



# Florida Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Rick Scott  
Governor

Jennifer Carroll  
Lt. Governor

Herschel T. Vinyard Jr.  
Secretary

June 28, 2012

Ms. Cori Hermle  
Land Planning Specialist  
Florida Forest Service  
3125 Conner Boulevard  
Tallahassee, FL 32399-1650

**RE: Cary State Forest – Lease numbers 3687 and 4609**

Dear Ms. Hermle:

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 Cary State Forest land management plan. The next management plan update is due June 28, 2022.

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

Sincerely,

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

MSG/ci

# **TEN-YEAR RESOURCE MANAGEMENT PLAN**

FOR THE

## **CARY STATE FOREST**

NASSAU AND DUVAL COUNTIES



PREPARED BY

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

FLORIDA FOREST SERVICE

APPROVED ON

JUNE 28, 2012

TEN-YEAR RESOURCE MANAGEMENT PLAN  
FOR THE  
CARY STATE FOREST



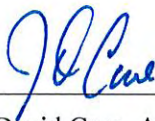
Approved by:

A handwritten signature in black ink, appearing to read "Jim Karels", written over a horizontal line.

Jim Karels, Director  
Florida Forest Service

3.15.12

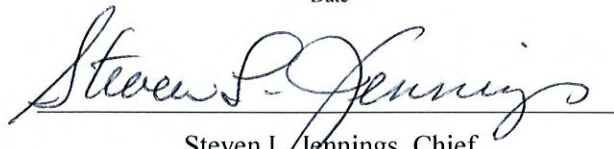
Date

A handwritten signature in blue ink, appearing to read "David Core", written over a horizontal line.

David Core, Assistant Director  
Florida Forest Service

3-12-12

Date

A handwritten signature in black ink, appearing to read "Steven L. Jennings", written over a horizontal line.

Steven L. Jennings, Chief  
Forest Management Bureau

March 8, 2012

Date

TEN-YEAR RESOURCE MANAGEMENT PLAN  
CARY STATE FOREST

**TABLE OF CONTENTS**

Land Management Plan Executive Summary .....	1
I. Introduction .....	2
A. General Mission and Management Plan Direction .....	2
B. Past Accomplishments .....	3
C. Goals/Objectives for the Next Ten Year Period.....	4
II. Administration Section.....	11
A. Descriptive Information .....	11
1. Common Name of Property .....	11
2. Legal Description and Acreage.....	11
3. Proximity to Other Public Resource .....	12
4. Property Acquisition and Land Use Considerations.....	13
B. Management Authority, Purpose and Constraints.....	13
1. Purpose for Acquisition/Management Prospectus .....	13
2. Degree of Title Interest Held by the Board.....	14
3. Designated Single or Multiple-Use Management.....	14
4. Revenue Producing Activities.....	15
5. Conformation to State Lands Management Plan .....	15
6. Legislative or Executive Constraints .....	15
7. Aquatic Preserve/Area of Critical State Concern .....	15
C. Capital Facilities and Infrastructure .....	16
1. Property Boundaries Establishment and Preservation .....	16
2. Improvements .....	16
3. On-Site Housing.....	16
4. Operations Infrastructure .....	16
D. Additional Acquisitions and Land Use Considerations .....	17
1. Alternate Uses Considered.....	17
2. Additional Land Needs .....	17
3. Surplus Land Assessment .....	17
4. Adjacent Conflicting Uses .....	17
5. Compliance with Comprehensive Plan.....	18
6. Utility Corridors and Easements.....	18
E. Agency & Public Involvement .....	20
1. Responsibilities of Managing Agencies.....	20
2. Law Enforcement.....	20
3. Public and Local Government Involvement .....	20
4. Volunteers .....	21
III. Archaeological/Cultural Resources and Protection .....	21
A. Past Uses .....	21
B. Archaeological and Historical Resources .....	22
C. Ground Disturbing Activities .....	23

D. Survey and Monitoring .....	23
IV. Natural Resources and Protection.....	23
A. Soils and Geologic Resources.....	23
1. Resources .....	24
2. Soil Protection.....	24
B. Water Resources.....	24
1. Resources .....	24
2. Water Protection .....	25
C. Wildlife Resources .....	26
1. Threatened and Endangered Species .....	26
2. Game Species and Other Wildlife.....	28
3. Survey and Monitoring .....	28
D. Sustainable Forest Resources.....	29
E. Beaches and Dune Resources .....	29
F. Mineral Resources .....	29
G. Unique Natural Features and Outstanding Native Landscapes.....	30
H. Research Projects/Specimen Collection.....	30
I. Ground Disturbing Activities .....	30
V. Public Access and Recreation .....	31
A. Existing .....	31
1. Public Access and Parking.....	31
2. Recreation Area .....	32
3. Trails .....	32
4. Camping.....	32
5. Hunting and Fishing.....	33
6. Environmental Education and Public Outreach.....	33
B. Planned.....	33
1. Public Access and Parking.....	33
2. Facilities.....	34
3. Trails .....	34
4. Camping.....	35
5. Day Use Areas .....	35
C. Hunter Access .....	35
VI. Habitat Restoration & Management Practices.....	35
A. Prescribed Fire .....	35
B. Sustainable Forestry & Silviculture .....	36
1. Strategies.....	36
2. Silvicultural Operations .....	37
3. Timber Inventory Control .....	37
4. Timber Sales .....	38
C. Non-Native Invasive Species Control.....	38
D. Insects, Disease and Forest Health.....	39
E. Use of Private Land Contractors .....	40
VII. Proposed Management Activities for Natural Communities .....	41



A. Mesic Flatwoods .....	42
B. Basin Swamp.....	44
C. Wet Flatwoods.....	46
D. Sandhill .....	48
E. Bottomland Forest .....	50
F. Dome Swamp.....	52
G. Baygall .....	53
H. Floodplain Swamp .....	54
I. Depression Marsh .....	55
J. Basin Marsh.....	56
 VIII. References.....	 58
IX. Glossary of Abbreviations .....	58

TEN-YEAR RESOURCE MANAGEMENT PLAN  
CARY STATE FOREST

**EXHIBITS**

Location Map .....	Exhibit A
Ten-Year Management Accomplishment Summary .....	Exhibit B
Proximity to Other Public Lands Map .....	Exhibit C
Management Prospectus .....	Exhibit D
Optimal Management Boundary Map .....	Exhibit E
Compliance with Local Comprehensive Plan .....	Exhibit F
Land Management Review Team Recommendations .....	Exhibit G
State Forest Management Plan Advisory Group Summary .....	Exhibit H
Management Procedures for Archaeological and Historical Sites and Properties on State Owned or Controlled Lands .....	Exhibit I
Soil Map.....	Exhibit J
Florida Natural Areas Inventory Managed Area Tracking Record .....	Exhibit K
Recreation and Facilities Map .....	Exhibit L
Roads Map .....	Exhibit M
Non-Native Invasive Plant Map.....	Exhibit N
Historic Natural Communities Map.....	Exhibit O
Current Natural Communities and Cover Type Map.....	Exhibit P
Leases and Easements.....	Exhibit Q

**TABLES**

Table 1. CSF Acreage by Parcel.....	Page 11
Table 2. Nearby Public Conservation Land and Easements .....	Page 12
Table 3. Endangered or Threatened Species on CSF.....	Page 26
Table 4. Suspected CSF Rare Species Needing FFS Confirmation/Documentation.....	Page 27
Table 5. Summary of 2006 FFS Non-Native Invasive Plant Survey .....	Page 38
Table 6. Vegetation Types Found on CSF.....	Page 42

## LAND MANAGEMENT PLAN EXECUTIVE SUMMARY

LEAD AGENCY: Florida Department of Agriculture and Consumer Services, Florida Forest Service  
COMMON NAME: Cary State Forest  
LOCATION: Nassau and Duval Counties  
ACREAGE TOTAL: 13,385.19

<i>Historical Natural Communities</i>	<i>Acreage</i>	<i>Historical Natural Communities</i>	<i>Acreage</i>
Mesic Flatwoods	4,944	Dome Swamp	296
Basin Swamp	3,322	Baygall	290
Wet Flatwoods	2,424	Floodplain Swamp	219
Sandhill	1,168	Depression Marsh	16
Bottomland Forest	366	Unmapped	345

LEASE/MANAGEMENT AGREEMENT NO.: 3687 & 4609    USE: Single\_\_\_Multiple X

### MANAGEMENT AGENCY

Florida DACS, Florida Forest Service  
Florida Fish and Wildlife Conservation Commission  
St. John's River Water Management District  
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

SUBLEASE(S): Sublessor-Department of Agriculture and Consumer Services, Sublessee-Board of County Commissioners, Nassau County (City of Bryceville), 50-year sublease to Nassau County (FDACS Contract Number 3676)

ENCUMBRANCES: Various easements

TYPE ACQUISITION: 1935 Florida Conservation Committee Acquisition Fee Simple, Florida Forever, Save Our Rivers, United States Department of Defense, Navy and City of Jacksonville.

UNIQUE FEATURES: As of 2012, the original Cary Tract has been managed by FFS for seventy-three years and is a good example of maturing, natural, pine flatwoods. No Catch Swamp basin marsh, nearly intact Thomas Creek and associated bottomland and floodplain forests.

ARCHAEOLOGICAL/HISTORICAL SITES: None known.

MANAGEMENT NEEDS: Ecological and hydrological restoration, improvement of current recreation facilities, development of new recreation facilities/trails and public access points, archaeological survey, non-native invasive survey and continued treatments, FNAI historical/current community mapping.

