miles
1,000 500 0 1,000 2,000 3,000 4,000
Yards
Map Month/Year: June 2020

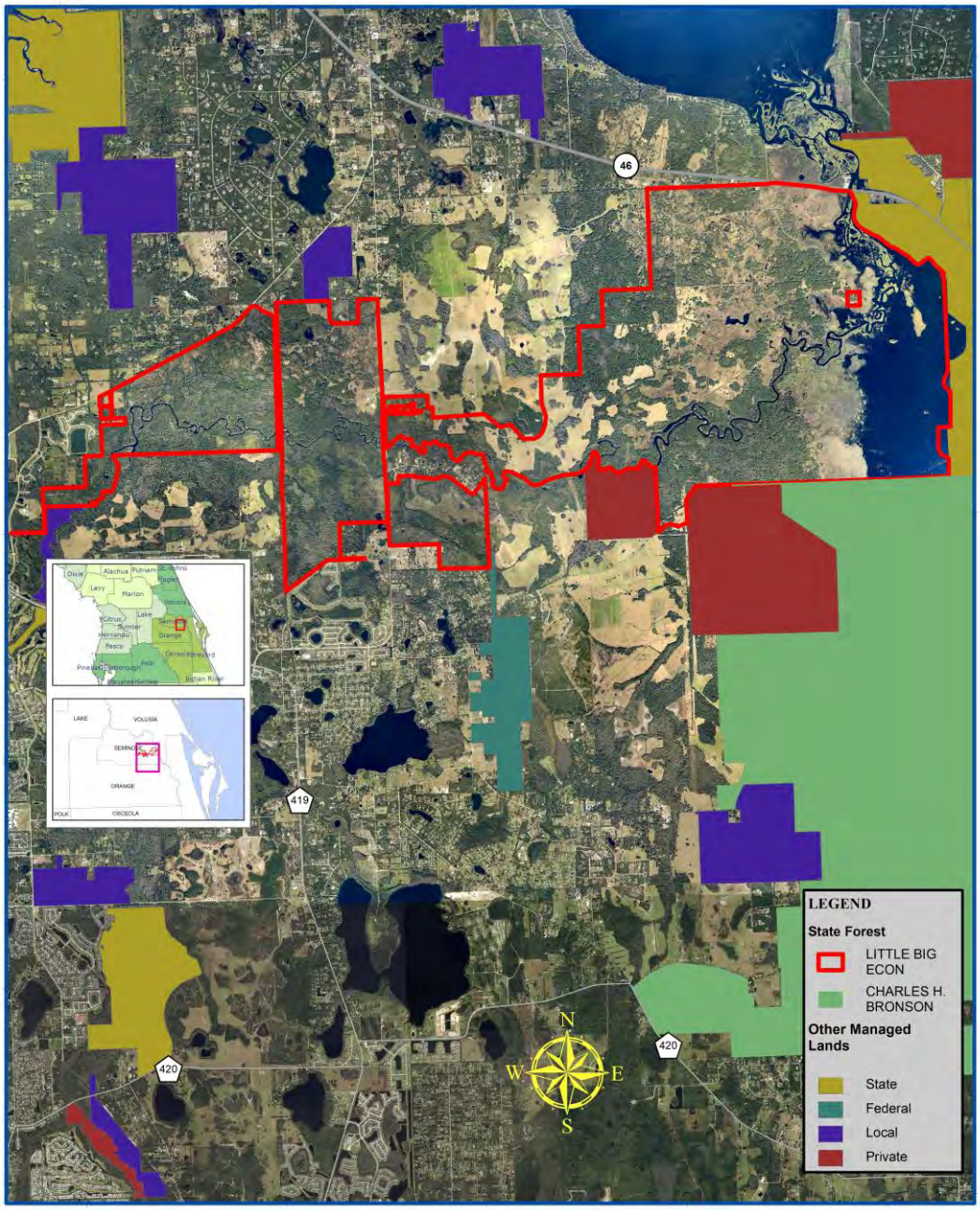
Exhibit F

Proximity to Significant Managed Lands

Florida Forest Service

Little Big Econ State Forest

Proximity to Significant Managed Lands



0.5 0.25 0 0.5 1 Miles

1,000 500 0 1,000 2,000 3,000 4,000 Yards

Map Month/Year: September 2020

Exhibit G

Florida Forever Projects

Maytown Flatwoods

Brevard County **Less-Than-Fee**

Purpose for State Acquisition

Acquiring a conservation easement over the Maytown Flatwoods would advance several major Florida Forever goals: preserving 3,060 acres of strategic habitat; 1,189 acres of rare species habitat for wood storks and the Florida sandhill crane; 7,598 acres of land for creating ecological greenways; 2,080 acres of natural floodplain; and various priorities of land that contribute to surface-water protection. A conservation easement would also protect thousands of acres of water-recharge land for springs, sinks, and the aquifer.

Manager

The owner has expressed interest in preserving this land with a conservation easement, which would be monitored by the Office of Environmental Services (OES) of the Division of State Lands.

General Description

The Maytown Flatwoods project is about 7,187 (GIS) acres with a tax-assessed value of $7,189,500. All but 379 acres are owned by the Miami Corporation or Swallowtail LLC. The Swallowtail property was purchased by Miami Corporation to assist Brevard County with their conservation goals.

The project is located in northern Brevard County, adjacent to the Buck Lake Conservation Area which is managed by the St. Johns River Water Management District. Other conservation properties in the area include the Charles H. Bronson State Forest, Little Big Econ State Forest, Salt Lake Wildlife Management Area and the Seminole Ranch Conservation Area. Currently the property is under a long-rotation silvicultural management regime. The project is being offered as a less-than-fee acquisition.

Natural communities located within the project include wet prairie, depression marsh, basin marsh and swamp, hydric hammock, dome swamp, and pine plantation. Several listed species are likely to occur on the tract. These include the Florida black bear, American alligator, little blue heron, gopher tortoise, and white ibis.

In 1998, the project area was devastated by wildfires that consumed most of the timber on the tract. Following the 1998 wildfires, the tract was aerially seeded with slash pine creating an even-age stand that is approximately 10 years in age. Mechanical treatments to control the understory have been used in lieu of prescribed fire. Scattered across the tract are numerous dome swamps in various conditions. Cypress trees in some of the domes are being harvested.

Public Use

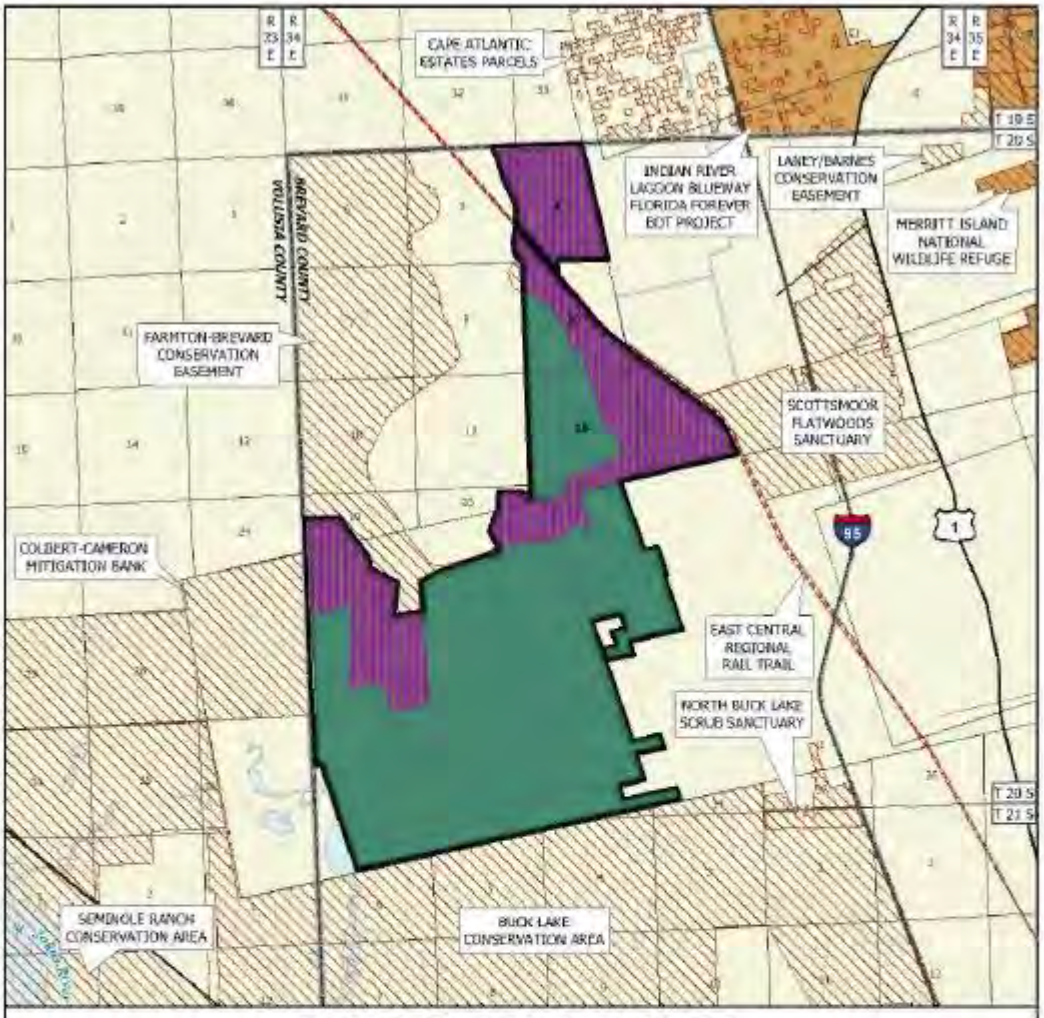
When the project is acquired as a less-than-fee acquisition, there will likely not be any public access granted under the terms of the easement, except the already established Rails-to-Trails project that runs along an abandoned Florida East Coast Railway right-of-way.

Acquisition Planning

On December 11, 2009 ARC recommended that this project be added to the 2010 Florida Forever list as a Less-than-Fee project.

Maytown Flatwoods FNAI Elements	
Florida Black Bear	G5T2/S2
Celestial Lily	G2/S2
Pine Pinweed	G2/S2
3 rare species are associated with the project	

Placed on List	**2010**
Project Area (GIS Acres)	**7,175**
Acres Acquired (GIS)	**2,231**
at a Cost of	**$0**
Acres Remaining (GIS)	**4,944**
Estimated (Tax Assessed) Value of	**$7,189,500**



MAYTOWN FLATWOODS

BREVARD COUNTY

- Florida Forever BOT Project Boundary
- Acquired for Conservation (Less-Than-Fee)
- Essential Parcel(s) Remaining
- Other Florida Forever BOT Projects
- State Owned Lands
- Other Conservation Lands

0 0.5 1 2 Miles

SEPTEMBER 2013

Coordination
The Nature Conservancy is considered a partner on this project. Brevard County's Environmentally Endangered Lands program may participate in the acquisition and management of the Swallowtail or Membrey parcel.

Management Policy Statement
As a proposed conservation easement or other less-than-fee interest, the project will be managed by the private landowner with restrictions. The purchase of the development rights, the prohibition of the further conversion of existing natural areas to more intensive uses and limited public access will likely be the primary focus of the conservation easement.

Management Prospectus
Conditions affecting intensity of management
Currently the property is under a long rotation silvicultural management regime. In 1998, the project area was devastated by wildfires that consumed most of the timber on the tract. Following the 1998 wildfires, the tract was aerially seeded with slash pine creating an even-age stand that is approximately 10 years in age. Mechanical treatments to control the understory have been used in lieu of prescribed fire.

Manager The property will continue to be managed by the landowner with restrictions imposed by a negotiated conservation easement. The OES will be responsible for monitoring compliance with the terms and conditions of the easement unless otherwise noted.

Updated March 21, 2017

Exhibit H

Department of State Report on Archeological Sites and Historical Sites

This record search is for informational purposes only and does NOT constitute a project review. This search only identifies resources recorded at the Florida Master Site File and does NOT provide project approval from the Division of Historical Resources. Contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333 for project review information.

October 8, 2018

Patti Anderson
State Lands Plan Coordinator
Florida Forest Service
Florida Department of Agriculture and Consumer Services
(850) 681-5887
Patricia.Anderson@FreshFromFlorida.com

In response to your inquiry of October 8, 2018, the Florida Master Site File lists 17 archeological sites, and two resource group found on Little-Big Econ State Forest in Seminole County, Florida.

When interpreting the results of our search, please consider the following information:

- **This search area may contain *unrecorded* archaeological sites, historical structures or other resources even if previously surveyed for cultural resources.**
- **Because vandalism and looting are common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.**
- **While many of our records document historically significant resources, the documentation of a resource at the Florida Master Site File does not necessarily mean the resource is historically significant.**
- **Federal, state and local laws require formal environmental review for most projects. This search DOES NOT constitute such a review. If your project falls under these laws, you should contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333.**

Please do not hesitate to contact us if you have any questions regarding the results of this search.

Sincerely,

Eman M. Vovsi, Ph.D.
Florida Master Site File
Eman.Vovsi@DOS.MyFlorida.com

Florida Master Site File

Created: 10/8/2018

AR=17
SS=0
CM=0
RG=2
BR=0
Total=19

Cultural Resource Roster

SiteID	Type	Site Name	Address	Additional Info	SHPO Eval	NR Status
SE00019	AR	CABIN MOUND	GENEVA	Human Remains May Be Present		
SE00020	AR	TOZZER				
SE00021	AR	BUZZARD ROOST/HEFFER MOUND		Human Remains May Be Present		
SE01165	AR	GREAT KILBEE MOUND	GENEVA			
SE01166	AR	YARBOROUGH ISOLATE	GENEVA			
SE01167	AR	PIG ISLAND MOUND	GENEVA			
SE01168	AR	HOG ISLAND MOUND	GENEVA			
SE01169	AR	CATFISH MOUND	GENEVA			
SE01170	AR	YARBOROUGH MOUND	GENEVA			
SE01173	AR	TWIN TREE MOUND	GENEVA			
SE01722	AR	NORRIS SURVEY MOUND	CHULUOTA			
SE01748	RG	FLORIDA EAST COAST RAILWAY	Chululota	Linear Resource - 2 Contrib Resources		
SE01749	AR	LONG CELERY FARM	CHULULOTA			
SE01953	RG	State Road 46	Sanford	Linear Resource - 1 Contrib Resources	Not Eligible	
SE02770	AR	Stephen Stipkovits Shell Midden	Geneva			
SE02797	AR	Kadle Shell Midden	Geneva			
SE02798	AR	Dead Alligator Shell Midden	Geneva			
SE02799	AR	Spiritual Eagle's Shell Midden	Geneva			
SE02826	AR	Wild Turkey Shell Midden	Geneva			

Exhibit I

Management Procedures
for
Archaeological and Historical Sites and Properties on State Owned or Controlled Lands

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties
(revised September 2019)

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:
https://dos.myflorida.com/historical/preservation/compliance-and-review/regulations-guidelines/

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:
https://dos.myflorida.com/media/31392/minimum_review_documentation_requirements.pdf

* * *

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

Robin Jackson
Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

Email: Robin.Jackson@DOS.MyFlorida.com
Phone: (850) 245-6496
Toll Free: (800) 847-7278
Fax: (850) 245-6439

Exhibit J

Soil Maps and Descriptions

Florida Forest Service

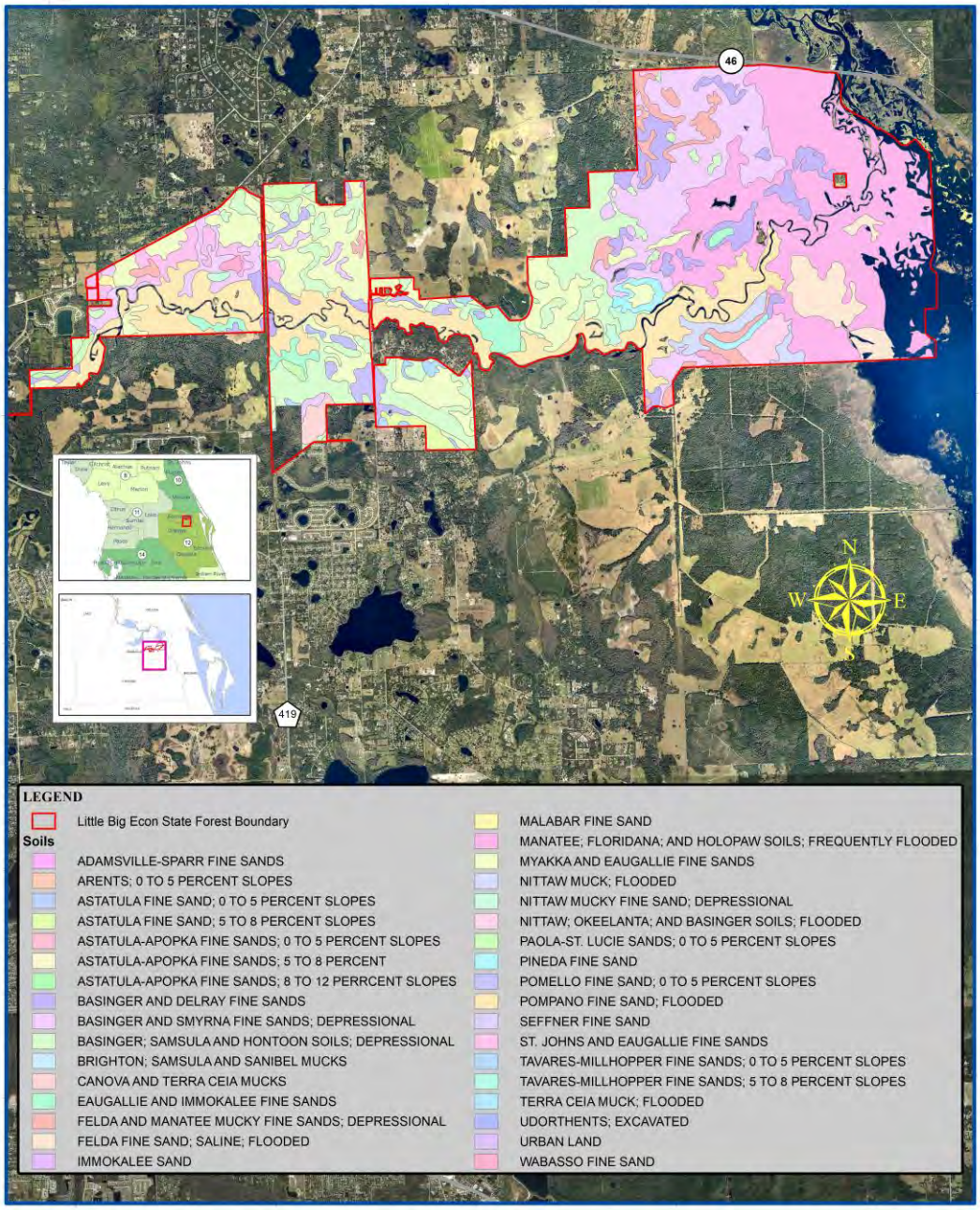
Little Big Econ State Forest

Soils Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

DISCLAIMER:

Managed Area boundaries courtesy of the Florida Natural Areas Inventory. Formerly Used Defense Sites (FUDS) from the US Army Corps of Engineers



LEGEND

- Little Big Econ State Forest Boundary

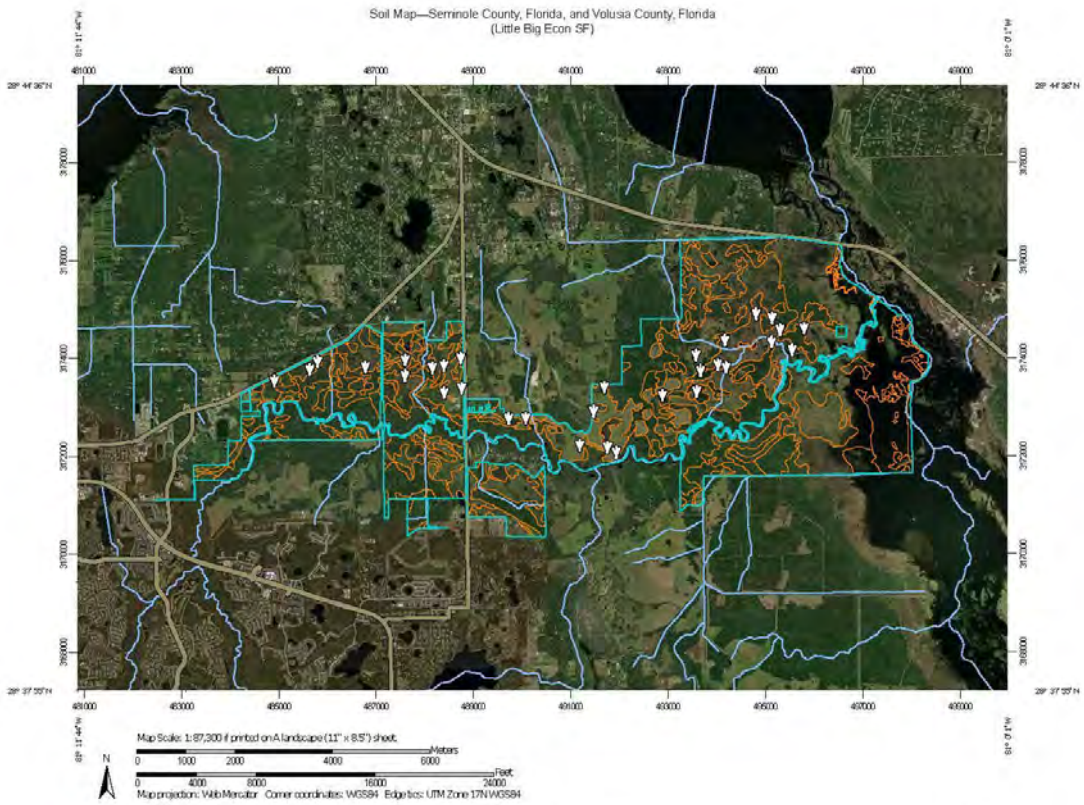
Soils

- ADAMSVILLE-SPARR FINE SANDS
- ARENTS; 0 TO 5 PERCENT SLOPES
- ASTATULA FINE SAND; 0 TO 5 PERCENT SLOPES
- ASTATULA FINE SAND; 5 TO 8 PERCENT SLOPES
- ASTATULA-APOPKA FINE SANDS; 0 TO 5 PERCENT SLOPES
- ASTATULA-APOPKA FINE SANDS; 5 TO 8 PERCENT
- ASTATULA-APOPKA FINE SANDS; 8 TO 12 PERRCENT SLOPES
- BASINGER AND DELRAY FINE SANDS
- BASINGER AND SMYRNA FINE SANDS; DEPRESSIONAL
- BASINGER; SAMSULA AND HONTOON SOILS; DEPRESSIONAL
- BRIGHTON; SAMSULA AND SANIBEL MUCKS
- CANOVA AND TERRA CEIA MUCKS
- EAUGALLIE AND IMMOKALEE FINE SANDS
- FELDA AND MANATEE MUCKY FINE SANDS; DEPRESSIONAL
- FELDA FINE SAND; SALINE; FLOODED
- IMMOKALEE SAND
- MALABAR FINE SAND
- MANATEE; FLORIDANA; AND HOLOPAW SOILS; FREQUENTLY FLOODED
- MYAKKA AND EAUGALLIE FINE SANDS
- NITTAW MUCK; FLOODED
- NITTAW MUCKY FINE SAND; DEPRESSIONAL
- NITTAW; OKEELANTA; AND BASINGER SOILS; FLOODED
- PAOLA-ST. LUCIE SANDS; 0 TO 5 PERCENT SLOPES
- PINEDA FINE SAND
- POMELLO FINE SAND; 0 TO 5 PERCENT SLOPES
- POMPANO FINE SAND; FLOODED
- SEFFNER FINE SAND
- ST. JOHNS AND EAUGALLIE FINE SANDS
- TAVARES-MILLHOPPER FINE SANDS; 0 TO 5 PERCENT SLOPES
- TAVARES-MILLHOPPER FINE SANDS; 5 TO 8 PERCENT SLOPES
- TERRA CEIA MUCK; FLOODED
- UDORTHENTS; EXCAVATED
- URBAN LAND
- WABASSO FINE SAND

0.5 0.25 0 0.5 1 Miles

1,000 500 0 1,000 2,000 3,000 4,000 Yards

Map Month/Year: May 2020


Soil Map—Seminole County, Florida, and Volusia County, Florida
(Little Big Econ SF)
481000
483000
485000
487000
489000
491000
493000
495000
497000
499000
28° 44' 36"N
28° 37' 55"N
3179000
3178000
3174000
3172000
3170000
3168000
Map Scale: 1:87,300 if printed on A landscape (11" x 8.5") sheet.
Meters
0
1000
2000
4000
6000
N
Feet
0
4000
8000
16000
24000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Seminole County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Soil Survey Area: Volusia County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 8, 2010—Nov 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
5	Astatula fine sand, 5 to 8 percent slopes	61.9	0.6%
9	Basinger and Delray fine sands	498.1	4.9%
10	Basinger, Samsula, and Hontoon soils, depressional	1,082.4	10.7%
11	Basinger and Smyrna fine sands, depressional	1,228.6	12.2%
12	Canova and Terra Ceia mucks	59.4	0.6%
13	EauGallie and Immokalee fine sands	195.6	1.9%
14	Felda fine sand, saline, frequently flooded	322.8	3.2%
15	Felda and Manatee mucky fine sands, depressional	280.0	2.8%
18	Malabar fine sand, 0 to 2 percent slopes	9.7	0.1%
19	Manatee, Floridana, and Holopaw soils, frequently flooded	2,229.8	22.1%
20	Myakka and EauGallie fine sands	1,247.0	12.4%
21	Nittaw mucky fine sand, depressional	55.3	0.5%
22	Nittaw muck, occasionally flooded	132.1	1.3%
23	Nittaw, Okeelanta, and Basinger soils, frequently flooded	105.3	1.0%
24	Paola-St. Lucie sands, 0 to 5 percent slopes	90.4	0.9%
25	Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	87.8	0.9%
26	Udorthents, excavated	0.4	0.0%
27	Pomello fine sand, 0 to 5 percent slopes	205.4	2.0%
28	Pompano fine sand, occasionally flooded	1,432.5	14.2%
29	St. Johns and EauGallie fine sands	207.0	2.1%
31	Tavares-Millhopper complex, 0 to 5 percent slopes	47.5	0.5%
35	Wabasso fine sand, 0 to 2 percent slopes	39.5	0.4%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
99	Water	429.2	4.3%
Subtotals for Soil Survey Area		**10,047.7**	**99.7%**
Totals for Area of Interest		**10,073.5**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
64	Tequesta muck, frequently ponded, 0 to 1 percent slopes	1.4	0.0%
99	Water	24.4	0.2%
Subtotals for Soil Survey Area		**25.8**	**0.3%**
Totals for Area of Interest		**10,073.5**	**100.0%**

Component Legend

This report presents general information about the map units and map unit components in the selected area. It shows map unit symbols and names and the components in each map unit. It also shows the percent of the components in the map units, the kind of component, and the slope range of each component.

