



Florida Department of Environmental Protection

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3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Jonathan P. Steverson
Secretary

April 28, 2016

Mr. John Browne
Florida Forest Service
The Conner Building
3125 Conner Boulevard - Room 236
Tallahassee, FL 32399-1650

RE: Twin Rivers State Forest – Lease #4047

Dear Mr. Browne:

On **April 22, 2016**, the Acquisition and Restoration Council recommended approval of the **Twin Rivers State Forest** management plan. Therefore, the Division of State Lands, Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the **Twin Rivers State Forest** management plan. The next management plan update is due April 22, 2026.

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,

Joseph P. Wilson, Chief
Office of Environmental Services
Division of State Lands

TEN-YEAR LAND MANAGEMENT PLAN

FOR THE

TWIN RIVERS STATE FOREST

HAMILTON, MADISON, AND SUWANNEE COUNTIES



PREPARED BY THE

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FLORIDA FOREST SERVICE

APPROVED ON

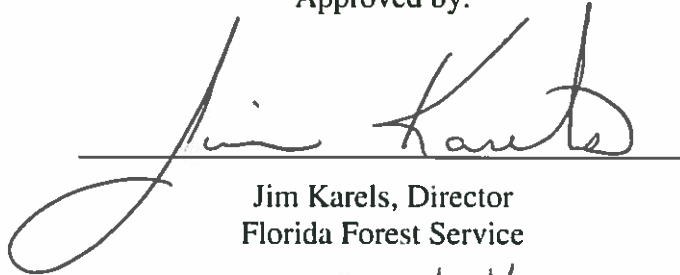
TEN-YEAR LAND MANAGEMENT PLAN

FOR THE

TWIN RIVERS STATE FOREST



Approved by:



Jim Karels, Director
Florida Forest Service

2.16.16
Date



Brad Ellis, Chief
Forest Management Bureau

2/15/16
Date

TEN-YEAR LAND MANAGEMENT PLAN
TWIN RIVERS STATE FOREST

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LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: Florida Department of Agriculture and Consumer Services,
Florida Forest Service
COMMON NAME: Twin Rivers State Forest
LOCATION: Hamilton, Madison, and Suwannee Counties
ACREAGE TOTAL: 14,981.42 acres (more or less)

<i>Historical Natural Communities</i>	<i>Approximate Acreage</i>
Upland Pine Forest	6,602
Bottomland Forest	3,336
Sandhill	1,973
Upland Hardwood Forest	1,305
Mesic Flatwoods	1,225

<i>Historical Natural Communities</i>	<i>Approximate Acreage</i>
Mesic Hammock	168
Floodplain Forest	48
Xeric hammock	11
Sinkholes	2
*Damascus Tract not included	599

TIITF LEASE AGREEMENT NUMBER: 4047

SRWMD LEASE AGREEMENT NUMBER: SRWMD #05/06-131 / FDACS Contract #10739

USE: Single ☐ Multiple ☒

MANAGEMENT AGENCY

Florida DACS, Florida Forest Service
Florida Fish and Wildlife Conservation Commission
Suwannee River Water Management District
Department of State, Division of Historical Resources

RESPONSIBILITY

General Forest Resource Management
Wildlife Resources & Laws
Water Resource Protection & Restoration
Historical and Archaeological Resource Management

DESIGNATED LAND USE: Multiple-Use State Forest

SUBLEASES: None

ENCUMBRANCES: Multiple Easements. See II.D.6.

TYPE ACQUISITION: Save Our Rivers, Preservation 2000, Donation, Conservation and Recreation Lands, Florida Forestry Service In-holding and Additions Program, and Florida Forever / Conservation and Recreation Lands

UNIQUE FEATURES: Extensive undeveloped river frontage along the Withlacoochee River and Suwannee River; Blue Springs Longleaf Tract;

ARCHAEOLOGICAL / HISTORICAL: Eighty Archeological Sites, One Historic Cemetery, One Historic Bridge, and One Standing Structure

MANAGEMENT NEEDS: Evaluate Damascus Tract for Recreation, Historic Resources, & Natural Communities; Reestablish Liaison Panel; Improve facilities at the Withlacoochee (locally known as the Pot Springs) recreation area; Reforest several clearcut off-site pine sites.

ACQUISITION NEEDS: None. See I.C.D.2

SURPLUS LANDS / ACREAGE: See II.D.3 on page 15.

PUBLIC INVOLVEMENT: 2011 Land Management Review (DEP), 2014 Land Management Review (SRWMD), Management Plan Advisory Group and Public Hearing, and the Acquisition and Restoration Council Public Hearing.

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

ARC Approval Date: _____ BTIITF Approval Date: _____

Comments: _____

I. Introduction

The Twin Rivers State Forest (TRSF) consists of 15 non-contiguous tracts which, with one exception, are scattered for over 30 miles along the east and west banks of the beautiful and historic Withlacoochee and Suwannee Rivers. TRSF entails 14,981.42 acres and is located in western Hamilton County, eastern Madison County, and northwest Suwannee County, Florida. The Suwannee River Water Management District (SRWMD) holds fee simple title to all properties within the boundaries of TRSF, with the exception of the Blue Springs Longleaf Tract (BSLT) and Damascus tract, of which the Board of Trustees of the Internal Improvement Trust Fund (TIITF) holds fee simple title. The Department of Agriculture and Consumer Services has entered in to a lease agreement with the SRWMD to manage the District owned portions for multiple resources benefits.

Unique features of the forest include extensive undeveloped river frontage along the beautiful Withlacoochee River and Suwannee River, the latter of which is designated as an Outstanding Florida Waterway (OFW) and is the second largest river in the state in terms of flow. The Blue Springs Longleaf tract contains one of the finest examples in the state of a longleaf pine / wiregrass (upland pine community) with old-growth characteristics. Other natural communities on the forest include bottomland forest, alluvial forest, xeric hammock, sandhill, upland hardwood forest, and sinkhole.

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 TRSF center on the multiple-use concept, as defined in sections 373.1391(b), 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 TRSF 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 nongame wildlife, and plants.
- Protect known archaeological, historical, cultural and paleontological resources.
- Restore, maintain and protect hydrological functions related to water resources and the health of associated wetland and aquatic communities.

This management plan is provided according to requirements of Sections 253.034, 259.032 and 373.1931(b), Florida Statutes, and was prepared utilizing guidelines outlined in Section 18-2.021 of the Florida Administrative Code. It is not an annual work plan or detailed operational plan but provides general guidance for the management of TRSF for

the next ten-year period and outlines the major concepts that will guide management activities on the forest.

B. Past Accomplishments

A compilation of management activities and public use on TRSF has been completed monthly and are available from the forest manager. A table has been prepared for this plan that summarizes, in numerical format, 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 that are more readily quantifiable. It does not list the multitude of daily activities and public interactions involved in managing the forest.

Since the approval of the previous management plans in 2004 and 2005, there have been many events, developments, and accomplishments. Among the most noteworthy have been the following:

- The Damascus Tract was acquired.
- 1,148 acres of longleaf pines were planted.
- Forest staff treated over 6,000 acres of invasive species.
- Almost 2,800 acres of trees were harvested or thinned.
- Over 120,000 visitors have come to the forest in the past ten years.
- Since 2005, over 1,400 overnight visitors.
- Forest staff conducted 25 programs or tours.
- 7 miles of trails were blazed; 48 miles of trails were maintained.
- Forest staff has installed over 10,500 feet of fence.
- Over 22,500 acres were prescribed burned.
- The Pot Springs Horse Trail (7.5 miles) was established.
- Major improvements were made to the Anderson Springs Recreation Area.
- The Loop Road was rebuilt on the Ellaville Tract.
- Four hunts have been hosted for Operation Outdoor Freedom; two deer hunts and two turkey hunts.
- A canoe launch was established on the Sullivan Tract.
- Two annual horseback riding events continue to be held on the Blue Springs Tract and the Withlacoochee (Pot Springs) Tract.
- Wiregrass was established on 50 acres of thinned Longleaf Pine as part of a grant.

C. Goals/Objectives for the Next Ten Year Period

The following goals and objectives provide direction and focus management resources for the next ten-year planning period. Funding, agency program priorities, and the wildfire situation during the planning period will determine the degree to which these objectives can be met. Management activities on TRSF 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. The majority of the management operations will be conducted by the FFS, although appropriate activities will be contracted to private sector vendors. 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 be achievable within a two year planning period, and long-term goals are be achievable within a ten year planning period. Objectives are listed in priority order for each goal. Cost estimates are provided below for FFS services and contract services where sufficient information is available to make projections. Costs for some activities cannot be estimated at this time. Other activities will be completed with minimal overhead expense and existing staff.

➤ **GOAL 1: Sustainable Forest Management**

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

Performance Measures:

- Completion of the annual updates of the Five Year Silviculture Management Plan.
- Continued implementation of the Silviculture Management Plan (acres treated).

Objective 2: Continue to follow the FFS process for conducting stand descriptions and forest inventory (as outlined in the State Forest Handbook) including a GIS database containing forest stands, roads, and other attributes (including but not limited to: threatened and endangered species, archaeological resources, non-native invasive species locations, historical areas). (Ongoing Goal)

Performance Measures:

- Complete GIS database and re-inventory all attributes as required by FFS procedures.
- Number of acres inventoried annually.

Objective 3: Conduct Forest Inventory updates each year, according to established criteria in State Forest Handbook. (Ongoing Goal)

Performance Measure: Number of acres inventoried annually.

Objective 4: As part of the Five Year Silvicultural Plan, FFS will continue to update the forest inventory per the State Lands Handbook. Based on this inventory, timber volumes and growth data will be estimated and used to guide a sustainable forest management program.

Performance Measures:

- Inventory of forested acres completed.
- Timber volume and growth estimated.
- Sustainable timber harvests confirmed.

➤ **GOAL 2: Public Access and Recreational Opportunities**

Objective 1: Maintain public access and recreational opportunities to allow for a recreational carrying capacity of 392 visitors per day for recreational purposes and 564 visitors per day during hunting season. (Ongoing Goal)

Performance Measure: Number of visitor opportunities per day.

Objective 2: In order to continue to safely integrate human use into TRSF, follow the established Five-Year Outdoor Recreation Plan and continue to update annually. (Ongoing Goal)

Performance Measure:

- Completion of the annual updates of the Five-Year Outdoor Recreation Plan.
- Continued implementation of the Five-Year Outdoor Recreation Plan.

Objective 3: Within one year of adoption of this ten-year management plan, reestablish the liaison panel. The panel consists of a cross section of local residents, community leaders, and special interest group representatives (canoe vendors, hunters, trail hikers, military, organized horse groups, etc.), environmental groups, and other public / private entities to establish communication and seek constructive feedback regarding the management of TRSF. (Short Term Goal)

Performance Measures:

- Liaison group re-organized.
- First meeting conducted.

Objective 4: Increase recreational opportunities on the Damascus Tract. Recreation on the tract may include: hiking, horseback riding, fishing, and birding. (Long Term Goal)

Performance Measure: Recreational opportunities established.

Objective 5: In conjunction with FWC and the SRWMD, assess the potential of including the Damascus Tract, and possibly other tracts, into the existing Wildlife Management Area (WMA) on TRSF. (Short Term Goal)

Performance Measures:

- Assessment conducted.
- Damascus Tract incorporated into the TRSF WMA, if assessment warrants.
- Annual review with the SRWMD and FWC.

➤ **GOAL 3: Habitat Restoration and Improvement**

Objective 1: Conduct habitat / natural community improvement on 555 acres. This improvement involves completion of clearing offsite pine species and reforestation with longleaf pine. Site preparation on these sites will include chemical application and burning. Approximate total cost is \$85,000 or \$150 per acre. (Long Term Goal)

- Damascus Tract – 300 acres; cost is \$45,000
- Sullivan Tract – 70 acres; cost is \$10,500
- Blue Springs Tract – 50 acres; cost is \$7,500
- Ellaville Tract – 130 acres; cost is \$19,500
- Black Tract – 5 acres; cost is \$750

Performance Measure: Number of acres with habitat improvements underway. This improvement will include prescribed burning, reforestation, hardwood reduction, and the use of chemical and/or mechanical treatments where necessary.

Objective 2: Assess the need to conduct natural community mapping on the Damascus Tract, acquired in 2013. If it is determined there is a need to conduct natural community mapping, the mapping will be done if funding is available. (Short Term Goal)

- **Performance Measure:** Assessment conducted and a determination is made.

Objective 3: Assess the need to conduct natural community mapping on the entire state forest. If it is determined there is a need to conduct natural community mapping, the mapping will be done if funding is available. (Short Term Goal)

- **Performance Measure:** Assessment conducted and a determination is made.

GOAL 4: Fire Management

Objective 1: The TRSF contains approximately 11,300 acres of fire dependent natural communities. In order to increase prescribed burning to achieve an average fire return interval of two to five years across the forest, approximately 3,000 acres will be prescribed burned annually. Based upon the FFS's contracted burning rate, the average estimated annual cost (including fuel and maintenance) rate is \$60,000 to \$75,000 per year. (Ongoing Goal)

Performance Measure: Number of acres burned during the dormant and growing seasons, and acres burned within target fire return interval.

Objective 2: Continue to annually update and implement the Five-Year Prescribed Burning Management Plan including reforestation, harvesting, prescribed burning, restoration, and timber stand improvement activities and goals. (Ongoing Goal)

Performance Measures:

- Completion of the annual updates of the Five-Year Prescribed Burning Management Plan.
- Continued implementation of Prescribed Burning Management Plan (acres treated).

Objective 3: Reduce the threat of wildfire within the Wildland/Urban interface on TRSF and the surrounding community through a comprehensive mitigation strategy that includes evaluating vegetative fuels near residential areas and identifying potential fuel reduction projects.

Performance Measures:

- Evaluation complete.
- Should the evaluation determine that fuel reduction is necessary, number of projects underway.

➤ **GOAL 5: Listed and Rare Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

Objective 1: In cooperation with FWC, develop a Wildlife Management Strategy that addresses fish and wildlife species for TRSF, with emphasis on imperiled species and associated management prescriptions for their habitats. (Long Term Goal)

Performance Measures:

- Imperiled species management strategy completed.
- Baseline listed and rare species list completed for TRSF.

Objective 2: In cooperation with FWC, develop appropriate imperiled species survey and monitoring protocols based on site-specific occurrences, population data, and sustainability potential. (Long Term Goal)

Performance Measure: Number of listed and rare species for which survey plans and monitoring protocols are developed.

Objective 3: In consultation with FWC, implement survey and monitoring protocols, where feasible, for listed and rare species as identified in Objective 2. (Long Term Goal)

Performance Measure: Number of species for which monitoring is ongoing.

➤ **GOAL 6: Non-Native Invasive Species Maintenance and Control**

Objective 1: Continue to follow the Five-Year Ecological Management Plan developed to locate, identify, and control non-native invasive plant species. (Ongoing Goal)

Performance Measures:

- Total number of acres identified and successfully treated.
- Completion of the annual updates of the Five-Year Ecological Management Plan.
- Continued implementation of the Five-Year Ecological Management Plan.

Objective 2: When needed, coordinate with the FWC Upland Invasive Plant Biologist for the area and utilize the FWC herbicide bank to control non-native invasive plant species. (Long Term Goal)

Performance Measures:

- Herbicide bank utilized.