ACQUISITION NEEDS/ACREAGE: 10,030 acres (Exhibit E)

SURPLUS LANDS/ACREAGE: None

PUBLIC INVOLVEMENT: Management Plan Advisory Group and a 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**

Cary State Forest (CSF) is comprised of approximately 13,385 acres located approximately 23 miles west of downtown Jacksonville, Florida in western Duval and southwest Nassau Counties (Exhibit A). CSF protects portions of the St. Johns, St. Marys, and Nassau River watersheds. Thomas Creek and several unnamed tributaries flow through and out of CSF. CSF is important to aquifer recharge and surface water storage. In addition, it is a key component in a regional wildlife and recreation corridor, connecting other publicly owned land.

Major natural communities include mesic and wet flatwoods, basin swamp, basin marsh, sandhill, bottomland swamp and floodplain forest, dome swamp, baygall, and depression marsh. Prior to state ownership, the original CSF lands were managed primarily for timber, turpentine, cattle and agricultural production, while the remaining, more recently acquired tracts were previously managed for timber using intensive silvicultural practices and leased for game species hunting.

### **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 CSF center on the multiple-use concept, as defined in 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 CSF 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 passive, outdoor recreation opportunities for multiple interests.
- Restore, manage and protect native ecosystems, and ensure 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.

This management plan is provided according to requirements of Sections 253.034, 259.032 and 373, 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 CSF for the next ten-year period and outlines the major concepts that will guide management activities on the forest.

## **B. Past Accomplishments**

A table has been prepared for this plan that summarizes, in numerical format, the accomplishments for each of the past ten years (Exhibit B). 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.

There have been many events, developments and accomplishments since the approval of the previous management plan. Among the most noteworthy have been the following:

- Five land acquisitions resulted in three new tracts for CSF: the 4,039-acre Thomas Creek Tract, the 3,942-acre Monticello Tract and the 1,651-acre Norfolk Southern Tract. CSF nearly quadrupled in size, increasing from 3,413 acres to 13,385 acres.
- Timber stands and compartments were delineated and re-delineated for the entire forest. FFS had no forest inventory data for most of the new parcels and in 2009-2010, FFS staff inventoried these areas (8,286 acres) collecting timber and forest data on 750 plots within two months.
- The restroom/bathhouse was renovated with major improvements including new septic system, toilets, sinks, lighting, hot water heater and reservoir, paint and signage. The Cary Fire Tower was renovated with all new stairs and fencing and cab improvements.
- A bridge was installed on No Catch Road providing crucial access to the southern Cary Tract and the entire Monticello Tract. Fifty-seven culverts and three hard-surface low water crossings were installed to improve hydrology within natural communities.
- Both boardwalks within the Pavilion Road recreation area were rebuilt. Twenty-two miles of trail were established for hiking and equestrian use and mowed, trimmed, painted and posted.
- Four information kiosks were installed and have been recently updated with new maps, educational fact sheets, rules, FFS program brochures, trail signs and paint. Volunteers and service projects such as Boy Scout Eagles contributed to these projects.
- A new CSF brochure was developed with map and forest information.
- With volunteer and Boy Scout assistance, improvements such as campground and trail benches, trail bridges, picnic tables, bird boxes and others were installed.
- Six new volunteers recruited and active on the forest.
- FNAI Historical and Current Natural Community surveys and mapping were completed on approximately 10,261 acres. With the assistance of forest volunteers

several threatened and endangered plant species previously undocumented on CSF are to be located and confirmed. A non-native invasive species plant survey was completed by FFS's Forest Management Bureau Forest Health Section.

- Saltbox, Sandhill, No Catch, Fox Squirrel, Chicken Farm and other important open roads all had major improvements. In particular, Basin, Monticello and Monument Roads had 2.3 miles of hardpan and limerock upgrades to provide access for future Monticello Tract recreation areas.
- Road signs were installed on all open roads forest-wide. All closed roads were posted.

### **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 CSF 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 achievable within a two year planning period, and long-term goals are achievable within a ten year planning period. Objectives are listed in priority order for each goal. 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:** Develop a CSF Five-Year Silvicultural Management Plan including reforestation, harvesting, prescribed burning, restoration and timber stand improvement (TSI) activities. (Short Term Goal)

**Performance Measure:** Completion of CSF Five-Year Silvicultural Management Plan.

**Objective 2:** Implement the CSF Five-Year Silvicultural Management Plan. (Long Term Goal)

**Performance Measure:** Implementation of plan (acres treated).

**Objective 3:** Implement the process for conducting stand descriptions and forest inventory. Include maintenance of CSF GIS geodatabase with forest stands, roads and

other attributes (including but not limited to: threatened & endangered species, archaeological resources, non-native invasive species locations, and historical areas). (Ongoing Goal)

**Performance Measure:** Complete GIS geodatabase and reinventory all attributes every 3-5 years or as needed.

**Objective 4:** Conduct Forest Inventory updates each year, according to established criteria. (Ongoing Goal)

**Performance Measure:** Number of acres inventoried annually.

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

**Objective 1:** Maintain public access and recreational opportunities to allow for a recreational carrying capacity of 128 visitors per day. (Ongoing Goal)

**Performance Measure:** Number of visitor opportunities per day.

**Objective 2:** In order to safely integrate human use into Cary State Forest, develop and implement a Five-Year Outdoor Recreation Plan and update annually. (Ongoing Goal)

**Performance Measure:** Completion of the Five-Year Outdoor Recreation Plan and update annually.

**Objective 3:** Construct the Millionth Acre Campground on the Monticello Tract. The site plans are developed and campground materials are on-site except the needed self-mulching toilet facility. (Long Term Goal)

**Performance Measure:** Campground constructed.

**Objective 4:** Secure a CSF full-time Park Ranger position to assist with current facility maintenance and development of future recreation sites and facilities. (Long Term Goal)

**Performance Measure:** Position secured.

**Objective 5:** Develop additional public access and recreational opportunities to expand the recreational carrying capacity up to 535 visitors per day provided all activities and plans listed in Exhibit L are completed. (Long Term Goal)

**Performance Measure:** Number of visitor opportunities per day.

**Objective 6:** Increase presence and education of all cooperating law enforcement agencies to enforce rules and reduce illegal hunting, fishing, vandalism, off-road use, dumping and other degradations to natural resources and facilities. (Ongoing Goal)

**Performance Measure:** Reduction of illegal or unauthorized activities.

**Objective 7:** Update the CSF brochure and state forest webpage. Estimated total cost for printing brochures is \$7,500. (Short Term Goal)

**Performance Measures:** Completion of updated CSF brochure and webpage.

**Objective 8:** Conduct annual environmental education programs. (Ongoing Goal)

**Performance Measure:** Number of educational programs conducted annually.

**Objective 9:** Organize and conduct semi-annual Liaison Committee meetings to receive feedback from the various CSF user groups. (Ongoing Goal)

**Performance Measure:** Number of Liaison Committee meetings conducted annually.

**Objective 10:** Maintain and continue the CSF Volunteer Program. Recruit additional volunteers as needed to assist with implementation of various forest programs. (Ongoing Goal)

**Performance Measures:**

- Number of volunteers.
- Number of volunteer hours.
- Number of volunteer projects/tasks identified.

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

**Objective 1:** A minimum of 1,800 acres will be burned annually during the first five years of this planning period, focusing on stands that have not been burned and/or have heavy fuel loads and pose a greater wildfire hazard. Stands currently within their target fire return intervals will be maintained but likely toward the upper limit of their interval for the first five years. Annual prescribed burning costs during the first five years are estimated at \$31,800 based on the FFS Fire Manual rates for contract burning and plowing. (Ongoing Goal)

**Performance Measure:** Number of acres prescribed burned.

**Objective 2:** As stands mature and reach a burnable age and structure, fuels are reduced and additional acreage reaches the maintenance burning phase, the long-term annual burn target will be 3,100 acres. Annual prescribed burning costs for the second half of the planning period are estimated at \$50,340 based on FFS Fire Manual rates for contract burning and plowing. (Ongoing Goal)

**Performance Measure:** Number of acres prescribed burned.

**Objective 3:** Update and implement the CSF Fire Management Plan. (Short Term Goal)

**Performance Measure:** Completion and implementation of CSF Fire Management Plan.

**Objective 4:** The CSF Five-Year Silvicultural Management Plan and corresponding assessments and inventory will be developed and implemented. Future reforestation needs and costs will be determined upon completion of the silvicultural plan. Clearcutting may be utilized in the future where appropriate, focusing on off-site species conversion. (Ongoing Goal)

**Performance Measure:** Number of acres reforested.

**Objective 5:** Conduct habitat/natural community improvement on 75 acres of degraded sandhill. (Short Term Goal)

**Performance Measure:**

- Number of acres burned.
- Number of acres reforested.

**Objective 6:** Utilize prescribe burning to enhance restoration of native groundcover. Evaluate areas where native groundcover has been eliminated or heavily impacted from historical land use on a case-by-case basis for alternative methods to address reestablishment of native ground cover plants, if practical. (Long Term Goal)

**Performance Measure:**

- Groundcover needs assessment completed.
- Number of impacted acres treated with prescribed fire.

➤ **GOAL 4: Listed and Rare Species Habitat Maintenance, Enhancement, Restoration, or Population Restoration**

**Objective 1:** Request and obtain funding for Florida Natural Areas Inventory (FNAI) current and historical natural community mapping and surveys of the Foster-Milne and Norfolk Southern acquisitions, totaling approximately 2,784 acres. FNAI natural community surveys have not been conducted on these two acquisitions. Estimated FNAI survey cost is \$8,000. (Long Term Goal)

**Performance Measures:**

- Funding request for FNAI mapping and surveying submitted.
- Number of acres where FNAI mapping and surveys completed.