Report—Component Legend

Component Legend–Seminole County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
5—Astatula fine sand, 5 to 8 percent slopes	327						
		97	Astatula	Series	5.0	7.0	8.0
9—Basinger and Delray fine sands	5,433						
		60	Basinger	Series	0.0	1.0	2.0
		32	Delray	Series	0.0	1.0	2.0
10—Basinger, Samsula, and Hontoon soils, depressional	22,896						
		58	Basinger	Series	0.0	1.0	2.0
		15	Samsula	Series	0.0	1.0	2.0
		15	Hontoon	Series	0.0	1.0	2.0
11—Basinger and Smyrna fine sands, depressional	8,124						
		63	Basinger	Series	0.0	1.0	2.0
		28	Smyrna	Series	0.0	1.0	2.0
12—Canova and Terra Ceia mucks	1,041						
		75	Canova, drained	Series	0.0	0.5	1.0
		25	Terra ceia, drained	Series	0.0	0.5	1.0
13—EauGallie and Immokalee fine sands	5,418						
		56	Eaugallie	Series	0.0	1.0	2.0
		35	Immokalee	Series	0.0	1.0	2.0
14—Felda fine sand, saline, frequently flooded	651						
		90	Felda, flooded	Series	0.0	1.0	2.0
15—Felda and Manatee mucky fine sands, depressional	5,063						
		56	Felda	Series	0.0	1.0	2.0
		38	Manatee	Series	0.0	1.0	2.0

Component Legend–Seminole County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
18—Malabar fine sand, 0 to 2 percent slopes	1,526						
		85	Malabar	Series	0.0	1.0	2.0
19—Manatee, Floridana, and Holopaw soils, frequently flooded	8,475						
		61	Manatee, flooded	Series	0.0	1.0	2.0
		21	Floridana, flooded	Series	0.0	1.0	2.0
		15	Holopaw, flooded	Series	0.0	1.0	2.0
20—Myakka and EauGallie fine sands	29,547						
		58	Myakka	Series	0.0	1.0	2.0
		32	Eaugallie	Series	0.0	1.0	2.0
21—Nittaw mucky fine sand, depressional	1,078						
		91	Nittaw	Series	0.0	1.0	2.0
22—Nittaw muck, occasionally flooded	4,672						
		100	Nittaw, flooded	Series	0.0	1.0	2.0
23—Nittaw, Okeelanta, and Basinger soils, frequently flooded	7,891						
		45	Nittaw, flooded	Series	0.0	1.0	2.0
		34	Okeelanta, flooded	Series	0.0	1.0	2.0
		19	Basinger, flooded	Series	0.0	1.0	2.0
24—Paola-St. Lucie sands, 0 to 5 percent slopes	4,680						
		52	Paola	Series	0.0	3.0	5.0
		43	St. lucie	Series	0.0	3.0	5.0
25—Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	1,693						
		45	Pineda	Series	0.0	1.0	2.0
		40	Pineda, wet	Series	0.0	0.5	1.0
26—Udorthents, excavated	440						
		90	Udorthents	Taxon above family	0.0	4.0	8.0
27—Pomello fine sand, 0 to 5 percent slopes	6,406						
		91	Pomello	Series	0.0	3.0	5.0
28—Pompano fine sand, occasionally flooded	4,588						
		90	Pompano, flooded	Series	0.0	1.0	2.0

Component Legend–Seminole County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
29—St. Johns and EauGallie fine sands	4,237						
		57	St. johns	Series	0.0	1.0	2.0
		36	Eaugallie	Series	0.0	1.0	2.0
31—Tavares-Millhopper complex, 0 to 5 percent slopes	14,603						
		63	Tavares	Series	0.0	3.0	5.0
		32	Millhopper	Series	0.0	3.0	5.0
35—Wabasso fine sand, 0 to 2 percent slopes	915						
		85	Wabasso	Series	0.0	1.0	2.0
99—Water	23,101						
		100	Water	Miscellaneous area			

Component Legend–Volusia County, Florida							
Map unit symbol and name	Map unit acres	Pct. of map unit	Component name	Component kind	Pct. slope		
					Low	RV	High
64—Tequesta muck, frequently ponded, 0 to 1 percent slopes	16,105						
		87	Tequesta	Series	0.0	0.5	1.0
99—Water	85,685						
		100	Water	Miscellaneous area			

Data Source Information

Soil Survey Area: Seminole County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Soil Survey Area: Volusia County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, provide information on the composition of map units and properties of their components.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

Seminole County, Florida

Map Unit: 5—Astatula fine sand, 5 to 8 percent slopes

Component: Astatula (97%)

The Astatula component makes up 97 percent of the map unit. Slopes are 5 to 8 percent. This component is on hillslopes on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Paola (3%)

Generated brief soil descriptions are created for major soil components. The Paola soil is a minor component.

Map Unit: 9—Basinger and Delray fine sands

Component: Basinger (60%)

The Basinger component makes up 60 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Delray (32%)

The Delray component makes up 32 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Malabar (4%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Component: Wabasso (4%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Map Unit: 10—Basinger, Samsula, and Hontoon soils, depressional

Component: Basinger (58%)

The Basinger component makes up 58 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 14 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Hontoon (15%)

The Hontoon component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 80 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Samsula (15%)

The Samsula component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 60 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (3%)

Generated brief soil descriptions are created for major soil components. The EauGallie soil is a minor component.

Component: Felda (3%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Component: Smyrna (2%)

Generated brief soil descriptions are created for major soil components. The Smyrna soil is a minor component.

Component: Myakka (2%)

Generated brief soil descriptions are created for major soil components. The Myakka soil is a minor component.

Component: St. Johns (2%)

Generated brief soil descriptions are created for major soil components. The St. Johns soil is a minor component.

Map Unit: 11—Basinger and Smyrna fine sands, depressional

Component: Basinger (63%)

The Basinger component makes up 63 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 14 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Smyrna (28%)

The Smyrna component makes up 28 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (5%)

Generated brief soil descriptions are created for major soil components. The EauGallie soil is a minor component.

Component: Malabar (4%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Map Unit: 12—Canova and Terra Ceia mucks

Component: Canova, drained (75%)

The Canova, drained component makes up 75 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 55 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Terra Ceia, drained (25%)

The Terra Ceia, drained component makes up 25 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit: 13—EauGallie and Immokalee fine sands

Component: EauGallie (56%)

The EauGallie component makes up 56 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Immokalee (35%)

The Immokalee component makes up 35 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Malabar (9%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Map Unit: 14—Felda fine sand, saline, frequently flooded

Component: Felda, flooded (90%)

The Felda, flooded component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, July, August, September, October, November, December. Organic matter content in the surface horizon is about 15 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Pineda (10%)

Generated brief soil descriptions are created for major soil components. The Pineda soil is a minor component.

Map Unit: 15—Felda and Manatee mucky fine sands, depressional

Component: Felda (56%)

The Felda component makes up 56 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 15 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Manatee (38%)

The Manatee component makes up 38 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 23 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Wabasso (3%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Component: Delray (3%)

Generated brief soil descriptions are created for major soil components. The Delray soil is a minor component.

Map Unit: 18—Malabar fine sand, 0 to 2 percent slopes

Component: Malabar (85%)

The Malabar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R155XY011FL Slough ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Valkaria (5%)

Generated brief soil descriptions are created for major soil components. The Valkaria soil is a minor component.

Component: Pineda (4%)

Generated brief soil descriptions are created for major soil components. The Pineda soil is a minor component.

Component: Oldsmar (4%)

Generated brief soil descriptions are created for major soil components. The Oldsmar soil is a minor component.

Component: Basinger (2%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Map Unit: 19—Manatee, Floridana, and Holopaw soils, frequently flooded

Component: Manatee, flooded (61%)

The Manatee, flooded component makes up 61 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Floridana, flooded (21%)

The Floridana, flooded component makes up 21 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 11 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Holopaw, flooded (15%)

The Holopaw, flooded component makes up 15 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger, flooded (3%)

Generated brief soil descriptions are created for major soil components. The Basinger, flooded soil is a minor component.

Map Unit: 20—Myakka and EauGallie fine sands

Component: Myakka (58%)

The Myakka component makes up 58 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (32%)

The EauGallie component makes up 32 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger (5%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Component: Pompano, flooded (5%)

Generated brief soil descriptions are created for major soil components. The Pompano, flooded soil is a minor component.

Map Unit: 21—Nittaw mucky fine sand, depressional

Component: Nittaw (91%)

The Nittaw component makes up 91 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 15 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger (9%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Map Unit: 22—Nittaw muck, occasionally flooded

Component: Nittaw, flooded (100%)

The Nittaw, flooded component makes up 100 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 55 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map Unit: 23—Nittaw, Okeelanta, and Basinger soils, frequently flooded

Component: Nittaw, flooded (45%)

The Nittaw, flooded component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 55 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Okeelanta, flooded (34%)

The Okeelanta, flooded component makes up 34 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 73 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger, flooded (19%)

The Basinger, flooded component makes up 19 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Pompano, flooded (2%)

Generated brief soil descriptions are created for major soil components. The Pompano, flooded soil is a minor component.

Map Unit: 24—Paola-St. Lucie sands, 0 to 5 percent slopes

Component: Paola (52%)

The Paola component makes up 52 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: St. Lucie (43%)

The St. Lucie component makes up 43 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Tavares (5%)

Generated brief soil descriptions are created for major soil components. The Tavares soil is a minor component.

Map Unit: 25—Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes

Component: Pineda (45%)

The Pineda component makes up 45 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Pineda, wet (40%)

The Pineda, wet component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during July, August, September, October. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Felda (6%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Component: Wabasso (3%)

Generated brief soil descriptions are created for major soil components. The Wabasso soil is a minor component.

Component: Boca (2%)

Generated brief soil descriptions are created for major soil components. The Boca soil is a minor component.

Component: Valkaria (2%)

Generated brief soil descriptions are created for major soil components. The Valkaria soil is a minor component.

Component: Hallandale (2%)

Generated brief soil descriptions are created for major soil components. The Hallandale soil is a minor component.

Map Unit: 26—Udorthents, excavated

Component: Udorthents (90%)

The Udorthents component makes up 90 percent of the map unit. Slopes are 0 to 8 percent. This component is on — Error in Exists On —. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Aquents (10%)

Generated brief soil descriptions are created for major soil components. The Aquents soil is a minor component.

Map Unit: 27—Pomello fine sand, 0 to 5 percent slopes

Component: Pomello (91%)

The Pomello component makes up 91 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges, coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 0 within 30 inches of the soil surface.

Component: Myakka, non-hydric (4%)

Generated brief soil descriptions are created for major soil components. The Myakka, non-hydric soil is a minor component.

Component: EauGallie, non-hydric (2%)

Generated brief soil descriptions are created for major soil components. The EauGallie, non-hydric soil is a minor component.

Component: Basinger, hydric (2%)

Generated brief soil descriptions are created for major soil components. The Basinger, hydric soil is a minor component.

Component: Sparr (1%)

Generated brief soil descriptions are created for major soil components. The Sparr soil is a minor component.

Map Unit: 28—Pompano fine sand, occasionally flooded

Component: Pompano, flooded (90%)

The Pompano, flooded component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Nittaw, flooded (10%)

Generated brief soil descriptions are created for major soil components. The Nittaw, flooded soil is a minor component.

Map Unit: 29—St. Johns and EauGallie fine sands

Component: St. Johns (57%)

The St. Johns component makes up 57 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: EauGallie (36%)

The EauGallie component makes up 36 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Felda (7%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Map Unit: 31—Tavares-Millhopper complex, 0 to 5 percent slopes

Component: Tavares (63%)

The Tavares component makes up 63 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Millhopper (32%)

The Millhopper component makes up 32 percent of the map unit. Slopes are 0 to 5 percent. This component is on knolls on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 51 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Candler (3%)

Generated brief soil descriptions are created for major soil components. The Candler soil is a minor component.

Component: Astatula (2%)

Generated brief soil descriptions are created for major soil components. The Astatula soil is a minor component.

Map Unit: 35—Wabasso fine sand, 0 to 2 percent slopes

Component: Wabasso (85%)

The Wabasso component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Myakka (4%)

Generated brief soil descriptions are created for major soil components. The Myakka soil is a minor component.

Component: Riviera (4%)

Generated brief soil descriptions are created for major soil components. The Riviera soil is a minor component.

Component: Basinger (3%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Component: Malabar (2%)

Generated brief soil descriptions are created for major soil components. The Malabar soil is a minor component.

Component: Felda (1%)

Generated brief soil descriptions are created for major soil components. The Felda soil is a minor component.

Component: Pinellas (1%)

Generated brief soil descriptions are created for major soil components. The Pinellas soil is a minor component.

Map Unit: 99—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Volusia County, Florida

Map Unit: 64—Tequesta muck, frequently ponded, 0 to 1 percent slopes

Component: Tequesta (87%)

The Tequesta component makes up 87 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 3 inches during January, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Basinger (4%)

Generated brief soil descriptions are created for major soil components. The Basinger soil is a minor component.

Component: Sanibel (3%)

Generated brief soil descriptions are created for major soil components. The Sanibel soil is a minor component.

Component: Holopaw (3%)

Generated brief soil descriptions are created for major soil components. The Holopaw soil is a minor component.

Component: Kaliga (3%)

Generated brief soil descriptions are created for major soil components. The Kaliga soil is a minor component.

Map Unit: 99—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Data Source Information

Soil Survey Area: Seminole County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Soil Survey Area: Volusia County, Florida
Survey Area Data: Version 17, Sep 13, 2018

Exhibit K

Department of Environmental Protection
Outstanding Florida Waters

FLORIDA DEPARTMENT OF
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

January 10, 2019

Ms. Patti Anderson
Florida Forest Service Land Management Plan Coordinator
Florida Department of Agriculture and Consumer Services
3125 Conner Boulevard, Suite I-262, Mail Stop C-25
Tallahassee, FL 32399-1650

RE: Little-Big Econ State Forest

Dear Ms. Anderson:

Thank you for your inquiry regarding the surface water quality classification of waters on and near Little-Big Econ State Forest in Seminole County. There are no waters on or near the site listed as exceptions to Class III in subparagraph 62-302.400(17)(b)59., Florida Administrative Code (F.A.C.); therefore, all of the surface waters on or adjacent to the site are classified as Class III waters (Fish Consumption; Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife), which is the statewide default classification under subsection 62-302.400(15), F.A.C.

As requested, we also checked to see if there are any Outstanding Florida Waters (OFWs) near the state forest. According to subsection 62-302.700(9), F.A.C., the State Forest along the Econlockhatchee River in Seminole County is almost entirely within areas that have been designated as OFW under subparagraph 62-302.700(9)(i)11., Florida Administrative Code (F.A.C.), or as part of the Lower Econlockhatchee OFW under subparagraph 62-302.700(9)(f)36., F.A.C. While there are several other parcels on, adjacent, or nearby that are considered conservation lands at a Federal, State or Local level (according to the Florida Natural Areas Inventory Managed Areas data layer), these have not been designated as OFWs beyond what is described above.

If you have any questions or need additional information, please feel free to contact me at the letterhead address (mail station 6511), by phone at 850-245-8427, or via E-mail at Janet.Klemm@FloridaDEP.gov.

Sincerely,

J Klemm

Janet Klemm
Environmental Specialist
DEP Water Quality Standards Program

Exhibit L

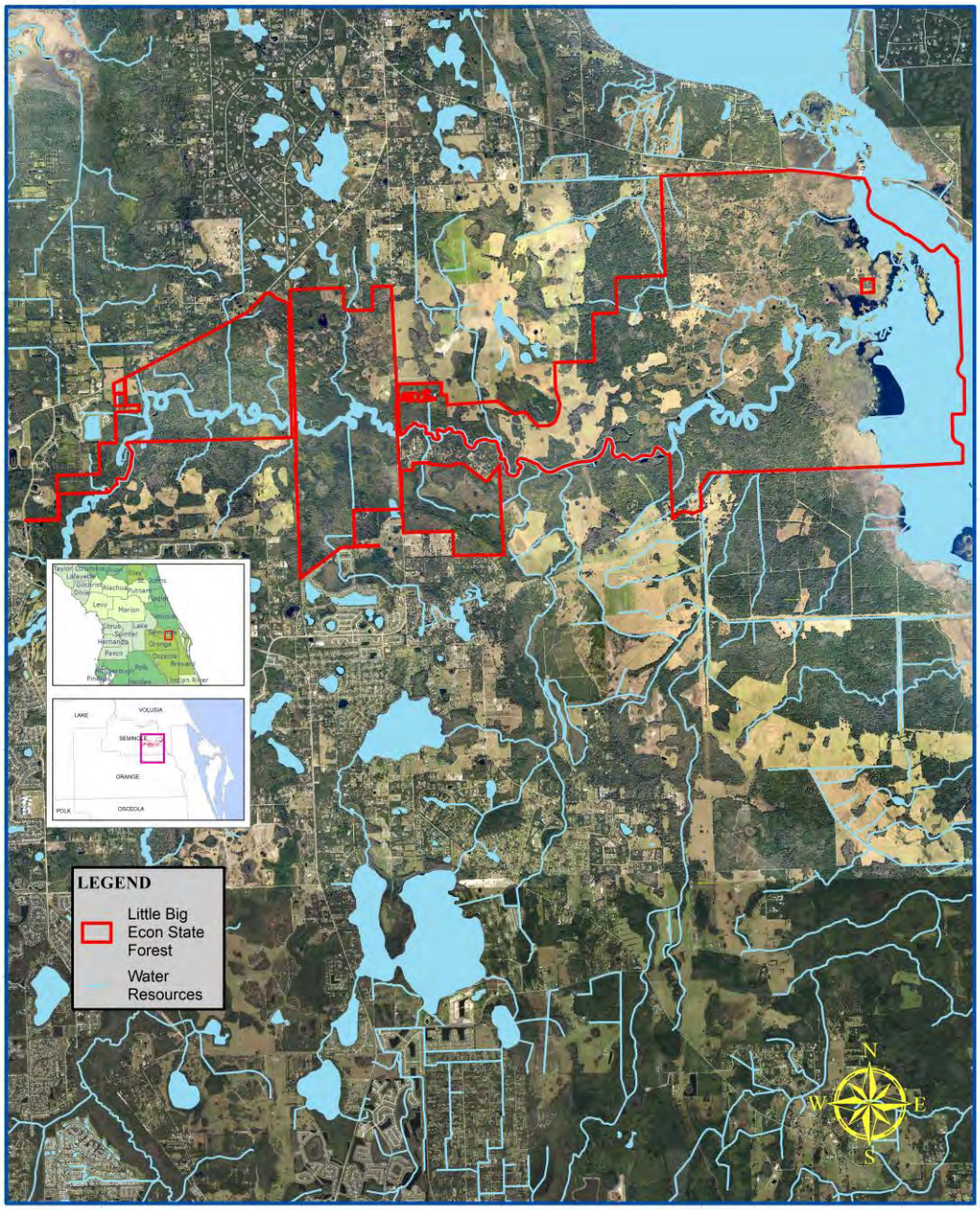
Water Resources Map

Florida Forest Service

Little Big Econ State Forest

Water Resources Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum

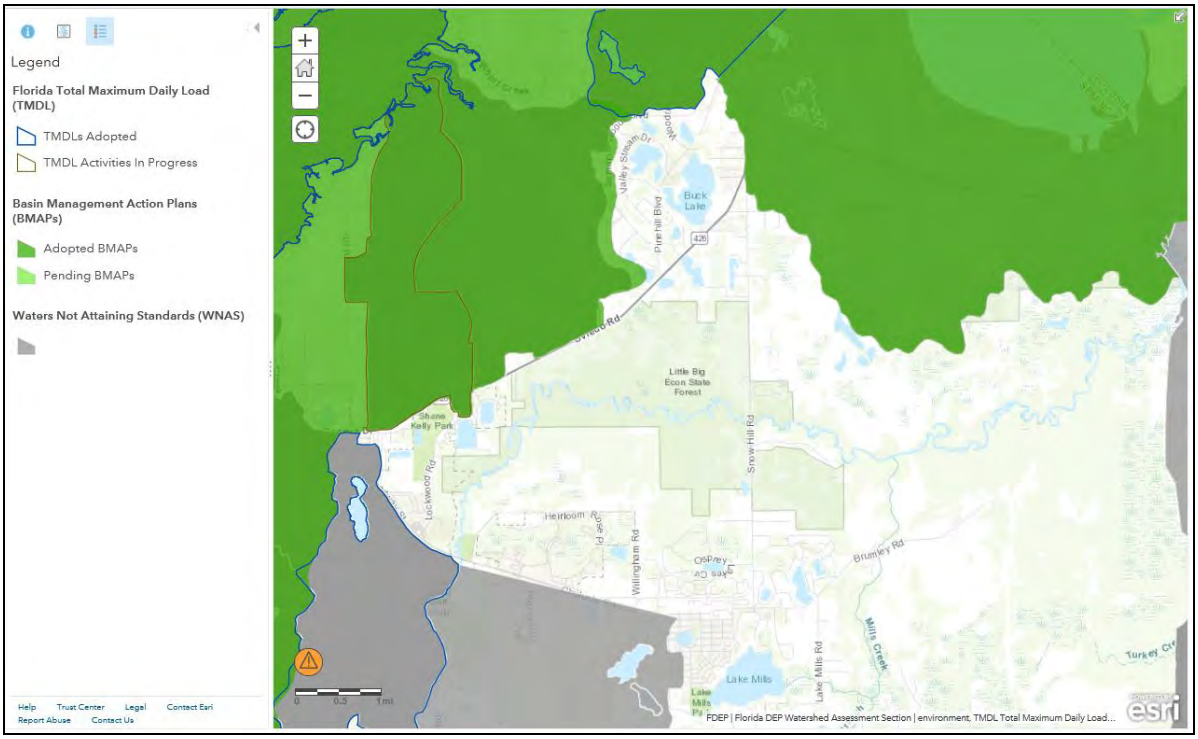


0.5 0.25 0 0.5 1 Miles

1,000 500 0 1,000 2,000 3,000 4,000 Yards

Map Month/Year: September 2020

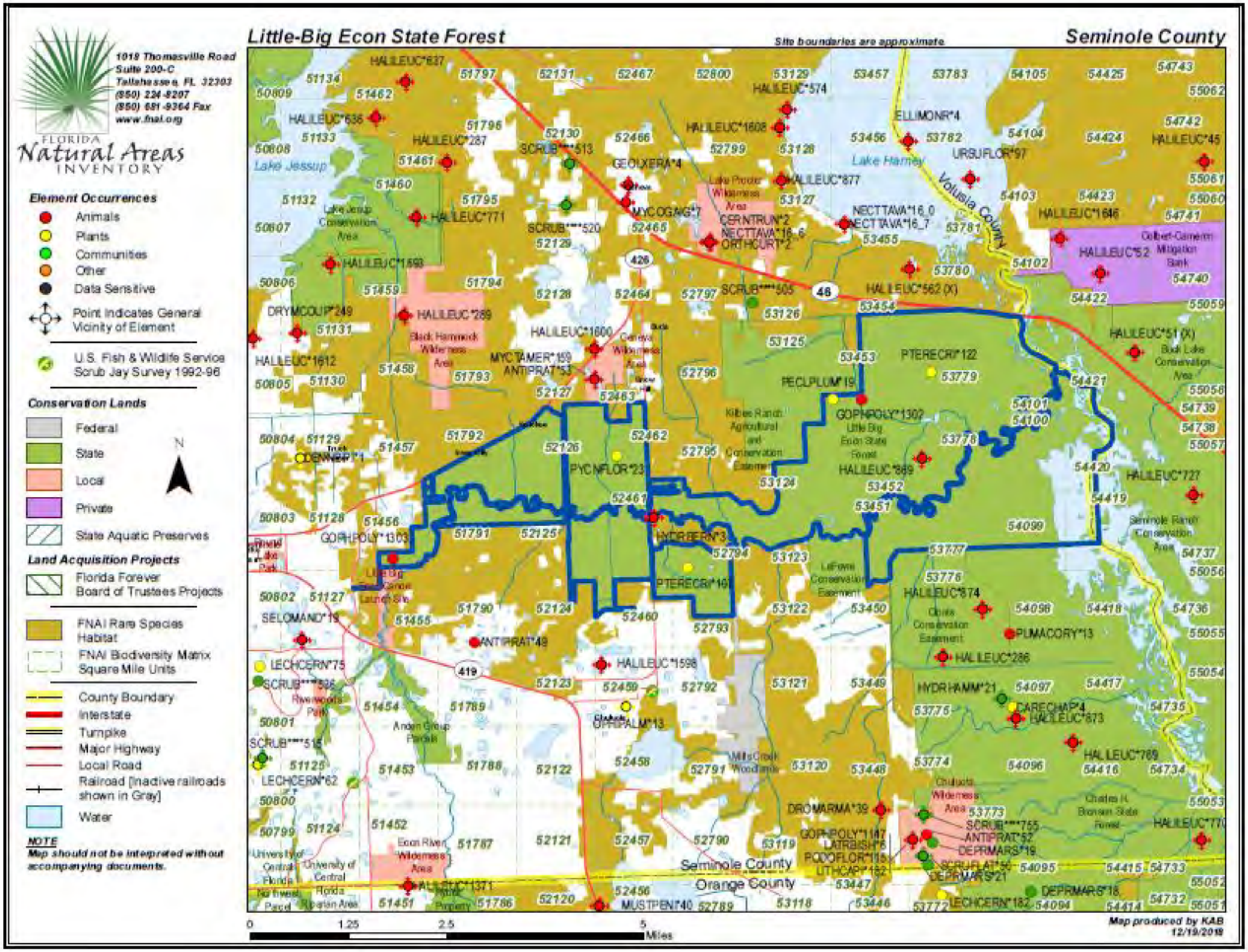
FDEP Water Quality Assessment, TMDLs and BMAP



The purpose of this map is to display the status of the Division of Environmental Assessment and Restoration efforts in Florida. This map displays those water body ID's (WBIDs) in Florida that are not attaining standards, WBIDs for which Total Maximum Daily Loads (TMDLs) have been developed and areas that have Basin Management Action Plans (BMAPs) implemented or in progress.