Objective 3: FFS may assess opportunities to work with adjacent, private landowners in the Withlacoochee Basin in an effort to provide education to landowners in an effort to control non-native, invasive species. FFS will cooperate and coordinate with FWC's Upland Staff, DEP's Manager at Blue Springs Park, the local Soil and Water Conservation Districts, and NRCS. (Long Term Goal)

Performance Measures:

- Contact made with adjacent, private landowners, when needed.
- FFS attendance at any meetings set up between agencies and public regarding the control of non-native invasive species.

➤ **GOAL 7: Cultural and Historical Resources**

Objective 1: Ensure all known sites are recorded in the Division of Historical Resources (DHR) Florida Master Site file. (Ongoing Goal)

Performance Measure: Number of recorded sites.

Objective 2: Monitor recorded sites and send updates to the DHR Florida Master Site File as needed. (Ongoing Goal)

Performance Measure: Number of sites monitored/reports submitted to DHR.

Objective 3: Maintain at least one qualified staff member as an archaeological site monitor, with the intent of qualifying two or more. (Ongoing Goal)

Performance Measure: Number of local staff trained.

Objective 4: Work with DHR to determine priorities for archaeological sites requiring monitoring. (Short Term Goal)

Performance Measure: Priorities established.

Objective 5: Implement monitoring protocols from the DHR / FFS assessment. (Ongoing Goal)

Performance Measure: Monitoring protocols implemented.

➤ **GOAL8: Hydrological Preservation and Restoration**

Objective 1: Conduct or obtain a site assessment / study to identify and rank potential hydrology restoration needs. FFS will coordinate efforts with the Suwannee River Water Management District. (Short Term Goal)

Performance Measure: Assessment conducted.

Objective 2: Protect water resources during management activities through the use of Silvicultural Best Management Practices (BMPs) for public lands. (Ongoing Goal)

Performance Measure: Percent compliance with state lands BMPs.

Objective 3: Close, rehabilitate, or restore those roads, firelines, and trails that have evidence of erosion into surrounding water bodies causing alterations to the hydrology and/or water quality. FFS will coordinate efforts with the Suwannee River Water Management District. (Ongoing Goal)

Performance Measure: Total number of roads, firelines, and trails closed, rehabilitated, and/or restored.

Objective 3: In conjunction with the Suwannee River Water Management District, make improvements to Pot Spring, including: spring bank stabilization; run-off control in the parking areas; redesign of the parking lot and boardwalk. These efforts will protect the water quality of Withlacoochee (Pot Springs) and reduce soil erosion. (Long Term Goal – Cost \$250,000)

Performance Measures:

- Secure funding.
- Improvements made.
- Erosion reduced.
- Spring bank stabilized.

➤ **GOAL 9: Capital Facilities and Infrastructure**

Objective 1: TRSF staff, along with help from volunteers and/or user groups, will continue maintenance of three primitive group campsites (Ellaville Bluff, Black Tract, and Anderson Springs), six parking areas / trailheads (BSLT horse trail, Withlacoochee horse trail, Ellaville check station / informational kiosk, Ellaville trailwalker trail, Anderson Springs trailwalker trail, and Black Tract horse trail), 48 miles of trails (BSLT horse trail, Withlacoochee horse trail, Ellaville trailwalker trail, Anderson Springs trailwalker trail, Anderson Springs bike trail, Black hiking trail, Black horse trail, and the Florida National Scenic Trail), 21 miles of secondary roads, and 101 miles of tertiary roads. (Ongoing Goal)

Performance Measure: The number of existing facilities, miles of roads, and miles of trails maintained.

Objective 2: Annually update the Five-Year Boundary Survey and Maintenance Plan for the TRSF and continue annual maintenance of state forest boundary. The entire boundary will be reworked every five years including harrowing, reposting signage, and repainting boundary trees. (Ongoing Goal)

Performance Measures:

- Completion of the annual updates of the Five-Year Boundary Survey and Maintenance Plan.
- Continued implementation of the Five-Year Boundary Survey and Maintenance Plan.
- Percentage of forest boundary maintained each year.

Objective 3: Annually update the Five-Year Road and Bridge Management Plan and continue annual maintenance of roads at TRSF.

(Short Term Goal)

Performance Measures:

- Completion of the annual updates of the Five-Year Road and Bridges Management Plan.
- Continued implementation of the Five-Year Road and Bridges Management Plan.

II. Administration Section

A. Descriptive Information

1. Common Name of Property

The common name of the property is the Twin Rivers State Forest (TRSF).

2. Legal Description and Acreage

The TRSF is comprised of 15 tracts totaling 14,981.42 acres.

The TRSF consists of 15 non-contiguous tracts that stretch for over 30 miles along the Withlacoochee and Suwannee Rivers. These tracts are located in portions of western Hamilton County, eastern Madison County and northwest Suwannee County, Florida. On the north end, the Sullivan Tract lies on the east side of the Withlacoochee River; approximately 1.5 miles south of the Florida / Georgia state line. On the south end, the Mill Creek South Tract lies on the west side of the Suwannee River; approximately 1 mile north of Dowling Park. Interstate 10 bisects the Anderson Springs Tract and U.S. 90 bisects the Ellaville Tract.

Table 1. TRSF Acreage by Tract / Parcel

Management Agreement	Tract Name	Funding Source	County	Acres
01/24/2006	Anderson Springs	SOR / SRWMD	Suwannee	1,426.99
01/24/2006	Black	SOR / SRWMD	Madison	632.60
01/24/2006	Chitty Bend East	SOR / SRWMD	Hamilton	*272.92
01/24/2006	Chitty Bend West	SOR / SRWMD	Madison	*527.88
01/24/2006	Deese	SOR / SRWMD	Hamilton	100.67
01/24/2006	Ellaville	SOR / SRWMD	Madison	4198.29

Management Agreement	Tract Name	Funding Source	County	Acres
01/24/2006	Mill Creek North	SOR / SRWMD	Madison	653.17
01/24/2006	Mill Creek South	SOR / SRWMD	Madison	1386.66
01/24/2006	Nekoosa	SOR / SRWMD	Hamilton	523.21
01/24/2006	Withlacoochee (Pot Springs)	SOR / SRWMD	Hamilton	1155.74
01/24/2006	Sullivan	SOR / SRWMD	Madison	375.82
01/24/2006	Westwood East	SOR / SRWMD	Hamilton	547.97
01/24/2006	Westwood West	SOR / SRWMD	Madison	*499.17
TIITF Lease Agreement	Tract Name	Funding Source	County	Acres
09/29/1994	Blue Springs - Champion	P2000 / CARL	Hamilton	1973.86
1/17/2002	Blue Springs – Hamilton Timberlands	DOF / FF	Hamilton	107.02
06/13/2013	Damascus Peanut Co.	FF / CARL	Hamilton	599.45
			Total Acres	14981.42

* - Acreage to be adjusted upon further research or land surplus activities.

The boundaries and major parcels are identified in Exhibit B. The TRSF/SRWMD parcels are located in Township 1 North, Range 11 East, Sections 2, 5, 6, 10 – 17, 20, 21; Township 2 South Range 11 East, Sections 2 – 4, 9, 10, 16, 17, 20, 21, 29, 30 – 32; Township 1 South, Range 11 East, Section 3, 4, 10 – 15, 23 – 27, 33 – 35; Township 2 North, Range 11 East, Sections 5 – 7, 18, 19, 31, 32; and Township 2 North, Range 10 East, Sections 2 and 13.

The BSLT is located in all or portions of Sections 2, 10-16, Township 1 North, Range 11 East and totals 2,080.88 acres. The Damascus tract is located in all or portions of Sections 33, 34, and 35, Township 1 South, Range 11 East, and totals 599.45 acres.

Table 2. TRSF Acreage by Funding Source

	FUNDING SOURCE	ACRES
SOR	Save Our Rivers	12,661.09
CARL	Conservation and Recreation Lands	2,573.31
P2000	Preservation 2000	1,973.86
FF	Florida Forever	706.47
FFS	Florida Forest Service	107.02

A complete legal description of lands owned by the Board of Trustees of the Internal Improvement Trust Fund (TIITF) and SRWMD as part of TRSF is on record at the Live Oak Forestry Station Office, Florida Department of Environmental Protection (DEP), and the FFS State Office in Tallahassee.

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 9 miles of the TRSF are included in Exhibit F as well as the table below:

Table 3. Nearby Public Conservation Land and Easements

TRACT	AGENCY	DISTANCE
Madison Blue Spring State Park	DRP	Adjacent to Withlacoochee (Pot Springs)
Suwannee River State Park	DRP	Adjacent to Ellaville
Lafayette Blue Springs State Park	DRP	7 miles south of Mill Creek South
Suwannee Ridge Mitigation Park, Wildlife & Environmental Area	FWC	7 miles southeast of Nekoosa
Holton Creek WMA	SRWMD	6 miles southeast of Nekoosa
Withlacoochee West Conservation Area	SRWMD	Adjoining
Withlacoochee East Conservation Area	SRWMD	2 miles northwest
Falmouth Springs Conservation Area	SRWMD	2 miles south
Charles Springs Conservation Area	SRWMD	4 miles south
Lower Alapaha Conservation Area	SRWMD	8 miles east
Upper Alapaha Conservation Area	SRWMD	9 miles east
Suwannee River State Park Connector; Donaldson, Michel, Richards, Goolsby & Adams tracts	USFS	5-7 miles east
Warner /Harrell Conservation Easement	SRWMD	3 miles east

DRP – Florida Dept. of Environmental Protection, Division of Recreation and Parks

FWC – Florida Fish and Wildlife Conservation Commission FFS – Florida Forest Service

SRWMD – Suwannee River Water Management District

USFS – United States Forest Service

USFWS – United State Fish & Wildlife Service

4. Property Acquisition and Land Use Considerations

The SRWMD holds fee simple title to all properties within the boundaries of TRSF, with the exception of the Blue Springs Longleaf Tract and Damascus Tract, of which the TIITF holds fee simple title. Of the SRWMD properties, approximately 11,672.09 acres were purchased through the Save Our Rivers program, established by the Florida Legislature in 1981 and 926 acres were purchased through the Preservation 2000 Program, established in 1990 by the Florida Legislature. A donation of 63 acres, made by the Chotiner family, is included in the Anderson Springs unit.

For the TIITF portion, a total of 1,973.86 acres of the BSLT was purchased as a Conservation and Recreation Lands (CARL) project on May 22, 1994. At that time, the FFS was assigned management responsibility for the property. In 2002, an additional 107.02 acre parcel was purchased through the FFS's In-holding and Additions Program and appended to the BSLT. The Damascus Tract was purchased

with Florida Forever / CARL funds in 2013. The FFS was assigned management responsibility of the Damascus Tract in 2013 and is conducting operations at this time under interim guidelines until a management plan is approved.

B. Management Authority, Purpose and Constraints

1. Purpose for Acquisition / Management Prospectus

Management is conducted by The Florida Department of Agriculture and Consumer Services, FFS, with assistance, as warranted, from other agencies. FFS will be the manager of forest resources, recreation, water resource protection, watershed protection, and land use planning on TRSF.

Revenue derived from timber sales is used to offset incurred expenses, capital improvements, reforestation, and other personnel services (OPS).

Staffing consists of one Forestry Supervisor II, one Forester, and two Senior Forest Rangers. Additional resource planning, administrative function and work project coordination support is provided by two Operations Administrators. Personnel and equipment is utilized from the Suwannee and Perry Districts. Also, inmate labor from Hamilton Correctional Institution is utilized on state forest lands for routine maintenance, trash pickup, and special projects such as cone collection, recreational trail development, and fence repair. Volunteer groups, such as the Florida Trail Association, assist with trail establishment and maintenance.

Multiple-use management for TRSF 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 nongame wildlife, and plants;
- Protect known archaeological, historical, cultural and paleontological resources;
- Restore, maintain and protect hydrological functions related water resources and the health of associated wetland and aquatic communities;
- To provide research and educational opportunities related to natural resource management.

2. Degree of Title Interest Held by the Board

The Suwannee River Water Management District (SRWMD) holds title to approximately 12,661.09 acres of the TRSF. The remainder is held by the Board of Trustees of the Internal Improvement Trust Fund (TIITF).

3. Designated Single or Multiple-Use Management

The TRSF is managed under a multiple-use concept by the FFS, under the authority of Chapters 253 and 589, Florida Statutes. The FFS is the lead managing agency as

stated in TIITF Management Lease Number #4047 and in SRWMD Contract 05/06-131.

Multiple use 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 that 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 of these resources and giving consideration to 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 the state forest 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 income producing activities for TRSF are:

- Timber Harvests – Timber harvests on TRSF will be conducted on a regular basis to improve forest health, promote wildlife habitat, restore plant communities, and other benefits.
- Fuelwood – TRSF staff may consider issuance of fuelwood permits as requested.
- Pine Straw Sales – the FFS may sell pine straw.

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 589, 259 and 253, Florida Statutes.

6. Legislative or Executive Constraints

There are no known legislative or executive constraints specifically directed towards the TRSF. The constraints in place from the SRWMD are outlined in the agreement between the SRWMD and the FDACS, #05/06-131, dated January 24, 2006.

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

The TRSF boundary lines (66 miles total) are managed by state forest personnel in accordance with the guidelines of the State Forest Handbook. There are 113 gates on TRSF that require periodic maintenance.

2. Improvements

Buildings present on the TRSF (Exhibit D) include:

- a. 258 sq. ft. storage building (WMA check station)
- b. 91 sq. ft. pole barn (necropsy shelter)
- c. 4 inch well at the WMA check station.
- d. 10 x 10 storage building.

3. On-Site Housing

There are no residences located on the TRSF.

FFS may establish on-site housing (mobile / manufactured home) on TRSF TIITF lands if deemed necessary to alleviate security and management issues. The need and feasibility specific for the state forest will be evaluated and established if considered appropriate by the Center Manager and approved by the FFS Director. Prior to the occurrence of any ground disturbing activity for the purpose of establishing on-site housing, a notification will be sent to the DHR and the 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 Center Manager and approved by the Director.

4. Operations Infrastructure

a. Budget

The total annual budget for Fiscal Year 2013-2014 at TRSF was \$186,551.

A summary of the budget is contained in Exhibit X.

Implementation of any of the activities within this management plan is contingent on availability of available funding, other resources, and other statewide priorities.

b. Equipment

To carry out the resource management work on the state forest, as well as to maintain forest improvements such as trails, roads, and facilities, the following equipment has been assigned or is immediately available for work on TRSF:

- 4wd ¾ ton pickup with 70 gallon water tank and electric pump
- 4wd ½ ton pickup
- 4wd 1 ton pickup with 225 gallon slip in water tank and gas pump
- 4wd ¾ ton pickup with 80 gallon water tank and electric pump
- 4wd 1 ton crew cab pickup for inmate crew
- LT9500 Road Tractor with low boy trailer
- 4wd Farm Tractor with bush hog, box blade, harrow and tree cutter
- JD 550 crawler tractor with plow and double gang harrow
- 4wd UTV Kawasaki Mule
- 4wd ATV Suzuki Vinson
- 5x10 utility trailer
- 6x12 utility trailer
- 61" riding lawnmower

Additional equipment is available from the Live Oak Forestry Station and the Madison Forestry Station.

c. Utilities

The following utilities serve the public and forest staff:

- 4" well for non-potable equestrian horse use and for hunter use while dressing or cleaning wild game next to the Ellaville check station.
- Electric services for the WMA check station provided by Duke Energy.

d. Staffing

Staff currently assigned to TRSF includes a Forestry Supervisor II, a Forester, and two Senior Forest Rangers. All staff and the Forest Area Supervisor (FAS) have offices at the Live Oak Forestry Station. When necessary, Forest Rangers from the Live Oak Forestry Station may be utilized, if available.