**Objective 2:** FFS, in cooperation with FWC, will develop and maintain a CSF Wildlife Management Plan that addresses all appropriate game and non-game wildlife species, including imperiled species, their habitat, and their sustainability based on collected site-specific population data. In conjunction with this plan, establish a continuous, long-term monitoring program to ensure the perpetual viability of these wildlife populations within CSF. (Long Term Goal)

**Performance Measures:**

- Completion of CSF Wildlife Management Plan.
- Establishment and continuation of long-term population monitoring program.

**Objective 3:** Develop baseline listed and rare species occurrence inventory list. (Short Term Goal)

**Performance Measure:** Baseline listed and rare species occurrence inventory list complete.

**Objective 4:** Develop monitoring protocols for selected listed and rare species in consultation with FWC. (Long Term Goal)

**Performance Measure:** The number of listed and rare species for which monitoring protocols are developed.

**Objective 5:** Implement monitoring protocols for listed and rare species. (Long Term Goal)

**Performance Measure:** The number of species for which monitoring is ongoing.

**Objective 6:** Identify and map environmentally sensitive areas, including but not limited to wetlands, ecotones, and sandhills. Train and inform all CSF staff on protection of environmentally sensitive areas. (Ongoing Goal)

**Performance Measures:**

- Environmentally sensitive areas identified and mapped.
- Number of CSF staff trained in protection of sensitive areas.

➤ **GOAL 5: Non-Native Invasive Species Maintenance and Control**

**Objective 1:** Develop a plan to prevent, locate, identify, control, and monitor non-native invasive plant species. Estimated cost to be determined. (Short Term Goal)

**Performance Measure:** Plan completed.

**Objective 2:** Continue annual treatments and monitoring on known non-native invasive plant species. (Ongoing Goal)

**Performance Measure:** Number of acres treated annually.

➤ **GOAL 6: Cultural and Historical Resources**

**Objective 1:** Maintain at least one CSF staff member as archaeological resource monitor. (Ongoing Goal)

**Performance Measure:** Number of CSF staff trained as monitor.

**Objective 2:** Ensure any new sites are recorded in the Division of Historical Resources (DHR) Florida Master Site file. (Ongoing Goal)

**Performance Measure:** Number of recorded sites.

**Objective 3:** Monitor recorded sites and send updates to the DHR Florida Master Site File as needed. (Ongoing Goal)

**Performance Measure:** Number of sites monitored.

➤ **GOAL 7: Hydrological Preservation and Restoration**

**Objective 1:** Conduct or obtain a site assessment/study to identify potential hydrology restoration needs. (Short Term Goal)

**Performance Measure:** Assessment conducted.

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

**Performance Measure:** Compliance with state lands BMP's.

**Objective 3:** Close, rehabilitate, or restore those roads and trails that have evidence of erosion into surrounding water bodies causing alterations to the hydrology. Estimated cost to be determined. (Short Term Goal)



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

**Objective 4:** Coordinate with Jacksonville District biologist, FFS Forest Hydrologist, and/or local non-profit organizations to seek mitigation and/or grant funding to initiate hydrological restoration projects based on the forest-wide hydrological assessment. (Long Term Goal)

**Performance Measures:**

- Completed grant application(s).
- Completed mitigation project proposal(s) distributed.

**Objective 5:** In conjunction with CSF Fire Management Plan, conduct forest-wide assessment of all pre-suppression firelines currently in regular use and those no longer maintained to determine needs for rehabilitation and improvement of disturbed hydric communities and associated ecotones. (Long Term Goal)

**Performance Measure:** Assessment completed.

**Objective 6:** Implement the recommendations from the pre-suppression fireline assessment to rehabilitate unnecessary firelines and/or those in wetland ecotones. (Long Term Goal)

**Performance Measures:**

- Miles of firelines rehabilitated.
- Miles of ecotones restored.

➤ **GOAL 8: Capital Facilities and Infrastructure**

**Objective 1:** CSF staff will maintain all existing facilities, roads, and trails. (Ongoing Goal)

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

**Objective 2:** The current forester truck and FFS radio will need to be replaced during this planning period due to mounting repair and maintenance costs. Estimated equipment cost (New Forester Vehicle/Radio) is \$35,000. (Long Term Goal)

**Performance Measure:** Vehicle replaced.

**Objective 3:** Construct a permanent forest headquarters on site, complete with office, shop, and storage capabilities. The current structure is a modular office trailer with higher long-term maintenance/repair costs than a permanent office building. Estimated total cost for a new CSF office is \$543,800. (Long Term Goal)

**Performance Measure:** Completion of construction of on-site headquarters facility.

**Objective 4:** Enclose, restore, and enhance current educational pavilion off Pavilion Road. This will include an initial assessment of current structural integrity and drainage around foundation. Improvements include enclosing the facility, air conditioning

installed, multimedia projection system installed and current interpretive educational stations removed and updated. Estimated total cost is \$97,000. (Long Term Goal)

**Performance Measure:** Description of improvements made to educational pavilion.

**Objective 5:** Continue annual maintenance of state forest boundary. (Short Term Goal)

**Performance Measure:** Percentage of forest boundary maintained.

**Objective 6:** The CSF Five-Year Road Management Plan and corresponding assessments and inventory will be developed and implemented for the current 62 mile forest-road network. The Cary Tract contains relatively well developed and maintained roads with a few road sections in need of significant improvements. The Monticello and Thomas Creek Tracts currently have ongoing improvement and maintenance projects. The existing roads on the Norfolk Southern Tract are degraded, eroding and seasonally impassable. A significant portion of these road networks are in need of major improvements to bring up to grade and meet FFS road standards to allow for safe public access and various forest operations. Costs include the Basin Road No Catch Swamp restoration project, and initiation and completion of various road projects across the forest. Estimated total 10-year cost is \$778,740. (Long Term Goal)

**Performance Measure:** Implementation of the Five-Year Road Management Plan and updated annually.

**Objective 7:** The full cost of implementing the CSF Five-Year Outdoor Recreation Plan will be determined upon its completion and approval. A new full-time position is needed to meet management objectives and serve the public. The services of a full-time CSF park ranger will be needed in the development and implementation of the recreation plan (staff costs include benefits). Estimated annual cost (salary) is \$39,483. (Long Term Goal)

**Performance Measures:**

- CSF park ranger position secured.

**Objective 8:** Information kiosks with maps and interpretive signs will be installed in various recreation areas on the forest. Estimated total cost to install two kiosks is \$2,094, and the estimated total cost to install interpretive signs is \$1,550. (Ongoing Goal)

**Performance Measures:**

- Number of kiosks installed.
- Number of interpretive signs installed.

**Objective 9:** A self-mulching restroom facility is needed for the planned Millionth Acre Campground on the Monticello Tract. The site plans are developed and remaining campground materials are on-site. Estimated total cost to install the restroom facility is \$21,370. (Long Term Goal)

**Performance Measures:**

- Funding request submitted and secured for self-mulching restroom facility.
- Restroom facility installed.

## II. Administration Section

### A. Descriptive Information

#### 1. Common Name of Property

The common name of the property is the Cary State Forest (CSF).

#### 2. Legal Description and Acreage

The 13,385 acre CSF is comprised of four (4) separate tracts, located along the Nassau-Duval County line in western Duval and southwest Nassau Counties, Florida (Exhibit A). It is approximately 23 miles west of downtown Jacksonville near Bryceville. The Cary, Monticello, and Norfolk Southern Tracts are adjacent to one another while the Thomas Creek Tract stands alone. Approximately 8,321 acres or 62% of CSF is within Duval County and 5,064 acres or 38% is within Nassau County. The legal description is located in Department of Environmental Protection (DEP) lease agreements 3687 and 4609. The property is located in all or part of Sections 31,32, 40, 41 Township 01 North, Range 25 East; Sections 4-6, 31, 43, 44 Township 01 South, Range 25 East; Sections 6,7 Township 02 South, Range 25 East; Sections 25-27, 34-37 Township 01 North, Range 24 East; Sections 15-17, 19-28, 34-36 Township 01 South, Range 24 East; and Sections 1,2 Township 02 South, Range 24 East.

**Table 1. CSF Acreage by Parcel**

Parcel Name	Deed Date	Closing Date	Lease Date	Management Lease No.	Amend. No.	Funding Source	County	Acres
<b>CARY TRACT (3,412.5 Total Acres)</b>								
George F. & Charlotte C. Cary Family	7/14/1939	7/14/1939	11/22/1968	3687	0	FCC	Nassau	2,282.50
Multiple Families	7/14/1939	7/14/1939	11/22/1968	3687	0	FCC	Duval	1,130.00
<b>MONTICELLO TRACT</b>								
Monticello Drug	12/22/2005	12/28/2005	7/7/2006	3687	1	Florida Forever	Duval	3,942.12
<b>THOMAS CREEK TRACT (4,038.9 Total Acres)</b>								
Thomas Creek* ±	7/20/2005	7/20/2005	3/18/2009	4609	0	Florida Forever & SOR	Duval	1,598.02
Thomas Creek*	7/20/2005	7/20/2005	3/18/2009	4609	0	Florida Forever & SOR	Nassau	570.76
Gopher Ridge	7/20/2005	7/20/2005	4/29/2010	3687	3	Florida Forever	Nassau	736.87
Foster-Milne		5/14/2008	4/29/2010	3687	3	Florida Forever	Nassau	1,133.23
Redshirt		4/22/2003	1/26/2011	016703**		SOR	Nassau	325.00

Parcel Name	Deed Date	Closing Date	Lease Date	Management Lease No.	Amend. No.	Funding Source	County	Acres
Abandonment of Roads Steven Subdivision			9/8/2009	4609	1		Nassau	15.21

#### NORFOLK SOUTHERN TRACT

Norfolk Southern	6/30/2006	6/30/2006	3/18/2009	3687	2	Florida Forever, DOD, Navy	Duval	1,651.00
------------------	-----------	-----------	-----------	------	---	----------------------------	-------	----------

BOT (3687) DACS Contract No. = 11466

BOT-WMD (4609) DACS Contract No. = 14695

FCC – Florida Conservation Committee Acquisition Fee Simple

SOR – Save Our Rivers

\*SJRWMD & BOT each have 50% interest in this parcel.