Exhibit M

Florida Natural Areas Inventory
Managed Area Tracking Record


Little-Big Econ State Forest
Seminole County
Site boundaries are approximate
1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax
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FLORIDA Natural Areas INVENTORY
Element Occurrences
Animals
Plants
Communities
Other
Data Sensitive
Point Indicates General Vicinity of Element
U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96
Conservation Lands
Federal
State
Local
Private
State Aquatic Preserves
Land Acquisition Projects
Florida Forever Board of Trustees Projects
FNAI Rare Species Habitat
FNAI Biodiversity Matrix Square Mile Units
County Boundary
Interstate
Turnpike
Major Highway
Local Road
Railroad [Inactive railroads shown in Gray]
Water
NOTE
Map should not be interpreted without accompanying documents.
N
Lake Jessup
Lake Harney
Volusia County
Seminole County
Orange County
0
1.25
2.5
5
Miles
Map produced by KAB 12/19/2018

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Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ANTIPRAT*49	*Antigone canadensis pratensis*	Florida Sandhill Crane	G5T2	S2	N	ST	1998-05-07	1998-05-07: 15 ac. of marsh; seasonal grassy marshes: depth max ca. 3 ft.; Panicum hemitomon, Pontederia cordata, Hypericum fasciculatum (Kissick).	1998-05-07: 2 nests observed (1 nest seen in wetlands #2 and #8 - map attached to EOR); unknown number of individuals in population, therefore was not able to determine age/population structure (Kissick).
ANTIPRAT*53	*Antigone canadensis pratensis*	Florida Sandhill Crane	G5T2	S2	N	ST	1997-06-26	1997-06-26: Freshwater lake, surrounded by hydric flatwoods, xeric hammock, sandpine scrub. Water level fluctuates dramatically with rain fall, or lack there of (U97DUB06FLUS).	1997-06-26: 3 individuals seen foraging at lake's edge (U97DUB06FLUS).
DENNBIPI*1	*Dennstaedtia bipinnata*	hay scented fern	G4	S1	N	E	1974-03-09	2005-01-03: Hardwood swamp, canopy opened up by 2004 hurricanes. Site heavily infested by exotic plants, primarily air potato (PNDWAL05FLUS). 1974-03-09: open woods, hardwood trees (S74SHUFSFLUS).	2005-01-03: few individuals in population, indusia observed (PNDWAL05FLUS). 1974-03-09: ferns 2.2 meters tall, fruit abundant (S74SHUFSFLUS).
DRYMCOUP*377	*Drymarchon couperi*	Eastern Indigo Snake	G3Q	S3	T	FT	1982 pre	No general description given	INDIGO COLL. 1973-05-23 IN UCF COLLECTION (MOLER INTERVIEW OF L. EHRHART, 1982-07-12). INDIGO OBSERVED BY PETER PRITCHARD, UNDER HIS HOUSE (MOLER INTERVIEW P. PRITCHARD, 1982-06-10).
ELLIMONR*4	*Elliptio monroensis*	St. Johns Elephantear	G2G3	S2S3	N	N	2015 pre	St. Johns River system, at least south (upstream) of Lake George. Inhabits river, lakes along the main stem, and lower reaches of some large tributaries (B14WIL01FLUS:205).	Williams et al. (2014) depict at least 17 sites from which this occurrence has been documented. For specific data, references, and sites, see individual source features and Additional Topics field in this record.
EUPHCALH*1	*Euphyes dukesi calhouni*	Calhoun's Skipper	G3T1	S1	N	N	2006-05	2006-05: The skippers were seen in or near roadside ditches with pickerelweed, buttonbush and coastal plain willow, near a hydric hammock with sabal palmetto and red cedars (N07KEI01FLUS).	2006-05: One adult found (N07KEI01FLUS). 2005-09: One adult found, diagnostic photo taken (N07KEI01FLUS)
GEOLXERA*4	*Geolycosa xera*	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N	1963 pre	1963-Pre: No description given (A63MCC01FLUS).	1963-Pre: Eleven specimens were collected (A63MCC01FLUS).

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Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
GOPHPOLY*1302	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	2007-01-09	2007-01-09: semi-improved pasture within a larger area of wet flatwoods, mesic flatwoods, and hydric hammocks on the edge of the St. John's River floodplain (F07FNA09FLUS).	2007-01-09: one active burrow, observed incidentally during natural community survey, in semi-improved pasture (F07FNA09FLUS).
GOPHPOLY*1303	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	2007-01-10	2007-01-10: in mesic flatwoods in close proximity to highly disturbed, young pine plantations (F07FNA09FLUS). 2007-01-09: flatwoods lying between scrub to the north and the floodplain of the Econlockhatchee River to the south (F07FNA09FLUS).	2007-01-10: two burrows ca. 0.75 mile apart in central area of Forest in mesic flatwoods (F07FNA09FLUS). 2007-01-09: one active burrow in mesic flatwoods in far western portion of Forest (F07FNA09FLUS). 2007 observations were made incidentally during natural community survey.
HALILEUC*1598	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2001	2005-07-12: Source does not provide a description.	Nest status: Active, 2001, 1999; Not active, 2003, 2002, 2000;(U03FWC01FLUS)
HALILEUC*1600	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001, 2000; Unknown status or not assessed, 1999;(U03FWC01FLUS)
HALILEUC*1646	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001, 2000; Not active, 1999;(U03FWC01FLUS)
HALILEUC*266	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1995: PRODUCED 2 YOUNG; 1994: PRODUCED 1 YOUNG; 1993: PRODUCED 1 YOUNG; 1992: ACTIVE, PRODUCED 0 YOUNG; 1991: PRODUCED 1 YOUNG; 1990: INACTIVE; 1989: ACTIVE, PRODUCED 0 YOUNG; 1975-1985, 1987-1988 ACTIVE; 1986 INACTIVE. FLEDGED YOUNG 1977, 1979-1980, 1982-1983, 1985, 1987-1988; 1978 AND 1981 UNKNOWN.

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HALILEUC*51	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	1991	No general description given	Nest status 1999-2003: Inactive - 2003; Unknown/not assessed - 2002, 2001, 2000, 1999; Status 1995-98: Inactive - 1998, 1997, 1996, 1995; (U03FWC01FLUS). Previous data (note different format) NEST: 1995-92: GONE; 1991: ACTIVE, PRODUCED 0 YOUNG; 1990-89: USED BY OTHER ANIMAL; 1974-1975, 1978, 1981-1988 ACTIVE; 1976-1977, 1979-1980 INACTIVE; FLEDGED YOUNG 1981-1985, 1987-1988.
HALILEUC*52	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST: 1995: ACTIVE, PRODUCED 0 YOUNG; 1994: PRODUCED 1 YOUNG; 1993: INACTIVE; 1992: PRODUCED 3 YOUNG; 1991: ACTIVE, PRODUCED 0 YOUNG; 1990: ACTIVE, PRODUCED 0 YOUNG; 1989: PRODUCED 2 YOUNG; 1979-1988 ACTIVE. FLEDGED YOUNG 1976-1986, 1988.
HALILEUC*562	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	1994	No general description given	Nest status 1999-2003: Inactive - 2003, 2002; Unknown/not assessed - 2001, 2000, 1999; Status 1995-98: Inactive - 1998, 1997, 1996, 1995; (U03FWC01FLUS). Previous data (note different format) NEST: 1995: GONE; 1994: PRODUCED 2 YOUNG; 1993: GONE; 1992: GONE; 1991: ACTIVE, PRODUCED 0 YOUNG; 1990: PRODUCED 2 YOUNG; 1989: PRODUCED 1 YOUNG; 1985-1988 ACTIVE. FLEDGED YOUNG 1985-1988.

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HALILEUC*669	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2001	No general description given	Nest status 1999-2003: Active - 2001, 2000, 1999; Inactive - 2003, 2002; Status 1995-98: Continuously active. (U03FWC01FLUS). Previous data (note different format) Nest; 1995: Active, produced 0 young; 1994: Active, produced 0 young; 1993: Active, produced 0 young; 1992: Produced 2 young; 1991: Produced 1 young; 1990-86: Gone; 1985: Inactive; 1984: Active, produced 0 young; 1983-82: Down; 1981: No data; 1980: Inactive; 1979: Osprey; 1978: Inactive; 1977: Produced 1 young; 1976-75: Owl; 1974: Produced 1 young.
HALILEUC*874	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) Nest; 1995: Produced 1 young; 1994: Produced 1 young.
HYDRBERN*3	*Hydroptila berneri*	Berner's Microcaddisfly	G4G5	S3	N	N	2001-05-12	2001-05-12: No description given (U06RAS01FLUS).	2001-05-12: One specimen was collected on 2001-05-12 using ultraviolet light (U06RAS01FLUS).

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HYDRHAMM*21	Hydric hammock		G4	S4	N	N	2004	HARDWOOD, HYDRIC HAMMOCK WITH CABBAGE PALM ON VERY POORLY DRAINED SOILS OR ON SOILS WITH HIGH WATER TABLES CHARACTERISTIC WITHIN THE EASTERN VALLEY PHYSIOGRAPHIC REGION (ST. JOHNS RIVER VALLEY) OF SEMINOLE AND ORANGE COUNTY. DOT AERIAL PHOTO PD 3812-13-04 FLOWN ON 2-27-89.	HYDRIC HAMMOCK IS FOUND ON THE MALABAR, PINEDA, BASINGER, AND SMYRNA SOIL SERIES. THESE SOILS OCCUR ON NEARLY LEVEL TERRAIN, OR ALONG POORLY DEFINED DRAINAGEWAYS, AND HAVE EITHER A SEASONAL HIGH WATER TABLE OR IN UNDRAINED AREAS MAY INUNDATE FOR TWO TO NINE MONTHS IN MOST YEARS. THERE ARE TWO DISTINCT SUBTYPES OF HYDRIC HAMMOCK, A CLAYEY HYDRIC HAMMOCK SUBTYPE, OCCURRING ON THE PINEDA SOIL SERIES, IS MAPPED ON SOIL SHEET 32 IN THE 1990 SEMINOLE COUNTY SOIL SURVEY. PINEDA SOILS HAVE A HIGH CLAY CONTENT IN THE SUBSOIL WITH A 5-8.5 PH RANGE, RENDERING THE SOIL SOMEWHAT CALCAREOUS. ANOTHER MORE ACIDIC SUBTYPE OF HYDRIC HAMMOCK OCCURS ON THE BASINGER, SMYRNA, AND MALABAR SOIL SERIES, WHICH ARE SANDY OR HAVE SOME ORGANIC MATTER AT THE SURFACE, AND HAVE A LOW CLAY CONTENT (PH 3.6-7.0) IN THE SUBSOIL. THE CALCAREOUS HYDRIC HAMMOCK SUBTYPE HAS A CANOPY OF SOUTHERN CEDAR (JUNIPERUS SILICICOLA) AS A CODOMINANT WITH FLORIDA ELM (ULMUS FLORIDANA), LIVE OAK (QUERCUS VIRGINIANA), DIAMOND-LEAF OAK (QUERCUS LAURIFOLIA), AND CABBAGE PALM (SABAL PALMETTO). THE MAJOR DISTINCTION NOTED DURING THE FIELD SURVEY BETWEEN THE SUBTYPES OTHER THAN SOIL TYPE IS THE PRESENCE OF LARGE SPECIMENS OF SOUTHERN CEDAR IN THE CANOPY OF THE CALCAREOUS SUBTYPE. THE SHRUB LAYER OF THESE MORE MESIC, CALCAREOUS HAMMOCKS IS DOMINATED BY BEAUTY-BERRY (CALLICARPA AMERICANA), WITH A GROUND LAYER

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									OF SPIKEGRASS (CHASMANTHIUM SESSILIFLORUM) AND VIRGINIA CHAIN FERN (WOODWARDIA VIRGINICA). IN THE ACIDIC SUBTYPE OF HYDRIC HAMMOCK THERE ARE AT LEAST THREE RATHER DISTINCT PLANT COMMUNITIES BASED UPON HYDROPERIOD AND SOIL MOISTURE. A PLANT COMMUNITY WHICH MIGHT BEST BE REFERRED TO AS A MESIC HAMMOCK HAS A CANOPY OF LIVE OAK (QUERCUS VIRGINIANA), DIAMOND-LEAF OAK (QUERCUS LAURIFOLIA), WATER OAK (QUERCUS NIGRA), SWEET GUM (LIQUIDAMBAR STYRACIFLUA), SLASH PINE (PINUS ELLIOTTII), AND SOUTHERN MAGNOLIA (MAGNOLIA GRANDIFLORA), WITH A SUBCANOPY OF 30-FOOT TALL STAGGER-BUSH (LYONIA FERRUGINEA), AND A GROUNDCOVER INCLUDING FETTERBUSH (LYONIA LKUCIDA) AND SAW PALMETTO (SERENOA REPENS). THIS COMMUNITY DEVELOPS ON THE SOMEWHAT BETTER DRAINED SANDY SOILS. WHERE HYDRIC HAMMOCK HAS DEVELOPED DOWNSLOPE FROM SCRUB OR SCRUBBY FLATWOODS, AND THERE IS LATERAL GROUNDWATER SEEPAGE ENTERING INTO THE HYDRIC HAMMOCK, THERE IS A DIFFERENT PLANT COMMUNITY. IN THIS HYDRIC HAMMOCK THE OVERSTORY IS DOMINATED BY RED MAPLE (ACER RUBRUM), SWEETBAY (MAGNOLIA VIRGINIANA), SWEETGUM, AND SWAMP BLACK GUM (NYSSA BIFLORA). THE UNDERSTORY IS MOSTLY RED MAPLE AND THE SHRUB LAYER IS TALL WAX-MYRTLE, AND BUTTON-BUSH. LIZARD'S-TAIL (SAURURUS CERNUUS), CHAIN FERN (WOODWARDIA VIRGINICA), MIDSORUS FERN (BLECHNUM SERRULATUM), AND BEAKRUSH

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									(RHYNCHOSPORA MILIACEA) ARE COMMON IN THE GROUND LAYER. IN THE LONGER HYDROPERIOD TYPE OF ACIDIC HYDRIC HAMMOCK THE CANOPY IS DOMINATED BY CABBAGE PALM, RED MAPLE, SWEETGUM, SWAMP BLACK GRUM, FLORIDA ELM (ULMUS FLORIDANA), AND RARELY BASSWOOD (TILIA CAROLINIANA). THE UNDERSTORY IS PREDOMINATELY A MIXTURE OF CANOPY TREES, BUT IN PLACES CONSISTED ALMOST ENTIRELY OF CABBAGE PALM. THE HERBACEOUS LAYER INCLUDES JACK-IN-THE-PULPIT (ARISAEMA TRIPHYLLUM), CHAPMAN'S SEDGE (CAREX CHAPMANII), SHIELD FERN (DRYOPTERIS LUDOVICIANA), YELLOW-STAR GRASS (HYPOSIX LEPTOCARPA), BASKET GRASS (OPLISMENUS SETARIUS), CINNAMON FERN (OSMUNDA CINNAMOMEA), ROYAL FERN, RED-TOP PANIC GRASS (PANICUM RIGIDULUM), BEAKRUSHES (RHYNCHOSPORA MIXTA, R. MILIACEA), ROSE-GENTIAN (SABATIA CALYCINA), MARSH FERN (THELYPTERIS PALUSTRIS), MID-SORUS FERN, CAMPHOR WEED (PLUCHEA LONGIFOLIA), MIST FLOWER (CONOCLINIUM COELESTINUM), AND WHISK FERN (PSILOTUM NUDUM). FERNS BECOME A CONSPICUOUS MEMBERS OF THE GROUNDCOVER, AND THE TREES TYPICALLY HAVE BUTTRESSED BASES DUE TO THE PROLONGED SATURATED CONDITIONS IN THE SOIL. IN THIS HYDRIC HAMMOCK TYPE THERE ARE SHALLOW DEPRESSIONS AND POORLY DEFINED DRAINAGEWAYS WHICH CONTAINED STANDING WATER DURING THE FIELD SURVEY. SINCE THIS HYDRIC HAMMOCK TYPE OCCURS ON NEARLY LEVEL, VERY POORLY DRAINED LAND IN THE

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MYCOGAIG*7	*Mycotrupes gaigei*	North Peninsular Mycotrupes Beetle	G2G3	S2S3	N	N	1960-04-20	1960-04-20: No description given (B73WOO01FLUS).	1960-04-20: Fifty one specimens were collected by R.E. Woodruff using a malt trap (B73WOO01FLUS).
MYCTAMER*159	*Mycteria americana*	Wood Stork	G4	S2	T	FT	1997-06-26	1997-06-26: Freshwater lake, surrounded by hydric flatwoods, xeric hammock, sandpine scrub, water level fluctuates dramatically with rain fall, or lack there of (U97DUB05FLUS).	1997-06-26: 2 adults seen foraging in shallow water near the shore of ~ 30 acre lake; 18 individuals seen previously at site (U97DUB05FLUS).
NECTTAVA*16_0	*Nectopsyche tavara*	Tavares White Miller Caddisfly	G3	S3	N	N	2005-04-01	This is a parent EO. Refer to individual sub-EOs for detailed information.	This is a parent EO for two sub-EOs. Refer to individual sub-EOs for detailed information.
NECTTAVA*16_7	*Nectopsyche tavara*	Tavares White Miller Caddisfly	G3	S3	N	N	2005-04-01	2005-04-01: No description given (U06RAS01FLUS).	2005-04-01: A total of 23 specimens were collected on 2005-04-01 using ultraviolet light (U06RAS01FLUS).
ORHIPALM*13	*Ophioglossum palmatum*	hand fern	G4	S2	N	E	1940-11-25	CHULUOTA	1940-11-25; LEAF FRAGMENTS
PECLPLUM*19	*Pecluma plumula*	plume polypody	G5	S2	N	E	2007-01-09	2007-01-09: with moss and resurrection fern in low area of hydric hammock on edge of St. John's River floodplain (F07FNA09FLUS).	2007-01-09: 12 plants seen on tall stump in hydric/mesic hammock (F07FNA09FLUS).
PTERECR*107	*Pteroglossaspis ecristata*	giant orchid	G2G3	S2	N	T	2007-04-10	2007-04-10: semi-improved pasture is surrounded by mesic and scrubby flatwoods (F07FNA09FLUS).	2007-04-10: plant seen in semi-improved pasture (F07FNA09FLUS).
PTERECR*122	*Pteroglossaspis ecristata*	giant orchid	G2G3	S2	N	T	2007-01-10	2007-01-10: Ruderal area with heavy cattle and agriculture disturbance (F07FNA09FLUS).	2007-01-10: 11-50 plants in flower/fruit over 10-100 sq meters (F07FNA09FLUS).
PUMACORY*13	*Puma concolor coryi*	Florida Panther	G5T1	S1	E	FE	2011-03-02	Pine plantation, hydric hammock, basin swamp, and pastures west of the upper St. Johns marshes (PNDHIP01FLUS).	2011-03-02: Dave Turner and Bryan Ames observed and photographed panther track on a sandy path along a new fence line (U11SHU01FLUS).
PYCNFLOR*23	*Pycnanthemum floridanum*	Florida mountain-mint	G3	S3	N	T	2007-01-10	2007-01-10: large area of pasture and young pine plantation interspersed with wetlands (F07FNA09FLUS).	2007-01-10: small clump of plants (11-50) in fruit on edge of small road between pasture and hammock edge of basin swamp (F07FNA09FLUS).
SELOMAND*19	*Selenodon mandibularis*	Large-Jawed Cebrionid Beetle	G2G4	S2S4	N	N	1963-05-20	1963-05-20: No description given (B99GAL01FLUS).	1963-05-20: This female specimen was collected in a ligustrum trap and deposited at FSCA (B99GAL01FLUS).

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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

Little-Big Econ State Forest

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
URSUFLOR*97	*Ursus americanus floridanus*	Florida Black Bear	G5T2	S2	N	N	2015-03-11	Largely private commercial timberland, nurseries, and small neighborhoods; public lands are dominated by pine plantation but also have flatwoods interspersed with dome swamps and patches of scrub(U05SIM01FLUS). 2015/03/11: Riparian habitat protection zone; floodplain swamp/stream is 400-to >1000-ft wide that connects Tomoka SP (east) to undeveloped lands contiguous to Tiger Bay SF (west). (UNDFNA02FLUS).	2002: Estimated population of 96-170 individuals (U05SIM01FLUS); This EO represents the Primary and Secondary Bear Ranges for the St. Johns population. Primary is the FWC-designated core area that represents breeding range and contains documented evidence of reproduction or female bears within available habitat, and Secondary is the FWC-designated area where bears occur within available habitat but outside primary bear range (evidence of bears without documented evidence of reproduction) (U12FWC02FLUS, U05SIM01FLUS). These data are based on decades of bear observations, roadkill distribution, nuisance bear locations, and bear research projects. For detailed location data contact the FWC. 2015/03/11: Tracks are in thick clayey mud inside a culvert that is persistent and not easily eroded or otherwise erased; hard to tell when the tracks were made, they could be weeks old (UNDFNA02FLUS).

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Aggregated Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Documented					
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Haliaeetus leucocephalus	Bald Eagle	G5	S3	N	N
Hydroptila berneri	Berner's Microcaddisfly	G4G5	S3	N	N
Pecluma plumula	plume polypody	G5	S2	N	E
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Pycnanthemum floridanum	Florida mountain-mint	G3	S3	N	T
Likely					
Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Drymarchon couperi	Eastern Indigo Snake	G3Q	S3	T	FT
Elliptio monroensis	St. Johns Elephantear	G2G3	S2S3	N	N
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork		S2	T	FT
Sandhill		G3	S2	N	N
Sandhill upland lake			S2	N	N
Scrub		G2	S2	N	N
Ursus americanus floridanus	Florida Black Bear	G5T2	S2	N	N
Potential					
Aphelocoma coerulescens	Florida Scrub-Jay	G2	S2	T	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Carex chapmannii	Chapman's sedge	G3	S3	N	T
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Coelorachis tuberculosa	Piedmont jointgrass	G3	S3	N	T
Coleataenia abscissa	cutthroatgrass		S3	N	E
Conradina grandiflora	large-flowered rosemary		S3	N	T
Corynorhinus rafinesquii	Rafinesque's Big-eared Bat	G3G4	S2	N	N
Cucurbita okeechobeensis	Okeechobee gourd	G1	S1	E	E
Deeringothamnus pulchellus	beautiful pawpaw		S1	E	E
Deeringothamnus rugelii	Rugel's pawpaw		S1	E	E
Dennstaedtia bipinnata	hay scented fern	G4	S1	N	E
Geolycosa xera	McCrone's Burrowing Wolf Spider	G2G3	S2S3	N	N
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake		S2	N	N
Illicium parviflorum	star anise		S2	N	E
Lechea cernua	nodding pinweed	G3	S3	N	T
Lithobates capito	Gopher Frog		S3	N	N
Matelea floridana	Florida spiny-pod	G2	S2	N	E
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3	S3	N	N
Mycotrupes gaigei	North Peninsular Mycotrupes Beetle	G2G3	S2S3	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Notophthalmus perstriatus	Striped Newt	G2G3	S2	C	N
Ophioglossum palmatum	hand fern	G4	S2	N	E
Peucaea aestivalis	Bachman's Sparrow	G3	S3	N	N
Picoides borealis	Red-cockaded Woodpecker		S2	E	FE
Podomys floridanus	Florida Mouse		S3	N	N
Salix floridana	Florida willow	G2	S2	N	E
Sciurus niger shermani	Sherman's Fox Squirrel	G5T3	S3	N	SSC

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Aggregated Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Selonodon mandibularis	Large-Jawed Cebrionid Beetle	G2G4	S2S4	N	N
Trichechus manatus	West Indian Manatee	G2	S2	T	FT
Warea amplexifolia	clasping warea	G1	S1	E	E
Warea carteri	Carter's warea	G3	S3	E	E

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

Elements and Element Occurrences

An **element** is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature.