The Forestry Supervisor II will work to achieve the goals outlined in this management plan. Day to day resource management (timber cruising, planning, etc) will be the responsibility of the Forestry Supervisor II, under the direction of the West Operations Administrator. Day-to-day forest operations (road maintenance, prescribed burning, etc) will be the responsibility of the FFS fire control personnel, under the direction of the respective Forest Area Supervisor(s). Additional assistance will be provided by the Department of Corrections' Inmate Supervisor and a work crew from Hamilton Correctional Institution as assigned by the Suwannee Operations Administrator.

D. Additional Acquisitions and Land Use Considerations

1. Alternate Uses Considered

During this management period, the following uses were considered and determined to be incompatible: palmetto drupe harvest.

Deadhead logging is not compatible and is not considered an appropriate use within or adjacent to the state forest boundaries.

Other 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.

2. Additional Land Needs

The FFS has evaluated the lands adjacent to the Blue Springs and Damascus Tracts (TIITF) and has determined there are no immediate needs for land acquisition. The lands surrounding these tracts are either disturbed or small tracts with established home sites.

The SRWMD has a process for evaluating lands within the 100-year floodplain and spring sheds for the purpose of acquisition. FFS will continue to work with the SRWMD in their assessment of additional land needs adjacent to their tracts. It is

understood that the focus of these additional acquisitions would be to acquire land within the 100-year floodplain of the rivers. In addition, FFS will evaluate SRWMD lands for acquisition that the SRWMD identifies as surplus for being located outside of the 100-year floodplain.

3. Surplus Land Assessment

The SRWMD staff has evaluated their lands for surplus which to date has resulted in the surplus and sale of 490 acres that had been managed by the FFS under the current lease agreement. Additionally, there are additional acres on TRSF that have been declared surplus by the SRWMD. FFS and SRWMD will cooperate to review lands for surplus as indicated in the Goals / Objectives section of the plan and cooperate on any exchanges to solidify boundary lines and/or correct management issues.

4. Adjacent Conflicting Uses

During the development of this management plan, FFS staff identified and evaluated adjacent land uses, reviewed current comprehensive plans, and future land use maps. Additionally, FFS staff met with adjacent land owners and maintains liaison with those land owners to ensure that any conflicting future land uses may be readily identified and addressed.

The following issues were determined to be conflicting land uses:

- a. Adjacent to the Ellaville, Westwood West, Black, and Mill Creek North Tracts, a pivot irrigation system has been established. This system impacts the state forest and interferes with prescribed burning and wildlife management.
- b. The Sabal Trail gas line proposal may impact the Blue Springs, Ellaville, and Anderson Springs Tract.

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 Hamilton, Madison, and Suwannee Counties for review and compliance with their local comprehensive plans (See Exhibit V).

6. Utility Corridors and Easements

A Progress Energy power line bisects several tracts on TRSF, including Black, Ellaville, Chitty Bend West and the Blue Springs Longleaf. A smaller Tri-County Electric power line bisects the Mill Creek South tract. In addition, a gas line easement bisects portions of Anderson Springs and Black tracts. These are the only recorded easements and are on file with DEP's Division of State Lands.

The 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. 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), to minimize habitat fragmentation, and to limit disruption of management activities and 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. The 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 SRWMD. Requests for linear facility uses will be handled according to the Governor and the Cabinet's linear facilities policy.

The Sabal Trail gas line proposal may be located on Blue Springs, Ellaville, and Anderson Springs Tracts.

E. Agency & Public Involvement

1. Responsibilities of Managing Agencies

The FFS is the lead managing agency, responsible for overall forest management and public recreation activities, as stated in TIITF Management Lease Number 4047 and SRWMD Contract Number 05/06-131 / FDACS Contract Number 10739. Pursuant to the management lease, the lead managing agency may enter into further agreements or to sub-leases on any part of the forest.

The Florida Fish and Wildlife Conservation Commission (FWC) has law enforcement responsibilities, enforces hunting regulations, cooperatively sets hunting season dates with FFS, and conducts other wildlife management activities with input from FFS. The FWC has established a Wildlife Management Area on approximately 9,339.61 acres of the TRSF.

The FFS will cooperate with the DHR regarding appropriate management practices on historical or archaeological sites on the property as stated in Section 267.061, Florida Statutes. They will be notified prior to the initiation of any ground disturbing activities by the FFS or any other agency involved with the forest.

The Suwannee River Water Management District (SRWMD) will be consulted and involved in matters relating to water resources as appropriate.

2. Law Enforcement

Primary law enforcement responsibilities will be handled by law enforcement officers from the FWC. Rules governing the use of TRSF are stated in Chapter 5I-4 of the Administrative Code. FWC will enforce fish and wildlife regulations and provide

assistance in enforcing state forest rules. The Office of Agricultural Law Enforcement (OALE) will assist with open burning and wildfire investigations as needed. Additional assistance is provided by the Suwannee, Madison, and Hamilton County Sheriff's Offices as needed. In light of the current statewide budget limitations, the FFS feels that law enforcement is adequate on TRSF. There may be some flexibility in managing the current staff schedules to get better FFS presence on the weekends. Present law enforcement measures are that at least one fire control forest ranger is on duty during the weekends, during normal business hours.

Special rules under Chapter 5I-4 of the Florida Administrative Code were promulgated for Department of Agriculture and Consumer Services, Florida Forest Service, to manage the use of state lands and better control traffic, camping, and other uses in the state forest.

3. Public and Local Government Involvement

This plan has been prepared by FFS and will be carried out primarily by that agency. The FFS responds to public involvement through direct communication with individuals, user groups, and government officials.

The FFS responds to public involvement through its Liaison Committees, Advisory Groups, public hearings, and through direct contact with user groups. A Land Management Review Team conducted a review of management plan implementation in 2006 and 2011 on the Blue Springs Unit [See Exhibit U]. The review team's recommendations were incorporated into this plan as appropriate.

Additionally, the Suwannee River Water Management District conducted a review in 2014 on the water management district lands. This report is also located in Exhibit U.

The plan was developed with input from the TRSF Management Plan Advisory Group and was reviewed at a public hearing on January 19, 2016. A summary of the advisory group's meetings and discussions, as well as written comments received on the plan, are included in Exhibit W. The Acquisition and Restoration Council (ARC) public hearing and meeting serve as an additional forum for public input and review of the plan.

4. Volunteers

Volunteers are important assets to TRSF. Depending upon the type of volunteer service needed, volunteer activities may be one-time events or long-term recurring projects and routine maintenance. The Florida Trail Association has assisted with trail establishment and maintenance. Other volunteer groups, Boy Scouts, or horseback riding clubs will occasionally do work at the TRSF. Additional volunteer recruitment will be encouraged to assist with other activities to further the FFS's mission.

5. Friends of Florida State Forests

Friends of Florida State Forests (FFSF) is a Direct Support Organization (DSO) of the Florida Forest Service. The FFSF supports recreation and reforestation projects on

Florida's state forests. FFSF is an organization established by Florida statute that supports programs within Florida's state forests and is governed by a board of directors representing all areas of the state. Through community support, the FFSF assists the Florida Forest Service to expand opportunities for recreation, environmental education, fire prevention, and forest management within Florida's state forests.

III. Archaeological/Cultural Resources and Protection

A. Past Uses

Historically, the junction of the Withlacoochee and Suwannee Rivers was an important point of commerce. In the 1800's, both rivers were used as major commercial routes and steamboats were a common sight as they carried passengers, freight, and mail on the rivers.

Today, the majority of the forest lies within the 100-year floodplain of the Withlacoochee and Suwannee Rivers. Acquisitions of land that comprise Twin Rivers State Forest were funded through the Save Our Rivers (SOR) Program, created by the Florida Legislature in 1981, the Preservation 2000 Program, established in 1990 by the Legislature, and the Conservation and Recreation Lands Program. Most of the land acquired lies in the rivers' 100-year floodplain.

In 1995, the Florida Department of Agriculture and Consumer Services, Florida Forest Service, was given lead management responsibility for Twin Rivers State Forest under a special lease agreement with the Suwannee River Water Management District, which is the owner of most of the property.

B. Archaeological and Historical Resources

A review of information contained in the DHR's Florida Master Site file has determined there are eighty-two previously recorded archeological sites, no resource groups, one historic cemetery, one historic bridge, and one standing structure on TRSF.

Table 4. Historical Sites on TRSF

SITE ID	SITE NAME	SITE TYPE
MD00035	Drew Mansion	1860 Unspecified
MD00188	Bellville Bridge	1912 Bridge
MD00220	Drew Cemetery	Established c1881
MD00282	The Stroud Cemetery	Established c1883

See Exhibit G for a complete list of all archeological and cultural sites on TRSF.

C. Ground Disturbing Activities

Representatives of DHR and FNAI will be consulted prior to the initiation of any proposed significant ground disturbing activity, not listed in this plan, by FFS or any other public agency. The FFS will make every effort to protect known archaeological and historical resources. The FFS will follow the "Management Procedures for

Archaeological and Historical Sites and Properties on State Owned or Controlled Lands” [See Exhibit H] and will comply with all appropriate provisions of Section 267.061(2) Florida Statutes. 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, there are 3 local district FFS personnel at the Live Oak Forestry Station trained by DHR as archaeological site monitors. FFS will pursue opportunities for getting additional personnel trained. FFS will consult with public lands archaeologists at DHR to determine an appropriate priority and frequency of monitoring at each of the listed sites, as well as any protection measures that might be required. FFS field staff will monitor the listed sites to note condition and any existing or potential threats.

As information becomes available, and as staffing allows, any known archaeological and historical sites will be identified on maps to aid state forest and law enforcement personnel in patrolling and protecting sites. Applicable surveys will be conducted by FFS staff or others 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 will oversee ground disturbing activities where monitoring is recommended by DHR. The 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

A. Soils and Geologic Resources

1. Resources

Soils information for TRSF was obtained from the United States Department of Agriculture Natural Resources Conservation Service (NRCS). Over 30 different soils are listed on the TRSF. The predominant soils listed by the NRCS include: Alpin Sand, Alpin Fine Sand, Kenansville Loamy Fine Sand, Eunola Loamy Fine Sand, Blanton Fine Sand, and Bigbee-Garcon-Meggett Complex. For detailed information on all soils present on the state forest, see Exhibit I.

2. Descriptions

a. Soil Groups of the Sand Hills and Ridges

Alpin-Lakeland-Blanton Group:

This soil unit is found on landscapes that are characterized mostly by broad plains interspersed with sloping landscapes without a well-defined drainage pattern.

The natural vegetation is mostly longleaf pine, slash pine, turkey oak, blue jack oak and live oak. The understory consists of native grasses and forbs.

The Alpin soils are nearly level to gently sloping and are excessively drained. They are mainly on broad sand flats and on uplands adjacent to the flood plains.

The Lakeland soils are nearly level to sloping and are excessively drained. They are on ridges and in positions similar to those of the Alpin soils.

The Blanton soils are nearly level to sloping and moderately well drained. They are on broad uplands and on slopes adjacent to Alpin soils.

Alaga-Blanton-Troup Group:

This landscape generally is undulating with occasional broad ridges.

The natural vegetation is mostly slash pine, longleaf pine, loblolly pine, live oak and bluejack oak. The understory includes pineland threeawn, blackberry, sassafras and winged sumac.

The Alaga soils are nearly level to strongly sloping and are either well drained or moderately well drained. They are in low positions on the uplands.

The Blanton soils are nearly level to sloping and are moderately well drained. They are adjacent to Alaga soils and are in slightly lower positions on the landscape

The Troup soils are nearly level to sloping and are well drained. They are in similar positions on the landscape as Alaga soils.

b. Soil Groups of the Rolling Uplands

Blanton-Albany-Ocilla:

This unit consists mostly of soils on gently undulating landscapes.

The natural vegetation is mostly live oak, water oak, laurel oak, sweetgum, slash pine and loblolly pine. The understory includes broomsedge bluestem, pineland threeawn, blackberry, wax myrtle, greenbrier and various panic grasses.

The Blanton soils are nearly level to sloping and are moderately well drained. These soils are on broad uplands and on slopes.

The Albany soils are nearly level to gently sloping and are somewhat poorly drained. These soils are on landscapes that generally are adjacent to and in slightly lower positions than Blanton soils.

The Ocilla soils are nearly level to gently sloping and are somewhat poorly drained. They are in the positions on the landscape as the Albany soils

These soils have particular management limitations due to low natural fertility, subject to periodic drought, and a seasonal high water table.

3. Soil Protection

The soil erosion problems on Twin Rivers State Forest occur at the public recreation points and roads located on the rivers and at the springs. These are primarily caused by foot traffic going down to the river or the springs.

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 Best Management Practices Manual.

B. Water Resources

The water resources on TRSF 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's Hydrology Section to incorporate wetland restoration into the overall resource management program as opportunities arise, particularly where wetland systems have been impaired or negatively impacted by previous management activities or natural disasters.

1. Resources

Numerous springs and creeks originate or flow through Twin Rivers State Forest. The Withlacoochee River runs through the northern portion of the forest and converges with the Suwannee River at Ellaville, Florida. The Suwannee River flows through the southern portion of the forest. Additionally, there is a man-made pond on the Blue Springs Tract. [See Exhibit L]

The forest contains several springs, all of which are located within or immediately adjacent to the banks of the Suwannee and Withlacoochee Rivers. The most notable include Anderson and Withlacoochee (Pot Springs). These two are open to the public and are popular summer recreation sites. Anderson Spring, considered a second magnitude spring, is located in the bottom of the Suwannee River. It is rarely visible due to the tannic acid content of the river. Pot Spring, a second magnitude spring is located on the east bank of the Withlacoochee River. The spring is visible at normal and lower river levels. There is a boardwalk allowing swimming access for the public.

2. Water Classification

The Department of Environmental Protection, Standards Development Section reports the Suwannee River and its floodplain have been designated as Outstanding Florida Waters. Any surface waters on the site are classified as Class III waters, which is the statewide default classification. [See Exhibit J]

3. Water Protection

Water resource protection measures, at a minimum, will be accomplished through the use of Best Management Practices (BMPs) as described in the most current version of Silviculture Best Management Practices Manual.

4. Springs Protection

At TRSF, silviculture and recreational activities have an impact on the springs in the forest. Approximately 30 springs are found in this stretch of the Withlacoochee and Suwannee Rivers (DEP 2011). The FFS works with in conjunction with the Suwannee River Water Management District to minimize these impacts.

Within the last five years, major renovations at Anderson Springs have included spring bank stabilization, run-off control in parking areas, and a redesign and construction of the parking lot and boardwalk. These efforts were made to protect the water quality and reduce soil erosion. In cooperation with the SRWMD, for funding and engineering, the FFS will work to make similar improvements at Withlacoochee (Pot Springs).

C. Wildlife Resources

1. Threatened and Endangered Species

The intent of the FFS is to manage TRSF in a fashion 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 will be used, as necessary, to protect or increase endangered and threatened species and species of special concern, as applicable for both plants and animals.