\*\*Department of Agriculture and Consumer Services contract number for management authority on 325 acres of property titled to SJRWMD.

± Management authority on approximately 90.1 acres in the Thomas Creek Tract east of the railroad will be assigned to SJRWMD by the Department of Environmental Protection. The FFS is requesting a partial release of lease.

A complete legal description of lands owned by the Board of Trustees of the Internal Improvement Trust Fund (BOT) and SJRWMD as part of CSF is on record at the CSF 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 15 miles of the CSF are included in Exhibit C as well as the table below:

**Table 2. Nearby Public Conservation Land and Easements**

TRACT	AGENCY	DISTANCE
Whitehouse Field	US DOD, Navy	Adjacent
Thomas Creek Conservation Area	SJRWMD/COJ	Adjacent
Monticello Wildlands (Monticello A, Scarborough, Block, International Tracts)	COJ	Adjacent
Jacksonville-Baldwin Rail Trail	COJ	Adjacent
Monticello Wildlands Conservation Easement	Duval County	Adjacent
Camp Milton Historic Preserve	COJ	5 miles SE
Miller Farm	JEA	5 miles SW
Cecil Field Conservation Corridor	COJ	7 miles S
Peterson Tract	JEA	7 miles S
St Marys River House	TNC	7 miles W
Stone Mountain Industrial Park	SJRWMD	7 miles E
Bulls Bay Preserve	COJ	9 miles SE
Loblolly Mitigation Preserve	LMB, LLC	9 miles SW

TRACT	AGENCY	DISTANCE
Yellow Water Branch Trailhead	COJ	10 miles SW
Jennings State Forest	FFS	12 miles S
Four Creeks State Forest	FFS	13 miles NE
Sal Taylor Creek Preserve	COJ	13 miles S
Ribault River Preserve	COJ	13 miles E
McGirts Creek Preserve	COJ	14 miles SE
Branan Field Mitigation Park Wildlife Env. Area	FWC	14 miles SE
Thomas Creek Preserve	COJ	15 miles NE

DOD – Department of Defense  
 SJRWMD- St. Johns River Water Management District  
 COJ – City of Jacksonville  
 JEA – Jacksonville Electric Authority

TNC – The Nature Conservancy  
 LMB, LLC – Loblolly Mitigation Bank, LLC  
 FFS - Florida Forest Service  
 FWC – Florida Fish and Wildlife Conservation Commission

#### **4. Property Acquisition and Land Use Considerations**

The original 3,413 acre Cary Tract was acquired by purchasing multiple parcels between 1935 and 1942, establishing CSF as Florida’s second state forest (Table 5). CSF is named after the George F. and Charlotte C. Cary family who sold the State the first parcel. Between July 20<sup>th</sup>, 2005 and May 14<sup>th</sup>, 2008 the Thomas Creek (4,039 acres), Monticello (3,942 acres), and Norfolk Southern (1,651 acres) Tracts were acquired through Florida Forever’s Northeast Florida Timberlands and Watershed Reserve Project and funds provided by the US Navy and the City of Jacksonville.

In 2003 St. John River Water Management District closed on the Redshirt (Farms) parcel. SJRWMD proposed a swap of management authority due to the proximity of the 325-acre Red Shirt parcel to the main body of CSF’s Thomas Creek Tract. In exchange, FFS would transfer management authority of the 90.1 acre parcel of the CSF Thomas Creek acquisition in Duval County which lies east of the railroad (Exhibits E and Q).

### **B. Management Authority, Purpose and Constraints**

#### **1. Purpose for Acquisition/Management Prospectus**

In the mid-1930s, Florida Governor David Sholtz, at the request of President Roosevelt, appointed a Conservation Committee. This committee drafted legislation, which was passed by the 1935 Florida Legislature, authorizing the acquisition, development and management of a system of state forests and parks, and appropriating funds for this purpose. The Cary Tract was established through this program.

When Florida took steps in 1935 to establish a system of state parks, the primary impetus came from a desire to take advantage of a federal depression-era program, the Civilian Conservation Corps (CCC). In order to take full advantage of the

program, Florida would have to make available public lands, such as state forests and parks, on which the work could be conducted.

The main objectives for the acquisition of the Thomas Creek, Monticello and Norfolk Southern Tracts under the Northeast Florida Timberlands Project are:

- Increase the protection of Florida's biodiversity at the species, community, and landscape levels.
- Increase the amount of open space available in urban areas – conserve spaces suitable for greenways or outdoor recreation that are compatible with conservation purposes.
- Increase natural resource-based public recreation and educational opportunities – camping, picnicking, nature appreciation, hiking, and horseback riding will be considered.
- Protect, restore, and maintain the quality and natural functions of land, water, and wetland systems of the state.

The management prospectus for this Florida Forever project (and the adjacent Baldwin Bay project) can be found in Exhibit D.

**2. Degree of Title Interest Held by the Board**

All tracts are held 100% fee simple by the Board of Trustees (BOT) of the Internal Improvement Trust Fund except the original Thomas Creek parcel (2,169 acres). The St. Johns River Water Management District (SJRWMD) owns a 50% undivided interest of this parcel. Lease agreements 3687 and 4609 delegate authority to manage the CSF. Copies of the deeds are on file at the FFS's State Office, Florida Department of Environmental Protection (DEP) State Office and the FFS's Jacksonville District Office.

**3. Designated Single or Multiple-Use Management**

The CSF 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 Management Lease Numbers 3687 and 4609.

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, or 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. The potential for income producing activities is quite varied and are listed below:

- *Camping* - There are three primitive camp sites located off Pavilion Road. Camping on CSF has generated a net average of approximately \$1,199 per year in the past three fiscal years.
- *Day-Use Fees* - CSF collects fees for day-use at the improved public recreation area on the Cary Tract. Day-use on CSF has generated a net average of approximately \$1,108 per year in the past three fiscal years.

Development and implementation of the CSF Five-Year Recreation Plan may provide additional recreation revenue opportunities.

- *Timber Sales* - Stands will be harvested to improve forest health. Forest management is optimized with other management responsibilities. Timber sales on CSF have generated an average of \$193,506 per year in the past three fiscal years.

A steady and significant revenue flow generated from timber sales will be achieved through sustainable forestry practices which also help improve and restore the natural communities of CSF.

- *Other* - CSF has been able to issue permits for the harvesting of palmetto drupes when in season (August to early October). Palmetto frond sales may be considered as well. Apiary leases and other compatible uses will be considered.

#### **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 CSF.

#### **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 CSF boundary lines are managed by state forest personnel in accordance with the guidelines stated in Chapter 11 of the State Forest Handbook (FFS 2008).

Approximately 95% of CSF boundaries have been painted and signs posted according to FFS boundary marking specifications. Forest boundary firelines are partially established and will be completed where appropriate in uplands.

### **2. Improvements**

Major FFS structures include the CSF headquarters office, the Jacksonville District Office, District Shop, educational pavilion, CSF pole barn/shop, recreation bathhouse/restrooms, fire tower, two boardwalks, well pumphouse, mobile home site near the CSF headquarters and a metal wood shed. Other structures located on subleases to Nassau County include a Nassau County Fire Station, two separate stretches of the same Florida Power and Light (FPL) power line and a Jacksonville Electric Authority (JEA) power line. A single lane steel bridge crossing No Catch Swamp is located on No Catch Road about half-way between the intersections of Cypress Pond and Basin Roads.

### **3. On-Site Housing**

FFS may establish on-site housing (mobile/manufactured home) on CSF 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 Jacksonville District 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 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 Jacksonville District Manager and approved by the Director.

There is potential to establish on-site housing at the future Monticello Recreation Area near Garden Street. Currently an FWC officer is utilizing a trailer site near the CSF headquarters on the Cary Tract.

### **4. Operations Infrastructure**

The current annual budget (FY 2010-2011) for CSF is \$148,109. Annual appropriations may change over time. This budget includes: salary, expenses and contractual costs:

Expenses (seedlings, road material)	\$56,584
Salary and Benefits	\$42,000
Operating Budget (general fuel, supplies, utilities costs)	\$38,725
Contractual Costs (reforestation)	\$10,800
Operating Capital Outlay (equipment)	\$ 0
Total: \$148,109	

A Forester has been assigned to CSF. The Forester and Duval County Forest Area Supervisor (FAS) will coordinate to complete objectives and achieve the goals outlined in this plan. Resource management is the responsibility of the Forester and includes forest management, recreation management, planning and most administration on CSF. Forest operations are the responsibility of the Duval FAS and current fire control personnel (two senior forest rangers and two forest rangers) which includes road, facility and infrastructure maintenance/repairs as well as prescribed burning activities. Additional assistance will be provided by other Jacksonville District staff as needed.