An **element occurrence (EO)** is an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location.

Element Ranking and Legal Status

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
GX = Believed to be extinct throughout range.
GXC = Extirpated from the wild but still known from captivity or cultivation.
G#? = Tentative rank (e.g., G2?).
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
GNA = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
GNR = Element not yet ranked (temporary).
GNRTNR = Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI STATE ELEMENT RANK

S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.
SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).
SX = Believed to be extirpated throughout Florida.
SU = Unrankable; due to a lack of information no rank or range can be assigned.
SNA = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
SNR = Element not yet ranked (temporary).

FEDERAL LEGAL STATUS

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
E = Endangered: species in danger of extinction throughout all or a significant portion of its range.
E, T = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
E, PDL = Species currently listed endangered but has been proposed for delisting.
E, PT = Species currently listed endangered but has been proposed for listing as threatened.
E, XN = Species currently listed endangered but tracked population is a non-essential experimental population.
T = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
PE = Species proposed for listing as endangered
PS = Partial status: some but not all of the species' infraspecific taxa have federal
PT = Species proposed for listing as threatened
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
SC = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

C = Candidate for listing at the Federal level by the U. S. Fish and Wildlife Service
FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
FXN = Federal listed as an experimental population in Florida
FT(S/A) = Federal Threatened due to similarity of appearance
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)
N = Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://www.doacs.state.fl.us/pi/.

E = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
T = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

FNAI ranks of quality of the element occurrence in terms of its viability (EORANK). Viability is estimated using a combination of factors that contribute to continued survival of the element at the location. Among these are the size of the EO, general condition of the EO at the site, and the conditions of the landscape surrounding the EO (e.g. an immediate threat to an EO by local development pressure could lower an EO rank).

A = Excellent estimated viability
A? = Possibly excellent estimated viability
AB = Excellent or good estimated viability
AC = Excellent, good, or fair estimated viability
B = Good estimated viability
B? = Possibly good estimated viability
BC = Good or fair estimated viability
BD = Good, fair, or poor estimated viability
C = Fair estimated viability
C? = Possibly fair estimated viability
CD = Fair or poor estimated viability
D = Poor estimated viability
D? = Possibly poor estimated viability
E = Verified extant (viability not assessed)
F = Failed to find
H = Historical
NR = Not ranked, a placeholder when an EO is not (yet) ranked.
U = Unrankable
X = Extirpated

*For additional detail on the above ranks see: http://www.natureserve.org/explorer/eorankguide.htm

FNAI also uses the following EO ranks:

H? = Possibly historical
F? = Possibly failed to find
X? = Possibly extirpated

The following offers further explanation of the H and X ranks as they are used by FNAI:

The rank of H is used when there is a lack of recent field information verifying the continued existence of an EO, such as (a) when an EO is based only on historical collections data; or (b) when an EO was ranked A, B, C, D, or E at one time and is later, without field survey work, considered to be possibly extirpated due to general habitat loss or degradation of the environment in the area. This definition of the H rank is dependent on an interpretation of what constitutes "recent" field information. Generally, if there is no known survey of an EO within the last 20 to 40 years, it should be assigned an H rank. While these time frames represent suggested maximum limits, the actual time period for historical EOs may vary according to the biology of the element and the specific landscape context of each occurrence (including anthropogenic alteration of the environment). Thus, an H rank may be assigned to an EO before the maximum time frames have lapsed. Occurrences that have not been surveyed for periods exceeding these time frames should not be ranked A, B, C, or D. The higher maximum limit for plants and communities (i.e., ranging from 20 to 40 years) is based upon the assumption that occurrences of these elements generally have the potential to persist at a given location for longer periods of time. This greater potential is a reflection of plant biology and community dynamics. However, landscape factors must also be considered. Thus, areas with more anthropogenic impacts on the environment (e.g., development) will be at the lower end of the range, and less-impacted areas will be at the higher end.

The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element at that location).

Exhibit N

Florida Fish and Wildlife Conservation Commission Response

Florida Fish and Wildlife Conservation Commission

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MyFWC.com

June 20, 2019

Patti Anderson
Land Planning Coordinator
Florida Forest Service
3125 Conner Boulevard
Tallahassee, FL
32399

Dear Patti Anderson:

This letter is in response to your request for listed species occurrence records and critical habitats for your project Little-Big Econ State Forest. Records from The Florida Fish and Wildlife Conservation Commission's database indicate that listed species occurrence data and critical habitats are located within the project area. Strategic Habitat Conservation Areas (SHCAs) were found along the perimeters of the property. Please refer to the 8.5x11 maps illustrating species occurrences, species richness, priority wetlands for listed species, priority SHCAs, and landcover for more information.

This letter and attachments should not be considered as a review or an assessment of the impact upon threatened or endangered species of the project site. It provides FWC's most current data regarding the location of listed species and their associated habitats.

Our SHCA recommendations are intended to be used as a guide. Land development and ownership in Florida is ever-changing and priority areas identified as SHCA might already have been significantly altered due to development or acquired into public ownership. Onsite surveys, literature reviews, and coordination with FWC biologists remain essential steps in documenting the presence or absence of rare and imperiled species and habitats within the project area.

Our fish and wildlife location data represents only those occurrences recorded by FWC staff and other affiliated researchers. It is important to understand that our database does not necessarily contain records of all listed species that may occur in a given area. Also, data on certain species, such as gopher tortoises, are not entered into our database on a site-specific basis. **Therefore, one should not assume that an absence of occurrences in our database indicates that species of significance do not occur in the area.**

The Florida Natural Areas Inventory (FNAI) maintains a separate database of listed plant and wildlife species, please contact FNAI directly for specific information on the location of element occurrences within the project area.

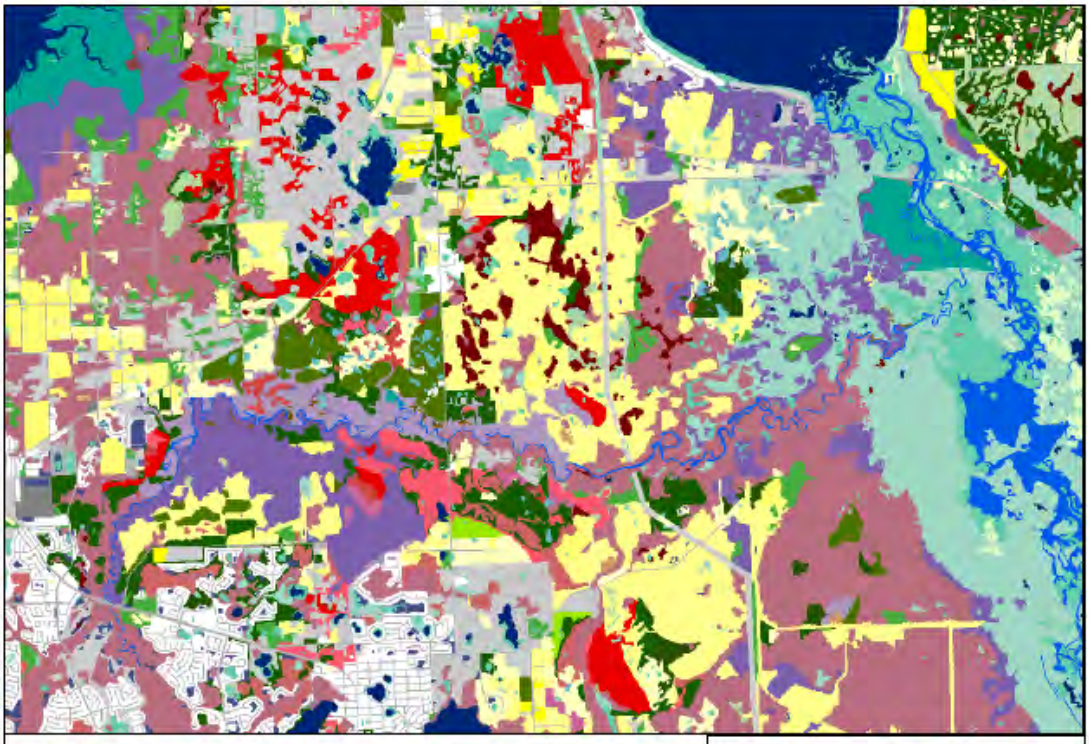
Because FNAI is funded to provide information to public agencies only, you may be required to pay a fee for this information. County-wide listed species information can be located at their website (http://www.fnai.org).

Please credit the Florida Fish and Wildlife Conservation Commission in any publication or presentation of these data. If you have any questions or further requests, please contact me at (850) 488-0588 or gisrequests@myfwc.com.

Sincerely,

Eva Salinas
Research Assistant

ES
2019_6326
Enclosures



Cooperative Land Cover -- State Classes

Little-Big Econ

- Hardwod Forested Uplands
- Mesic Hammock
- Xeric Hammock
- Scrub
- Sandhill
- Mesic Flatwoods
- Scrubby Flatwoods
- Mixed Hardwood-Coniferous
- Shrub and Brushland
- Cultural - Terrestrial
- Low Intensity Urban
- High Intensity Urban
- Rural
- Cropland/Pasture
- Improved Pasture
- Orchards/Groves
- Tree Plantations
- Vineyard and Nurseries
- Other Agriculture
- Transportation
- Communication
- Utilities
- Extractive
- Freshwater Non-Forested Wetlands
- Prairies and Bogs
- Marshes
- Isolated Freshwater Marsh
- Floodplain Marsh
- Freshwater Forested Wetlands
- Cypress
- Dome Swamp
- Basin Swamp
- Floodplain Swamp
- Wet Flatwoods
- Atlantic White Cedar
- Baygall
- Hydric Hammock
- Non-vegetated Wetland
- Lacustrine
- Natural Lakes and Ponds
- Cultural - Lacustrine
- Riverine
- Natural Rivers and Streams

N

Miles

0 0.75 1.5 2.25 3

Florida Fish and Wildlife Conservation Commission

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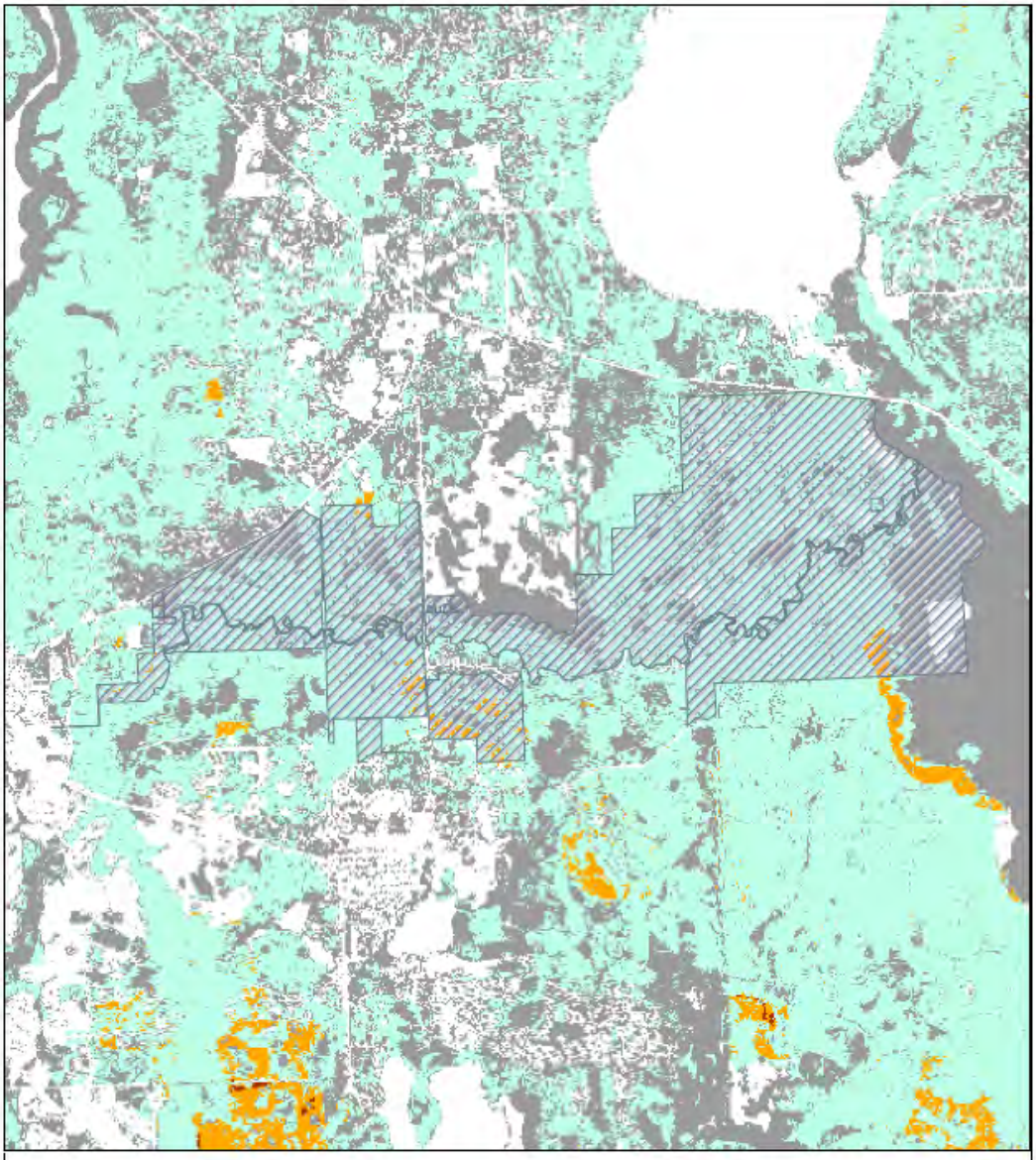

Little-Big Econ

Species Richness

1 - 3
4 - 6
7 - 9
10 - 13

Miles

0 0.75 1.5 2.25 3

N

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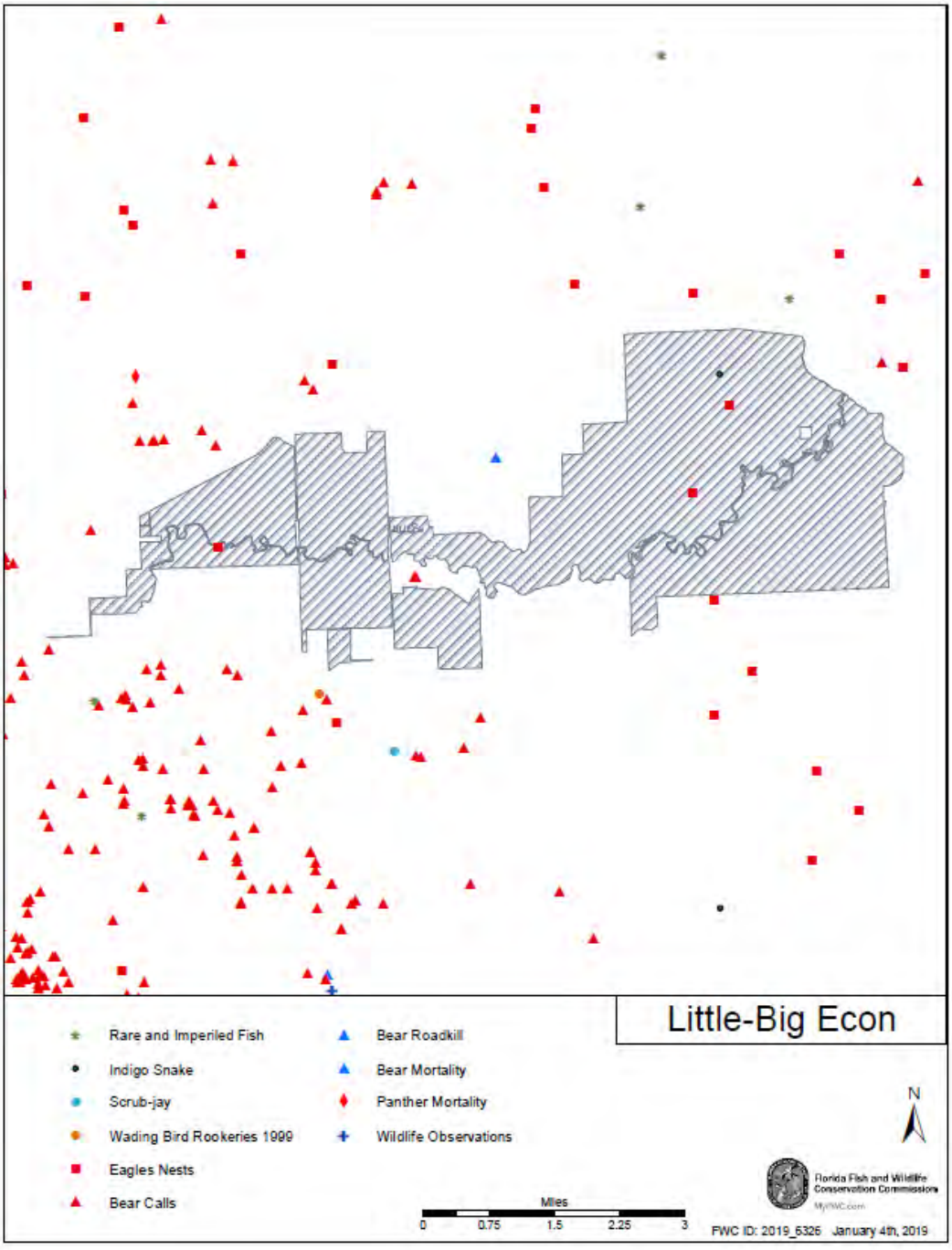
Little-Big Econ
Rare and Imperiled Fish
Indigo Snake
Scrub-jay
Wading Bird Rookeries 1999
Eagles Nests
Bear Calls
Bear Roadkill
Bear Mortality
Panther Mortality
Wildlife Observations
N
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0
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3
Florida Fish and Wildlife Conservation Commission
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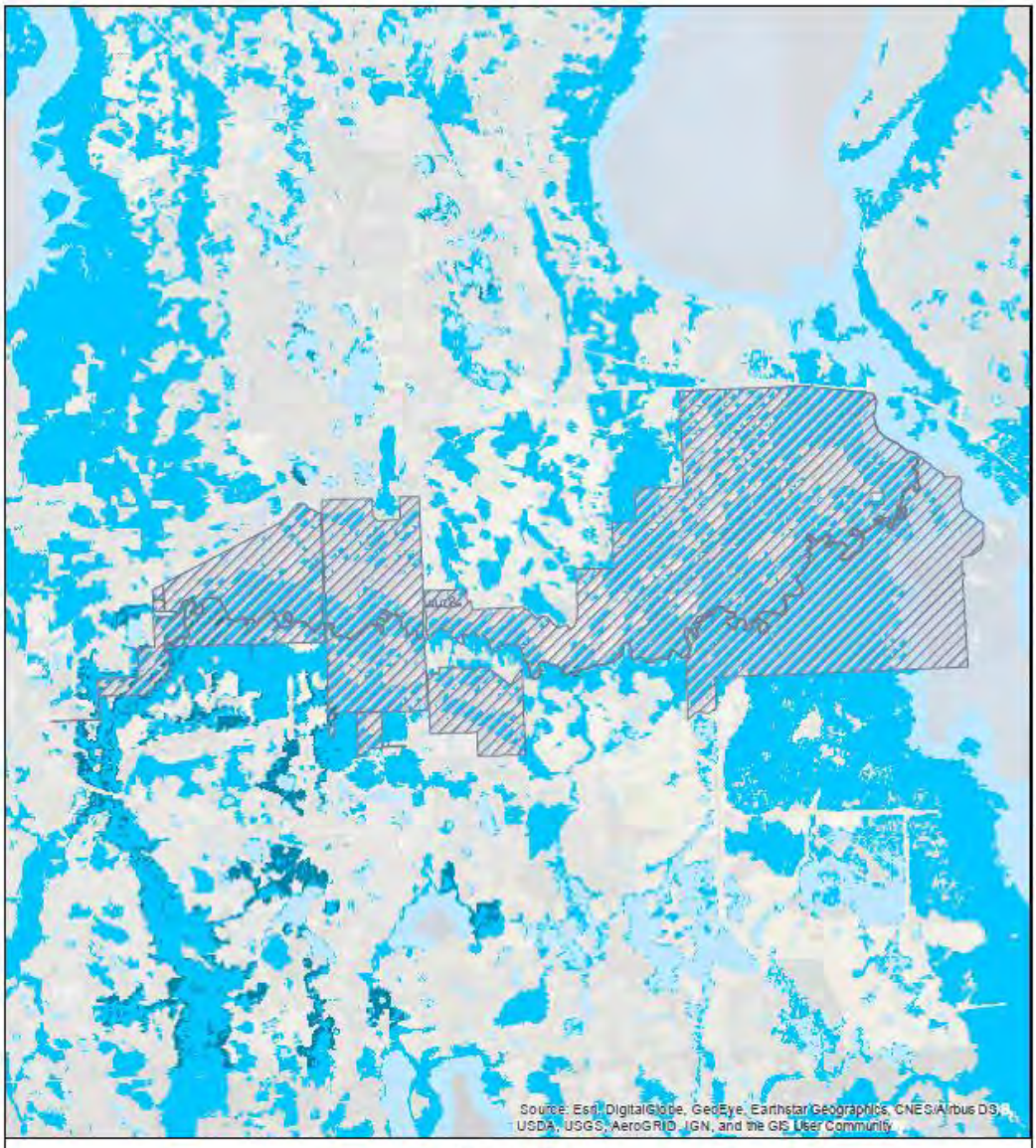

Little-Big Econ

Priority Wetlands

- 1-3 Species, Wetlands habitat
- 4-6 Species, Wetlands habitat
- 7-9 Species, Wetlands habitat
- 10-11 Species, Wetlands habitat

N

Miles

0 0.75 1.5 2.25 3

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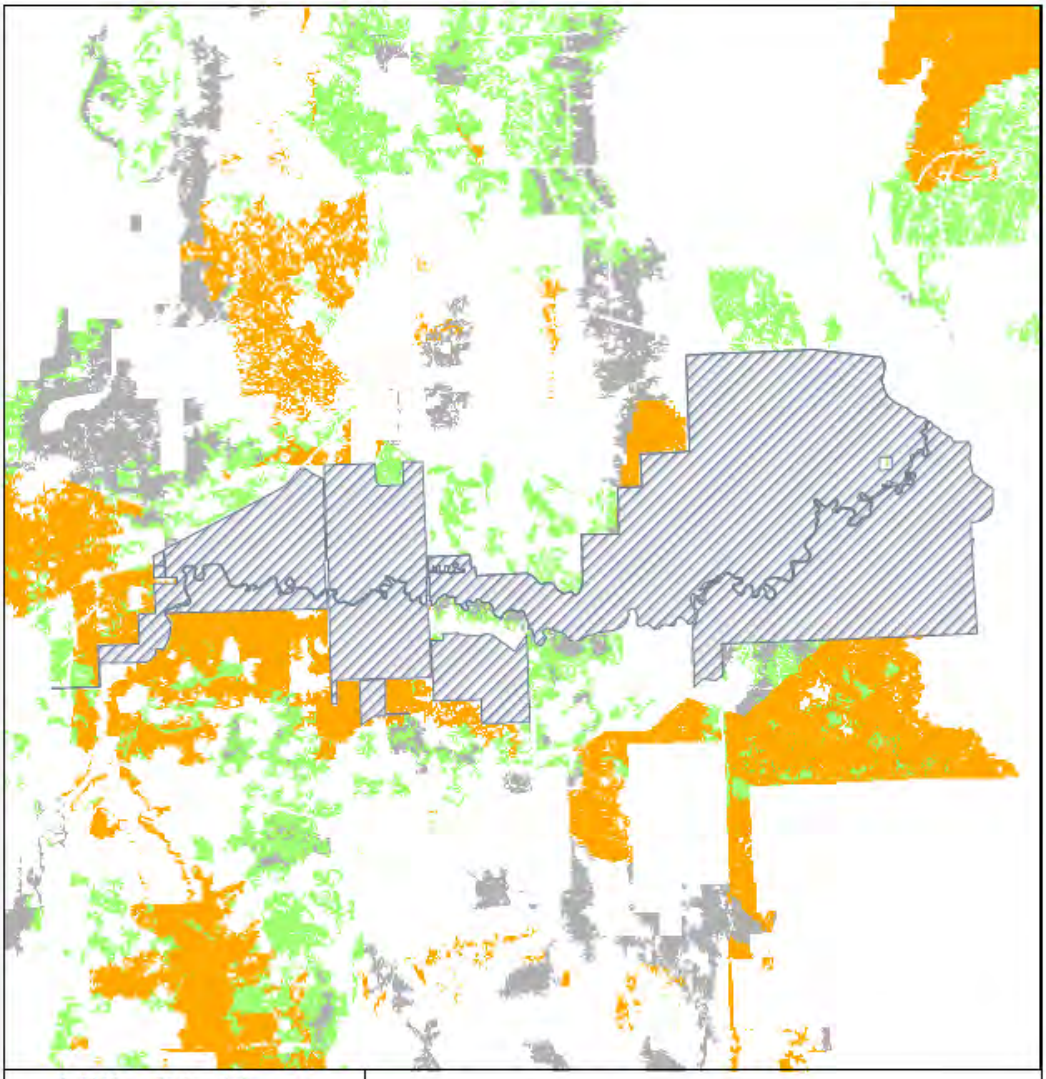
FWC ID: 2019_6326 January 4th, 2019



Little-Big Econ

Prioritized SHCA's

Priority 1 Priority 2 Priority 3 Priority 4 Priority 5

The prioritized SHCA map identifies 5 classes of SHCA based upon Heritage ranking criteria developed by The Nature Conservancy, the Natural Heritage Program Network, and the Florida Natural Areas Inventory. There are 2 possible ranks used to prioritize a species' SHCA: 1) the global rank based on a species worldwide status, and 2) the state rank based upon the species status in Florida. The state and global ranks are based upon many factors such as known occurrence locations, estimated abundance, range, amount of habitat currently protected, perceived levels of threats towards the species, and ecological fragility.