2. Listed Species

Presence of listed species is based on information compiled from FNAI tracking records, FWC, and field observations by SRWMD and FFS. The following listed species were identified:

Table 5. Rare, Threatened, and Endangered Species on TRSF

Common Name	Scientific Name	Federal Status *	State Status *	FNAI Global Rank *	FNAI State Rank *
Florida Burrowing Owl	<i>Athene cunicularia floridana</i>	N	SSC	G4T3	S3
Bachman's Sparrow	<i>Peucaea aestivalis</i>	N	N	G3	S3
Hairy Woodpecker	<i>Picoides villosus</i>	N	N	G5	S3
Southeastern American Kestrel	<i>Falco sparverius paulus</i>	N	ST	G5T4	S3
Eastern Indigo Snake	<i>Drymarchon couperi</i>	LT	FT	G3	S3
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>	N	SSC	G4T3	S3
Eastern Diamondback Rattlesnake	<i>Crotalus adamanteus</i>	N	N	G4	S3

Common Name	Scientific Name	Federal Status *	State Status *	FNAI Global Rank *	FNAI State Rank *
Timber Rattlesnake	<i>Crotalus horridus</i>	N	N	G4	S3
Gopher Tortoise	<i>Gopherus polyphemus</i>	C	ST	G3	S3
American Alligator	<i>Alligator mississippiensis</i>	SAT	FT(S/A)	G5	S4
Alligator Snapping Turtle	<i>Macrochelys temminckii</i>	N	SSC	G3G4	S3
Small Pocket Gopher Aphodius Beetle	<i>Aphodius aegrotus</i>	N	N	G3G4	S3?
Large Pocket Gopher Aphodius Beetle	<i>Aphodius laevigatus</i>	N	N	G3G4	S3?
Hubbell's Pocket Gopher Aphodius Beetle	<i>Aphodius hubbelli</i>	N	N	GNR	S3?
Simple Cebionid Beetle	<i>Selonodon simplex</i>	N	N	G1	S1
Schwarz' Pocket Gopher Ptomaphagus Beetle	<i>Ptomaphagus schwarzi</i>	N	N	G3	S3
Florida Spiny-pod	<i>Matelea floridana</i>	N	LE	G2	S2
Giant Orchid	<i>Pteroglossaspis ecristata</i>	N	LT	G2G3	S2
Florida Mountain-Mint	<i>Pycnanthemum floridanum</i>	N	LT	G3	S3
Sweet-Shrub	<i>Calycanthus floridus</i>	N	LE	G5	S2
Mud Sunfish	<i>Acantharchus pomotis</i>	N	N	G4G5	S3
Mountain Mullet	<i>Agonostomus monticola</i>	N	N	G5	S3
Bannerfin Shiner	<i>Cyprinella leedsii</i>	N	N	G4	S3
Spotted Bullhead	<i>Ameiurus serracanthus</i>	N	N	G4G5	S3
Suwannee Bass	<i>Micropterus notius</i>	N	N	G3	S3
Suwannee Moccasinshell	<i>Medionidus walkeri</i>	N	N	G1	S1
Henry's Elfin	<i>Callophrys henrici</i>	N	N	G5	S3S4
Allegheny River Cruiser	<i>Macromia alleghaniensis</i>	N	N	G4	S1
A Mayfly	<i>Stenacron floridense</i>	N	N	G3G4	S3S4
Blue Purse-Web Spider	<i>Sphodros abboti</i>	N	N	G4G5	S4
Twin-Striped Clubtail	Twin-striped Clubtail	N	N	G3G4	S3
Sherman's Fox Squirrel	<i>Sciurus niger shermani</i>	N	SSC	G5T3	S3

* Common Name	Scientific Name	Federal Status *	State Status *	FNAI Global Rank *	FNAI State Rank *
Florida Mouse	<i>Podomys floridanus</i>	N	SSC	G3	S3

T

STATUS/RANK KEY

Federal Status (USFWS): L

E= 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.

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; 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.

3. 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, threatened, or endangered species within the vicinity of the property. [See Exhibit L]

Documented species are listed in Table #5 Rare, Threatened, and Endangered Species on TRSF.

Documented habitat includes: Upland Pine, Upland Hardwood Forest, Spring-Run Stream, and Sandhill

- b. Likely and Potential Habitat for Rare Species: The TRSF may be located near other rare species and natural communities. See Exhibit L for a list of species and habitat. Care will be taken and impacts avoided or mitigated.
- c. Land Acquisition Projects: Portions of the forest appear to be located within the Longleaf Pine Ecosystem Florida Forever Project and the Florida's First Magnitude Springs Florida Forever Project. Both are part of the State of Florida's Conservation and Recreation Lands Acquisition Program. [See Exhibit T] Additionally, the property is adjacent to the Suwannee County Preservation Florida Forever Project [See Exhibit O].
- d. FNAI recommends special care be taken in the southwest portion of the property. It appears to be a significant region of natural areas and habitat for several rare species.

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 any expansions or alterations are made to facilities on the forest.

4. Florida Fish and Wildlife Conservation Commission

The Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, 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. [See Exhibit M]

Other findings by the FWC include:

- a. The property is located within and adjacent to multiple Strategic Habitat Conservation Areas and multiple Prioritized Strategic Habitat Conservation Areas.
- b. The TRSF is located within an area of Species Richness.
- c. Multiple Priority Wetlands are located in close proximity to the TRSF.

This data represents 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, such as gopher tortoises, is not entered into the 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.

5. Game Species and Other Wildlife

Wildlife management will play an important role in the management of resources on TRSF. The forest currently makes up all or part of the following Wildlife Management Areas: Twin Rivers WMA, and Twin Rivers WMA – Blue Springs Unit. The FWC provides cooperative technical assistance in managing the wildlife and fish populations, setting seasons, establishing bag and season limits and overall wildlife and fish law enforcement.

Wildlife, such as white-tailed deer, bobwhite quail, bobcat, otter, beaver, alligator, and wild turkey are frequently seen on the Twin Rivers State Forest.

The FFS and FWC cooperatively maintain approximately 49 acres of permanent wildlife openings and planted food plots on the TRSF ranging in size from ¼ of an acre to 5 acres. Wildlife openings and food plots will be established and maintained in accordance with the FFS State Forest Handbook.

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.

6. Survey and Monitoring

Species-specific management plans will be developed when necessary, with assistance from FWC. Such plans will be consistent with rule and statute promulgated for the management of such species. Continued biological surveys will be conducted to determine locations of these species.

a. Gopher Tortoises

Surveys for gopher tortoise burrows have been done by FNAI, SRWMD and FWC staff intermittently as needed. Surveys have been done in proposed surplus property sites, pine-straw raking areas, and the entire Blue Springs Longleaf Tract. Burrow activity status and locations are maintained at the TRSF office.

In 2008, FWC conducted a survey on 200 acres of pine plantation prior to pine straw harvest on the BSLT. In 2008, FWC conducted a survey of the West Ellaville tract on 1,105 acres and estimated 2.38 gopher tortoises per acre. In 2011, FNAI conducted a survey for gopher tortoises across the entire BSLT. This survey evaluated approximately 2,081 acres of suitable habitat. It divided the habitat into three different types: upland pine, pine plantation, and ruderal. The survey found multiple size classes of burrows, suggesting multiple age classes present within the forest and evidence of recent reproduction. The survey concluded with an estimate of 573 active and 261 inactive burrows. In 2012, SRWMD staff conducted a survey of on 670 acres of proposed surplus lands and the western portion of the Ellaville Tract. The survey estimated a population of 2.06 gopher tortoises per acre.

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 between habitat on TRSF and other Florida black bear habitat.

c. Southeastern American Kestrel

FWC, with FFS assistance, has placed several nesting boxes for the southeastern American kestrel on the Ellaville and Black Tracts. These boxes are surveyed and maintained annually. There is the possibility that more boxes may be added in the Ellaville Tract. At this time, all systematic information gathered about this species is related to box placement. Additional southeastern American kestrel information may be collected in the future; perhaps related to natural cavity nesting surveys though not systematic at this time.

d. Listed Plant Species

All known locations of listed or rare flora are GIS mapped and location data are shared with FNAI. In conjunction with USFWS and the FFS Plant Conservation Program, all known populations are inspected prior to conducting activities with potential impact.

e. Other Rare Biota Surveys

Surveys are done as time and staffing allow. High quality plant communities continue to have ad hoc surveys for both non-native invasive and listed plants.

Most of the isolated TRSF wetlands have received a cursory biological survey, with rare and significant plant and animal species observed and documented. Additional amphibian larvae dip netting and frog call surveys have been conducted at several

wetlands on the forest. FFS will offer assistance to FWC for gopher tortoise burrow commensals monitoring 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 semi-annually.

D. Sustainable Forest Resources

The 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. Inventories will be updated on a continual basis according to guidelines established by FFS's Forest Management Bureau.

Additional forestry resources available on the property may include pine straw, biomass and other forest resources. At this time these resources are not being utilized but may be assessed in the future.

E. Beaches and Dune Resources

No beaches or dunes occur on the TRSF.

F. Mineral Resources

There are no known significant mineral deposits of commercial value on TRSF.

G. Unique Natural Features and Outstanding Native Landscapes

There are many natural communities within the Twin Rivers State Forest. Among these are sandhill, floodplain, swamp and sinkhole communities. Found within the natural communities are a wide variety of tree species. For example, American elm, river birch, sweetgum, water hickory and bald cypress can be found in the floodplains. Located in the drier sandhill areas are longleaf pine, turkey oak, post oak and live oak. In addition, clear running springs are located on the Anderson Springs and Withlacoochee / Pot Springs Tracts.

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. The FFS cooperates with other governmental agencies, non-profit organizations, and educational institutions, whenever feasible, on this type of research. The FFS will consider assisting with research projects when funds and manpower are available.

All research projects to be considered on TRSF must be considered accordance with the guidelines stated in the State Forest Handbook. Any requests for research projects 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 project. 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 research projects to the TRSF 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:

- Ornate Chorus Frog Study, authorized January of 2015. Conducted by FWC, Fish and Wildlife Research Institute.
- Specimen collection of *Consolea*, *Nopalea*, and *Opuntia*, (cactus pads) authorized June 11, 2008. Conducted by Mississippi State University.
- A plant survey was conducted on the Blue Springs Tract by the FFS Plant Conservation biologist in August and September of 2012. Over 78 species were identified. There are 164 plants that have been identified on TRSF. Exhibit R is a list of plant species developed from the survey at TRSF.
- A Ground Cover Project has begun on the Ellaville Tract by FFS using grant funding.
- FWC has installed two temporary drift-fence arrays on the Ellaville Tract to survey for upland snake species.
- FNAI has begun a survey for Gopher Tortoise and their commensals, specifically insects, on the Blue Springs Longleaf tract.

I. Ground Disturbing Activities

Although the FFS's approach to handling ground disturbing activities is identified in various sections of this plan, the FFS's overall approach to this issue is summarized here. The 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. This includes areas such as known sensitive species locations; archaeological, fossil, and historical sites; ecotones and floodplains and wetlands.

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, and when necessary, the Acquisition and Restorations Council (ARC).

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. The FFS will continue to promote and encourage public access and recreational use by the public while protecting resources and practicing multiple-use management. Recreation activities available on TRSF include nature study, picnicking, hiking, bicycling, horseback riding, canoeing, and fishing.

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 the FFS determines their compatibility with other forest uses and forest resources.

A. Existing

Each of the tracts on Twin Rivers State Forest offer many recreational opportunities which include: nature study, picnicking, hiking, bicycling, horseback riding, canoeing, swimming, hunting, and fishing. Twin Rivers State Forest contains 2 hiking trails (Ellaville and Anderson Springs) that are included in the Florida Forest Service's Trailwalker Hiking Program. The TRSF is part of the Trailtrotter Program and the Great Florida Birding Trail. The Ellaville Trail is part of the Florida National Scenic Trail (FNST), which is primarily a foot trail.

Full facility camping is not available on the forest; however, a few primitive camp areas are located along the rivers. In the WMAs, camping is prohibited during periods open to hunting and permits are required for camping during non-hunting periods. Permits are required for special or group recreational activities and can be obtained from the Twin Rivers State Forest office at no charge. Access for overnight camping is along the river only, except for special use permits.

The FFS handles permitting requests for recreational activities.

B. Planned

In addition to offering public access for fishing, canoeing, swimming, picnicking, and hunting, FFS will continue to maintain a system of multiple-use trails that can be used by hikers, equestrians, and all-terrain bicycles.

FFS will continue to assess the trails to determine if single-use on some trails is more appropriate, rather than multi-use. Any adjustments, if necessary, will be included in the 5-Year Recreation Plan. FFS may designate certain trails as single-use to mitigate or minimize negative environmental impacts.

FFS does not plan, at this time, to develop full facility camping areas on this forest. At least one state park, Suwannee River State Park, as well as other private campgrounds, are currently providing for this recreational activity. FFS plans to continue maintaining several small primitive camp areas along the Withlacoochee and Suwannee Rivers.

1. **Withlacoochee (Pot Springs)** – further improvements to the spring boardwalk at the Withlacoochee (Pot Springs) Tract are being evaluated and planned.
2. **Damascus Tract** – FFS is evaluating the Damascus Tract to establish recreational opportunities. Due to the Damascus Tracts alignment related to an I-10 overpass across the Suwannee River, the Florida National Scenic Trail (FNST) may be re-routed through the Tract as part of the development of recreational opportunities and an FNST gap closure initiative.
3. TRSF will work with the SRWMD on evaluating existing access point to minimize erosion and negative impacts from public use.

- 4. Mill Creek South Tract** – FFS is evaluating the Tract to establish recreational opportunities. Due to a planned gap closure of the Florida National Scenic Trail (FNST), the Mill Creek South Tract recreational opportunities may include the FNST.

C. Hunter Access

The Florida Fish and Wildlife Conservation Commission (FWC) has designated several areas as Wildlife Management Areas for hunting. Hunting season dates, limits, and methods are established annually by FWC, in cooperation with FFS.

There are several tracts within the TRSF that comprise Wildlife Management Areas. The FWC manages the hunting in the Twin Rivers Wildlife Management Area and the Twin Rivers WMA - Blue Springs Unit, in cooperation with FFS. FFS will work with FWC and the SRWMD and will continue to assess hunting area opportunities annually.

D. Cave Diving

No permit will be issued for recreational diving, however they may be issued for research type activities. Any permits for cave diving are by and at the discretion of the Suwannee River Water Management District.

VI. Forest Management Practices

A. Prescribed Fire

Timber management practices on Twin Rivers State Forest are important in the restoration and maintenance of forest ecosystems and provide a variety of socio-economic benefits to Floridians. Management practices on Twin Rivers State Forest include a prescribed fire program that is an effective tool in controlling the growth of hardwood trees, stimulating the recovery of native herbaceous and grassy ground cover, and promoting the regeneration of native pines.

The 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 the FFS's Suwannee Forestry Center 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.

The annual forest prescribed burning program produces multiple benefits. The purposes of prescribed burning on TRSF are to facilitate forest management operations; enhance wildlife and listed species habitat; decrease fuel loading, consequently enhancing 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 TRSF, which consists of growing and dormant season burns. Burns are planned by the state forest staff with input from cooperating agencies as appropriate. The Five-Year Prescribed Burning Management Plan is updated annually and identifies the individual burn unit prescriptions, whether the unit is on a growing or dormant season rotation, map of burn unit, and other information specific to that burn unit. The smoke screening system will be used as a smoke management tool to

minimize the adverse impact of smoke that may affect residential communities, public roads, schools, and other smoke sensitive areas.