#### **D. Additional Acquisitions and Land Use Considerations**

##### **1. Alternate Uses Considered**

During this management period the following uses were considered and determined to be not compatible: water resource development projects, water supply projects, storm-water management projects, linear facilities, off-highway vehicles used for recreation or communication towers and antennas, except as otherwise outlined in this plan. 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 long-term land acquisition goal of the FFS is to create a forested corridor, eventually connecting Four Creeks, Jennings and Cary State Forest. Cooperation between FFS and various managing agencies of local public conservation lands may be a necessary objective to meet this goal. Purchasing of additional land within the optimal management boundary would facilitate restoration, protection, maintenance, and management of the resources on CSF (Exhibit E).

##### **3. Surplus Land Assessment**

In reviewing the state forest boundaries for potential acquisitions and possible surplus lands, CSF staff has determined the northeast parcel (90.1 acres) to be more efficiently managed by the SJRWMD due to its location and position immediately adjacent to their Thomas Creek Conservation Area property. Fee simple title to this small parcel is currently split 50/50 between the BOT and the SJRWMD. FFS supports a partial release of lease on this parcel located northeast of the railroad within the Thomas Creek Tract (Exhibit E).

All other property within CSF is suitable for and necessary for the management of CSF, and none should be declared surplus.

##### **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 in making the determination that there are currently no known conflicting adjacent

land uses. Additionally, FFS staff met with several adjacent land owners and maintains liaison with those land owners to ensure that any conflicting future land uses may be readily identified and addressed.

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

Nearby developed areas, and adjoining major highway systems including US 301, US 90, I-10 and various local roads limit the prescribed burning program on CSF due to smoke management concerns.

**5. Compliance With Comprehensive Plan**

This plan was submitted to the Board of County Commissioners in Nassau County and the City Council of Jacksonville (Duval County) for review and compliance with their local comprehensive plans (Exhibit F).

**6. Utility Corridors and Easements**

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. The FFS does not consider CSF suitable for any new linear facilities.

When such encroachments are unavoidable, previously disturbed sites will be the preferred location. The objectives, when identifying possible locations for new linear facilities, will be to minimize damage to sensitive resources (e.g., listed species and archaeological sites), 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 BOT. Requests for linear facility uses will be handled according to the Board of Trustees linear facilities policy.

The power line right-of-way that cuts through the Cary Tract has recently been found to contain several rare and listed species. FPL periodically mows this area and will be notified of these occurrences and their respective locations. A potential buffer may need to be established around this area in which FFS could maintain vegetation heights of selected species to FPL's mandated standards. This corridor is generally maintained with prescribed fire when adjacent stands are burned and FFS mows and maintains the road under the power line itself.

Current easements include:

- A major Florida Power & Light (FPL) power line right-of-way 100 feet wide and 2.8 miles long runs northeast through the Cary and Thomas Creek Tracts.
- A smaller, JEA power line right-of-way also runs through the eastern portion of the Thomas Creek Tract.
- Nassau County has an easement running north northeast through the western edge of the forest for the US 301 right-of-way.
- A 30 foot wide by 2.3 mile non-exclusive easement was granted to Holland M. Ware by Monticello Companies, Inc. from Garden Street south through the Monticello Tract.
- A 0.8 mile ingress and egress easement running east from Dillon Road was granted to the City of Jacksonville by Monticello Companies, Inc. Easement ends on the western boundary of the Monticello Tract of Cary State Forest.
- A 0.5-mile long by 60 foot wide ingress and egress easement was granted by Southern Region Industrial Realty to Earl F. Hannah and Bonnie Hannah running north through the southern section of the Norfolk Southern Tract.
- A 1.3 mile 80 foot wide road right-of way easement was granted to the Monticello Land Company, James R. Roberts Testamentary Trust and William V. Roberts in the eastern portion of the Thomas Creek Tract.
- The City of Jacksonville has a 100 foot wide by 1.4 mile long right-of-way easement running east-west in the central portion of the Norfolk Southern Tract (previously an Old Florida Railroad easement).
- Located on the west side of the Monticello Tract a 1,320 foot wide easement has been placed by the Monticello Companies, Inc. to exclude hunting and recreational use of firearms. A 300 foot wide adjacent easement exists that excludes all public use, improvements, paved roads and buildings (Exhibit Q).
- Five acres in the southwestern corner of the Cary Tract have been subleased to Nassau County for 50 years to house a community services center/library and a baseball field.
- A 68.3-acre aviation easement exists that was previously granted by the Monticello Drug Company to the US Navy on the southeastern section of the Monticello Tract which prohibits any structures and provides for agricultural height limits.
- A 40.5-acre oil, gas and road reservation was retained by the Monticello Drug Company on a southeastern section of the Monticello Tract at the time of acquisition.

All existing easements are on file with the DSL and the FFS state office in Tallahassee.

## **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 Management Lease Numbers 3687 and 4609. The Florida Department of Agriculture and Consumer Services (DACS) Office of Agricultural Law Enforcement (OALE) has law enforcement responsibilities. The Florida Fish and Wildlife Conservation Commission (FWC) is responsible for enforcing hunting regulations, cooperatively setting hunting season dates with FFS, and conducting other wildlife management activities with input from FFS. The FFS will cooperate with the DHR regarding appropriate management practices on historical 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 St. Johns River Water Management District (SJRWMD) 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 OALE and FWC. Additional assistance is provided by the Nassau and Duval County Sheriff's Offices as needed.

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 Forest 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 April 2002 and November 2007 (Exhibit G). The review team's recommendations were incorporated into this plan as appropriate.

The plan was developed with input from the CSF Management Plan Advisory Group and was reviewed at a public hearing on January 11, 2012. A summary of the advisory group's meetings and discussions, as well as written comments received on the plan, are included in Exhibit H. The Acquisition and Restoration Council (ARC) public hearing and meeting serve as an additional forum for public input and review of the plan. After ARC approval, the plan will then be submitted to the SJRWMD Governing Board for approval.

#### **4. Volunteers**

Volunteers are important assets to CSF. Depending upon the type of volunteer service needed, volunteer activities may be one-time events or long-term projects. Volunteers have assisted with improving public information/access, education, boundary work, trail maintenance, mowing, road inventory/posting, trash cleanup, rare plant and animal monitoring. They also provide information from the field including criminal activity and impacts on natural resources and facilities. Additional volunteer recruitment will be encouraged to assist with other activities to further the FFS's mission. CSF staff will maintain a list of potential projects/tasks to assist in recruiting volunteers.

### **III. Archaeological/Cultural Resources and Protection**

#### **A. Past Uses**

##### ***Cary Tract***

CSF was originally managed from the FFS state office in Tallahassee until 1971, when management responsibility was given to the Jacksonville District. Prior to FFS acquisition the forest was managed for timber, turpentine, cattle, and agricultural production among other uses by the Cary family and other local landowners.

Since acquisition in 1939, the forest has been managed for multiple-use by the FFS and State of Florida. Forest management has included various silvicultural treatments such as thinnings and clearcuts with artificial regeneration. Group selections (small clearcuts) and seed tree cuts for natural regeneration and uneven-aged management goals have also been utilized. Some portions of the wetland communities appear to have had complete and partial harvests prior to FFS management.

In an effort to improve fire protection for local communities, in 1973 the BOT agreed to a 50-year lease of one acre of CSF to Nassau County for the construction of a Nassau County Fire Station and meeting hall. The DACS also subleased five acres to the city of Bryceville for community improvements including a library/community center and a baseball field.

##### ***Monticello Tract***

Prior to state acquisition, the Monticello Tract was managed by Jacksonville-based Monticello Land and Monticello Drug Companies. A former local landowner, St Regis Timber Company, leased and managed this parcel prior to the Monticello companies. When acquired, the property had not been prescribed burned since the 1970s.

Both St Regis and the Monticello companies managed the property intensively for timber production and other uses including hunting leases and turpentine production. Upon acquisition, the Monticello Tract's upland communities were and continue to be dominated by merchantable and premerchantable mostly intensively managed slash pine (*Pinus elliottii*), longleaf pine (*Pinus palustris*), loblolly pine (*Pinus taeda*) and sand pine

(*Pinus clausa* var. *clausa*) plantations. Most of the wetland communities appear to have had complete or partial timber harvests during past ownerships.

A prospecting oil well is located on the Monticello Tract and has been plugged. Another former United States Geological Survey (USGS) water quality monitoring well is located several yards from the abandoned well and is no longer in use.

### ***Thomas Creek Tract***

The Thomas Creek and Gopher Ridge parcels of the current CSF Thomas Creek Tract were acquired from Rayonier Forest Resources, Inc. Engraved concrete boundary markers on site indicate portions of these parcels may have been owned or leased by the St Regis Timber Company at some point prior to Rayonier. The Foster-Milne parcel of the Thomas Creek Tract was acquired by the Foster and Milne families. This parcel changed ownership many times over the past 50 years, including various timber companies, land holdings and small private, non-industrial forest landowners such as the Foster and Milne families.

The Thomas Creek parcel's upland communities were mostly clearcut prior to State acquisition. Most of the wetland communities appear to have had complete or partial timber harvests during past ownerships. Past land uses on the Thomas Creek, Gopher Ridge and Foster-Milne parcels include but are not limited to intensive and non-intensive timber production, cattle grazing, turpentine production, agricultural production and nearby suspected homesteads.

The Thomas Creek Tract also includes the 325 acre Redshirt Parcel that is owned fee-simple by St Johns River Water Management District and, as of January 2011, is managed by FFS under a ten-year lease agreement (DOACS 016703) as a part of CSF (Exhibit Q). Past land use here is very similar to the other parcels on the tract.