Miles

0 0.75 1.5 2.25 3

N

Florida Fish and Wildlife Conservation Commission

MyFWC.com

FWC ID: 2019_6326 January 4th, 2019

Exhibit O

Fire History

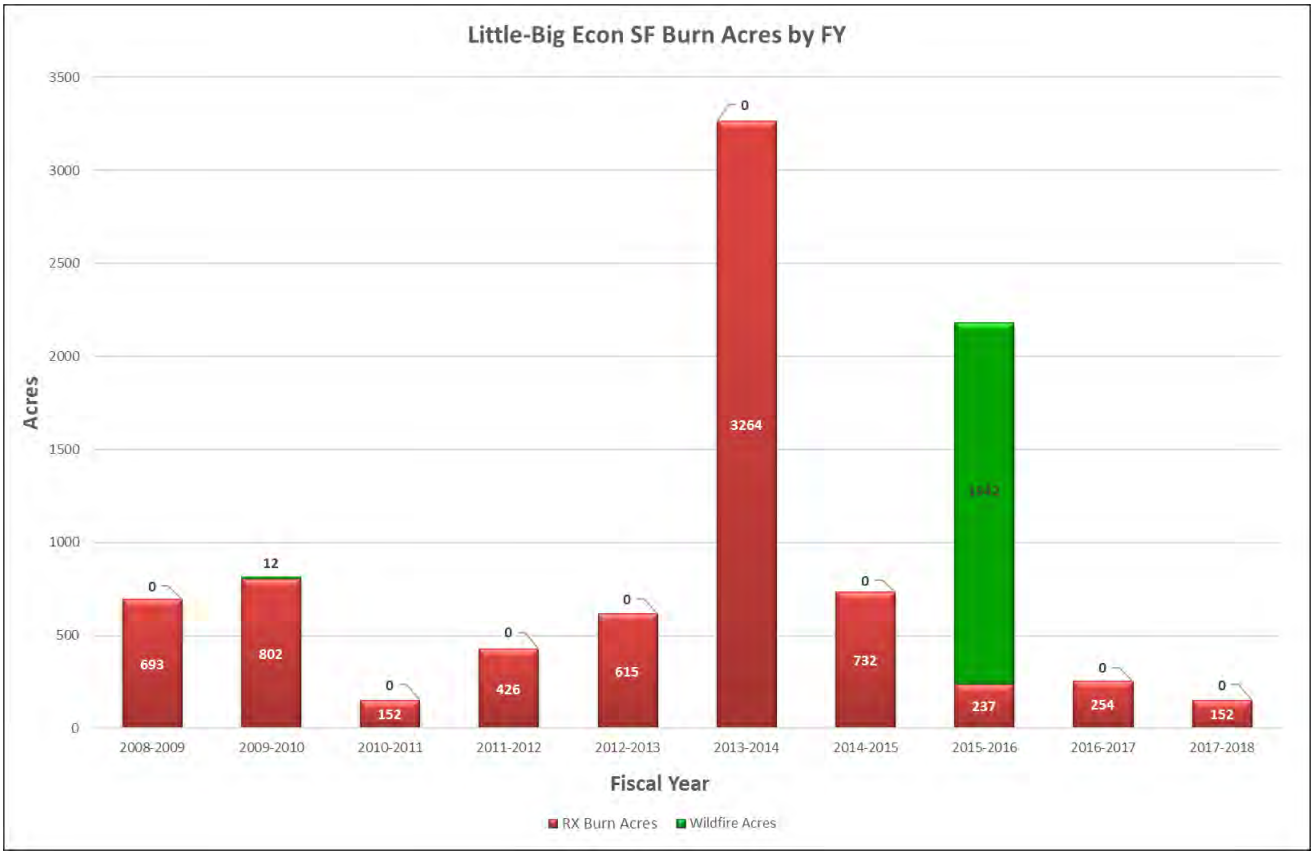

Little-Big Econ SF Burn Acres by FY
3500
3000
2500
2000
1500
1000
500
0
Acres
0
693
12
802
0
152
0
426
0
615
0
3264
0
732
1942
237
0
254
0
152
2008-2009
2009-2010
2010-2011
2011-2012
2012-2013
2013-2014
2014-2015
2015-2016
2016-2017
2017-2018
Fiscal Year
RX Burn Acres
Wildfire Acres

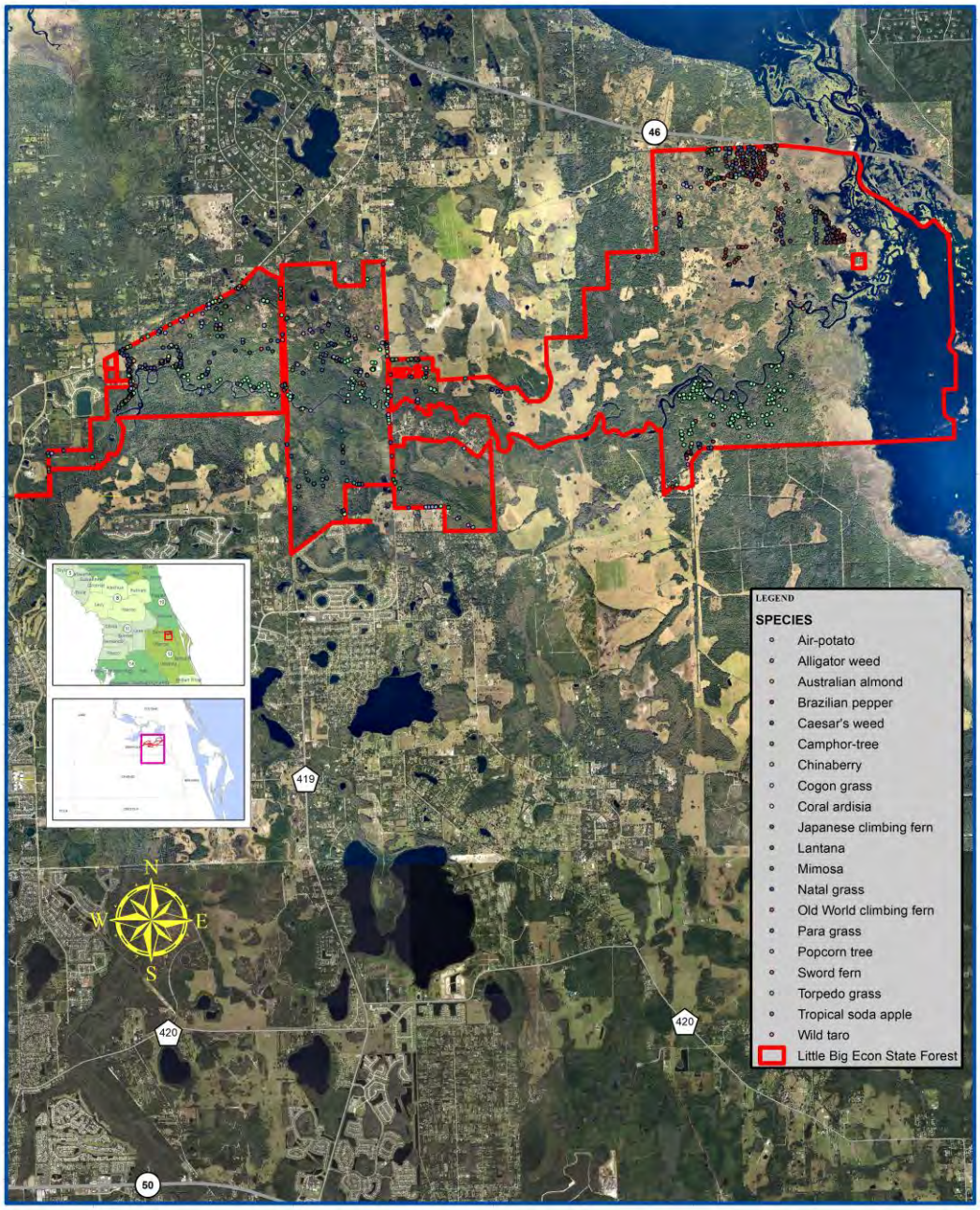
Exhibit P

Non-Native Invasive Species Map

Florida Forest Service

Little Big Econ State Forest

Non-Native Invasive Species Map



Map Month/Year: May 2020

Exhibit Q

Current Natural Communities and Cover Type Map

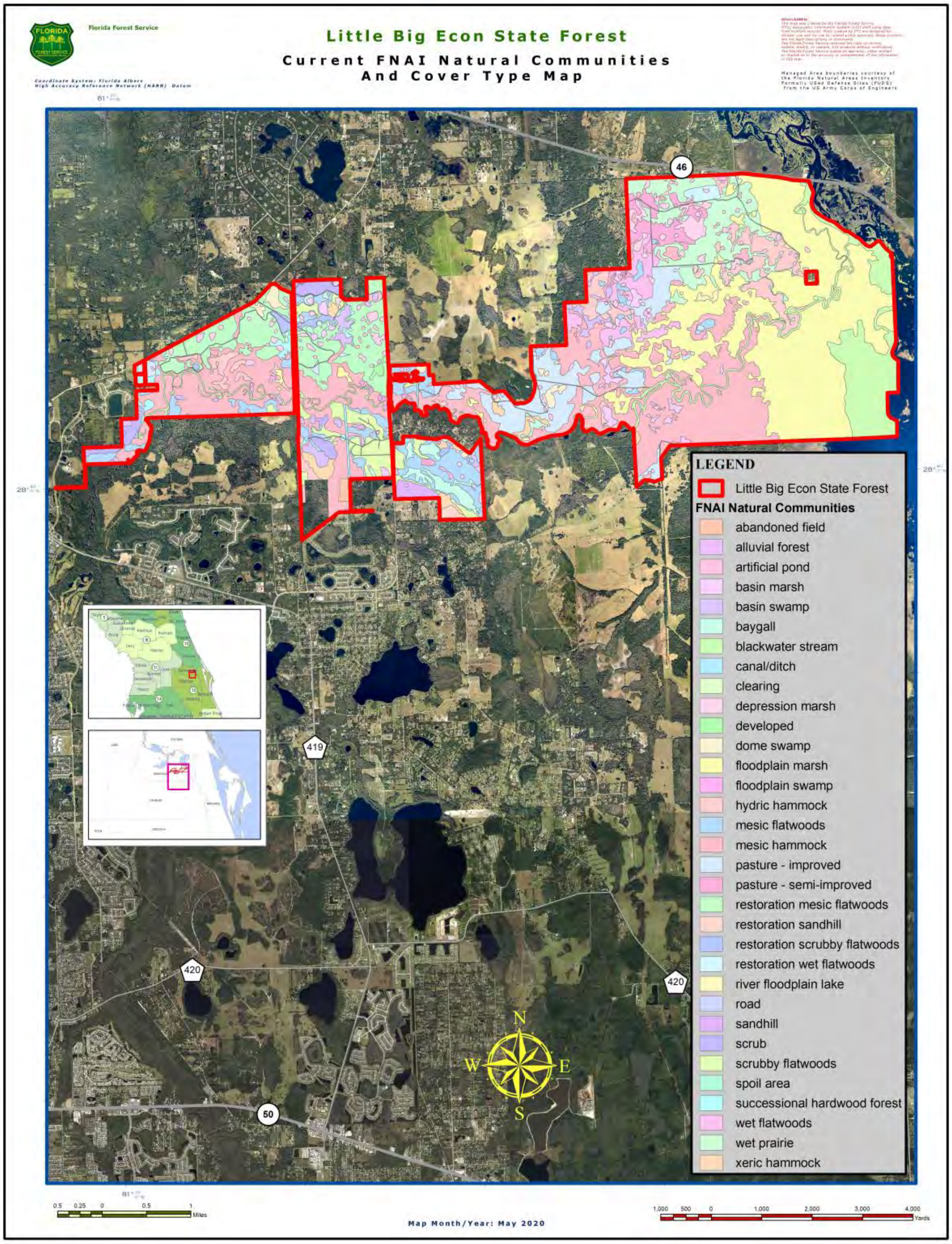

Florida Forest Service
Little Big Econ State Forest
Current FNAI Natural Communities
And Cover Type Map
Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum
Managed Area boundaries courtesy of
the Florida Natural Areas Inventory
Formally USed Defense Sites (FUDS)
from the US Army Corps of Engineers
46
419
420
420
50
LEGEND
Little Big Econ State Forest
FNAI Natural Communities
abandoned field
alluvial forest
artificial pond
basin marsh
basin swamp
baygall
blackwater stream
canal/ditch
clearing
depression marsh
developed
dome swamp
floodplain marsh
floodplain swamp
hydric hammock
mesic flatwoods
mesic hammock
pasture - improved
pasture - semi-improved
restoration mesic flatwoods
restoration sandhill
restoration scrubby flatwoods
restoration wet flatwoods
river floodplain lake
road
sandhill
scrub
scrubby flatwoods
spoil area
successional hardwood forest
wet flatwoods
wet prairie
xeric hammock
N
W
E
S
0.5 0.25 0 0.5 1
Miles
1,000 500 0 1,000 2,000 3,000 4,000
Yards
Map Month/Year: May 2020

Exhibit R

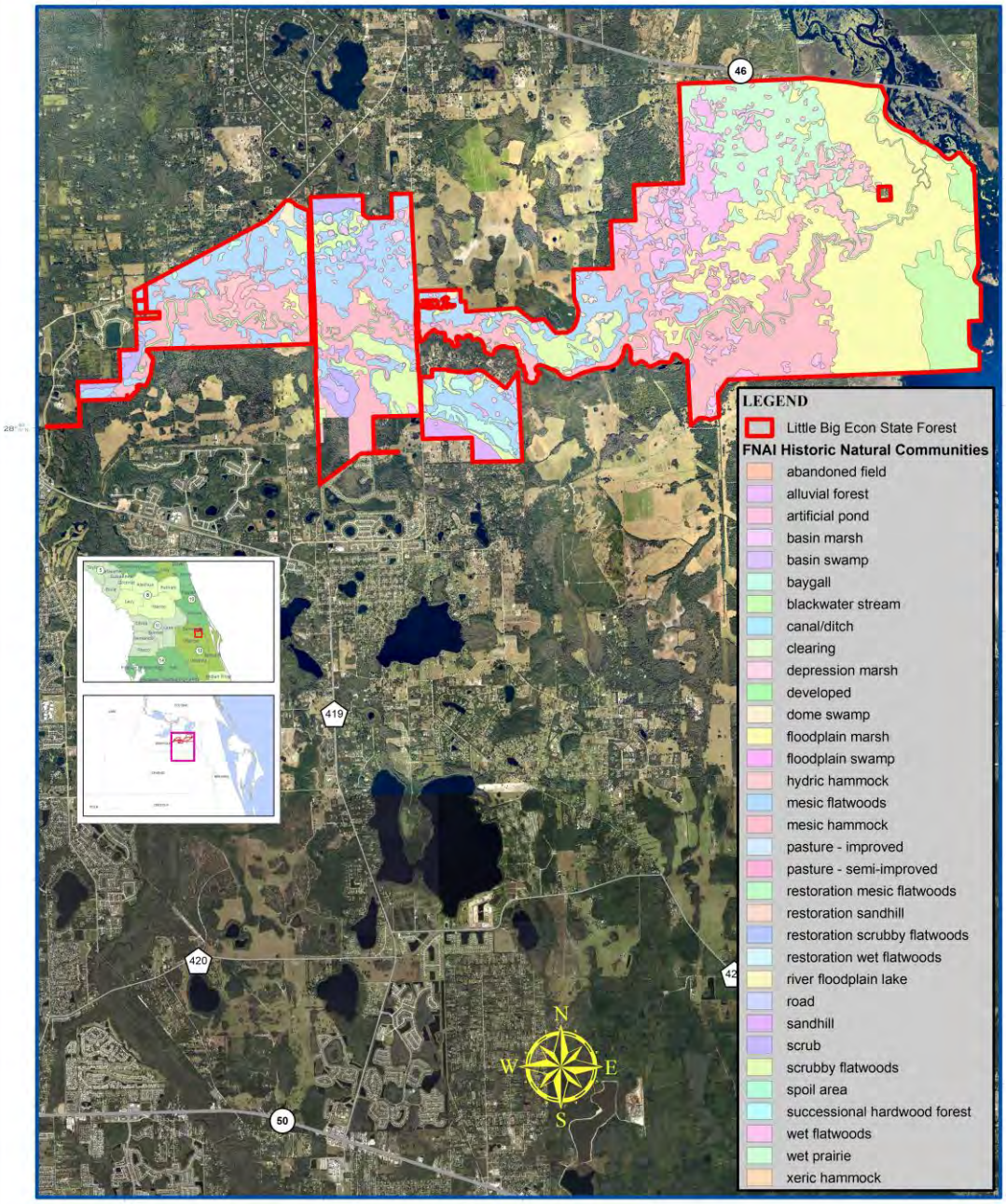
Historic Natural Communities Map

Florida Forest Service

Little Big Econ State Forest

Historic FNAI Natural Communities And Cover Type Map

Coordinate System: Florida Albers
High Accuracy Reference Network (HARN) Datum



LEGEND

- Little Big Econ State Forest

FNAI Historic Natural Communities

- abandoned field
- alluvial forest
- artificial pond
- basin marsh
- basin swamp
- baygall
- blackwater stream
- canal/ditch
- clearing
- depression marsh
- developed
- dome swamp
- floodplain marsh
- floodplain swamp
- hydric hammock
- mesic flatwoods
- mesic hammock
- pasture - improved
- pasture - semi-improved
- restoration mesic flatwoods
- restoration sandhill
- restoration scrubby flatwoods
- restoration wet flatwoods
- river floodplain lake
- road
- sandhill
- scrub
- scrubby flatwoods
- spoil area
- successional hardwood forest
- wet flatwoods
- wet prairie
- xeric hammock

0.5 0.25 0 0.5 1 Miles

1,000 500 0 1,000 2,000 3,000 4,000 Yards

Map Month/Year: May 2020

Exhibit S

Management Prospectus

Wekiva-Ocala Greenway

Lake, Orange, Seminole and Volusia Counties **Critical Natural Lands**

Purpose for State Acquisition

The springs, rivers, lakes, swamps, and uplands stretching north from Orlando to the Ocala National Forest are an important refuge for the Florida black bear, as well as other wildlife such as the bald eagle, swallow-tailed kite, Florida scrub jay, and wading birds. The Wekiva-Ocala Greenway will protect these animals and the Wekiva and St. Johns River basins by protecting natural corridors connecting Wekiwa Springs State Park, Rock Springs Run State Reserve, the Lower Wekiva River State Reserve, and Hontoon Island State Park with the Ocala National Forest. It will also provide the people of the booming Orlando area with a large, nearby natural area in which to enjoy camping, fishing, swimming, hiking, canoeing, and other recreational pursuits. The Florida National Scenic Trail, a cross-Florida hiking and non-motorized trail, is also planned to cross this project. The trail is a congressionally designated national scenic trail.

Managers

Division of Recreation and Parks (DRP), Florida Department of Environmental Protection (BMK Ranch, Seminole Springs, St. Johns River and portions of the Wekiva-Ocala Connector); Florida Forest Service/FFS, Florida Department of Agriculture and Consumer Services (Seminole Springs and portions of the Wekiva-Ocala Connector).

Wekiva-Ocala Greenway FNAI Elements	
Florida Scrub-jay	G2/S2
Florida Black Bear	G5T2/S2
Swallow-tailed Kite	G5/S2
Okeechobee Gourd	G1/S1
Eastern Indigo Snake	G3/S3
Gopher Tortoise	G3/S3
Bald Eagle	G5/S3
Florida Hasteola	G1/S1
Seminole Spring Siltsnail	G1/S1
Florida Willow	G2/S2
Sand Skink	G2/S2
Star Anise	G2/S2
29 rare species are associated with the project	

General Description

This project provides an important link between Ocala National Forest and the extensive state holdings along the Wekiva River. It is habitat for many rare animal species including the Florida black bear, the Florida sandhill crane, bald eagle, Eastern indigo snake, Florida scrub jay, Sherman's fox squirrel, Florida scrub lizard and gopher tortoise. It incorporates most of the forested wetlands along the St. Johns and Wekiva Rivers between Orlando and the Ocala National Forest. The St. Johns River site consists of three large bottomlands and adjacent uplands between three existing state ownerships. The Seminole Springs/Woods site is reported to have 50-75 springs within its boundary. The Wekiva-Ocala Connector site provides a wildlife movement corridor between the Ocala National Forest and the other portions of the project along the Wekiva River.

Public Use

The project sites are designated as state reserves or preserves and state forests, offering opportunities for canoeing, hiking, fishing and camping.

Acquisition Planning

On November 18, 1994, the Land Acquisition Advisory Council (LAAC) approved combining the Seminole Springs/Woods, Wekiva-Ocala Connector, St. Johns River, and BMK Ranch projects and renaming the project Wekiva-Ocala Greenway. Based on GIS, the approximate total project acreage was 67,585 acres. Seminole Springs/Woods: Seminole Springs—core tracts include Strawn Tract, M.S. Carter (acquired), and Brumlick parcels (acquired through eminent domain).

Placed on List	**1995**
Project Area (GIS Acres)	**81,128**
Acres Acquired (GIS)	**57,701***
at a Cost of	**$183,142,325***
Acres Remaining (GIS)	**23,427**

with Estimated (Tax Assessed) Value of $31,792,123

***Includes acreage and expenditures by the St. Johns River Water Management District (SJRWMD) and the Orlando-Orange County Transportation Authority.**

The Strawn tract is the largest and most significant ownership remaining to be acquired.

Wekiva-Ocala Connector: Core Tracts West—Maxwell and Holman (acquired), Shockley (acquired), Harper (acquired by SJRWMD 2,228 acres/2.1 million), Alger Enterprises (acquired), Fisch (acquired by SJRWMD), Southland Gardens (contingent upon the acquisition of Harper and Fisch), Clemmons (acquired), Blaskovic (acquired), Kittridge (acquired). Core Tracts East—Stetson University (acquired), Stein, Lenholt Farms, Francolino (acquired), Jung (acquired), and Hollywood Pines, Inc.

St. Johns River: New Garden Coal, the largest ownership, was acquired in 2005.

The BMK Ranch parcel has been acquired.

On October 30, 1995, the LAAC approved a fee-simple, ± 5,616-acre addition to the project boundary. It was sponsored by Eastern Marketing Inc, representative for several owners and consisted of multiple landowners and parcels. All tracts were designated as essential. In addition, the project phasing was removed.

On October 30, 1996, the LAAC approved a fee-simple, 425-acre addition to the project boundary. It was sponsored by the Division of State Lands, consisted of seven landowners (Jung, Hollywood Pines, Miranda Trust, Overstreet, New Garden Coal, Seminole Springs, and Fisch) and 12 parcels. Other acquisitions in the Wekiva Basin are Wekiva Buffers, Wekiva Springs State Park, Rock Springs Run, Lower Wekiva River State Park, Hontoon Island State Recreation Area, and Blue Spring State Park. These acquisitions total 18,400 acres.

On July 18, 1997, the LAAC approved a fee-simple, 128-acre addition to the project boundary. It was sponsored by the landowner, Conway Kittredge, who already has 20 acres in the current project boundary. Any portion of the addition that is not needed for resource protection or management will be surplused.

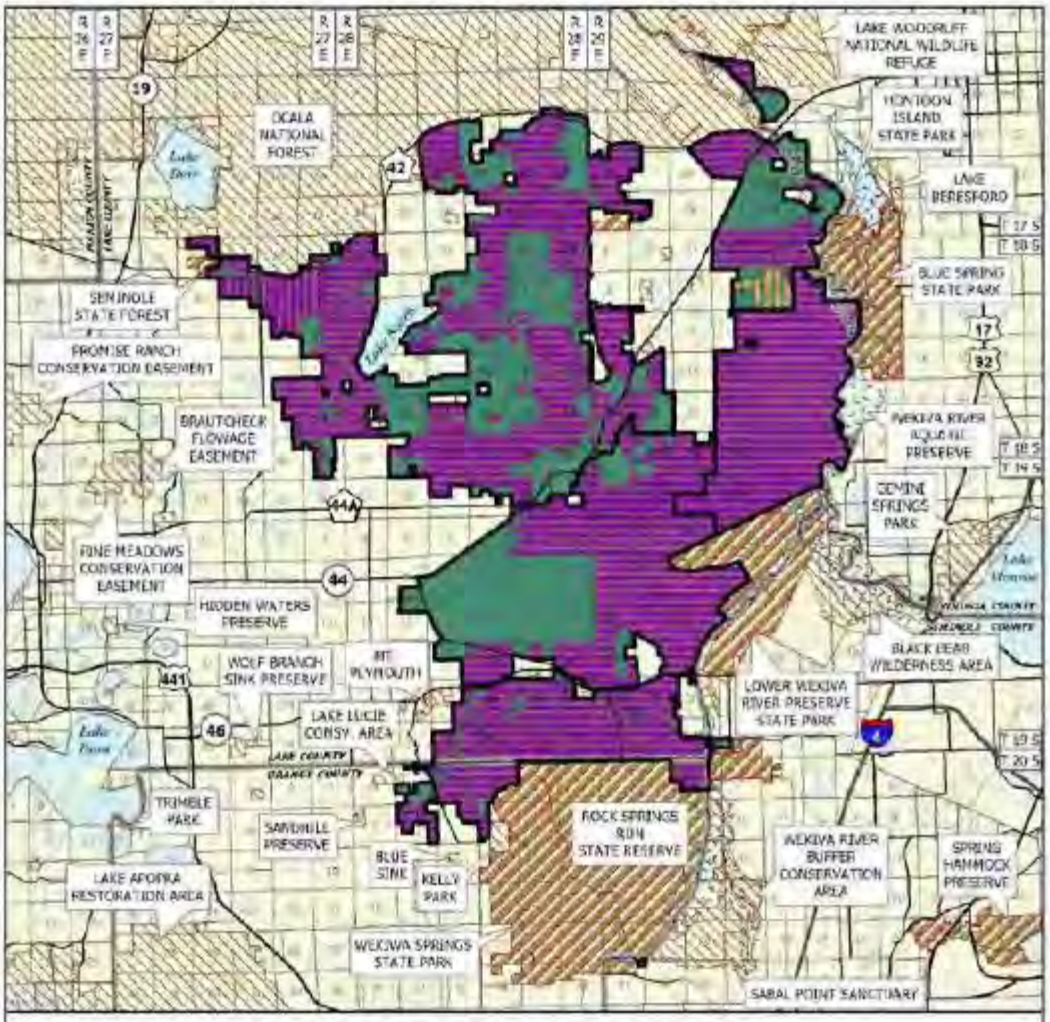
On December 3, 1998, the Land Acquisition and Management Advisory Council (LAMAC) approved a fee-simple, 1,507-acre addition to the project boundary. It was sponsored by the Division of Recreation and Parks, and consisted of 20 parcels . At the time of the boundary addition, the parcels were owned by Neighborhood Lakes LTD and Lake Lerla LTD Partnership, and were designated as essential parcels.