Historic, fire dependent natural communities on TRSF are estimated to have occupied approximately 11,285 acres, and to have burned at approximately 2 to 4 year interval on all community types combined. Past land uses have left some of these historically fire dependent communities in a condition unable to carry prescribed fire. They have also altered non fire dependent communities into a condition able to carry fire. Based on current conditions and management objectives there are 11,000 acres considered to be burnable. TRSF will plan for an average of 2,750 to 5,500 acres to be prescribed burned annually. Restoration of these areas by removal of the off-site species and reforestation will increase prescribed burn acreage goals over time. Meeting prescribed fire goals will be largely dependent on weather conditions, personnel, and statewide emergency situations such as wildfires, hurricanes, and other natural disaster response and relief.

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

B. Wildfires, Prevention, Fire / Prescribed Fire Strategies

The FFS utilizes a comprehensive wildfire management approach on state forests that includes an ongoing program of wildfire prevention, detection, and suppression, and aggressive prescribed burning. Implementation of this program is the responsibility of the FFS's Suwannee Forestry Center. 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.

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

- 1) Protection of human lives, both that of the firefighter and the public
- 2) Protection of improvements
- 3) Protection of natural resources

All procedures regarding wildfire will follow the State Forest Handbook and the 5-Year TRSF Fire Management Plan.

1. Suppression Strategies

If a wildfire occurs on TRSF there are two alternative suppression strategies as defined below:

- a. Contain** is defined as a suppression strategy where a fire is restricted to a specific pre-determined area by using natural or constructed barriers that stop the fire spread under the prevailing and forecasted weather until dead out. This strategy allows the use of environmentally sensitive tactics while monitoring for smoke and fuel conditions that would warrant more aggressive control tactics, described below.
- b. Control** 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 field unit fire load dictates that crews not be involved with individual fires for any longer than absolutely necessary.

Appropriate suppression action will be that which takes into account the three paramount considerations listed above, provides for the most reasonable probability of minimizing fire suppression cost and critical resource damage by taking into consideration probable fire behavior, total fire load, potential resource and environmental impacts, and smoke management issues. 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 or public nuisance 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 TRSF 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 fire breaks will meet the established Silvicultural Best Management Practices (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 bulldozed 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. Plow and bulldozed lines will be rehabilitated and BMPs implemented as soon as practical after the fire is suppressed.

4. Sensitive Areas

The TRSF has 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 forest. Personnel are aware of these areas in the event of a wildfire. Special precautions will be followed when prescribed burning or fighting wildfires in sensitive areas on TRSF. When possible, fire staff will avoid line construction in wetland ecotones throughout the forest.

5. Firewise Communities

The FFS has implemented a Firewise community approach for prevention statewide. Specifically in the area adjacent to or nearby TRSF, efforts in this regard have included identifying Communities at Risk through the web-based SouthWRAP (Southern Wildfire Risk Assessment Portal).

6. Adjacent Neighbor Contacts

The staff at TRSF 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 forest to assess impacts on timber and habitat. Based on the evaluations, decisions will be made on timber salvage operations. An historical fire record for all fires and prescribed burns will be maintained. This will be accomplished through the burn plans in the Forestry Supervisor's files, and through 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, and biological 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 TRSF:

- 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 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 TRSF will be directed toward improving forest health, wildlife habitat, biological 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 a subsequent 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 will include prescribed fire, mechanical vegetation control, and herbicide applications.

Prescribed fire is the most desirable method of vegetation control for 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 vegetation control may be used. Mechanical 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 plant communities through timber harvesting will include thinning for maintenance and regeneration, and clear-cutting to remove off-site species.

All silvicultural activities (including timber harvesting and reforestation) will meet or exceed the standards in the FFS's Silviculture Best Management Practices (BMPs) and the State Forest Handbook and will follow the Five-Year Silviculture Management 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 of TRSF forest will be re-inventoried annually to provide an accurate estimation of the standing timber and to ensure that stands will be managed sustainably.

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.

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. When these species are discovered, an eradication or management plan will be developed with the assistance of the Forest Management Bureau's Forest Health Section as needed. The plan will be implemented based upon the severity of the infestation and the availability of personnel and funding. A map of invasive species is found in Exhibit P.

On-going maintenance and monitoring strategies are out-lined in the Five-Year Ecological Management Plan which is developed to locate, identify, and control non-native invasive plant species.

State forests are periodically surveyed by FFS staff, and detection of populations of non-native invasive species are noted and prioritized for appropriate control action. Known occurrences of non-native invasive species are prioritized and treated as funding and personnel allow, with the intention of ultimately eradicating such species. These occurrences are recorded in the GIS database and updated as new plants are discovered. Adjacent landowners who are known to have these species on their property will be approached in an effort to cooperate on control measures.

FFS works to control the spread of non-native invasive species by decontaminating internal equipment and equipment used by private contractors according to the State Forest Handbook.

The FFS will enlist support from the FWC in efforts to control non-native invasive animals. Feral hogs (*Sus scrofa*) are present on some tracts of the TRSF. The FWC has issued a feral hog control trapping permit to FFS for all state forests and the FFS will encourage hog removal on TRSF through trapping and hunting.

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. The FFS utilizes the FWC herbicide bank to aid in the control of non-native invasive species.

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

Scientific Name	Common Name	Treatment Strategy	Acres Impacted	Increasing /Decreasing/ Eradicated / Stable
<i>Imperata cylindrica</i>	Cogon Grass	Burning followed by Glyphosate/Imazapyr Spring/Fall	6 initial / 1 current	Decreasing
<i>Albizia julibrissin</i>	Mimosa	Glyphosate	5 initial / < 1 current	Decreasing
<i>Lygodium japonicum</i>	Japanese Climbing Fern	Glyphosate	unknown	Increasing
<i>Melia azedarach</i>	Chinaberry	Glyphosate	5 initial	Stable
<i>Aleurites fordii</i>	Tung Oil	Glyphosate	5 acres initial	Stable
<i>Wisteria sinensis</i>	Chinese Wisteria	Glyphosate	10 acres initial	Stable
<i>Elaeagnus umbellata</i>	Autumn Olive	Glyphosate	2,000 initial / <10 current	Decreasing

- **Cogon Grass** – There are 10 known infestations that have all received at least 2 treatments and are in annual inspection or maintenance.
- **Mimosa** – All known mimosa trees have been treated and additional trees are treated when encountered in the field. Additional survey work is needed to determine presence of additional sites.
- **Japanese Climbing Fern** – The presence is observed in many locations and additional survey work is needed. Grant funding has been utilized in the past, however additional funding is needed in order to map and treat this problematic species.
- **Chinaberry, Tung Oil and Wisteria** – These frequently occur together on old home site locations. Grant funding for treatment has been utilized in the past, however control was unsuccessful. Additional funding is needed, which will require multiple treatments in order to achieve success.
- **Autumn Olive** – This was planted by a previous owner on over 60 acres for the purpose of quail food and cover. This species has spread to cover over 2,000 acres of

scattered individual plants; most likely dispersed by wildlife. In 2008, grant funding was utilized to include 3 successive annual treatments, which has greatly reduced the extent of this population. The current population persists on less than 10 acres and prescribed fire appears to be keeping it controlled.

E. Insects, Disease and Forest Health

Past pine bark beetle infestations have resulted in salvage harvests. In the event of any future outbreaks of bark beetle or other insect or disease, consultation with the Forest Management Bureau's Forest Health Section will be sought to formulate an appropriate and effective response.

In compliance with section 388.4111, Florida Statutes and in Sec. 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. With the approval of this plan documenting this designation, the local arthropod control agencies in Hamilton, Madison, and Suwannee Counties will be notified of this designation.

As a result, prior to conducting any arthropod control activities on TRSF, 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 TRSF. This public lands control plan must be in compliance with DACS guidelines and using the appropriate DACS form. The plan must then be approved and mutually adopted by the county, FFS, and DACS, 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.

Officials with Madison County and Suwannee County have confirmed the TRSF is outside of any control areas. Any future changes to include TRSF in their control area will require an Arthropod Control Plan between FFS and the appropriate County agency. Further information regarding the Arthropod Control Plans may be found in Exhibit Y.

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. Invasive Species Control | 5. Timber Stand Improvement |
| 2. Tree Planting | 6. Road Work |
| 3. Site Prep | 7. Other Large Projects |
| 4. Timber Harvests | |

VII. Proposed Management Activities for Natural Communities

In 2007, FNAI completed an inventory and natural community mapping project of TRSF and a historic natural community type map (Exhibit S) was created. Current natural communities and cover types can be found in Exhibit R.

For the purposes of this management plan, restoration is defined as the process of returning ecosystems or habitats 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 across the forest. Strategies may include thinning of overly dense pine plantations, mowing or chopping in areas of heavy fuel buildup, and/or application of cool dormant season fires. The results of these initial efforts will be monitored and more refined and detailed restoration plans will be made. Fire return intervals are included as a guide and may vary depending upon specific conditions. The intention is to use prescribed fire in a manner and frequency that will attain the desired habitat goals. Fire frequency is generally increased or decreased depending upon the conditions of the specific area.

Table 7. Natural Community Types Found on TRSF

Natural Community Types	Acres Mapped (Historical)	Historical Burn Interval (Years)
Upland Pine Forest *	6,602	2 – 4
Bottomland Forest *	3,336	Varies
Sandhill *	1,973	1 – 3
Upland Hardwood Forest *	1,305	Varies
Mesic Flatwoods *	1,225	2 – 4
Mesic Hammock *	168	Varies
Floodplain (Alluvial) Forest	48	N/A
Xeric Hammock	11	Varies
Sinkholes	2	N/A
Other (See Table 8, Altered Landcover Type)	N/A	
Damascus Tract (unmapped)	599	
Total	15,269**	

*Approximately 9,400 acres of planted pine occur in varying stages of restoration within these community types. To large measure, ongoing burning and silvicultural treatments have achieved, or will soon achieve, improvements to ground cover sufficient to consider as restored to functioning natural community.

**Difference of approximately 287 acres related to GIS mapping and legal description acreage.

Table 8. Altered Landcover Types Found on TRSF

Altered Landcover Type*	Current Acres Mapped
Roads – Service & Secondary	147 / 30
Utility Corridor	169
Food Plots	60
Borrow Pits	79

* Protocol as described in Exhibit 2 of FNAI’s “Guide to the Natural Communities of Florida”, 2010 Edition.

The following community descriptions, existing condition descriptions, and management recommendations are taken from this 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 TRSF.

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

The following, utilizing TRSF staff knowledge, the 2007 FNAI survey, and the 2010 FNAI Guide to the Natural Communities of Florida, describes the community descriptions , the current conditions, and management actions for each natural community.

A. Upland Pine Forest

Description:

The upland pine community is characterized by a pine canopy where longleaf pine (*Pinus palustris*) is the dominant tree species. The midstory consists of smaller pines, red oak, dogwood, bluejack oak, and hickory. The groundcover includes wiregrass, bluestem, broomsedge, indiagrass, silkgrass, partridge pea, bracken fern, and sensitive brier.

Upland pine forests subcanopy and shrub layers are sparse if present and typically include sand post oak (*Quercus margaretta*), southern red oak (*Quercus falcata*), turkey oak (*Quercus laevis*), and bluejack oak (*Quercus incana*), flowering dogwood (*Cornus florida*), Michaux's hawthorn (*Crataegus michauxii*), sassafras (*Sassafras albidum*), and running oak (*Quercus elliotii*). Herbs include shortspike bluestem (*Andropogon brachystachyus*), Elliott's bluestem (*Andropogon gyrans*), wiregrass, coastalplain honeycomb-head (*Balduina angustifolia*), coastalplain chaffhead (*Carphephorus corymbosus*), longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), scaleleaf aster (*Symphyotrichum adnatum*), coastalplain balm (*Dicerandra linearifolia* var. *robustior*), poor joe (*Diodia teres*), tall elephantsfoot (*Elephantopus elatus*), fragrant eryngo (*Eryngium aromaticum*), lady lupine (*Lupinus villosus*), narrowleaf silkgrass (*Pityopsis graminifolia*), tall jointweed (*Polygonella gracilis*), hairy smartweed (*Polygonum hirsutum*), bracken fern (*Pteridium aquilinum*), and little bluestem (*Schizachyrium*

scoparium). Vines can be frequent, including peppervine (*Ampelopsis arborea*), trumpet honeysuckle (*Lonicera sempervirens*), Virginia creeper (*Parthenocissus quinquefolia*), and eastern poison ivy (*Toxicodendron radicans*).

According to the 2007 FNAI report, the Upland pine forest is difficult to distinguish from mesic flatwoods and upland hardwood forest on the 1947 aerial photographs. It is usually a uniform light grey, or with a slight amount of mottled white. Fire suppression seems to have occurred in upland pine forests along the rivers as far back as the forties, as trees can appear in dense patches in otherwise open uplands, possibly influenced by patchiness in the clay soil lense, and occasionally by dissolution of soil by underground waterflow in limestone. To positively identify overgrown upland pine 1995 DOQQ's confirm with a pink/red signature, along with ground truth points. Nineteenth century survey notes typically denote this community as level second rate pine.

Current Condition:

Other than the Blue Springs tract which remains mostly intact upland pine, most of this community has been altered by former silvicultural practices. In past years the areas were mechanically site prepared and planted to slash, sand, and loblolly pine. Over the past 20 years, approximately 1,600 acres of these areas have been converted to longleaf pine. There are approximately 2,800 acres that remain in slash and loblolly pine. These sites have been thinned and will continue to be managed until maturity and reforestation funds allow for conversion to longleaf pine. Most of these communities are being burned on a 2 – 4 year fire return interval. Groundcover condition depends primarily on how extensively it was disturbed in the past. Offsite hardwood competition remains an issue in many of the stands. However, prescribed burning and herbicide have helped reduce the competition in many of the stands. The biggest threat from non-native, invasives species to this community is from Chinaberry, Mimosa, and cogon grass.

Management Actions:

The management strategy is to continue a 2 – 4 year fire return interval on areas with adequate fuel. In addition to fire, herbicide will be used to reduce unwanted hardwood competition. Areas dominated by longleaf pine will be managed by thinning to improve groundcover and to work towards uneven aged management. Areas that are in planted slash and loblolly pine will be managed for timber production until they are clearcut harvested. In most cases, the clearcut stands will be reforested with longleaf pine. Various chemical and mechanical site preparation practices will be used to ensure adequate survival as well as improve groundcover species.

B. Bottomland Forests

Description:

Bottomland forests occur in the higher portions of the floodplain and flood infrequently and are hardwood forests with a canopy of mixed tree species that occur on low-lying, irregularly flooded and/or saturated soils of a riverine floodplain. Bottomland forests may be inundated for a portion of the wet season but may also encompass only

occasionally flooded areas near rivers. This variability accounts for the mixed canopy species composition. Bottomland forest is found along the Withlacoochee and Suwannee Rivers.