### ***Norfolk Southern Tract***

This parcel was acquired from the Norfolk Southern Railroad Company. This Tract was intensively managed for timber production in both the upland and wetland communities. Approximately 40% of wetland communities were clearcut by the previous landowner prior to State acquisition. Upland communities are mostly premerchantable, bedded slash pine plantations with small clearcut areas of naturally-regenerating slash pine. The property was also leased by a local hunting club prior to acquisition.

## **B. Archaeological and Historical Resources**

A review of information contained in the DHR's Florida Master Site file has determined that there are no known recorded sites on CSF.

DHR Site File NA07746, Medium Chicken Site, indicates there is a single artifact, prehistoric non-ceramic, land site near the Cary Tract boundary along the US 301 FLDOT right-of-way. The site is not located within the CSF boundary and the FFS will not monitor this site for these reasons. A homesite is suspected to have been located near



the current Jacksonville District Office site based on 1953 aerial images and a cattle dipping vat located near the intersection of Big Oaks and Hog Trap Roads.

There is potential for historical and cultural resource site discoveries mainly on the Thomas Creek Tract according to a DHR Cultural Resources Analysis for the 2007 Land Management Review Team (Exhibit G). FFS field observations support this report. There is what appears to be an old farm and a suspected homesite located in western Thomas Creek Tract. There is a small cemetery outparcel with two grave stones and a suspected homestead located within the eastern portion of this tract as well. Discovered sites and artifacts will be priority for future DHR surveys and brought to the attention of DHR Public Lands Archaeologists.

**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" (Exhibit I) 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 is one local district FFS personnel trained by DHR as an archaeological site monitor. FFS will pursue opportunities for getting additional personnel trained. 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. During this ten year planning period, FFS will seek the advice and recommendations of DHR regarding any additional archaeological survey needs. Trained monitors will oversee ground disturbing activities in which DHR recommends monitoring. 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**

There are several different soil series found on CSF. They range from deep, well drained sands to poorly drained organic muck soils associated with wetlands. A soils map and general description of the major series can be found in Exhibit J.

## **2. Soil Protection**

Currently there are no known soil or erosion problems present on CSF. Management activities will be executed in a manner to minimize soil erosion. CSF falls within the jurisdiction of the SJRWMD. The FFS will coordinate with SJRWMD, as necessary, on activities pertaining to water resource protection and management. If 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 CSF 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**

CSF protects portions of the St John's, St Marys, and Nassau River watersheds. There are two freshwater creeks that flow through and originate within the CSF boundary (Exhibit A). The first is Thomas Creek which flows northeast through the Thomas Creek Tract towards Four Creeks State Forest and the headwaters of the Nassau River. The second creek on CSF is unnamed and begins within No Catch Swamp on the Norfolk Southern Tract. It then flows northwest through the Monticello Tract and then west, out of the swamp and southwest out of CSF, eventually flowing into Brandy Branch which flows into the St Marys River.

There are two unnamed tributaries within CSF that flow into Thomas Creek. The first is located on the western portion of the Thomas Creek Tract and flows south directly into Thomas Creek. The second begins on the northeastern portion of the Cary Tract and flows northeast out of CSF through private lands and eventually flows directly into Thomas Creek. There are several drainages and wetlands that flow out of CSF into major waterways such as the Trout River and McGirts Creek.

Additionally, two man-made, borrow pits have formed small ponds on CSF. The first is located along Motes Road on the Cary Tract and is infested with torpedo grass and is no longer used as a borrow pit. The torpedo grass must be controlled or eliminated to prevent spread of this non-native invasive species before the pit is used again. The second pond is located directly east of a large windrow along the north end of

Sandhill Road on the Thomas Creek Tract. This borrow pit was created by prior landowner(s) and will not be used by FFS for road material.

The surface waters on CSF are classified as Class III Surface Waters - Recreation, Propagation, and Maintenance of a Healthy Well-balanced Population of Fish and Wildlife in accordance with Rule 62-302.400 Florida Administrative Code.

Approximately 35% of the CSF land area is occupied by wetlands, with 71% of these wetlands being basin swamp. These crucial wetland communities provide watershed protection, aquifer recharge for the region, valuable water storage/flood control, water filtration and aquatic habitat preservation. No Catch Swamp, the Thomas Creek floodplain, and bottomland forest communities are unique wetland communities within CSF.

## **2. 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.

Soil and water resources are currently protected, maintained and restored using several practices. Culvert replacement and installation and hard surface, low water crossings are used along wetland road crossings or in areas to improve natural sheet flow. Road projects such as road closures, road removals, road shoulder and ditch maintenance and roadside seeding will also be considered for soil and water resource protection. A SJRWMD-managed upper Floridan aquifer monitoring well is located near the CSF office and data periodically collected at this site will be attained and filed on site by CSF staff. The SJRWMD abandoned a former groundwater monitoring well on the Monticello Tract to prevent potential negative impacts on upper and lower Floridan aquifer water quality.

Wetland improvement and restoration objectives on the Forest may include reintroduction of fire to ecotones and hydric communities, erosion control, hydrology/sheet flow and hydroperiod, restoration of natural wetland plant community densities and structures and promotion of wetland wildlife species. A specific area of focus for wetland community improvements will be ecotones between the wetland and upland communities. Tools to achieve these results may involve road and soil stabilization, prescribed fire, culvert replacement and installation, plugging ditches and canals, fireline abandonment and rehabilitation, non-native invasive species eradication, timber harvests and re-vegetation of wetland plants/trees. All activities will be monitored in the short and long-term. FFS, other agencies and contractors will be utilized.

There are several major hydrological factors that need to be addressed on CSF before landscape-level hydrological restoration can take place. There are many hydrological issues within the forest that can be addressed and will be evaluated for restoration needs related to sheet flow, hydroperiod and water quality. These include bedded

plantations, canals, firelines, roads, road and field ditches, altered streams and other factors that have changed the historical hydrology on CSF. The Monticello Tract has many of these issues and will be an initial priority. The 2008 No Catch Swamp Hydrological Enhancement Project Proposal focuses on key areas for restoration on this Tract. This proposal package was distributed to local environmental consulting firms in 2008 as a potential mitigation project. No Catch Swamp is approximately 740 acres of basin swamp and 210 acres of basin marsh. As the remaining Tracts are assessed they will be considered for hydrological restoration projects.

## C. Wildlife Resources

### 1. Threatened and Endangered Species

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.

Presence of listed species is based on information compiled from FNAI tracking records (Exhibit K) and FWC as well as field observations by SJRWMD and FFS. The following listed species were identified:

**Table 3. Endangered or Threatened Species on CSF**

Common Name	Scientific Name	Federal Status *	State Status *	FNAI Global Rank *	FNAI State Rank *
<b>Animals</b>					
Gopher Tortoise	<i>Gopherus polyphemus</i>	N	ST	G3	S3
Sherman's Fox Squirrel	<i>Sciurus niger shermani</i>	N	SSC	G5 T3	S3
Swallow-tailed Kite	<i>Elanoides forficatus</i>	N	N	G5	S2
Wood Stork	<i>Mycteria americana</i>	LE	FE	G4	S2
<b>Plants</b>					
Florida Toothache Grass	<i>Ctenium floridanum</i>	N	LE	G2	S2
Nightflowering Wild Petunia	<i>Ruellia noctiflora</i>	N	LE	G2	S2
Purple Honeycomb-head	<i>Balduina atropurpurea</i>	N	LE	G2	S1

**\* STATUS/RANK KEY**

Federal Status (USFWS): LE= Listed Endangered, LT= Listed Threatened, N= Not currently listed

State Status (FWC): FE = Listed as Endangered Species at the Federal level by the USFWS, FT = Listed as Threatened Species at the Federal level by the USFWS, ST = State population listed as Threatened by the FFWCC, SSC = Listed as Species of Special Concern by the FFWCC, LE= Listed Endangered, LT=Listed Threatened, 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, T# = Taxonomic Subgroup; numbers have same definition as G#'s.

FNAI State Rank: S1= Critically Imperiled, S2= Imperiled, S3= Very Rare, S4= Apparently Secure.

There is also a FNAI Tracking Record from 1998 that states there was an active red-cockaded woodpecker (*Picoides borealis*) cavity tree on CSF. The birds were last observed in 1978 and have not been documented since. The cavity tree is located near the CSF office.

The following management practices are recommended to protect and preserve listed species that are present on the forest:

- a. Locate and map: cover, food, critical resources, and breeding places for all listed species.
- b. Establish a monitoring plan for all listed species.
- c. Other specialized management practices for listed species may be implemented if deemed necessary. This includes designation of buffers for aquatic and wetland resources.

During the development of this plan, the CSF Forester and CSF volunteers began locating and documenting various rare species, some of which are endangered and threatened. A list of these species has been developed and will be field checked with the help of the Jacksonville District Biologist and others as needed (Table 4). The complete list will include species names, dates, GPS coordinates, site notes, photos and other necessary data. Once the list is confirmed by FFS staff it will be submitted to FNAI for permanent documentation.