They were subsequently purchased by BARN, LLC. These parcels were acquired in a transaction approved by the Board of Trustees on 12/19/2006. The total acquisition area contained 1,584 acres.

On December 6, 2001, the Acquisition and Restoration Council (ARC) approved a fee-simple, 5,455-acre addition to the project boundary. It was sponsored by the Wekiva Basin Working Group, consisted of 14 sites, multiple landowners and parcels, and 13 tracts.

On June 4, 2004, the ARC approved a less-than-fee, 572-acre addition to the project boundary. The property was owned by Robert Maxwell, and consisted of two parcels. The boundary amendment was sponsored by the owner's representative, Roland Pacetti Realty. On August 15, 2006, the Board of Trustees approved the purchase of a conservation easement covering these two parcels.

On December 8, 2006 the ARC approved a fee-simple 77-acre addition in Lake County (a.k.a. the Ellis and Windsor tracts) to the project boundary. It was sponsored by The Nature Conservancy (TNC), consisted of two parcels with two owners (Natalie Windsor and Jerry Ellis). The Division of Recreation and Parks (DRP) will manage the 17-acre Windsor tract as part of the Lower Wekiva River Preserve State park. The 60-acre Ellis tract will be managed by the FFS as part of the Seminole State Forest.



WEKIVA-OCALA GREENWAY

LAKE, ORANGE, SEMINOLE AND VOLUSIA COUNTIES

- Florida Forever BOT Project Boundary
- Acquired for Conservation (Fee Simple)
- Acquired for Conservation (Less-Than-Fee)
- TNC Owned Lands Within Project
- Essential Parcel(s) Remaining
- State Owned Lands
- Other Conservation Lands
- State Aquatic Preserves

0 2 4 8 Miles

DECEMBER 2016

On December 14, 2007, ARC approved a fee-simple 675-acre addition, known as the Pine Plantation Addition, to the project boundary. It was sponsored by Henry Dean Esq., and consisted of five parcels and four landowners. The Division of Recreation and Parks agreed to manage the parcels. The parcels have been designated essential. To date, 421 acres of this addition have been purchased.

On September 30, 2008, the Board of Trustees approved the purchase of 385 acres from Project Orlando LLC; Pinestraw Partners LLC; and Herscho Properties, Inc. This acquisition was for a portion of the Pine Plantation property. On November 20, 2008, the Board of Trustees approved a 36-acre purchase from Project Orlando LLC which was part of the boundary amendment that included the Pine Plantation property. On October 3, 2008, from the Division of State Lands (DSL) Florida Forever funds 345-acre parcel was purchased from Palmer ownership in Pine Plantation for $24,930,304 (40 acres in the SE corner of the Palmer parcel was acquired by the Orlando-Orange County Expressway Authority for a future conveyance to Orange County for a park. In November 2008, DSL Florida Forever funds were used to buy 35.7 acres of the Project Orlando, LLC ownership. DRP will manage this site.

On March 27, 2009, 307.17 acres were purchased from the OOCEA for BARN, LLP parcel (payback of $10M paid by the Authority—Neighborhood Lakes, Phase II).

On December 9, 2011 ARC placed this project in the category of Critical Natural Lands.

Coordination

TNC, Florida Communities Trust (FCT), Lake County Water Authority, SJRWMD, DOT, Orlando-Orange County Expressway Authority are acquisition partners in this project.

Management Policy Statement

The primary goals of management of the Wekiva-Ocala Greenway project are to conserve and protect environmentally unique and irreplaceable lands that contain native, relatively unaltered flora and fauna representing a natural area unique to, or scarce within, a region of this state or a larger geographic area; to conserve and protect significant habitat for native species or endangered and threatened species; to conserve, protect, manage, or restore important ecosystems, landscapes, and forests, in order to enhance or protect significant surface water, coastal, recreational, timber, fish or wildlife resources which local or state regulatory programs cannot adequately protect; to provide areas, including recreational trails, for natural-resource-based recreation; and to preserve significant archaeological or historical sites.

Management Prospectus

Qualifications for state designation The large size, variety of forest resources, and diversity of the former Seminole Springs project and the western Wekiva-Ocala Connector make them highly desirable for management as a state forest. The quality of resources on the remainder of the project make them suitable for state preserves.

Manager The FFS proposes to manage the Seminole Springs and western connector portions of the project. The remainder will be managed by the DRP. The DRP may elect to assume management of the western portion of the Strawn property at a later date if it is purchased.

Conditions affecting intensity of management On the portion to be managed by the FFS, there are no known disturbances that will require extraordinary attention, so the level of management intensity is expected to be typical for a state forest. The portion to be managed by the DRP, the BMK Ranch (acquired), is a high-need management area, while the Eastern Connector of the former Wekiva-Ocala Connector project and the former St. Johns River project are low-need management areas. The BMK Ranch is expected to have a higher level of recreational use and development compatible with resource management than the other properties.

Timetable for implementing management and provisions for security and protection of infrastructure About 8,000 acres have been purchased by the State of Florida and the SJRWMD and have been assigned to the FFS for management as the Seminole State Forest (SSF). The FFS is currently providing for public access for low-intensity, non-facilities-related outdoor recreation. Initial activities include securing the site, providing public and fire management access, inventorying resources, and removing trash. The project's natural resources and threatened and endangered plants and animals will be inventoried to provide the basis for a management plan. Long-range plans for this property will generally be directed toward restoring disturbed areas to their original conditions, as far as possible, as well as protecting threatened and endangered species. An all-season burning program will use, wherever possible, existing roads, black lines foam lines and natural breaks to contain fires. Timber management will mostly involve improvement thinning

and regeneration harvests. Plantations will be thinned and, where appropriate, reforested with species found in natural ecosystems. Stands will not have a targeted rotation age. Infrastructure will primarily be located in disturbed areas and will be the minimum required for management and public access. The DRP will promote recreation and environmental education. For the DRP, within the first year after acquisition, management activities will concentrate on site security, natural and cultural resource protection, and the development of a plan for long-term public use and resource management.

Revenue-generating potential The FFS will sell timber as needed to improve or maintain desirable ecosystem conditions. These sales will provide a variable source of revenue, but the revenue-generating potential for this project is expected to be low. The DRP expects no significant revenue to be generated initially. After acquisition, it will probably be several years before any significant public facilities are developed on the BMK Ranch properties, and public facilities will probably not be a major emphasis on the eastern connector properties. The amount of any future revenue will depend on the nature and extent of public use and facilities.

Cooperators in management activities The FFS will cooperate with and seek the assistance of other state agencies, local government entities and interested parties as appropriate. The DRP recommends no local governments or others for management of its project area.

Updated January 31, 2017

Management Cost Summary/DRP

Category	1996/97	1997/98	1998/99
Source of Funds	SPTF/LATF/ CARL	SPTF/CARL	SPTF/CARL
Salary	$0	$0	$0
OPS	$425	$425	$425
Expense	$5,739	$5,739	$5,739
OCO	$0	$0	$0
FCO	$38,798	$0	$0
TOTAL	$44,962	$6,164	$6,164

Management Cost Summary/FFS (Seminole State Forest)

Category	1995/96	1996/97	1997/98
Source of Funds	CARL	CARL	CARL
Salary	$35,440	$64,440	$105,000
OPS	$0	$4,500	$5,000
Expense	$22,600	$40,225	$51,000
OCO	$0	$29,270	$48,000
FCO	$0	$0	$0
TOTAL	$58,040	$138,435	$209,000

Management Cost Summary/FFS (Wekiva-Ocala Connector: West Corridor)

Category	Startup	Recurring
Source of Funds	CARL	CARL
Salary	$28,140	$28,140
OPS	$0	$0
Expense	$20,000	$15,000
OCO	$90,400	$4,500
FCO	$0	$0
TOTAL	$138.540	$47.640

Exhibit T

Land Management Reviews
(2009 & 2015)

Name of Site: Little Big Econ SF **County:** Seminole County

Managed by: Department of Agriculture and Consumer Services
Division of Forestry **Acres:** 9,809 Acres

Review Date: 09/3-4/09

Review Team Determination

Managed in accordance with acquisition purpose? Yes = 6, No = 0

★★★★★★

Management practices, including public access, in compliance with the management plan? Yes =6, No = 0

★★★★★★

Categories	Management Plan Review	Field Review
Natural Communities	1.00	3.78
Listed Species	0.71	3.33
Natural Resource Survey	1.00	4.03
Cultural Resources	1.00	4.42
Prescribed Fire	0.94	4.24
Restoration	0.77	3.83
Exotic Species	0.89	3.84
Hydrology	1.00	3.90
Surface Water Monitoring	0.83	3.50
Resource Protection	1.00	4.25
Adjacent Property Concerns	0.77	3.95
Public Access & Education	0.94	4.11
Management Resources	N/A	4.33
Managed Area Uses	1.00	N/A
Buildings, Equipment, Staff & Funding	N/A	3.25

Consensus Commendations to the Managing Agency

The following commendations resulted from discussion and vote of the review team members.

1. The team commends the DOF staff on their partnership with Seminole County in all aspects of land management across jurisdictional boundaries. (VOTE: 6+, 0-)
★★★★★★

2. The team commends the DOF staff on the thorough information provided to the team for this land management review. (VOTE: 6+, 0-)
★★★★★★

3. The team commends the DOF and FWC staff for the outstanding prescribed fire program, which currently has resulted in most of the fire-maintained communities to be in maintenance condition. (VOTE: 5+, 0-)
★★★★★★

4. The team commends the DOF and FWC on the exemplary sandhill restoration efforts which are a model of interagency cooperation. (VOTE: 5+, 0-)
★★★★★★

5. The team commends the DOF for outstanding efforts to restore the pasture and hydrology within the forest. (VOTE: 5+, 0-)
★★★★★★

6. The team commends the DOF on the outstanding recreational program, which provides an extensive and popular trail system for multiple user groups. (VOTE: 5+, 0-)
★★★★★★

7. The team commends the DOF staff for their industrious and successful pursuit of grant funding for invasive exotic plant control. (VOTE: 5+, 0-)
★★★★★★

8. The team commends the DOF on the recovery of the floodplain marsh and wet prairie at the Kilbee Tract due to their restoration efforts in the past five years. (VOTE: 5+, 0-)
★★★★★★

Consensus Recommendations to the Managing Agency

The following recommendations resulted from a discussion and vote of review team members. The management plan must include responses to the recommendations identified below.

1. The team recommends that DOF explore opportunities for biological support for rare species surveys on the property. (VOTE: 5+, 0-)
★★★★★★

Managing Agency Response: The forest manager has recently contacted the Forest Ecology section in the DOF Forest Management Bureau in Tallahassee to help coordinate a survey for rare plants. DOF will also contact and work with the FWC Biologist and/or FNAI in surveying for rare animals. Once the survey protocol is developed and the actual field survey completed, the forest manager will then be able to work with the DOF Forest Ecologist to develop an action plan that will promote and manage rare species on the State Forest in the most appropriate manner..

2. The team recommends that DOF evaluate increasing target fire frequency goals for sandhill, scrub and flatwoods habitats in the next management plan update. (VOTE: 5+, 0-)
★★★★★★

Managing Agency Response: Division of Forestry will evaluate increasing the fire frequency and number of growing season burns on sandhills, scrub and flatwood habitats to benefit fire endemic plants and animals. The fire frequency and growing season burns will also help to decrease non fire-dependant species from encroaching into these habitats.

Goals for prescribed fire frequency in each natural community type will reflect a more aggressive fire regime

3. Because of the recent large acquisition to be managed by DOF within the forest area, the team recommends that a forestry supervisor position be created. (VOTE: 5+, 0-)

Managing Agency Response: DOF agrees that current staffing at the LBESF creates a challenge to keep up with the administration and maintenance of the increased land base. The needs for additional positions are reviewed each year on a state wide basis, and are requested each year through the Division's legislative budget process.

Checklist Findings

The following items received high scores on the review team checklist, which indicates that management actions exceeded expectations.

- Natural Communities, specifically mesic flatwoods, scrub, wet flatwoods, mesic hammock, basin swamp, sandhill, scrubby flatwoods, baygall, xeric hammock, depression marshes, basin marsh, hydrick hammock, wet prairie, floodplain marsh, prairie hammock, blackwater stream, shell mound and floodplain swamp.
- Listed Species, specifically animal inventory, gopher frog, plant inventory, hooded pitcher plant and garberia.
- Natural Resource survey, specifically listed species/habitat monitoring, other non-game species or habitat monitoring, fire effects monitoring, other habitat management effects monitoring, and invasive species survey/monitoring.
- Cultural resources, specifically cultural resource survey, protection and preservation.
- Resource management, specifically area being burned, frequency, and quality.
- Restoration of ruderal areas, specifically offsite pine plantation at Kilbee, sandhill, wet prairie/floodplain marsh, scrubby flatwoods & flatwoods, and ruderal area/tree planting.
- Non native, invasive problem species, specifically prevention and control of plants, animals and pests/pathogens.
- Hydrologic/Geologic function, specifically roads, culverts, ditches, hydro-period alteration and water level alteration and dams/reservoirs or other impoundments.
- Ground and Surface Water Monitoring, specifically ground and surface water quality and quantity.
- Resource protection, specifically boundary survey, gates and fencing, signage and law enforcement presence.
- Adjacent property concerns, specifically expanding development, Flagler Trail, and inholdings/additions.
- Public access and education, specifically roads, parking, wildlife, invasive species, habitat management activities, interpretive facilities and signs, recreational opportunities, and management of visitor impacts.
- Managed area uses, specifically recreational trail, camping, multiple use field, hunting, fishing, environmental education and public outreach, visitor center and cattle grazing.

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review (FR) were not considered sufficient (less than 2.5 score on average), or that the text noted in the Management Plan Review (PR) does not sufficiently address this issue (less

than .5 score on average.). The management plan must include responses to the checklist items identified below:

1. Discussion in the management plan regarding Natural Communities, specifically Scrub and Sandhill. (FR)

Managing Agency Response: The LMR Checklist actually document the collective estimate by LMR team members of the percent of each community that is in "Maintenance Condition". As such, these scores reflect a "snapshot in time" and statistically suggests that 40% of the scrub and 20% of the sandhill is in maintenance. The restoration efforts that DOF is currently working on in these habitats at LBESF will continue and will be thoroughly addressed in the management plan update being developed now. Fire frequencies in the scrub and sandhill habitats will be increased to bring these habitats closer to their historical vegetative composition and structure... and thus, into "maintenance condition". Herbicide control and seasonal burning will continue in the sandhill community to stimulate wiregrass growth and to reduce oaks that have increased in recent years due to fire exclusion.

2. Discussion in the management plan regarding Listed Species, specifically Gopher Tortoise. (PR)

Managing Agency Response: The forest manager will contact the FWC Biologist and/or FNAI regarding their availability to assist with developing and/or assisting with a gopher tortoise survey. Once detailed information is collected on their population, an action plan can be developed to address management needs and future monitoring.

3. Discussion in the management plan regarding Management Resources, specifically Staff and Funding. (FR)

Managing Agency Response:See the response to Recommendation #3

APPENDIX A:

PLAN REVIEW		1	2	3	4	5	6	AVERAGE
Natural Communities (I.A)								
Mesic Flatwoods	I.A.1	1	1	1	1	1	1	1.00
Scrub	I.A.2	1	1	1	1	1	1	1.00
Wet Flatwoods	I.A.3	1	1	1	1	1	1	1.00
Mesic Hammock	I.A.4	1	1	1	1	1	1	1.00
Basin Swamp	I.A.5	1	1	1	1	1	1	1.00
Sandhill	I.A.6	1	1	1	1	1	1	1.00
Scrubby Flatwoods	I.A.7	1	1	1	1	1	1	1.00
Baygall	I.A.8	1	1	1	1	1	1	1.00
Xeric Hammock	I.A.9	1	1	1	1	1	1	1.00
Depression Marshes	I.A.10	1	1	1	1	1	1	1.00
Basin Marsh	I.A.11	1	1	1	1	1	1	1.00
Hydric Hammock	I.A.12	1	1	1	1	1	1	1.00
Wet Prairie	I.A.13	1	1	1	1	1	1	1.00
Floodplain Marsh	I.A.15	1	1	1	1	1	1	1.00
Prairie Hammock	I.A.16	1	1	1	1	1	1	1.00
Blackwater Stream	I.A.17	1	1	1	1	1	1	1.00
Shell Mound	I.A.18	1	1	1	1	1	1	1.00
Floodplain Swamp	I.A.19	1	1	1	1	1	1	1.00
Listed species:Protection & Preservation (I.B)								
Animal Inventory	I.B.1	1	0	1	1	0	1	0.67
Gopher Tortoise	I.B.1.a	1	0	1	0	0	1	0.50
Gopher Frog	I.B.1.b	1		1	0			0.67
Plant Inventory	I.B.2	1	1	1	1	1	1	1.00
Hooded Pitcher Plant	I.B.2.a	1	0		0	1	1	0.60
Garberia	I.B.2.b	1				1	1	1.00
Natural Resources Survey/Management Resources (I.C)								
Listed species or habitat monitoring	I.C.2	1	1	1	1	1	1	1.00
Other non-game species or habitat monitoring	I.C.3	1	1	1	1	1	1	1.00
Fire effects monitoring	I.C.4	1	1	1	1	1	1	1.00
Other habitat management effects monitoring	I.C.5	1	1	1	1	1		1.00
Invasive species survey / monitoring	I.C.6	1	1	1	1	1		1.00
Cultural Resources (Archeological & Historic sites) (II.A,II.B)								
Cultural Res. Survey	II.A	1	1	1	1	1	1	1.00
Protection and preservation	II.B	1	1	1	1	1	1	1.00

Resource Management, Prescribed Fire (III.A)								
Area Being Burned (no. acres)	III.A.1	1	1	1	1	1	1	1.00
Frequency	III.A.2	0	1	1	1	1	1	0.83
Quality	III.A.3	1	1	1	1	1	1	1.00
Restoration of Ruderal Areas (III.B)								
Offsite Pine Plantation @ Kilbee	III.B.1	0	1	1	0	1	1	0.67
Sandhill	III.B.2	1	1	1	0	1	1	0.83
Wet Prairie/Floodplain Marsh	III.B.3	1		1	0	1	1	0.80
Scrubby Flatwoods and Flatwoods	III.B.4	1	1	1	0	1	1	0.83
Ruderal Area/Tree Planting	III.B.5		1	1	0	1	1	0.80
Non-Native, Invasive & Problem Species (III.E)								
Prevention								
prevention - plants	III.E.1.a	1	1	1	1	1	1	1.00
prevention - animals	III.E.1.b	1	1	1	1	0	1	0.83
prevention - pests/pathogens	III.E.1.c	1	1	1	1	1	1	1.00
Control								
control - plants	III.E.2.a	1	1	1	1	0	1	0.83
control - animals	III.E.2.b	1	1	1	1	0	1	0.83
control - pest/pathogens	III.E.2.c	1	1	1	1	0	1	0.83
Hydrologic/Geologic function Hydro-Alteration (III.F.1)								
Roads/culverts	III.F.1.a	1	1	1	1	1	1	1.00
Ditches	III.F.1.b	1	1	1	1	1	1	1.00
Hydro-period Alteration	III.F.1.c	1	1	1	1	1	1	1.00
Water Level Alteration	III.F.1.d	1	1	1	1	1	1	1.00
Dams, Reservoirs or other impoundments	III.F.1.e	1	1	1	1	1	1	1.00
Ground Water Monitoring (III.F.2)								
Ground water quality	III.F.2.a	1	1	1	1	1	1	1.00
Ground water quantity	III.F.2.b	1	1	1	1	1	1	1.00
Surface Water Monitoring (III.F.3)								
Surface water quality	III.F.3.a	1	0	1	1	1	1	0.83
Surface water quantity	III.F.3.b	1	0	1	1	1	1	0.83
Resource Protection (III.G)								
Boundary survey	III.G.1	1	1	1	1	1	1	1.00
Gates & fencing	III.G.2	1	1	1	1	1	1	1.00
Signage	III.G.3	1	1	1	1	1	1	1.00
Law enforcement presence	III.G.4	1	1	1	1	1	1	1.00
Adjacent Property Concerns (III.H)								
Land Use								
Expanding development	III.H.1.a	1	0	1	1	0	1	0.67
Flagler Trail	III.H.1.b	1	0	1	1	1		0.80

Inholdings/additions	III.H.2	1	0	1	1	1	1	0.83
Public Access & Education								
Public Access								
Roads	IV.1.a	1	1	1	1	1	1	1.00
Parking	IV.1.b	1	1	1	1	1	1	1.00
Boat Access	IV.1.c	1	1	1	1	1	1	1.00
Environmental Education & Outreach								
Wildlife	IV.2.a	1	1	1	1	0	1	0.83
Invasive Species	IV.2.b	1	1	1	1	0	1	0.83
Habitat Management Activities	IV.2.c	1	1	1	1	0	1	0.83
Interpretive facilities and signs	IV.3	1	1	1	1	1	1	1.00
Recreational Opportunities	IV.4	1	1	1	1	1	1	1.00
Management of Visitor Impacts	IV.5	1	1	1	1	1	1	1.00
Managed Area Uses								
Existing Uses								
Recreational Trails	VI.A.1	1	1	1	1	1	1	1.00
Camping	VI.A.2	1	1	1	1	1	1	1.00
Multiple Use Field	VI.A.3	1	1	1	1	1	1	1.00
Hunting/Fishing	VI.A.4	1	1	1	1	1	1	1.00
Environmental Education and Public Outreach	VI.A.5	1	1	1	1	1	1	1.00
Visitor Center	VI.A.6	1	1	1	1	1	1	1.00
Proposed Uses								
Cattle Grazing	VI.B.1	1	1	1	1	0	1	0.83
FIELD REVIEW		**1**	**2**	**3**	**4**	**5**	**6**	**AVERAGE**
Natural Communities (I.A)								
Mesic Flatwoods	I.A.1	5	4	5	4	5	5	4.67
Scrub	I.A.2	2	3	3	2	3	2	2.50
Wet Flatwoods	I.A.3	4	3	3	X	3	4	3.40
Mesic Hammock	I.A.4	5	5	5	5	5	5	5.00
Basin Swamp	I.A.5	4	5	5	X	5	3	4.40
Sandhill	I.A.6	2	3	1	1	1	1	1.50
Scrubby Flatwoods	I.A.7	3	3	2	4	5	3	3.33
Baygall	I.A.8	4	1	3	4	4	4	3.33
Xeric Hammock	I.A.9	3	5	4	5	5	3	4.17
Depression Marshes	I.A.10	5	5	5	4	5	4	4.67
Basin Marsh	I.A.11	4	5	5	5	5	4	4.67
Hydric Hammock	I.A.12	4	5	5	5	5	4	4.67
Wet Prairie	I.A.13	4	5	5	4	5	5	4.67
Floodplain Marsh	I.A.15	5	5	5	4	5	5	4.83
Prairie Hammock	I.A.16	5	5	4	5	5	5	4.83
Blackwater Stream	I.A.17	5	5	5	5	5	5	5.00
Shell Mound	I.A.18	4	5	3	5	5	5	4.50
Floodplain Swamp	I.A.19	4	5	5	5	5	5	4.83
Listed species:Protection & Preservation (I.B)								