The canopy includes red maple (*Acer rubrum*), river birch (*Betula nigra*), American hornbeam (*Carpinus caroliniana*), water hickory (*Carya aquatica*), pignut hickory (*Carya glabra*), hackberry (*Celtis laevigata*), American holly (*Ilex opaca*), sweetgum (*Liquidambar styraciflua*), slash pine (*Pinus elliottii*), spruce pine (*Pinus glabra*), longleaf pine (*Pinus palustris*), diamond-leaved oak (*Quercus laurifolia*), overcup oak (*Quercus lyrata*), swamp chestnut oak (*Quercus michauxii*), water oak (*Quercus nigra*), live oak (*Quercus virginiana*), pond cypress (*Taxodium ascendens*), bald cypress (*Taxodium distichum*), and American elm (*Ulmus americana*). All of these species other than *Taxodium*, which occurs primarily along the waterline in included floodplain swamp, may be present under ideal conditions. Shrub and herb cover is usually diverse but sparse, although palms and some grasses can tolerate periodic flooding in higher bottomlands, and are frequently dominants. The subcanopy includes parsley hawthorn (*Crataegus marshallii*), common persimmon (*Diospyros virginiana*), laurel oak (*Quercus hemisphaerica*), and cabbage palm (*Sabal palmetto*). Tall shrubs frequently include false indigobush (*Amorpha fruticosa*), possumhaw (*Ilex decidua*), Gulf sebastian bush (*Sebastiania fruticosa*), Florida bully (*Sideroxylon reclinatum*), horse sugar (*Symplocos tinctoria*), *Vaccinium* spp., and small-leaf viburnum (*Viburnum obovatum*). White fringe tree (*Chionanthus virginicus*), yaupon (*Ilex vomitoria*), swamp bay (*Persea palustris*), and mountain azalea (*Rhododendron canescens*) are occasionally found in bottomland forest. Short shrubs include red buckeye (*Aesculus pavia*), American beautyberry (*Callicarpa americana*), swamp dogwood (*Cornus foemina*), Virginia willow (*Itea virginica*), wax myrtle (*Myrica cerifera*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), dwarf palmetto (*Sabal minor*), saw palmetto, and possumhaw (*Viburnum nudum*). Herbaceous groundcover in lower elevation bottomland forests at Twin Rivers State Forest is typically sparse. Herbs include splitbeard bluestem (*Andropogon ternarius*), *Aristida* sp., switchcane (*Arundinaria gigantea*), swamp milkweed (*Asclepias perennis*), white wild indigo (*Baptisia alba*), rattlesnake fern (*Botrychium virginianum*), *Carex* sp., longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*), *Liatris* sp., Florida paspalum (*Paspalum floridanum*), bracken fern (*Pteridium aquilinum*), narrow plumegrass (*Saccharum baldwinii*), Canadian blacksnakeroot (*Sanicula canadensis*), *Symphyotrichum* sp., sea oats (*Uniola paniculata*), netted chain fern (*Woodwardia areolata*), and rainlily (*Zephyranthes atamasca*). Commonly epiphytes are present such as oak mistletoe (*Phoradendron leucarpum*), resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*), and Spanish moss (*Tillandsia usneoides*).

Current Conditions:

Approximately two-thirds of the bottomland forest communities are relatively intact and have been minimally altered by previous practices. This is primarily because of the occasional flooding associated with the two rivers. However, approximately 1,100 acres have in the past been converted to pine plantations which are being thinned and burned as appropriate. The non-native invasive species with the most impact in this community is Japanese climbing fern.

Management Actions:

The intact bottomland forest community requires little management actions besides protection from damaging practices. Occasional prescribed fires will be allowed to creep through intact bottomland forest when feasible. Areas that can be confirmed as historic bottomland forest that have been planted to pine will be managed with thinning and less frequent fire to eventually allow natural hardwood recruitment to take over.

C. Sandhill**Description:**

The sandhill community occurs mostly outside the 100-year floodplain on sandy excessively drained soils. Sandhills are characterized by longleaf pine canopy with a sparse understory of deciduous oaks and a dense, diverse herbaceous ground cover of wiregrass and other grasses. Overstory and midstory species density is greatly affected by fire history.

Sandhills species include longleaf pines (*Pinus palustris*) and turkey oak (*Quercus laevis*). Grasses include wiregrass (*Aristida stricta* var. *beyrichiana*) and other grasses and herbs such as Elliott's bluestem (*Andropogon gyrans*), arrowfeather threeawn (*Aristida purpurascens*), capillary hairsedge (*Bulbostylis ciliatifolia*), *Dichanthelium* sp., little bluestem (*Schizachyrium scoparium*), and lopsided indiagrass (*Sorghastrum secundum*), coastalplain honeycomb-head (*Balduina angustifolia*), soft greeneyes (*Berlandiera pumila*), coastalplain chaffhead (*Carphephorus corymbosus*), Maryland goldenaster (*Chrysopsis mariana*), tall elephantsfoot (*Elephantopus elatus*), narrowleaf silkgrass (*Pityopsis graminifolia*), summer farewell (*Dalea pinnata*), hairy lespedeza (*Lespedeza hirta*), coastalplain balm (*Dicerandra linearifolia* var. *robustior*), poor joe (*Diodia teres*), oblongleaf twinflower (*Dyschoriste oblongifolia*), roundleaf bluet (*Houstonia procumbens*), lady lupine (*Lupinus villosus*), sundial lupine (*Lupinus perennis*), piedmont leatherroot (*Orbexilum lupinellus*), tall ironweed (*Vernonia angustifolia*), and the rare Florida mountain-mint (*Pycnanthemum floridanum*).

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. Mockernut hickory (*Carya alba*), sand pine (*Pinus clausa*), slash pine (*Pinus elliottii*) are less frequent components of sandhill and would rarely be dominant. Tall shrubs are sparse and include sparkleberry (*Vaccinium arboreum*), and deerberry (*Vaccinium stamineum*). Short shrubs include slimleaf pawpaw (*Asimina angustifolia*), St. Andrew's cross (*Hypericum hypericoides*), American holly (*Ilex opaca*), flatwoods plum (*Prunus umbellata*), winged sumac (*Rhus copallinum*), gum bully (*Sideroxylon lanuginosum*), and many dwarf shrubs such as pricklypear (*Opuntia humifusa*), running oak (*Quercus elliottii*), queensdelight (*Stillingia sylvatica*), saw palmetto (*Serenoa repens*), shiny blueberry (*Vaccinium myrsinites*), and Adam's needle (*Yucca filamentosa*). Most herbs, promoted by a canopy and understory may be the most desirable component in a sandhill from the standpoint of taxonomic diversity and prioritizing sites for active management. Vines are diverse and frequent, such as yellow jessamine (*Gelsemium sempervirens*), brownhair snoutbean (*Rhynchosia cinerea*), cat greenbrier (*Smilax glauca*), bristly greenbrier (*Smilax tamnoides*),

coastalplain dawnflower (*Stylisma patens*), eastern poison oak (*Toxicodendron pubescens*), summer grape (*Vitis aestivalis*), and muscadine (*Vitis rotundifolia*).

According to the 2007 FNAI report, the Sandhills usually have a distinct signature that distinguishes them on the 1947 aerial photographs. The open shrub layer shows up as mottled white and light gray as opposed to the darker gray signature of flatwoods, which are usually on lower slopes leading into bottomland forest, or within shallow bottomlands. Sandhills are usually on slightly higher hills than level upland pine forest, which has a smooth gray signature unless trees have invaded due to fire suppression. Infrequently woody encroached, fire excluded sandhill and upland pine forest may be indistinguishable from each other and mesic flatwoods on historic aerials. Surveyor notes do not provide any discernible information about sandhill distribution.

Current Conditions:

Approximately 90% of the sandhill community has been altered by former silvicultural practices. In the past, areas were mechanically site prepared and planted to slash, sand, and loblolly pine. Over the past 20 years, over 1,100 acres have been converted to longleaf pine. There are still approximately 600 acres that remain in slash and loblolly pine. Most of these communities are being burned on a 2 – 4 year fire return interval. Groundcover condition depends primarily on how extensively it was disturbed in the past. Offsite hardwood competition remains an issue in many of the stands. However, the use of prescribed fire and herbicides have served to improve conditions in many areas. . The biggest threat from non-native, invasives species to this community is from Chinaberry, Mimosa, and cogon grass.

Management Actions:

The management strategy for the sandhill community, regardless of current pine species or age, is to continue a 1 – 3 year fire return interval on areas with adequate fuel and strive for a 2 – 3 year fire return interval. Prescribed fires will include growing season fire when feasible. This is the most cost effective method to improve groundcover and reduce offsite hardwood competition. In addition to fire, herbicide will be used to reduce unwanted hardwood competition. Areas dominated by longleaf pine will be managed by thinning to improve groundcover and to work towards uneven aged management. Areas that remain in planted slash and loblolly pine will be managed for timber production until they are clearcut harvested. All of the clearcut stands will be reforested with longleaf pine. Various chemical and mechanical site preparation practices will be used to ensure adequate survival as well as improve groundcover species.

D. Mesic Flatwoods

Description:

Mesic Flatwoods are characterized by a canopy of longleaf and slash pine. Loblolly pine is present in transitions to adjacent wetlands. There is little or no sub-canopy or tall shrub layer other than pine recruitment, a shrub layer typically dominated by saw palmetto with an average height that does not generally exceed four feet, and

groundcover dominated by herbs and grasses (e.g., wiregrass [*Aristida stricta* var. *beyrichiana*]) which allows for frequent fires.

Mesic flatwoods species include longleaf pine (*Pinus palustris*), Slash pine (*P. elliottii*), and loblolly pine (*P. taeda*). Saw palmetto (*Serenoa repens*) and dwarf shrubs such as dwarf huckleberry (*Gaylussacia dumosa*), gallberry (*Ilex glabra*), gopher apple (*Licania michauxii*), queensdelight (*Stillingia sylvatica*), and *Vaccinium* spp. form the patchy short shrub layer. Fetterbush (*Lyonia lucida*), red chokeberry (*Photinia pyrifolia*), and *Styrax* sp. occur on a relatively steep moist flatwoods slope. In addition to wiregrass in mesic flatwoods on Twin Rivers State Forest, a diverse herb layer is present, including Elliott's bluestem (*Andropogon gyrans*), *Aristida* sp., coastalplain honeycomb-head (*Balduina angustifolia*), white wild indigo (*Baptisia alba*), poor joe (*Diodia teres*), tall elephantsfoot (*Elephantopus elatus*), button rattlesnakemaster (*Eryngium yuccifolium*), narrowleaf silkgrass (*Pityopsis graminifolia*), *Polygonella* sp., bracken fern (*Pteridium aquilinum*), *Rhynchospora* sp., and *Symphyotrichum* sp.

According to the 2007 FNAI report, the Mesic flatwoods appear on the 1947 aerial photographs as a darker 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 dense, even shrub cover (most likely saw palmetto) is only occasionally apparent in these photos. GLO Land Surveyor's notes from the mid-1800's call this 3rd rate pine land.

Current Conditions:

Field reconnaissance by FFS staff suggests that this historic community is not as extensive as is currently mapped in the 2007 FNAI report. Approximately two thirds of the mesic flatwoods community has been altered by former silvicultural practices. In the past, areas were mechanically site prepared and planted to slash and loblolly pine. Over the past 20 years, approximately 230 acres have been converted to longleaf pine. Most of these communities are being burned on a 2 – 4 year fire return interval. Groundcover condition depends primarily on how extensively it was disturbed in the past. Offsite hardwood competition remains an issue in many of the stands.

Management Actions:

The management strategy for the mesic flatwoods community, regardless of current pine species or age, is to continue a 2 – 4 year fire return interval on areas with adequate fuel. Prescribed fires will include growing season fire when feasible. This is the most cost effective method to improve groundcover and reduce offsite hardwood competition. In addition to fire, herbicide will be used to reduce unwanted hardwood competition. Areas that are in planted pine will be managed by thinning to improve groundcover and forest health.

E. Mesic Hammock

Description:

Mesic hammocks are forests mainly of older mature oaks with a diverse mixture of other mesic temperate hardwood species in the canopy. They occur on rather poorly drained soils in areas that receive infrequent fire. These hammocks are drier than bottomland forest, often have a dense cover of saw palmetto (*Serenoa repens*) and dwarf palmetto (*Sabal minor*).

If connected to bottomland, mesic hammock do not possess as many wetland associated species. They can also occur around small solution depressions within more upland communities. The canopy may include pignut hickory (*Carya glabra*), hackberry (*Celtis laevigata*), common persimmon (*Diospyros virginiana*), American holly (*Ilex opaca*), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), white oak (*Quercus alba*), red cedar (*Juniperus virginiana*), cabbage palm (*Sabal palmetto*), and sand live oak (*Quercus geminata*). Swamp chestnut oak (*Quercus michauxii*), live oak (*Quercus virginiana*), red maple (*Acer rubrum*), and American elm (*Ulmus americana*) may be present in lower spots. Flowering dogwood (*Cornus florida*), *Crataegus* sp., dwarf hawthorn (*Crataegus uniflora*), and redbay (*Persea borbonia*) may be found in the subcanopy. Slash pine (*Pinus elliotii*), longleaf pine (*Pinus palustris*), and loblolly pine (*Pinus taeda*) may be present, but are typically rare. Tall shrubs may include mockernut hickory (*Carya tomentosa*), yellowleaf hawthorn (*Crataegus flava*), parsley hawthorn (*Crataegus marshallii*), possumhaw (*Ilex decidua*), gallberry (*Ilex glabra*), winged sumac (*Rhus copallinum*), Gulf sebastian bush (*Sebastiania fruticosa*), Florida bully (*Sideroxylon reclinatum*), horse sugar (*Symplocos tinctoria*), *Vaccinium* spp., small-leaf viburnum (*Viburnum obovatum*), and rusty blackhaw (*Viburnum rufidulum*). Short shrubs include red buckeye (*Aesculus pavia*), false indigobush (*Amorpha fruticosa*), American beautyberry (*Callicarpa americana*), American strawberrybush (*Euonymus americanus*), and running oak (*Quercus elliotii*). Longleaf woodoats (*Chasmanthium laxum* var. *sessiliflorum*) and Canadian blacksnakeroot (*Sanicula canadensis*) are particularly common herbs. Ferns such as bicolor sphenopter (*Asplenium heterochroum*), rattlesnake fern (*Botrychium virginianum*), resurrection fern (*Pleopeltis polypodioides* var. *michauxiana*), and southern shield fern (*Thelypteris kunthii*) are desirable. Epiphytes are more abundant when the canopy is allowed to mature, and may support a greater diversity of *Tillandsia* spp. Swamp leather flower (*Clematis crispa*), Florida yam (*Dioscorea floridana*), and trumpet honeysuckle (*Lonicera sempervirens*) are some of the less disturbance tolerant mesic hammock vines as opposed to larger, faster growing vines.

According to the 2007 FNAI report, the Mesic hammock are next to impossible to distinguish from bottomland forests on the 1947 aerial photographs, as all of these appear as dark forested signatures. Mesic flatwoods are sometimes slightly lighter blue or contain more red on the 1995 infrared DOQQ's than bottomland hardwoods. Ground truthing in the field assists in identification of this community. Mesic flatwoods can be distinguished from mesic hammock by a more open canopy on 1947 photographs.

Current Conditions:

Most of the intact historic mesic hammock is in its desired future condition. However, approximately one half of the historic mesic hammock community has been altered by former silvicultural practices. In the past, areas were mechanically site prepared and planted to longleaf, slash, and loblolly pine. Most of these communities are being burned on a 2 – 4 year fire return interval. Groundcover condition depends primarily on how extensively it was disturbed in the past. However, some of the current mesic hammocks are a result of chronic fire exclusion and hardwood encroachment in areas that were historically mesic flatwoods. Although non-native, invasive species are a concern, there are no specific species concerns to this community.