**Table 4. Suspected CSF Rare Species Needing FFS Confirmation/Documentation**

Common Name	Scientific Name	FNAI State Rank/ Status	Federal Status	DACS Status	AFVP Status	Tract
Blueflower Butterwort	<i>Pinguicula caerulea</i>			Threatened	Threatened	Cary
Crested Fringed Orchid	<i>Platanthera cristata</i>			Threatened	Threatened	Cary
Fernald's Orchid	<i>Pogonia bifaria</i>				Threatened	Cary
Large Rosebud Orchid	<i>Cleistes divaricata</i>	S1/LT	N	Threatened	Threatened	Cary
Many Flowered Grass Pink Orchid	<i>Calopogon multiflorus</i>	S2,S3/LE	N	Endangered	Endangered	Cary
Pine Lily	<i>Lilium catesbaei</i>			Threatened	Threatened	Cary
Snowy Orchid	<i>Habenaria nivea</i>			Threatened	Threatened	Monticello
Southeastern Spinyleg Dragonfly	<i>Dromogomphus armatus</i>	S3/N	N			Thomas Creek
Spoon-leaved Sundew	<i>Drosera intermedia</i>	S3/LT	N		Threatened	Cary
Ten Petal White Sabatia	<i>Sabatia dodecandra</i>				Rare	Cary
Variable-leaf Crownbeard	<i>Verbesina heterophylla</i>	S2/N	N		Endemic	Monticello

Common Name	Scientific Name	FNAI State Rank/ Status	Federal Status	DACS Status	AFVP Status	Tract
Yellow Butterwort	<i>Pinguicula lutea</i>			Threatened	Threatened	Cary

AFVP - Atlas of Florida Vascular Plants

FNAI State Rank: S1 = Critically imperiled in FL because of extreme rarity (5 or fewer occurrences or less than 1,000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor; S2 = Imperiled in FL because of rarity (6 to 20 occurrences or less than 3,000 individuals) or because of vulnerability to extinction due to some natural or man-made factor; S3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

State Status: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. 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.

\* = Confirmed and documented by FFS and FNAI staff during plan development.

## 2. Game Species and Other Wildlife

Wildlife management will play an important role in the management of resources on CSF. The Cary, Monticello and Thomas Creek Tracts currently comprise the 11,410 acre Cary Wildlife Management Area. 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. Hunting on Cary State Forest and WMA is provided through both non-quota and quota hunts. Hunting is prohibited in the environmental education area on the Cary Tract and the private easement on the Monticello Tract. All changes in hunting and fishing regulations will be approved by the FFS Director prior to implementation by the FWC.

The FFS maintains two permanent wildlife openings on the Cary Tract, 0.2 and 1.3 acres in size. Wildlife openings and food plots will be established and maintained in accordance with Chapter 7 of the FFS State Forest Handbook. Wildlife openings and food plots will be addressed in the CSF Wildlife Management Plan developed by FFS and FWC. Several abandoned food plots, totaling approximately 6 acres, exist on the Thomas Creek Tract will be maintained as wildlife openings with prescribed fire and/or rotational mowing treatments.

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.

## 3. Survey and Monitoring

Species-specific management plans will be developed when necessary. Continued biological surveys will be conducted to determine locations of these species.

An additional baseline, site-specific, imperiled species occurrence inventory list will be developed and initiation of further inventory surveys on priority species will be

implemented. Monitoring protocols will be developed and implemented for selected imperiled species upon completion of these surveys. Assistance from outside agencies and organizations such as FNAI, FWC, Florida Division of Recreation and Parks (DRP) and the Florida Native Plant Society (FNPS) may be needed to complete these lists and surveys. Funding may need to be requested as appropriate to meet these objectives. Limited biological documentation and monitoring assistance is currently provided by FWC Biologists. The Jacksonville District Biologist position was filled during the development of this plan and will provide assistance in improving and further developing threatened and endangered species management, documentation and monitoring on CSF in the future.

Specialized forest management and habitat restoration practices will be utilized where appropriate. These practices will aim to protect and, when possible, increase imperiled plants and animals species occurring on the forest. Species-specific management plans will be developed when necessary. Gopher tortoise (*Gopherus polyphemus*), Sherman's fox squirrel (*Sciurus niger* var. *shermani*), hooded pitcher plant (*Sarracenia minor*), purple honeycomb-head (*Balduina atropurpurea*) and Florida toothache grass (*Ctenium floridanum*) have been documented on CSF and are considered during forest management activities.

An extraordinary gopher tortoise die-off on the eastern portion of the Monticello Tract was reported to the CSF Forester in 2010. This mortality has been confirmed by FFS. FWC Biologists, the Jacksonville District Biologist and the FFS Forest Ecologist have been informed. An FNAI gopher tortoise survey and report was completed in 2010/2011 on 214 acres of transects within 1,003 acres of potential habitat at CSF. This survey included areas that are either currently or were historically sandhill or other upland pine communities. The mortality issue was brought to the FNAI Biologists' attention prior to beginning surveys. A cause for the die-off was not determined.

#### **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.

#### **E. Beaches and Dune Resources**

No beaches or dunes occur on the CSF.

#### **F. Mineral Resources**

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

#### **G. Unique Natural Features and Outstanding Native Landscapes**

Thomas Creek itself, and the nearly intact bottomland hardwood forest and floodplain swamp through which the creek flows, are considered unique natural features. No Catch Swamp and the associated basin marsh are also unique natural features of CSF.

The Cary Tract contains particularly well managed and representative mesic and wet flatwoods, cypress domes, and basin swamps. The Thomas Creek bottomland forest and floodplain swamp are also exceptional native landscapes found on CSF.

#### **H. Research Projects/Specimen Collection**

Research projects may be performed on certain areas of 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 CSF must be considered in accordance with the guidelines stated in Chapter 4 of the State Forest Handbook (FFS 2008). 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 CSF 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:

- Pondspice (*Litsea aestivalis*) Population Status and Response to Laurel Wilt Disease in Northeast Florida. FNAI. November 2009.
- Integrated Water Resource Monitoring Network Program. FDEP. 2009-ongoing.
- Florida Freshwater Mercury Total Maximum Daily Load Project. FDEP. July 26, 2010 – August 25, 2010.

#### **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 archaeological, fossil, and historical sites, ecotones, wetlands, and sensitive species.



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 the FNAI, DHR, and when necessary, the 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. CSF had approximately 11,022 day-use visitors during the 2010-2011 fiscal year. Recreation activities available on CSF include hunting, equestrian use, camping, hiking, bicycling, nature study/environmental education, nature photography, birding and wildlife viewing.

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.

Expansion of recreation opportunities on CSF will be fully evaluated in the CSF Five-Year Recreation Management Plan. Existing and potential recreation opportunities are shown in Exhibit L.

### **A. Existing**

#### **1. Public Access and Parking**

CSF is bordered by several major and local roadways including US 301, Ford/Plummer Road, Thomas Creek/Acree Road, Motes Road, and Garden Street (Exhibit M). Old Plank Road is an important nearby roadway, and the paved Jacksonville-Baldwin Rail Trail runs through the southern portion of the Norfolk Southern Tract.

Access is available to recreational users through four designated entrances. CSF is open to public day-use, 1.5 hours before sunrise until 1.5 hours after sunset. All open forest roads permit hiking, bicycle and equestrian use, except in the Private Easement area on the Monticello Tract which is closed to all public use. Due to its long history as a state forest, the majority of the recreational facilities are located on the Cary Tract.

#### *Cary Tract*

The main day-use and camping recreation area for CSF is located off of Pavilion Road. Designated vehicle access to this site is provided at US 301 and Pavilion

Road. A large grassy parking area is located off of Pavilion Road. Hunting is prohibited in the camping and environmental education area.

#### *Monticello Tract*

Designated vehicle access is provided where Garden Street dead-ends into CSF at Monticello Road. Licensed vehicles, hiking, equestrian use and bicyclists are permitted on open roads. There is no public access permitted in the Private Easement located along the southwestern boundary of this Tract.

#### *Thomas Creek Tract*

Designated vehicle access is provided at US 301 and Jennifer Road. Walk-in access and limited parking is permitted at Acree/Thomas Creek Road and Cross County Road.

## **2. Recreation Area**

The S. Bryan Jennings Environmental Center (an approximately 1,200 square foot educational pavilion), recreation bathhouse/restrooms, three campsites, two boardwalks and a fire tower are all located within the environmental education area off of Pavilion and Fire Tower Roads. FFS provides public tours of the fire tower upon request, but is otherwise closed.

Picnicking is available in the parking area under shade trees and around the educational pavilion. Potable water for all users is provided. An honor fee box for day-use at the Pavilion Road Recreation Area at the trailhead kiosk in the parking area. Brochures, forest information, general rules and a map are located at the trailhead kiosk.

## **3. Trails**

Recreational trails are monitored for negative impacts through routine inspections and maintenance. Trails are maintained and are closed during prescribed burning activities, following intense storm events or at other times when necessary. Significant ground disturbance caused by recreation use may require the closing or rerouting of trails.

The Pavilion Road parking area provides the trailhead for the 1.25 mile hiking Nature Trail and an associated 0.2 mile cypress dome boardwalk, 7.75 mile equestrian Red Root Trail, the 12.2 mile equestrian and hiking Fireline Trail and a 0.3 mile basin swamp boardwalk. The Red Root trail is a designated FFS Trail Trotter program trail and the Nature Trail is a Trail Walker trail.

## **4. Camping**

The campground along Pavilion Road is available with three large designated campsites. This campground is located in the environmental education area. Camping is primitive (no water and electric hookups) and by permit only. Campers have access to a bathhouse restroom facility with showers and hot water. Each

campsite has grills, a fire-pit, picnic tables, and benches. Honor fees for camping are deposited into a fee box at the trailhead kiosk.

**5. Hunting and Fishing**

The Cary, Monticello and Thomas Creek Tracts compose the Cary State Forest and Wildlife Management Area (WMA). All hunting is prohibited in the environmental education area on the Cary Tract and the private easement on the Monticello Tract. Regulated hunting is permitted within the WMA area during designated hunting dates and with possession of appropriate quota permits and licenses. Hunting and fishing activities are regulated by FWC. FFS will evaluate areas along the boundary to identify possible safety issues where actions need to be taken to mitigate these concerns to protect adjacent properties and neighbors. Possible solutions include increased signage, road closures, and setbacks.