Animal Inventory	I.B.1	3	1	5		3	5	3.40
Gopher Tortoise	I.B.1.a	3	3	5	2	3	4	3.33
Gopher Frog	I.B.1.b	3		5	1			3.00
Plant Inventory	I.B.2	3	3		3	4	5	3.60
Hooded Pitcher Plant	I.B.2.a	4	2	4	2	5	5	3.67
Garberia	I.B.2.b	4		4		5	4	4.25
Natural Resources Survey/Management Resources (I.C)								
Listed species or habitat monitoring	I.C.2	3	3	4	3	4	4	3.50
Other non-game species or habitat monitoring	I.C.3	4	2	4	3	4	3	3.33
Fire effects monitoring	I.C.4	5	3	5	3	5	5	4.33
Other habitat management effects monitoring	I.C.5	5	4	5	3	5	5	4.50
Invasive species survey / monitoring	I.C.6	5	3	5	4	5	5	4.50
Cultural Resources (Archeological & Historic sites) (II.A,II.B)								
Cultural Res. Survey	II.A	4	5	5	4	5	4	4.50
Protection and preservation	II.B	4	5	4	4	5	4	4.33
Resource Management, Prescribed Fire (III.A)								
Area Being Burned (no. acres)	III.A1	5	4	4	4	5	4	4.33
Frequency	III.A.2	4	4	5	3	5	3	4.00
Quality	III.A.3	4	4	5	4	5		4.40
Restoration of Ruderal Areas (III.B)								
Offsite Pine Plantation @ Kilbee	III.B.1	3	4	4	2	5	2	3.33
Sandhill	III.B.2	5	4		4	3	4	4.00
Wet Prairie/Floodplain Marsh	III.B.3	5	3	3	4	5	5	4.17
Scrubby Flatwoods and Flatwoods	III.B.4	4	3	4	4	5	3	3.83
Non-Native, Invasive & Problem Species (III.E)								
Prevention								
prevention - plants	III.E.1.a	4	3	5	4	4	4	4.00
prevention - animals	III.E.1.b	4	3	X	4	3	4	3.60
prevention - pests/pathogens	III.E.1.c	4	3	X	4	4	3	3.60
Control								
control - plants	III.E.2.a	5	3	5	5	3	5	4.33
control - animals	III.E.2.b	4	3	5	4	3	4	3.83
control - pest/pathogens	III.E.2.c	3	3	5	4	3	4	3.67
Hydrologic/Geologic function Hydro-Alteration (III.E.1)								
Roads/culverts	III.F.1.a	4	4	4	3	4	4	3.83
Ditches	III.F.1.b	3	3	5	3	4	3	3.50
Hydro-period Alteration	III.F.1.c	4	4	5	3	4	4	4.00
Water Level Alteration	III.F.1.d	4	5	5	3	4	5	4.33
Dams, Reservoirs or other impoundments	III.F.1.e	4	4	5	3	4	3	3.83

Ground Water Monitoring (III.F.2)								
Ground water quality	III.F.2.a	3	3	X	3	4	4	3.40
Ground water quantity	III.F.2.b	3	3	X	3	4	4	3.40
Surface Water Monitoring (III.E.3)								
Surface water quality	III.F.3.a	3	X	X	3	4	4	3.50
Surface water quantity	III.F.3.b	3	X	X	3	4	4	3.50
Resource Protection (III.F)								
Boundary survey	III.G.1	4	5	5	4	5	4	4.50
Gates & fencing	III.G.2	5	4	4	4	5	5	4.50
Signage	III.G.3	4	3	4	4	5	4	4.00
Law enforcement presence	III.G.4	4	4	X	4	5	3	4.00
Adjacent Property Concerns (III.G)								
Land Use								
Expanding development	III.H.1.a	3		5	3	3	3	3.40
Flagler Trail	III.H.1.b	4		5	3	5		4.25
Inholdings/additions	III.H.2	4		4	4	4	5	4.20
Public Access & Education								
Public Access								
Roads	IV.1.a	4	4	5	4	5	4	4.33
Parking	IV.1.b	4	5	5	4	5	4	4.50
Boat Access	IV.1.c	3	4	5	4	4	3	3.83
Environmental Education & Outreach								
Wildlife	IV.2.a	3	5	5	4	2	4	3.83
Invasive Species	IV.2.b	3	3	5	4	2	3	3.33
Habitat Management Activities	IV.2.c	3	4	5	4	2	3	3.50
Interpretive facilities and signs	IV.3	4	5	5	4	5	5	4.67
Recreational Opportunities	IV.4	5	5	5	4	5	5	4.83
Management of Visitor Impacts	IV.5	4	4	5	4	5	3	4.17
Management Resources								
Maintenance								
Waste disposal	V.1.a	3	5	5	4	5	4	4.33
Sanitary facilities	V.1.b	3	5	5	4	5	4	4.33
Infrastructure								
Buildings	V.2.a	3	5	5	4	5	5	4.50
Equipment	V.2.b	3	5	5	4	5	4	4.33
Staff	V.3	2	2	3	2	1	2	2.00
Funding	V.4	3	3	2	2	1	2	2.17

APPENDIX B:

I.A. Natural Communities

- Very good burning efforts over the last 3-4 years in the mesic and wet flatwoods communities, including some growing season burns. Rollerchopping was used in some areas to reduce fuel height and improve burning conditions. A few areas of flatwoods could use some longleaf pine tubelings hand planted in areas lacking natural recruitment. Many of the natural flatwoods contain healthy numbers of native longleaf pine – which is unusual in many central Florida flatwoods. Past longleaf plantings in the mesic and scrubby flatwoods looked healthy (5-8 years ago). However, the lack of burning in these areas has allowed oaks and palmetto growth to dominate site. Initial fuel reduction burns are needed – but should be done during cool season to limit damage to the pines. Wetland transition areas at the edges of the flatwoods (ecotones) still need more fire to suppress invasion of wetland trees (e.g. bays) and reduce fuel buildup in these areas. This will need to be done during times that sufficient moisture in the bays. Much of the scrub needs mechanical treatment and fire to restore it. Rollerchopping and fire has been done on some scrub sites. Some areas of scrub appeared to be better typed as scrubby flatwoods. Excellent recent work to restore sandhill using liquid velpar oak treatments and growing season fire, however, repeated burning and perhaps some follow-up velpar treatments. Continued efforts building on past accomplishments will produce a fully restored sandhill. Areas of xeric hammock still had wiregrass in the understory and should be included in sandhill restoration efforts. Excellent work in wet prairie and floodplain marsh to use mechanical treatment (rollerchopping), chemical control of para grass and burning to restore to excellent condition. These communities are now part of a recent cattle lease. Some torpedo grass exists, but control efforts would be difficult. More effort is needed to curtail growth of cabbage palms outside of the prairie hammocks through chemical treatment of bud and/or possible use of feller buncher to shear and remove palms. Suggest some occasional periodic surveys be done for selected plant and animal species such as gopher tortoise, garberia, gopher frog and pitcherplants. Excellent job planting longleaf pine in 1500 acres of old bahia.
- Sandhill restoration is progressing. Making good progress. Work on ecotones on baygall/mesic flatwoods transition, may want to fence around cultural sites.
- Scrub and sandhill currently has low percentages of total for maintenance condition, but work has begun (herbicide, chopping) to restore and has progressed/improved towards higher percentages

I.B. Listed Species

- Survey gopher tortoise burrows after burns for population estimates. Survey and GPS hooded pitcher plants locations. Survey and identify gopher frog breeding ponds.

I.C. Natural Resources Survey/Management Resources

- Recommend a detailed rare and endangered species survey and inventory.

II.A.B. Cultural Resources

- Site 8SE1748, bike access to and along this site needs to be controlled to prevent erosion control by new trails.

III.A. Prescribed Fire

- Revisit natural community fire frequencies and suggest reduction in intervals between fires, especially in sandhill, scrubby flatwoods, and the flatwoods.
- Increased fire frequency in sandhill, wiry mesic flatwoods, wet flatwoods and scrub/scrubby flatwoods.
- Frequency of sandhill burns could be increased.
- Decrease the fire return interval for sandhill to 1-3 years, flatwoods 2-4 years, scrub 5-10 years, wet flatwoods 2-4 years. Burn more during the growing seasons when you can.
- Increase fire frequency, encourage mosaic burning, no "burning-out". Transition to more growing season fire.

III.B. Restoration

- Excellent efforts in all facets of restoration as was mentioned in these comments. Planted pine 40 acres in the wet prairie still need to be harvested, although merchantability and timber quality

issues may make selling the timber problematic, but there removal is essential to increasing hydroperiod at this site.

- Long-term goal should be to restore the edge of the sandhill. Don't leave it. Treat it little by little. Cut all the pines and burn 1-3 year interval. Don't wait on the planted pines in the scrubby flatwood.
- Great work with initiating and restoration of scrub/scrubby flatwoods and sandhill sites with high risk of complete conversion to xeric hammock. Pine plantation is merchantable and should be prepared for sale or trade for in-kind work, such as cabbage palm removal, hardwood removal, etc.

III.C. Non-native, Invasive & Problem Species

- Prioritize species to control for the Cattle lease. Set goals and numbers of time to treat species.

III.D. Hydrologic/Geologic Function

- Good work at establishing hydrological assessment of property and several productive mitigation projects have been completed. Culverts all looked good. Restoring old drainage ditches in old agriculture areas should be addressed.

III.E. Resource Protection

- Fences are inspected and repaired routinely. Increase law enforcement presence.

III.F. Adjacent Property Concerns

- Several major land acquisitions have been made in the last five years.

IV. Public Access and Education

- Excellent trailhead parking areas and kiosks. Great brochure and kiosk map aerial photos. Good cooperation.

V. Infrastructure/ Management Resources

- The forester at this site has management responsibilities for much more land than just this parcel.
- Recommend one biologist position and one forester position. Increase funding for mechanical treatment, habitat restoration equipment.
- Revenue generated on state forests should remain on the forest it was generated on. This will provide more incentive for management/restoration activities and staff support and additions.

VI. Managed Area Uses

- Continue to monitor and record bicycle use on natural areas where trails are not designated. Signage or blocking trails should be pursued. Work with user groups whenever possible.

2015 Land Management Review Team Report for Little Big Econ State Forest

Table of Contents

1. Introduction

Section 259.036, F.S. requires a periodic on-site review of conservation and recreation lands titled in the name of the Board of Trustees to determine (1) whether the lands are being managed for the purposes for which they were acquired and (2) whether they are being managed in accordance with their land management plan adopted pursuant to s. 259.032, F.S. In case where the managed areas exceed 1,000 acres in size, such a review must be scheduled at least every five years. In conducting this review, a statutorily constructed review team "shall evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions or archaeological features. The review shall also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan."

The land management review teams are coordinated by the Division of State Lands and consist of representatives from the Division of Recreation and Parks (DEP), the Florida Forest Service (DACS), the Fish and Wildlife Conservation Commission, the local government in which the property is located, the DEP District in which the parcel is located, the local soil and water conservation district, a conservation organization member, and a local private land manager.

Each Land Management Review Report is divided into three sections. Section 1 provides the details of the property being reviewed as well as the overall results of the report. Section 2 provides details of the Field Review, in which the Review Team inspects the results of management actions on the site. Section 3 provides details of the Land Management Plan Review, in which the team determines the extent to which the Management Plan provides for and documents adequate natural and recreational resource protection.

Finally, each report may also contain an Appendix that lists individual team member comments. This is a compilation of feedback, concerns or other thoughts raised by individual team members, but not necessarily indicative of the final consensus reached by the Land Management Review Team.

1.1. Property Reviewed in this Report

Name of Site: Little Big Econ State Forest
Managed by: Florida Forest Service
Acres: 10,236.38 **County:** Seminole County
Purpose(s) for Acquisition: to add to conservation lands already on the river, protecting habitat for wildlife and rare plants, preserving several archaeological sites, and providing the public opportunities for canoeing, fishing, hunting, and other recreation.
Acquisition Program(s): CARL/P2000/Florida Forever **Original Acquisition Date:** 03/14/91
Area Reviewed: Entire Property **Last Management Plan Approval Date:** 9/2/10
Review Date: 2/23/15

Agency Manager and Key Staff Present:

- Stephen Stipkovits, Forester
- Eugene McDowell, Forest Area Supervisor
- Sean Gallagher, District Manager

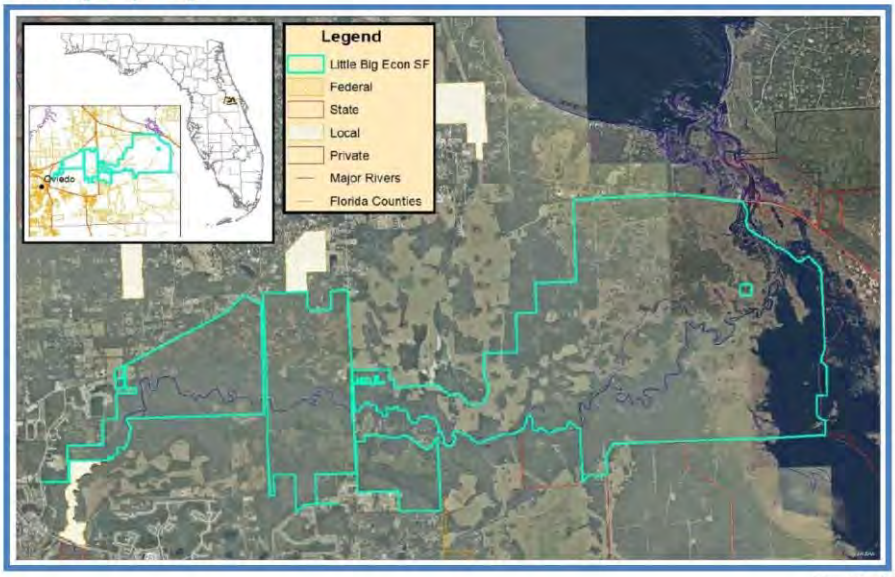
Review Team Members Present (voting)

- DRP: Alice Bard
- FWC: David Turner
- FFS: Bill Korn
- DEP: Courtney Knickerbocker
- SWCD: Judith Benson
- Local gov't: Jim Duby, Seminole County
- Conservation organization: Vince Lamb, FNPS
- Private land manager:

Other Non-Team Members Present (attending)

- Keith Singleton, DEP/DSL
- Jackie Smith, FWCC-IMP

1.2 Property Map



1.3. Overview of Land Management Review Results

Is the property managed in accordance with the purposes for which it was acquired?

Yes = 7, No = 0

Are the management practices, including public access, in compliance with the management plan?

Yes = 7, No = 0

Table 1 shows the average scores received for each applicable category of review. *Field Review* scores refer to the adequacy of management actions in the field, while *Management Plan Review* scores refer to adequacy of discussion of these topics in the management plan. Scores range from 1 to 5 with 5 signifying excellence. For a more detailed key to the scores, please see *Appendix A*.

Table 1: Results at a glance.

Major Land Management Categories	Field Review	Management Plan Review
Natural Communities / Forest Management	4.31	4.82
Prescribed Fire / Habitat Restoration	4.40	4.63
Hydrology	3.63	4.13
Imperiled Species	3.64	4.17
Exotic / Invasive Species	4.02	4.27
Cultural Resources	4.85	5.00
Public Access / Education / Law Enforcement	4.13	4.08
Infrastructure / Equipment / Staffing	3.38	N/A

Color Code (See Appendix A for detail)

Excellent	Above Average	Below Average	Poor

1.3.1 Consensus Commendations for the Managing Agency

The following commendations resulted from discussion and vote of the review team members:

1. The team commends the FFS staff for efforts to implement fuelwood harvests necessary to initiate restoration of approximately 40 acres of senescent scrub. (7+, 0-)

2. The team commends the FFS staff for superb work at monitoring and treating invasive plant populations, including their ongoing coordination with the FWC Upland Invasive Plant Management Program. (7+, 0-)

3. The team commends the FFS staff for work to reduce saltbush and myrtle in the freshwater marsh using roller chopping and a recent aerial burn. (7+, 0-)

4. The team commends the FFS staff for identifying and reporting additional archaeological sites and for their efforts to visit and monitor existing sites. (7+, 0-)

5. The team commends the FFS staff for creative use of cattle lease revenue to support extensive in-kind services that have allowed multiple resource management activities that were unfunded from traditional budget sources. (7+, 0-)

6. The team commends the FFS staff for all work accomplished at LBESF with minimal staff and funding. (7+, 0-)

7. The team commends the FFS staff for their involvement in the Operation Outdoor Freedom endeavor. (7+, 0-)

1.3.2. Consensus Recommendations to the Managing Agency

The following recommendations resulted from a discussion and vote of review team members. The next management plan update should include information about how these recommendations have been addressed:

1. The team recommends that FFS staff continue efforts to increase the amount of habitat maintained within the desired fire return interval. (7+, 0-)

   Managing Agency Response:

   We will continue our efforts to increase the amount of habitat that is maintained within the desired fire return intervals. As the Review Team recommended we do need a Type 6 engine which will help us to be able to achieve these efforts.

2. The team recommends that FFS staff continue work to develop public access and recreation improvements on the Yarborough Unit. (7+, 0-)

   Managing Agency Response:

   The Florida Forest Service will be working this fiscal year 2015-16 to establish hiking and horseback riding trails on the Yarborough Tract which the public will be able to access from existing trailheads along Snowhill Road.

3. The team recommends that FFS staff continue efforts to develop relationships with citizens and environmental groups that may aid in the inventory of resources and in management of trails and associated infrastructure. (7+, 0-)

   Managing Agency Response:

   Currently at the Little Big Econ State Forest we work with the Florida Trail Association who maintains our hiking trails and SORBA Orlando who maintains our bicycle trails. We will recruit the help of additional citizens and environmental groups as the need presents itself.

4. The team recommends that FFS pursue additional equipment needs including a type 6 engine, motor grader, dump truck, and larger roller chopper to address road access and forest management activities. (7+, 0-)

   Managing Agency Response:

We recently acquired a motor grader through Federal Excess and we will continue to watch for a dump truck to become available. Recently a request was made for a Type 6 Engine. We will continue to request and seek funding for a roller chopper.

2. Field Review Details

2.1 Field Review Checklist Findings

The following items received high scores on the review team checklist, which indicates that management actions exceeded expectations.

1. **Natural Communities; specifically mesic flatwoods, mesic hammock, wet prairie, floodplain marsh, hydric hammock, wet flatwoods, basin swamp, baygall, depression marsh, basin marsh, blackwater stream, dome swamp, floodplain swamp, floodplain forest, and xeric hammock:**
2. **Listed Species Protection and Preservation; plants in general:**
3. **Natural Resources Survey/Monitoring Resources; specifically other non-game species or their habitat, fire effects monitoring, other habitat management effects monitoring, and invasive species survey and monitoring:**
4. **Cultural Resources; specifically cultural resource survey, and protection and preservation:**
5. **Prescribed Fire; specifically area being burned, frequency, and quality:**
6. **Restoration; specifically scrub, sandhill and wet prairie:**
7. **Forest Management, specifically timber inventory and timber harvesting:**
8. **Non-Native Invasive & Problem Species, specifically prevention and control of animals and plants:**
9. **Hydro-alteration, specifically roads and culverts:**
10. **Resource Protection; specifically boundary survey, gates and fencing, and signage:**
11. **Adjacent Property Concerns, specifically inholdings and additions:**
12. **Public Access, specifically roads, parking and boat access:**
13. **Environmental Education & Outreach, specifically interpretive facilities and signs, recreational opportunities, and management of visitor impacts:**
14. **Management Resources; specifically waste disposal, sanitary facilities, and buildings:**

2.2. Items Requiring Improvement Actions in the Field

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review were not considered sufficient (less than 3.0 score on average). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. **The management plan update should include information on how these items have been addressed:**

1. **Management Resources; specifically equipment, staff, and funding, received below average scores. The review team is asked to evaluate, based on information provided by the managing agency, whether management resources are sufficient.**

   Managing Agency Response:

   FFS agrees with the Review Team that equipment, staff and funding are not sufficient and will continue to explore ways that we can increase them such as equipment from Federal Excess and grants to fund different projects, as well as to evaluate our OPS/Career Service position needs.

2.3. Field Review Checklist and Scores

Field Review Item	Reference #	Anonymous Team Members								Average
		1	2	3	4	5	6	7	8	
Natural Communities (I.A)										
Mesic Flatwoods	I.A.1	4	4	4	4	4	4	4		4.00
Mesic Hammock	I.A.2	5	5	5	5	5	4	5		4.86
Wet Prairie	I.A.3	5	4	X	4	4	X	4		4.20
Floodplain Marsh	I.A.4	5	5	5	5	5	5	5		5.00
Scrubby Flatwoods	I.A.5	4	4	4	3	4	4	4		3.86
Hydric Hammock	I.A.6	5	4	5	5	4	4	4		4.43
Wet Flatwoods	I.A.7	5	5	4	4	4	4	5		4.43
Basin Swamp	I.A.8	5	4	5	4	4	4	5		4.43
Scrub	I.A.9	3	3	3	3	3	3	3		3.00
Baygall	I.A.10	5		5	4	5	5	5		4.83
Depressional Marsh	I.A.11	5	4	4	5	4	5	4		4.43
Basin Marsh	I.A.12	5	4	5	5	4	5	4		4.57
Blackwater Stream	I.A.13	5	5	5	5	4	4	5		4.71
Sandhill	I.A.15	2	3	3	4	3	3	4		3.14
Dome Swamp	I.A.16	5	4	5	5	4	5	5		4.71
Floodplain Swamp	I.A.17	5	5	5	5	5	5	5		5.00
Floodplain Forest	I.A.18	5	X	5	5	4	5	5		4.83
Xeric Hammock	I.A.19	5	5	5	5	4	4	5		4.71
									Natural Communities Average Score	4.40
Listed Species: Protection & Preservation (I.B)										
Animals	I.B.1	5	4	4	3	4	4	4		4.00
Plants	I.B.2	5	4	4	3	4	4	4		4.00
									Listed Species Average Score	3.64
Natural Resources Survey/Management Resources (I.C)										
Listed species or their habitat monitoring	I.C.2	4	4	4	3	4	3	4		3.71
Other non-game species or their habitat monitoring	I.C.3	4	5	4	3	5	4	4		4.14
Fire effects monitoring	I.C.4	5	5	5	4	5	3	5		4.57
Other habitat management effects monitoring	I.C.5		5	4	4	5	3	4		4.17
Invasive species survey / monitoring	I.C.6	5	5	4	5	5	4	5		4.71

Cultural Resources (Archeological & Historic sites) (II.A, II.B)										
Cultural Res. Survey	II.A	5	5	5	5	5	4	5		4.86
Protection and preservation	II.B	5	4	5	5	5		5		4.83
								Cultural Resources Average Score		4.85
Resource Management, Prescribed Fire (III.A)										
Area Being Burned (no. acres)	III.A1	5	5	4	5	5	5	5		4.86
Frequency	III.A.2	5	4	4	5	4	4	4		4.29
Quality	III.A.3	5	4	4	5	5	5	5		4.71
								Resource Management, Prescribed Fire Average Score		4.62
Restoration (III.B)										
Scrub	III.B.1	5	5	4	5	4	3	4		4.29
Sandhill	III.B.2	5	4	4	5	5	4	4		4.43
Scrubby Flatwoods	III.B.3	4	4	4	5	4	3	3		3.86
Wet Prairie	III.B.4	5	4	X	5	4	3	4		4.17
								Restoration Average Score		4.18
Forest Management (III.C)										
Timber Inventory	III.C.1	5	5	5	4	4	3	5		4.43
Timber Harvesting	III.C.2	5	4	4	4	4	3	4		4.00
								Forest Management Average Score		4.21
Non-Native, Invasive & Problem Species (III.D)										
Prevention										
prevention - plants	III.D.1.a	5	4	4		5	2	4		4.00
prevention - animals	III.D.1.b	5	3	4		5	3	4		4.00
prevention - pests/pathogens	III.D.1.c	4	4	4		4	3	4		3.83
Control										
control - plants	III.D.2.a	4	5	4	5	4	4	5		4.43
control - animals	III.D.2.b	4	5	4	5	4	3	4		4.14
control - pest/pathogens	III.D.2.c	4	3	4	4	4	3	4		3.71
								Non-Native, Invasive & Problem Species Average Score		4.02
Hydrologic/Geologic function Hydro-Alteration (III.E.1)										
Roads/culverts	III.E.1.a		5	4	3	4	4	4		4.00
Ditches	III.E.1.b	4	5	4	3	4	3	3		3.71
Hydro-period Alteration	III.E.1.c	4		X	3	4	3	3		3.40
Water Level Alteration	III.E.1.d	4		X	3	4	3	3		3.40
								Hydrologic/Geologic function, Hydro-Alteration Average Score		3.63
Ground Water Monitoring (III.E.2)										
Surface Water Monitoring (III.E.3)										
Resource Protection (III.F)										
Boundary survey	III.F.1	4	5	5	5	5	2	4		4.29
Gates & fencing	III.F.2	4	4	5	5	5	2	3		4.00
Signage	III.F.3	5	5	5	5	4	2	4		4.29
Law enforcement presence	III.F.4	5	4	3		4	3	3		3.67

								Resource Protection Average Score		4.06
Adjacent Property Concerns (III.G)										
Land Use										
Inholdings/additions	III.G.2	4	5	4		X		3		4.00
Public Access & Education (IV.1, IV.2, IV.3, IV.4, IV.5)										
Public Access										
Roads	IV.1.a	5	5	3	5	4	4	4		4.29
Parking	IV.1.b	5	5	4	5	4	4	5		4.57
Boat Access	IV.1.c	5	4	4	5	4	4	4		4.29
Environmental Education & Outreach										
Wildlife	IV.2.a	4	4	4	5	4	3	3		3.86
Invasive Species	IV.2.b	4	4	4	5	4	3	3		3.86
Habitat Management Activities	IV.2.c	4	4	4	5	3	3	3		3.71
Interpretive facilities and signs	IV.3	5	5	5	5	4	3	3		4.29
Recreational Opportunities	IV.4	5	5	5	5	5	4	5		4.86
Management of Visitor Impacts	IV.5	5	5	4	5	4	2	4		4.14
								Public Access & Education Average Score		4.21
Management Resources (V.1, V.2, V.3. V.4)										
Maintenance										
Waste disposal	V.1.a	5	5	5	5	4	1	4		4.14
Sanitary facilities	V.1.b	5	5	5	5	4	1	4		4.14
Infrastructure										
Buildings	V.2.a	5	5	5	5	5	3	5		4.71
Equipment	V.2.b	3	3	3	4	3	2	2		2.86
Staff	V.3	2	2	2	5	2	1	2		2.29
Funding	V.4	2	2	2		3	1	3		2.17
								Management Resources Average Score		3.38

Color Code:	Excellent	Above Average	Below Average	Poor	See Appendix A for detail
		Missing Vote	Insufficient Information		

3. Land Management Plan Review Details

3.1 Items Requiring Improvements in the Management Plan

The following items received low scores on the review team checklist, which indicates that the text noted in the Management Plan Review does not sufficiently address this issue (less than 3.0 score on average.). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The next management plan update should address the checklist items identified below:

1. **Managed Area Uses, specifically equestrian camping, received a below average score. This is an indication that the management plan does not sufficiently address area use.**

Managing Agency Response:

The Little Big Econ State Forest 10 Year Resource Management Plan states that we will assess the potential for overnight equestrian camping at the trailhead. During the development of the management plan the public did not request primitive camping along the horse trails. We will ask the equestrian user group to see if this is something that they would use. If we get a large request for it then we will plan for it in our five year recreation plan.