Management Actions:

The management strategy for the planted pine in the historic mesic hammock community is to continue a 2 – 4 year fire return interval on areas with adequate fuel. Prescribed fires will include growing season fire when feasible. The pine will be thinned to maintain healthy stocking levels. Areas of historic and recent hammock succession will be allowed to mature. However, fires from adjacent communities will be allowed to burn into this community which overtime may reduce the acreage of mesic hammock.

F. Upland Hardwood Forest**Description:**

Upland hardwood forests occur on rolling mesic hills, slopes above river floodplains, in smaller areas on the sides of sinkholes, and occasionally on rises within floodplains. It is a well-developed canopy forest dominated by deciduous hardwood trees on mesic soils in areas sheltered from fire. It typically has a diverse assemblage of deciduous and evergreen tree species in the canopy and midstory, shade-tolerant shrubs, and a sparse groundcover. It is possible that some upland hardwood forests at Twin Rivers State Forest were historically upland pine forest and succeeded to upland hardwood forest by chronic fire exclusion over a period of several decades.

Characteristic canopy trees include southern magnolia (*Magnolia grandiflora*), pignut hickory (*Carya glabra*), sweetgum (*Liquidambar styraciflua*), Florida maple (*Acer saccharum* ssp. *floridanum*), live oak (*Quercus virginiana*), laurel oak (*Q. hemisphaerica*), swamp chestnut oak (*Q. michauxii*), southern hackberry (*Celtis occidentalis*), and loblolly pine (*Pinus taeda*). The midstory layer is composed of younger canopy species as well as small trees, and tall shrubs, such as American holly (*Ilex opaca*), American hornbeam (*Carpinus caroliniana*), devil's walkingstick (*Aralia spinosa*), eastern hophornbeam (*Ostrya virginiana*), flowering dogwood (*Cornus florida*), and eastern redbud (*Cercis canadensis*). The groundcover is composed of shade-tolerant herbs, graminoids, and vines, such as partridgeberry (*Mitchella repens*) and Virginia creeper (*Parthenocissus quinquefolia*).

Many upland hardwood forests can be distinguished from upland pine forest by their position in a fire shadow, frequently surrounded mostly by bottomland or floodplain

forest. Upland hardwood forest appears as a densely wooded dark grey area in the 1947 aerial photographs and is difficult to distinguish from mesic hammock. Typically mesic hammocks are moister and show more blue in the signature on the 1995 DOQQ's.

Current Conditions:

Approximately one quarter of the historic upland hardwood forest communities as identified by the 2007 FNAI report are relatively intact and have been minimally altered by previous practices. However, approximately 1,000 acres have in the past been converted to pine plantations which are being thinned and burned as appropriate. The biggest threat from non-native, invasive species to this community is from Chinaberry, Mimosa, and cogon grass.

Management Actions:

The intact upland hardwood forest community requires little management actions besides allowing fire to creep into transition areas. Areas that can be confirmed as historic upland hardwood forest which have been planted in pine will be managed with thinning to eventually allow natural hardwood recruitment to take over. The rest of the acreage was likely historic upland pine and will be managed with thinning and frequent fire to try to move towards its historic community.

G. Floodplain (Alluvial) Forest

Description:

Floodplain forests occupy seasonally flooded flats behind the low lying river levees in the floodplain. They are flooded frequently with high river levels. Floodplain forests are hardwood forests that 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. Blackwater rivers, such as those present on Twin Rivers State Forest (Withlacoochee and Suwannee Rivers), carry little inorganic alluvium, and so do not generally form extensive flats of floodplain forest.

The canopy is dominated by red maple (*Acer rubrum*), water hickory (*Carya aquatica*), diamond-leaved oak (*Quercus laurifolia*), bald cypress (*Taxodium distichum*), American elm (*Ulmus americana*), occasionally *Crataegus* sp. and less frequently live oak (*Quercus virginiana*). Shrubs frequently include swamp dogwood (*Cornus foemina*), and small-leaf viburnum (*Viburnum obovatum*). Herbs are very sparse to absent and include *Dichanthelium* sp. and early blue violet (*Viola palmata*). Vines such as bristly greenbrier (*Smilax tamnoides*) and eastern poison ivy (*Toxicodendron radicans*) are infrequent.

According to the 2007 FNAI report, the Suwannee and Withlacoochee Rivers within Twin Rivers State Forest have not shifted course since the 1947 aerial photographs were taken. Floodplain forests show up as an almost completely blue signature on the 1995 infrared DOQQ's. The Mill Creek South floodplain forest may be used as a reference of this community type at Twin Rivers State Forest.

Current Condition:

Most of the floodplain forest community is intact and minimally disturbed by past operations, due to frequent flooding. However, approximately nine acres were planted with loblolly and slash pine by the previous landowners. The largest issue with non-native, invasive species in the floodplain is Japanese climbing fern. Climbing fern is located along the banks of the two rivers and is potentially spread every time the rivers flood.

Management Actions:

Given silvicultural BMP's are met, any remaining acres of planted pine may be harvested and allowed to revert back to floodplain forest. Since the rest of the floodplain forest is mostly intact, no other management actions are recommended other than protecting this intact community.

H. Xeric Hammock**Description:**

Xeric hammock is characterized as a scrubby, dense, low canopy forest with little understory other than saw palmetto (*Serenoa repens*). 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. Both xeric hammock communities on Twin Rivers State Forest are former sandhills near the two rivers. The canopy is dominated by sand live oak (*Quercus geminata*) and also includes pignut hickory (*Carya glabra*), longleaf pine (*Pinus palustris*), and laurel oak (*Quercus hemisphaerica*).

Proximity to the river allows more mesic species, such as red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), to persist despite predominantly xeric conditions. Additionally the dissected scour pattern of the river floodwaters allows more hydric species to occur in bottomland inclusions along the xeric hammock edges, such as swamp dogwood (*Cornus foemina*), possumhaw (*Ilex decidua*), dwarf palmetto (*Sabal minor*), and Gulf sebastian bush (*Sebastiania fruticosa*). Occasionally gopher apple (*Licania michauxii*), bluejack oak (*Quercus incana*), sand post oak (*Quercus margaretta*), turkey oak (*Quercus laevis*), winged sumac (*Rhus copallinum*), sparkleberry (*Vaccinium arboreum*), saw palmetto (*Serenoa repens*), and horse sugar (*Symplocos tinctoria*) may be found in the tall and short shrub layer. Upland herbs such as wiregrass (*Aristida stricta* var. *beyrichiana*), coastalplain honeycomb-head (*Balduina angustifolia*), and capillary hairsedge (*Bulbostylis ciliatifolia*) may still be found, along with coastalplain chaffhead (*Carphephorus corymbosus*), Maryland goldenaster (*Chrysopsis mariana*), *Rhynchospora* sp., Canadian blacksnakeroot (*Sanicula canadensis*), and little bluestem (*Schizachyrium scoparium*).

According to the 2007 FNAI report, the two historic xeric hammocks were mapped at Twin Rivers State Forest. The one on Westwood East Tract appears in the 1947 aerial photographs to be heavily dissected sandhill with dense canopy cover in spots. On Anderson Springs tract, the xeric hammock appears to be an overgrown sandhill peninsula surrounded by upland hardwood forest and bottomland forest.

Current Condition:

These two xeric hammock communities are a result of hardwood encroachment in historic sandhills. This may have been a natural process in some sandhills along the river edge that had recently become isolated by bottomland forest or some other type of fire shadow. The canopy is typically closed for the most part, but not very tall and a sub-canopy is sparse to absent. Approximately five acres have been planted to longleaf pine in effort to restore historic sandhill pine community. Although non-native, invasive species are always a concern, there are no specific concerns for this community type.

Management Actions:

Continue to burn adjacent communities and let fire push into the more recently succeeded xeric hammocks. This is in an effort to return more areas to historic sandhill conditions.

I. Sinkholes**Description:**

Sinkholes are generally characterized as cylindrical or conical depressions with steep walls often containing limestone. This community can also be sand-lined, with, or without a seasonal water table at the surface. This depends on the age and development of the sink. Sinkholes may contain perennial or seasonal water. However, the majority of sinkholes on the TRSF property do not hold water.

The canopy layer immediately above and around the sinkhole community is dominated by hackberry (*Celtis laevigata*), American holly (*Ilex opaca*), water oak (*Quercus nigra*), and live oak (*Quercus virginiana*). The subcanopy includes American holly (*Ilex opaca*), diamond-leaved oak (*Quercus laurifolia*), and tall and short shrubs include possumhaw (*Ilex decidua*), dwarf palmetto (*Sabal minor*), Florida bully (*Sideroxylon reclinatum*), highbush blueberry (*Vaccinium corymbosum*), and small-leaf viburnum (*Viburnum obovatum*). Herbs are typically sparse and include *Asplenium* sp., *Dichanthelium* sp., spider brake (*Pteris multifida*) and southern shield fern (*Thelypteris kunthii*). Vines are usually common and include trumpet creeper (*Campsis radicans*), saw greenbrier (*Smilax bona-nox*), and muscadine (*Vitis rotundifolia*).

According to the 2007 FNAI report, the signature for the sinkhole community on 1947 historic photographs is frequently distinct and appears as isolated circular hardwood hammocks due to mesic to hydric trees surrounding the edges of sinkhole slopes. On Anderson Springs the sinkhole is not very distinct due to its location in closed canopy bottomland forest, which rims the sinkhole upper slopes as well.

Current Condition:

These areas are left as is due to instability. Field reconnaissance has revealed hundreds of sinkholes that were too small to be mapped in the 2007 FNAI report. The sinkhole communities have serious issues with expansion and continuous sinking. TRSF staff consistently locates or discover new sinkholes within the forest. Japanese

climbing fern is the non-native, invasive species that seems to have the largest impact on sinkholes communities.

Management Actions:

These areas will be protected as required through the application of Best Management Practices. Fire is allowed to creep into the sinkholes when they are located within a burnable community.

VIII. Description of Individual Tracts / Recreation and Timber Management

A. Ellaville Tract – 4,285 Acres

The Ellaville Tract is on US Highway 90 in Madison County along the western banks of Withlacoochee and Suwannee Rivers near their confluence. Approximately 3,031 acres lay in the 100-year floodplain. There are 650 acres of bottomland forest associated with these two rivers. The remainder of the tract's upland and bottomland forest has in the past been converted to longleaf, slash, and loblolly pine plantations. This unit is crossed by U.S. Highway 90, a CSX railroad line, and a number of power line rights-of-way originating from a Duke Energy electric plant located east of the tract. This tract is topographically diverse, varying from 45 to 50 feet in elevation along the Suwannee River to over 80 feet in elevation on ridges located on the western side of the property.

1. Recreation Resources:

- Currently there are two public access points to the Withlacoochee River and two public access points to the Suwannee River. Most of these have picnic facilities.
- The Ellaville Unit continues to be an important recreation resource for hiking as the Florida Trail traverses the tract. Also, this unit contains one of the two Trailwalker trails located on the forest.
- There are no other designated trails on this tract but the existing roads and firebreaks may be utilized for hiking, biking, and horseback riding on a regular basis.
- There is a primitive group camping site on the river available by special use permit.
- Most of the Ellaville unit, with the exception of the northwest section, is used for hunting as part of the Twin Rivers Wildlife Management Area. This tract continues to be a popular area for hunters. It also contains the hunter check station for the WMA.
- No further recreation improvements are planned at this time.

2. Natural Community / Timber Management:

- Nearly all of the sizable historic sandhill, upland pine, and habitat was converted in past to longleaf, loblolly, sand, and slash pine plantations. Past efforts by FFS have removed much of the off-site sand and slash pine stands and re-established longleaf pines.
- Dormant and growing season burning has been initiated in the majority of the planted longleaf pine stands and groundcover response has been good.
- Any remaining sites planted to slash and loblolly pine will continue to be thinned and burned to promote native groundcover. Eventually, portions representative of sandhill will be converted to longleaf pine. In contrast, those representative of bottomland forest, by thinning and prescribed burning with lower intensity and less

frequent fires, will favor the recruitment of hardwood species that were present historically.

- Much of the historic floodplain and bottomland forest remains intact, however some small populations of Japanese climbing fern continue to be treated and monitored.

B. Blue Springs Longleaf Tract – 2,081 acres

The Blue Springs Longleaf Tract is on State Road 6 in Hamilton County a couple of miles east of the Withlacoochee River. The majority of the tract consists of intact upland pine community composed of relatively uniform old growth longleaf pine, with little to no indication of any past negative impacts. Several old field areas (< 400 acres) have been replanted in longleaf pine.

1. Recreation Resources:

- There is a large parking area/kiosk located at the main entrance on SR 6 for public access.
- The parking area serves as a trailhead for a designated Trailtrotter horse trail.
- This tract is utilized as part of the FFS Operation Outdoor Freedom (wounded military veterans) hunts.
- This tract is part of the TRSF Blue Springs Unit WMA and quail hunting is allowed as managed by the FWC.

2. Natural Community / Timber Management:

- Significant 60 to 100 year aged longleaf pine forest is noted as an “exemplary upland pine site” (FNAI, 2010) as one of the finest old-growth longleaf/wiregrass sites in the state. It will be managed to encourage its uneven-aged characteristics, averaging approximately 40 to 50 basal area. Any future thinning will remove enough timber to avoid crown closure but ensure large amounts of old growth timber. Small openings will encourage establishment of small pockets of young pine seedlings to augment the current regeneration.
- Prescribed burning, done during both the dormant and growing seasons, will continue on a 1 - 3 year cycle.
- FFS will continue to monitor and treat any resurgence of invasive plants that survived past control efforts.
- FFS will continue efforts to survey and monitor native groundcover plants, including wiregrass, blazing star, bracken fern, butterfly pea, partridge pea and aster, and will document any discovered listed plants.
- The final slash pine plantations were harvested in 2014 and need to be reforested with longleaf pine.

C. Mill Creek South Tract – 1,400 Acres

The Mill Creek South Tract is the southernmost tract on TRSF and has approximately 842 acres in the 100-year floodplain. It is located along SE River Road in Madison County along the western banks of the Suwannee River. There are about 200 acres of natural bottomland forest and floodplain swamp along the river. The remainder of the tract’s uplands and bottomland forest has been altered by past silviculture activities. The result is 450 acres of planted loblolly pine, largely in historic bottomland forest; over 600

acres of former planted slash pines that were converted to longleaf pine; and approximately 150 acres of mixed hardwood and pine natural regeneration

1. Recreation Resources:

- SE Boundary Bend Trail is a county grade road that bisects the tract and leads to a public county boat ramp on the Suwannee River.
- Road B, off of SE Boundary Bend Trail provides public access to the tract and leads to several parking areas including one at the river.
- There are no designated trails on this tract but the existing roads and firebreaks may be utilized for hiking, biking, and horseback riding.
- This tract is part of the TRSF WMA and hunting as managed by the FWC is allowed.