3.2 Management Plan Review Checklist and Scores

Plan Review Item	Reference #	Anonymous Team Members								Average
		1	2	3	4	5	6	7	8	
Natural Communities (I.A)										
Mesic Flatwoods	I.A.1	5	5	5	5	5	5	5		5.00
Mesic Hammock	I.A.2	5	5	5	5	5	5	5		5.00
Wet Prairie	I.A.3	5	5	5	5	5	5	5		5.00
Floodplain Marsh	I.A.4	5	5	5	5	5	5	5		5.00
Scrubby Flatwoods	I.A.5	5	5	5	5	5	5	5		5.00
Hydric Hammock	I.A.6	5	5	5	5	5	5	5		5.00
Wet Flatwoods	I.A.7	5	5	5	5	5	5	5		5.00
Basin Swamp	I.A.8	5	5	5	5	5	5	5		5.00
Scrub	I.A.9	5	5	5	5	5	4	5		4.86
Baygall	I.A.10	5	5	5	5	5	5	5		5.00
Depressional Marsh	I.A.11	5	5	5	5	5	5	5		5.00
Basin Marsh	I.A.12	5	5	5	5	5	5	5		5.00
Blackwater Stream	I.A.13	5	5	5	5	5	5	5		5.00
Sandhill	I.A.15	5	5	5	5	5	5	5		5.00
Dome Swamp	I.A.16	5	5	5	5	5	5	5		5.00
Floodplain Swamp	I.A.17	5	5	5	5	5	5	5		5.00
Floodplain Forest	I.A.18	5	5	5	5	5	5	5		5.00
Xeric Hammock	I.A.19	5	5	5	5	5	5	5		5.00
									Natural Communities Average Score	4.99
Listed species: Protection & Preservation (I.B)										
Animals	I.B.1	5		5	3	4	4	4		4.17
Plants	I.B.2	5		5	3	4	4	4		4.17
									Listed Species Average Score	4.17
Natural Resources Survey/Management Resources (I.C)										
Listed species or their habitat monitoring	I.C.2	5	4	5	3	4	4	4		4.14
Other non-game species or their habitat monitoring	I.C.3	5	4	4	4	4	3	3		3.86
Fire effects monitoring	I.C.4	5	4	5	4	5	4	4		4.43
Other habitat management effects monitoring	I.C.5		4	4	4	5	4	3		4.00
Invasive species survey / monitoring	I.C.6	5	4	4	4	5	4	4		4.29
Cultural Resources (Archeological & Historic sites) (II.A,II.B)										

Cultural Res. Survey	II.A	5	5	5	5	5	5	5		5.00
Protection and preservation	II.B	5	5	5	5	5		5		5.00
								Cultural Resources Average Score		5.00
Resource Management, Prescribed Fire (III.A)										
Area Being Burned (no. acres)	III.A.1	5	5	5	5	5	5	5		5.00
Frequency	III.A.2	5	5	5	5	5	5	5		5.00
Quality	III.A.3	5	5	5	5	5	5	5		5.00
								Resource Management, Prescribed Fire Average Score		5.00
Restoration (III.B)										
Scrub	III.B.1	5	5	5		3	4	3		4.17
Sandhill	III.B.2	5	5	5		3	4	3		4.17
Scrubby Flatwoods	III.B.3	5	5	5		4	4	3		4.33
Wet Prairie	III.B.4	5	5	5		3	4	4		4.33
								Restoration Average Score		4.25
Forest Management (III.C)										
Timber Inventory	III.C.1	5	4	5	5	5	4	5		4.71
Timber Harvesting	III.C.2	5	4	5	5	5	4	4		4.57
								Forest Management Average Score		4.64
Non-Native, Invasive & Problem Species (III.D)										
Prevention										
prevention - plants	III.E.1.a	4	4	5		5	4	3		4.17
prevention - animals	III.E.1.b	5	4	5		5	4	3		4.33
prevention - pests/pathogens	III.E.1.c	4	4	5		4	4	3		4.00
Control										
control - plants	III.E.2.a	5	4	5	5	5	4	4		4.57
control - animals	III.E.2.b	5	4	5	5	4	4	4		4.43
control - pest/pathogens	III.E.2.c	4	4	5	5	4	4	3		4.14
								Non-Native, Invasive & Problem Species Average Score		4.27
Hydrologic/Geologic function, Hydro-Alteration (III.E.1)										
Roads/culverts	III.F.1.a	5	5	5		4	5	4		4.67
Ditches	III.F.1.b	4	5	5		4	5	3		4.33
Hydro-period Alteration	III.F.1.c	4	3	5		4	4	3		3.83
Water Level Alteration	III.F.1.d	4	3	5		4	3	3		3.67
								Hydrologic/Geologic function, Hydro-Alteration Average Score		4.13
Ground Water Monitoring (III.E.2)										
Surface Water Monitoring (III.E.3)										
Resource Protection (III.F)										
Boundary survey	III.G.1	4	4	5	5	5	2	3		4.00
Gates & fencing	III.G.2	4	4	5	5	5	2	3		4.00
Signage	III.G.3	5	4	5	5	4	2	3		4.00
Law enforcement presence	III.G.4	5	4	5	5	5	2	2		4.00
								Resource Protection Average Score		4.00

Adjacent Property Concerns (III.G)										
Land Use										
Inholdings/additions	III.H.2	4		5		2	2	4		3.40
Discussion of Potential Surplus Land Determination	III.H.3	5	4	5		3	1	3		3.50
Surplus Lands Identified?	III.H.4	5	4	5	5	1	3	3		3.71
Public Access & Education (IV.1, IV.2, IV.3, IV.4, IV.5)										
Public Access										
Roads	IV.1.a	5	5		5	4	5	4		4.67
Parking	IV.1.b	5	5		5	5	5	4		4.83
Boat Access	IV.1.c	5	4		5	5	1	3		3.83
Environmental Education & Outreach										
Wildlife	IV.2.a	4	3		5	4	3	3		3.67
Invasive Species	IV.2.b	4	3		5	4	3	3		3.67
Habitat Management Activities	IV.2.c	4	3		5	3	3	3		3.50
Interpretive facilities and signs	IV.3	5	4		5	4	3	4		4.17
Recreational Opportunities	IV.4	5	5		5	5	5	5		5.00
Management of Visitor Impacts	IV.5	5	4		5	4	3	4		4.17
								Public Access & Education Average Score		4.17
Managed Area Uses (VI.A, VI.B)										
Existing Uses										
Apiary Lease	VI.A.1	4	5	5	5	3	4	5		4.43
Cattle Grazing	VI.A.2	4	3	5	5	4	4	4		4.14
Silviculture	VI.A.3	4	4	5	5	3	4	5		4.29
Equestrian	VI.A.4	4	4	5	5	4	4	4		4.29
Biking	VI.A.5	4	4	5	5	5	4	4		4.43
Paddling	VI.A.6	4	4	5	5	4	5	5		4.57
Hiking	VI.A.7	4	4	5	5	5	5	5		4.71
Camping	VI.A.8	4	4	5	5	3	4	5		4.29
Proposed Uses										
Equestrian Camping	VI.B.1	1	3	3		2	1	3		2.17

Color Code:	Excellent	Above Average	Below Average	Poor	See Appendix A for detail
		Missing Vote	Insufficient Information		

Appendix A: Scoring System Detail

Explanation of Consensus Commendations:

Often, the exceptional condition of some of the property's attributes impress review team members. In those instances, team members are encouraged to offer positive feedback to the managing agency in the form of a commendation. The teams develop commendations generally by standard consensus processes or by majority vote if they cannot obtain a true consensus.

Explanation of Consensus Recommendations:

Subsection 259.036(2), F.S., specifically states that the managing entity shall consider the findings and recommendations of the land management review. We ask team members to provide general recommendations for improving the management or public access and use of the property. The teams discuss these recommendations and develop consensus recommendations as described above. We provide these recommendations to the managing agency to consider when finalizing the required ten-year management plan update. We encourage the manager to respond directly to these recommendations and include their responses in the final report when received in a timely manner.

Explanation of Field Review Checklist and Scores, and Management Plan Review Checklist and Scores:

We provide team members with a checklist to fill out during the evaluation workshop phase of the Land Management Review. The checklist is the uniform tool used to evaluate both the management actions and condition of the managed area, and the sufficiency of the management plan elements. During the evaluation workshop, team members individually provide scores on each issue on the checklist, from their individual perspective. Team members also base their evaluations on information provided by the managing agency staff as well as other team member discussions. Staff averages these scores to evaluate the overall conditions on the ground, and how the management plan addresses the issues. Team members must score each management issue 1 to 5: 1 being the management practices are clearly insufficient, and 5 being that the management practices are excellent. Members may choose to abstain if they have inadequate expertise or information to make a cardinal numeric choice, as indicated by an "X" on the checklist scores, or they may not provide a vote for other unknown reasons, as indicated by a blank. If a majority of members failed to vote on any issue, that issue is determined to be irrelevant to management of that property or it was inadequately reviewed by the team to make an intelligent choice. In either case staff eliminated the issue from the report to the manager.

Average scores are interpreted as follows:

Scores 4.0 to 5.0 are *Excellent*

Scores 3.0 to 3.99 are *Above Average*

Scores 2.0 to 2.99 are *Below Average*

Scores 1.0 to 1.99 are considered *Poor*

Exhibit U

Compliance with Local Comprehensive Plan(s)

FLORIDA FOREST SERVICE
(850) 681-5800

THE CONNER BUILDING
3125 CONNER BOULEVARD
TALLAHASSEE, FLORIDA 32399-1650

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

COMMISSIONER NICOLE "NIKKI" FRIED

November 2, 2020

Mr. Jeff Hopper
Seminole County Planning and Zoning
1101 East 1st Street
Sanford, FL 32771
(407) 665-7371
jhopper@seminolecountyfl.gov

RE: Little Big Econ State Forest 10-Year Land Management Plan

Dear Mr. Hopper,

Greetings from the Florida Forest Service (FFS). Enclosed is a copy of the Ten-Year Land Management Plan and plan Exhibits for Little Big Econ State Forest, prepared in accordance with F.S. 253.034. Please review the draft plan at your earliest convenience and reply as to whether the plan is consistent with Seminole County's Comprehensive Plan.

Please address all correspondence concerning the Management Plan on official letterhead to the above mailing address or via e-mail. I can be reached by telephone at (850) 681-5889 or by email at Patricia.Anderson@FDACS.gov if you have any questions.

Thank you for assisting us in managing Little Big Econ State Forest's resources through a stewardship ethic to ensure they are available for future generations.

Sincerely,

Patti Anderson
State Lands Plan Coordinator

cc: Stephen Stipkovits, FFS Forester

Exhibit V

State Forest Management Plan
Advisory Group Summary

Management Plan Advisory Group Public Hearing
Little Big Econ State Forest
10-Year Land Management Plan

October 28, 2020
10:30 A.M.

Meeting Minutes

MPAG Members Present:

- Sean Gallagher — Orlando District Manager, Florida Forest Service (FFS)
- Bryan Ames — Biologist, Florida Fish and Wildlife Conservation Commission (FWC)
- Graham Williams — Land Manager, St. Johns River Water Management District
- Jon Yost — Private Property Owner
- Kevin Allbritton — Private Property Owner
- Jay Zembower — Chairman, Seminole County Board of Commissioners

MPAG Members Not Present:

- Ed Young — Seminole County Soil and Water Conservation District
- Zachary Prusak — Florida Fire Manager, The Nature Conservancy

Staff:

- Alan Davis, Land Planning Coordinator, FFS
- Brian Camposano, Forest Management Assistant Bureau Chief, FFS
- Stephen Stipkovits, Forester, FFS
- Robert Yarborough, FFS
- Matthew King, FFS
- Keith Rowell, Land Programs Administrator, FFS
- Patti Anderson, Assistant Land Planning Coordinator, FFS

Guests:

- Eugene Stoccardo
- Jenna Taylor
- Jim Duby

Virtual Public Meeting Start Time: 10:30 A.M.

- Mr. Davis opened the meeting by introducing himself and explained the purpose and statutory framework for the Little Big Econ State Forest 10-Year Land Management Plan process. He explained that the Plan is not an annual work plan or detailed operational plan but provides general guidance for management of Little Big Econ State Forest for the next 10-year period. It also outlines the major concepts that will guide management activities on the state forest.
- Mr. Davis confirmed compliance with the Florida Sunshine Law reminding MPAG members to not discuss the draft outside of the public hearings. He stated that the meetings are recorded, and minutes taken.
- Mr. Davis stated both MPAG meetings are open to the public and proper notice was given. The meetings were advertised to the public through local newspaper (Orlando Sentinel), Florida Administrative Register, FFS webpage, as well as posted on the kiosk at the entrance to the forest. The meetings were also announced at the Seminole County Board of County Commissioners meeting on October 27, 2020. He

noted that the draft goes through various approvals before and after the day's meetings but that the Director assumes ultimate authority on changes to the draft.

- Mr. Davis then stated that after a PowerPoint presentation there would be a question and answer session where guests were welcome to speak or ask questions. Mr. Davis encouraged MPAG members to hear the public's ideas/concerns during that time. He advised that at the MPAG Workshop meeting following the hearing there would be an opportunity to discuss their thoughts on input shared by the public.
- Mr. Davis requested the individual MPAG members introduce themselves.
- Mr. Davis then asked the advisory group to elect an MPAG chairperson. By negative response consensus, Sean Gallagher was appointed chairperson. Mr. Davis then introduced Brian Camposano, Forest Management Assistant Bureau Chief.
- Brian Camposano explained the technical logistics and how to use the webinar tools to share comments, then asked if there were any technical questions. No questions followed.
- Mr. Davis then confirmed that there were no attendees present at the in-person venue. He then introduced Stephen Stipkovits who presented a PowerPoint presentation of the 2020 10-year plan.
- Guest Mr. Eugene Stoccardo, representing the Florida Trail Association (FTA), asked to speak. He stated concerns with observing invasive plants Caesar weed and Tropical soda apple along the trails; asked if there are plans to install composting toilets in the heavily-used camping areas; asked if there are plans to leave cavity habitat during pine thinning; and asked if there are Red-cockaded woodpeckers and Florida scrub jays are present on the forest. He further requested coordination between FTA and FFS to shorten the 30-mile road-walking route between LBESF and Seminole State Forest.
- Mr. Yarborough from the in-person venue read aloud emailed comments received from equestrian liaison Caren Stauffer: "I'm happy to see all the trailhead improvements that will be accessed, hopefully they will be approved. These improvements, if completed, will be appreciated by all trail users! I would like to know what is still on the table for Snow Hill trailhead access to the Yarbrough tract, I seen no mention in this plan."
- Commissioner Jay Zembower requested possible multi-agency coordination to link local public lands for the benefit of equestrian trail users. Mr. Davis referred to the 1:00 meeting to address this request.
- Mr. Davis offered a hyperlink to the 1:00 meeting registration which was placed in the webinar chat box.
- Mr. Davis then thanked everyone for their participation and acknowledged addressing the comments at the 1:00 P.M. workshop meeting then adjourned the public hearing.

Virtual Public Meeting End Time: 11:15 A.M.

Management Plan Advisory Group Workshop Meeting
Little Big Econ State Forest
10-Year Land Management Plan

October 28, 2020
1:00 P.M.

Meeting Minutes

MPAG Members Present:

- Sean Gallagher — Orlando District Manager, Florida Forest Service (FFS)
- Bryan Ames — Biologist, Florida Fish and Wildlife Conservation Commission (FWC)
- Graham Williams — Land Manager, St. Johns River Water Management District
- Jon Yost — Private Property Owner
- Jay Zembower — Chairman, Seminole County Board of Commissioners
- Kevin Allbritton — Private Property Owner

MPAG Members Not Present:

- Ed Young — Seminole County Soil and Water Conservation District
- Zachary Prusak — Florida Fire Manager, The Nature Conservancy

Staff:

- Alan Davis, Land Planning Coordinator, FFS
- Brian Camposano, Forest Management Assistant Bureau Chief, FFS
- Stephen Stipkovits, Forester, FFS
- Robert Yarborough, FFS
- Matthew King, FFS
- Keith Rowell, Land Programs Administrator, FFS
- Patti Anderson, Assistant Land Planning Coordinator, FFS

Guests:

- Eugene Stoccardo
- Jenna Taylor
- Jim Duby
- Charles Honaker

Virtual Workshop Meeting Start Time: 1:00 P.M.

- Mr. Davis opened the meeting noting the review of the public comments and the page-by-page process of negative response approval; reminded the MPAG members to follow the Florida Sunshine Law guidelines, minutes will be emailed and must be approved by MPAG member negative response. MPAG member appointment will terminate when the final draft is submitted to the Acquisition Restoration Council (ARC).
- MPAG member soundcheck conducted.
- Mr. Williams noted Executive Summary inconsistent with Page 10 language regarding water resource protection responsibilities between the water management district and FFS. Mr. Davis suggested leaving as both entities share the same management goals. Consensus attained.
- Mr. Williams requested clarity in interpreting Page 12 hunt camp pavilion location and Culpepper bend shelter absence from draft language due to plans to remove this winter. Mr. Stipkovits affirmed both requests.
- Mr. Williams noted site discrepancies of Econ River length on forest. Corrected all references to read "17 miles".

- Mr. Williams, referencing page 21, noted wetland impact permits should be coordinated with DEP. Language updated to include DEP.
- Mr. Williams referencing page 28, asked if primitive camp zones are geographically identified on a map. SS stated they are GPS identified but are subject to tidal changes. BC stated future FFS plans to designate all camping areas reservable thus zoned areas must be ide identified with permanent sites criteria. Mr. Gallagher suggested internal discussions as zone descriptions are defined in LBESF rules. Mr. Stipkovits noted that the Zones are referenced on website and in forest brochures. Mr. Williams further commented that since this information exists in the brochures, it suffices and doesn't need to be in the plan.
- Mr. Davis referenced public hearing comment for Page 29 requesting installation of restroom facilities. Language added: "FFS will assess the need for restroom facilities at other trailheads and recreation areas."
- Mr. Davis referenced Mr. Stoccardo's comment on invasive plant treatments (Page 36). Discussion concluded that further detail added to the draft is not needed in order to sufficiently execute treatment.
- Mr. Ames noted on Page 40 that fire frequency goals for sandhill and mesic flatwoods communities should be closer to FNAI's goals. Discussions concluded that adjusted fire intervals are acceptable, and the draft was updated accordingly.
- Referencing Page 57, Mr. Ames recommended including the use of herbicide Velpar as treatment for sandhill restoration. Mr. Gallagher read from the Silviculture Best Management Practices handbook verifying that chemical site improvement is sufficiently covered in the draft.
- Commissioner Zembower proposed to partner with multiple stakeholders in the region to connect public lands for contiguous access between Seminole, Osceola, Brevard, and Orange counties. Mr. Davis encouraged public use of LBESF and requested routes and a plan be prepared. Mr. Zembower shall produce a plan for consideration.
- Mr. Ames referenced the Public Access and Recreational Opportunities section requesting installation of DOT signs at designated Wildlife Management Area entrances. Mr. Gallagher stated that DOT does not provide signage at entrances where restroom or recreational facilities are not accessible.
- Mr. Ames requested a parking area be constructed on the Yarborough Tract at the River's Edge residential community for WMA users. Mr. Stipkovits shared that prior meetings with the River's Edge residents produced agreement that recreational parking would be permitted at the pavilion and the possibility of DOT installing a Snow Hill Road crossing. Mr. Gallagher stated that constructing a road crossing would keep the vehicle traffic on forest property and foot traffic away from the residential area. Mr. Williams asked that further evaluation be mentioned in the draft. Commissioner Zembower offered assistance in coordinating funding for a road crossing. Further discussions regarding the installation of a safe road crossing was determined.
- Exhibits:
    - Optimal Management Boundary Map: Mr. Williams questioned a small outparcel as forest boundary.
    - Trails & Infrastructure Map: no shelters, campsites.
    - Trails & Infrastructure Map: Mr. Williams questioned "Ditch of doom" location. Mr. Gallagher described the site as is a feature on the mountain bike trail; consensus to strike from map.
    - Exhibit G: Florida Forever Area Project Maytown Flatwoods conservation project not relevant to LBESF.
    - Water Resources Map: Mr. Williams noted that not all of Econ River is shaded in.
    - Mr. Williams noted Conley Parcel is not mapped. Mr. Camposano stated this will occur with the next FNAI survey.
    - Exhibit H: Mr. Gallagher questioned historical site reference SE00021 Buzzard's Roost being on LBESF and Heffer mound being on CHBSF (indicating separate sites). Mr. Davis stated FFS will verify with DHR. Mr. Stipkovits stated he will review the DHR Masterfile.
- Mr. Davis took rollcall for each MPAG member's acceptance of changes made to draft during meeting. He reiterated the minutes will be sent soon for approval by MPAG member negative response.

Virtual Workshop Meeting End Time: 2:30 P.M.

Exhibit W

State Forest Summary Budget

	LITTLE BIG ECON STATE FOREST MGT. ONLY 18-19 EXPENDITURES	Percentages Based on Total Dollar Amount of Expenditures	Assessed Needed Funding Based Upon LMUAC Resource Management
Resource Management	**$ 13,321**	**25.50%**	**$ 47,139.85**
Exotic Species Control	$ 1,471	4.10%	$ 7,579.35
Prescribed Burning	$ 5,176	2.80%	$ 5,176.14
Cultural Resources Management	$ 36	0.10%	$ 184.86
Timber Management	$ 3,050	8.50%	$ 15,713.28
Hydrological Management	$ 179	0.50%	$ 924.31
	$ -		$ -
OTHER RESOURCE MANAGEMENT	$ 3,409	9.50%	$ 17,561.91
Listed Species Management	$ -		$ -
Forest Pest and Disease	$ -		$ -
Plant Conservation Program	$ -		$ -
State Forest Research Projects	$ -		$ -
Boundary Surveys for State Forests	$ -		$ -
Other Activities Also Include:	$ -		$ -
Liaison Community Meetings / Boundary Line Maintenance / Forest Inventories and Various Other Activities / Wildfire Suppression on State Forests			
			$ -
Administration	**$ 2,583**	**7.20%**	**$ 13,310.08**
Central Office Headquarters	$ 2,583	7.20%	$ 13,310.08
District/Regions	$ -		$ -
Units/Projects	$ -		$ -
	$ -		$ -
Support	**$ 12,164**	**33.90%**	**$ 62,668.27**
Land Management Planning	$ 502	1.40%	$ 2,588.07
Land Management Reviews	$ 144	0.40%	$ 739.45
Training/Staff Development	$ 3,445	9.60%	$ 17,746.77
Vehicle Purchase	$ 323	0.90%	$ 1,663.76
Vehicle Operations and Maintenance	$ 5,131	14.30%	$ 26,435.29
	$ -		$ -
OTHER SUPPORT	$ 2,619	7.30%	$ 13,494.94
State Forest Land Acquisition Support			$ -
Other Support Activities Also Include:	$ -		$ -
Computer Maintenance / Radio Maintenance / Technical Support / Management of Apiary and Cattle Leases / State Forest Leases, Lease Amendments, Easements and Other Various Activities	$ -		$ -
			$ -
Capital Improvements	**$ 7,356**	**20.50%**	**$ 37,896.74**
New Facility Construction	$ 1,830	5.10%	$ 9,427.97
Facility Maintenance	$ 5,526	15.40%	$ 28,468.77
			$ -
Visitor Services/Recreation	**$ 4,629**	**12.90%**	**$ 23,847.22**
Information/Education	$ 1,076	3.00%	$ 5,545.86
Operations	$ 3,552	9.90%	$ 18,301.35
			$ -
Law Enforcement	$ -	0.00%	$ -
Total	**$ 35,881**	**100.00%**	**$ 184,862**

Exhibit X

Arthropod Control Plan
Response from Seminole County, Florida

PUBLIC WORKS DEPARTMENT
WATERSHED MANAGEMENT DIVISION

SEMINOLE COUNTY
FLORIDA'S NATURAL CHOICE

February 21, 2019

Patti Anderson
Land Management Plan Coordinator- Florida Forest Service
Florida Department of Agriculture and Consumer Services
3125 Conner Boulevard
Suite I-262, Mail Stop C-25
Tallahassee, FL 32399-1650

RE: Arthropod Control Plan- Little Big Econ and Charles Bronson State Forests

Dear Patti Anderson,

Seminole County Mosquito Control Program will not be conducting arthropod control activities for Little Big Econ and Charles Bronson State Forests. As result, no Arthropod Control Plan will be required.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

Gloria Eby
Principal Environmental Scientist/Mosquito Control Director
Lake Management & Mosquito Control Programs
Seminole County Watershed Management Division
200 W. County Home Road, Sanford, FL 32773
407-665-2439
407-665-5600 (fax)
geby@seminolecountyfl.gov