2. Natural Community / Timber Management:

- Nearly all of the sizable historic sandhill, upland pine, and bottomland forest was converted in the past to longleaf, loblolly, and slash pine plantations. Past efforts in the sandhills and upland pine by FFS have removed much of the off-site slash pine stands and re-established longleaf pines. As of this plan, a total of 615 acres has been successfully converted to longleaf pine and only a twenty-two acre slash pine stand remains unrestored on the Mill Creek South Tract.
- Dormant and growing season burning has been initiated in the majority of the planted longleaf pine and in the intact stands and groundcover response has been good.
- Herbicide (Velpar) treatments have been effective in reducing hardwoods and improving opportunities for prescribed fire.
- In the bottomland forest areas, the slash and loblolly pine and hardwoods will continue to be thinned and burned to promote native groundcover. In the upland pine areas, the loblolly pine will continue to be thinned and burned to promote native groundcover and control of the hardwoods. Over time, longleaf pine may be reestablished. The establishment of longleaf pine may include clear-cutting any hardwoods, slash pine, and loblolly pine and the planting of longleaf pine.
- FFS will continue to identify the need for selective thinning to improve timber quality and enhance groundcover diversity.

D. Anderson Springs Tract – 1,314 acres

The Anderson Springs Tract is on River Road in Suwannee County along the eastern banks of Suwannee River and has approximately 1152 acres in the 100-year floodplain. There are about 630 acres of relatively intact bottomland forest associated with the river. The remainder of the tract is composed of longleaf, loblolly, and slash pine planted on historic sandhills. The tract includes Anderson Springs, a popular local recreation area.

1. Recreation Resources:

- There is a day use area with a boardwalk located at the north entrance on River Road that provides public access to the spring area.
- The day use area also serves as a trailhead for a designated Trailwalker hiking trail and designated bicycle trail.
- There is a primitive group camping site on the river available by special use permit.
- There is another small parking area on the southern end of the tract that provides fishing access to the river.
- This tract is part of the TRSF WMA and hunting as managed by the FWC is allowed.

- FFS will work with SRWMD staff to assess impacts to spring and associated limestone outcrop habitat from public visitation and implement any appropriate protection measures.

2. Natural Community / Timber Stand Management:

- For the past 50 years, nearly all sizable historic sandhill / upland pine habitat was converted to slash pine plantation. However, the FFS has converted nearly half of this acreage to longleaf pine. Similarly, nearly all of the historic upland hardwood forest was planted to slash pine. As with past efforts in the sandhills, FFS will continue to harvest the off-site slash pine and reestablished longleaf pines. Continued efforts will serve to ensure adequate conversion of planted slash pines to longleaf pine.
- Approximately 40 acres of native sandhill habitat remain and is burned on 2 -3 year cycle and groundcover is in fair condition.
- Dormant and growing season burning has been initiated in majority of the planted longleaf and upland pine and groundcover response has been good.
- Herbicide (Velpar) treatments have been effective in reducing hardwoods, promoting native groundcover, and improving opportunities for prescribed fire.

E. Withlacoochee (Pot Springs) Tract – 1,162 Acres

The Withlacoochee Tract (locally known as the Pot Springs Tract) is located on State Road 6 in Hamilton County along the eastern side of the Withlacoochee River and has approximately 957 acres in the 100-year floodplain. Currently, public access to the tract is located on SW 28th Lane south of SR 6. Pot Springs, nestled on the riverbank, is a large spring that is a popular recreation area during the warmer months of the year. There are about 150 acres of intact bottomland associated with the river. Most of the tract's upland habitat is thought to be historic sandhill/upland pine. However, much of this has been impacted by past silvicultural practices, having been cleared and planted predominantly to slash and loblolly pine along with some longleaf pine.

1. Recreation Resources:

- There is a day use area which includes a kiosk, picnic tables, and grill with a boardwalk that provides public access to the spring area.
- There is trailhead for a designated 7-mile horseback riding trail.
- There is a primitive camp site on the river available for overnight camping by boaters.
- This tract is part of the TRSF WMA and hunting as managed by the FWC is allowed.

2. Natural Community / Timber Stand Management:

- Past efforts in the sandhills will continue by FFS to harvest slash pine and over time encourage the desired reforestation of longleaf pine.
- Ongoing dormant and growing season burning in majority of the upland sites has improved native groundcover and limited hardwood encroachment in many areas.
- Efforts will continue to thin and maintain more open loblolly pine stand conditions in historic bottomland forest in order to reduce pine beetle threats and to encourage natural regeneration of native wetland hardwood species.
- Japanese climbing fern occurs along the Withlacoochee River in the floodplain swamp. It continues to be treated and monitored.

- Several areas of cogon grass have been present in past but have been treated and contained and will continue to be monitored.

F. Black Tract – 674 Acres

The Black Tract is on SE River Road in Madison County along the west side of the Suwannee River and has approximately 546 acres in the 100-year floodplain. Most of the tract has been altered by past cattle and silviculture operations. There are just under 400 acres of longleaf, loblolly, and slash pine plantations. Prior to the clearing and planting of these pine plantations, the historical upland natural community type here probably would have been a mix of sandhill, upland pine, and upland hardwood forest. The remainder is natural bottomland forest mostly associated with the river.

1. Recreation Resources:

- Black Tract has a large parking area located at the entrance on SE River Road for public access.
- The parking area serves as a trailhead for a 5-mile designated horse trail and designated 1-mile hiking trail.
- In addition, the National Florida Scenic Trail also traverses this tract.
- There is a primitive group camping site on the river available by special use permit for boaters.
- This tract is part of the TRSF WMA and hunting, as managed by the FWC, is allowed.

2. Natural Community / Timber Stand Management:

- Efforts will continue by FFS to harvest the off-site slash pine and re-establish longleaf pines on all historic sandhill sites.
- Dormant and growing season burning has been initiated on a majority of the planted longleaf and slash pine.
- Herbicide (Velpar) treatments have been necessary to control persistent hardwood encroachment and to improve opportunities for prescribed fire.

G. Mill Creek North Tract – 654 Acres

The Mill Creek North Tract is on SE River Road in Madison County along the west bank of the Suwannee River and has approximately 546 acres in the 100-year floodplain. Other than about 70 acres of intact bottomland, the rest of the tract has been converted to pine plantation. There are about 70 acres of longleaf pine, 150 acres of real-estate cut (less than 20 BAF) slash pine, and 360 acres of loblolly pine.

1. Recreation Resources:

- Road A off of SE River Road provides public access to several parking areas and to the river for picnicking and fishing.
- The National Florida Scenic Trail traverses this tract.
- There are no other designated trails on this tract but the existing roads and firebreaks may be utilized for hiking, biking, and horseback riding.
- This tract is part of the TRSF WMA and hunting as managed by the FWC is allowed.

2. Natural Community / Timber Stand Management:

- Efforts will continue by FFS to harvest the off-site slash pine and loblolly pine and return longleaf pine to historic sandhill sites.
- Dormant and growing and dormant season burning has been initiated on a majority of the planted pine.
- Herbicide (Velpar) treatments and/or single-drum roller-chopping have been necessary to control persistent hardwood encroachment, enhance wildlife habitat, and to improve opportunities for prescribed fire.
- Much of the historic bottomland forest planted to loblolly pine will be managed to achieve more desirable pine densities, improve groundcover response, and encourage a gradual conversion to mature loblolly pine and mixed hardwood.

H. Chitty Bend West Tract – 625 acres

The Chitty Bend West Tract is located on Cottonwood Trail in Madison County immediately west of the Withlacoochee River and has approximately 262 acres in the 100-year floodplain. There are 130 acres of intact bottomland forest associated with the river. The remainder of the tract is mostly historic upland pine habitat that is comprised of areas of 50-year old planted slash pine and longleaf pine planted since 2003 following harvest of the off-site slash pine.

1. Recreation Resources:

- There is a river access point and picnic table located on the river.
- There are no designated trails on this tract but the existing roads and firebreaks may be utilized for hiking, biking, and horseback riding.

2. Natural Community / Timber Stand Management:

- Continue to increase the amount of prescribed burning to ensure all stands are at the desired fire frequency and include a growing season component, especially in those areas converted back to longleaf pine.
- Continue, where necessary, to reduce undesired hardwoods using timber harvests and/or site sensitive herbicide and/or mechanical treatments.
- Sites treated in past for golden bamboo, mimosa, or Japanese climbing fern will be monitored and re-treated as necessary.

I. Damascus Tract – 599 acres

The Damascus Tract was acquired in 2013 and is the newest addition to TRSF. It is on SE River Road in Madison County along the Suwannee River on the south side of Interstate 10 and has approximately 578 acres in the 100-year floodplain. Other than 120 acres of intact bottomland forest along the river, the tract has been altered by borrow pits and past silviculture practices. Most of the remainder of the tract has been planted with loblolly and slash pine plantations. This tract has not been surveyed and mapped to determine historic FNAI natural communities.

1. Recreation Resources:

- During the management plan period, public access, recreation and hunting will be evaluated and implemented.

2. Natural Community / Timber Stand Management:

- Continue efforts to remove offsite planted pines and reforest uplands with native longleaf pine.
- Assess tract and map historical natural communities.
- Survey for and treat any discovered non-native invasive plants.
- Initiate prescribed burning program to improve groundcover as timber management guidelines allow.

J. Westwood East Tract – 569 Acres

The Westwood East is located in Hamilton County, one mile south of County highway 152 along the eastern bank of the Withlacoochee River and has approximately 474 acres in the 100-year floodplain. There are 250 acres of bottomland forest associated with the river. The balance of the tract has been impacted by silvicultural activities and contains heavily thinned slash pine plantations which were originally established in 1964. There is no cleared public easement to the tract and therefore public access is limited to those boating on the Withlacoochee River.

1. Recreation Resources:

- There are no designated land-based trails on this tract but the property is open to hiking if accessed from the river.

2. Natural Community / Timber Stand Management:

- Continue efforts to burn every 1-3 years, during both the dormant and growing seasons, to maintain healthy native groundcover.
- Over time, conduct a final harvest of planted slash pine and reforest with longleaf pine on the historical sandhill and upland pine sites.
- Continue to monitor past infestations of Japanese climbing fern and cogon grass populations, and re-treat as necessary.

K. Nekoosa Tract – 526 Acres

The Nekoosa Tract is located in Hamilton County, 3 miles south of State Road 6 along the eastern shore of the Withlacoochee River and the entire parcel is in the 100-year floodplain. There are 160 acres of intact bottomland forest associated with the river. The balance of the tract has been impacted by slash pine plantations of varying conditions. These plantation sites are now comprised of dense and widely scattered pine and a moderate to dense stand of hardwoods. Interestingly, throughout the tract occur several “micro” sites of ten acres or less, at the highest elevations, composed of what appears to be remnant sandhill vegetation. There is no cleared public easement to the tract and therefore no recreation opportunities exist via land access.

1. Recreation Resources:

- There are no designated land-based trails on this tract but the property is open to hiking if accessed from the river.

2. Natural Community / Timber Stand Management:

- Investigate possibilities to burn tract to reduce the hardwood component and enhance native vegetation in the small imbedded sandhill sites. Assess benefits and implement herbicide / mechanical treatments to reduce undesired hardwoods.

- Over time, harvest planted slash pine and reforest small sandhill sites with longleaf pine.
- Continue to monitor past infestations of Japanese climbing fern associated with the river bank and re-treat as necessary.

L. Westwood West Tract – 503 Acres

The Westwood West Tract is located on NE Hickory Grove Road in Madison County along the Withlacoochee River and has approximately 396 acres in the 100-year floodplain. There is 80 acres of bottomland forest associated with the river and sinkholes. The remainder of the tract is historical upland pine / sandhill which has been planted in the past to longleaf and loblolly pine.

1. Recreation Resources:

- There is a river access point and picnic table located on the river.
- There are no designated trails on this tract but the existing roads and firebreaks may be utilized for hiking, biking, and horseback riding.

2. Natural Community / Timber Stand Management:

- Continue past efforts to maintain stands within a 1-3 year fire frequency which includes a growing season component.
- Continue to inventory pine plantations and implement thinning harvests to maintain desired stocking sufficient for sustaining timber growth and burning frequencies. Restore loblolly pine plantations to longleaf pine following any final clearcut harvests.
- Continue to monitor past Japanese climbing fern infestations for follow up treatments should new growth be discovered.

M. Sullivan Tract – 376 Acres

The Sullivan Tract is located on County Road 150 in Madison County along the western shores of the Withlacoochee River and has approximately 367 acres in the 100-year floodplain. There are 30 acres of bottomland forest along the river. The remainder of the tract is historically upland pine/sandhill and was planted in the 1980's in longleaf and slash pine.

1. Recreation Resources:

- The tract contains two river access points with picnic tables providing excellent opportunities for canoe access and paddling the Withlacoochee River to the remaining state forest tracts to the south.
- There is a concrete canoe launch. Continue to monitor and minimize soil/bank erosion associated with public access.
- Close proximity to CR 150 make this a popular fishing and picnic area.
- There are no designated trails on this tract but the existing roads and firebreaks may be utilized for hiking, biking, and horseback riding.

2. Natural Community / Timber Stand Management:

- Continue past efforts to maintain stands within a 2-4 year fire frequency with both a dormant and growing season component.

- Continue to inventory pine plantations and implement thinning harvests to maintain desired stocking sufficient for sustaining timber growth and burning frequencies. Over time, conduct a final harvest of planted slash pine and reforest with longleaf pine on the historical sandhill sites.
- Continue to monitor past Japanese climbing fern infestations for follow-up treatments.

N. Chitty Bend East Tract – 295 Acres

The Chitty Bend East Tract is located off of Northwest 34th Street in Hamilton County along the Withlacoochee River and has approximately 247 acres in the 100-year floodplain. There are about 50 acres of intact bottomland forest associated with the river. In 2004, approximately 105 acres of planted slash pine was clearcut and replanted with longleaf pine.

1. Recreation Resources:

- There is a primitive camp site on the river available for overnight camping by boaters.
- Fishing is also available at the primitive campsite.
- There are no designated trails on this tract but the existing roads and firebreaks may be utilized for hiking, biking, and horseback riding from the public parking/access point off of NW 34th Street.

2. Natural Community / Timber Stand Management:

- Continue efforts to establish desired fire regime in the upland pine/sandhill community. Assess hardwood component and consider herbicide/mechanical treatments if burning is unsuccessful.

O. Deese Tract – 99 Acres

The Deese Tract is a narrow, linear, east-west tract, located on NW 16th Avenue in Hamilton County along the Withlacoochee River and has approximately 87 acres in the 100-year floodplain. There are 45 acres of bottomland forest associated with the river and a small stream. The remainder contains natural longleaf pine sandhill communities.

1. Recreation Resources:

- Because of the small size and layout of the tract, there is minimal opportunity for recreation other than a river access point for fishing.

2. Natural Community / Timber Stand Management:

- Continue efforts to establish the desired fire regime in the natural sandhill communities with dormant and growing season prescribed fire.
- Assess hardwood component and consider herbicide/mechanical treatments if burning is unsuccessful.

IX. References

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X. Glossary of Abbreviations

ARC	Acquisition and Restoration Council
BMP	Best Management Practice
BSLT	Blue Springs Longleaf Tract
CARL	Conservation and Recreation Lands
DACS	Department of Agriculture and Consumer Services
DEP	Department of Environmental Protection
DHR	Division of Historical Resources
DRP	Division of Recreation and Parks
FFS	Florida Forest Service
FNAI	Florida Natural Areas Inventory
FNST	Florida National Scenic Trail
FWC	Florida Fish and Wildlife Conservation Commission
OFW	Outstanding Florida Water
SRWMD	Suwannee River Water Management District
TIITF	Board of Trustees of the Internal Improvement Trust Fund
TRSF	Twin Rivers State Forest
USFWS	United States Fish and Wildlife Service
WMA	Wildlife Management Area