**6. Environmental Education and Public Outreach**

Current staffing allows for programs and tours to be conducted upon request. Programs and tours are conducted annually for the Boy Scouts of America, church groups, local schools, summer camps, University of Florida Master Naturalist classes and other groups. Approximately 119 environmental education programs and/or newspaper articles were conducted between 2000 and 2011. Volunteers will be utilized in the future to assist with environmental education and public outreach programs.

**B. Planned**

The CSF Five-Year Outdoor Recreation Plan will be updated during this planning period to include an in-depth, forest-wide assessment of potential future recreation opportunities on CSF. Potential recreational opportunities for CSF are shown in Exhibit L. These improvements are dependent on future economic conditions and may not be completed during this planning period.

**1. Public Access and Parking**

*Monticello Tract*

Parking areas will be built to accommodate the planned Millionth Acre Campground and the Monticello Recreation Area/Trailhead. A potential observation tower to overlook the basin marsh will be considered and parking provided at this location if needed.

*Thomas Creek Tract*

A parking area will be built to accommodate a recreation day-use site near the US 301/Jennifer Road designated vehicle entrance. If needed, a separate parking area will be built for a potential campground along Sandhill Road.

Two potential entrances on the eastern side of the Thomas Creek Tract may be built. More specifically, the current walk-in area at Acree Road and Cross County Road will be developed into a parking area to include a wood fence, current gate, kiosk, and

road material. A walk-in entrance at Acree Road and Venison Road will also be considered and would require similar materials.

#### *Norfolk Southern Tract*

The City of Jacksonville has agreed to provide the FFS with an access point off of the Chaffee Road extension near the current FFS service access gate to this Tract. A parking area may be considered once the Chaffee Road construction is complete and an access point is provided to FFS to access the Tract. This parking area may serve as a trailhead in the future.

## **2. Facilities**

#### *Cary Tract*

If there is sufficient funding, renovations will be made to the S. Bryan Jennings Environmental Center. The FFS may partner with volunteers or with the Eagle Boy Scouts to construct a replacement wildlife viewing tower in the environmental education area.

#### *Monticello Tract*

If funded, a self-mulching toilet facility will be installed to accommodate campers at the Millionth Acre Campground. A restroom and picnic pavilion may be built at the Monticello Recreation Area. If there is sufficient funding, a wildlife viewing observation tower overlooking the basin marsh off of Basin and Timber Service Roads may be constructed. The marsh provides excellent wildlife viewing opportunities.

#### *Thomas Creek Tract*

A picnic pavilion and self-mulching toilet may be developed near the potential campground and parking area along Sandhill Road at the borrow pit pond. This site was disturbed prior to acquisition.

## **3. Trails**

Existing roads, firelines, stand boundaries and two-trails will be utilized for potential trail system(s). In addition, the forest managers will focus on assessing possible routes for trails during this planning period. Forest managers will focus on assessing the need for additional trails and possible routes that will highlight CSF natural attributes. Trails will be designated and developed with user group input to the greatest extent possible.

The Cary Tract will be assessed during this planning period for potential additional hiking, equestrian, or bicycle trails. Trail surveys have been completed on the Monticello Tract. The potential for year-round, all-weather trail system development is good on the dryer portions of the Monticello and Thomas Creek Tracts.

FFS is a partner in a long-range effort to connect CSF to Jennings State Forest through a multi-use trail that will cross several conservation lands owned by multiple

agencies. As part of this partnership, FFS will coordinate with the COJ on a possible trail connection to the Jacksonville-Baldwin Rail trail from CSF.

#### **4. Camping**

Additional camping sites may be considered on the Cary Tract to meet growing camping demands at CSF. Materials have been acquired and staged for the proposed construction of the primitive sites for the Millionth Acre Campground on the Monticello Tract. Final site plan approval, ground disturbance approval from DHR and funding for a toilet facility are needed before construction can begin. Western Thomas Creek may provide the best opportunities for camping. The potential for a campground located near an existing man-made pond off of Sandhill Road on the Thomas Creek Tract will be evaluated.

#### **5. Day Use Areas**

The Monticello Recreation area near the Garden Street entrance and Monticello Road will be a focus for development during this planning period. Parking, picnic pavilion, shade trees, restrooms, trailhead and grills will be considered.

The area near US 301 and Jennifer Road will be considered for future day-use opportunities on the Thomas Creek Tract. A parking/trailhead area and picnic area will be considered. The existing and potential walk-in entrances along Acree Road at Cross County and Venison Roads respectively, will be considered for day-use and trailhead opportunities.

The Norfolk Southern Tract may provide an opportunity to establish a bicycle trail and day-use area on CSF.

#### **C. Hunter Access**

Hunting season dates, limits, and methods are established annually by FWC, in consultation with FFS. Access to CSF/Cary WMA is restricted to open designated roads as outlined in the WMA brochures, printed annually. Modifications to the hunting regulations and limits discussed above may be made at the request of FFS.

### **VI. Habitat Restoration & Management Practices**

#### **A. Prescribed Fire**

The FFS utilizes a total 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 Jacksonville District. Emphasis will be placed on prescribed burning, wildfire prevention and education to help reduce wildfire occurrence on the forest. The FFS has three paramount considerations regarding wildfires, and these are listed in priority order: 1) protection of human lives, both the firefighter's and the public's, 2) protection of improvements, and 3) protection of natural resources.

The annual forest prescribed burning program produces multiple benefits. The purposes of prescribed burning on CSF are to facilitate forest management operations and enhance wildlife and listed species habitat, to decrease fuel loading, consequently enhancing public safety, and to 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 CSF, which will consist of growing and dormant season burns. Burns are planned by the State Forest staff with input from cooperating agencies as appropriate. A CSF annual Prescribed Burn Plan is developed each year, which 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 CSF are estimated to have occupied approximately 8,848 acres, and to have burned at approximately 1-8 year intervals. Refer to Table 6 for information on each natural community and their specific desired return intervals. Past land uses have left some of these historically fire dependent communities in a condition unable to carry prescribed fire. Based on current conditions and management objectives, CSF will plan for 1,800 acres to be prescribed burned annually during the first five years of this planning period. The long-term goal for CSF will be to prescribe burn a minimum of 3,100 acres 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.

Pre-suppression firelines will be constructed in accordance with BMPs. Whenever possible, alternatives to plowed firelines, such as harrowed lines or natural breaks should be used. Post burn evaluations will be performed to monitor effectiveness of the prescribed burns. The procedures for conducting post burn evaluations are outlined in the Forest Health section of the State Forest Handbook.

## **B. 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 CSF:

- 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.

- 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 CSF 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 ground cover. Site preparation methods will include prescribed fire, mechanical vegetation control, and herbicide applications.

Prescribe 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 (roller chopping/gyro tracking) is a consideration. 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 planted pine 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.

## **3. Timber Inventory Control**

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 CSF forest will be re-inventoried annually to provide an accurate estimation of the standing timber and to ensure that stands will be managed sustainably.

CSF is composed of 5,169 acres of planted pine or approximately 40% of the land by area (Exhibit O). Pine plantations range in age from 1 year to 72 years old with most planted in slash, longleaf, loblolly and sand pine respectively. Forest-wide, there are approximately 5,345 acres of merchantable, planted and natural pine within upland natural communities ranging in age from 14 years to 80 years old.

All of the timber stands on CSF have been delineated in GIS. Completion of the forest-wide timber inventory was completed during the 2009-2010 inventory cycle.

A large portion of the Cary Tract will be re-inventoried fiscal year 2010-2011, while the rest of the forest has recent data recorded from 2008-2010.

#### **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.

#### **C. Non-Native Invasive Species Control**

FFS employees continually monitor the forest for non-native invasive species while conducting management activities. The practice of the FFS is to locate, identify and 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. 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 pests from State Forest property. These occurrences are recorded in the GIS database and updated as new plants are discovered. When large infestations of Japanese climbing fern (*Lygodium japonica*) are discovered, assistance from the FWC Invasive Plant Management Section's Lygodium Strike Team will be utilized. Adjacent landowners who are known to have these species on their property will be approached in an effort to cooperate on control measures.

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 pest plants will be target specific and use a variety of methods including appropriately labeled and efficacious herbicides.

A non-native invasive plant survey was completed in January 2006 by Forest Management Bureau's Forest Health Section. Exhibit N and Table 5 show the results of the 2006 survey. A priority during this planning period will be to compile all current non-native invasive species data and reports into a CSF Non-Native Invasive Species Management Plan. This plan will include preventing, locating, identifying, treating and post-treatment evaluations/monitoring for any non-native invasive plant and animal infestations. Non-native invasive species locations will be mapped in the CSF GIS geodatabase.

**Table 5. Summary of 2006 FFS Non-Native Invasive Plant Survey**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Mapped Acres</b>
Camphor Tree	<i>Cinnamomum camphora</i>	0.032



Common Name	Scientific Name	Mapped Acres
Showy Rattlebox	<i>Crotalaria spectabilis</i>	0.011
Chinese Privet	<i>Ligustrum sinense</i>	0.022
Japanese Climbing Fern	<i>Lygodium japonicum</i>	0.089
Torpedo Grass	<i>Panicum repens</i>	14.172
Chinese Tallow	<i>Sapium sebiferum</i>	0.070
Total:		14.396

Numerous non-native invasive species, including Florida Exotic Pest Plant Council (FLEPPC) category I and II invasive plants have been observed in the forest. Invasive exotic plant species that have been identified on CSF include Japanese climbing fern (*Lygodium japonicum*), Chinese tallow (*Sapium sebiferum*), showy rattlebox (*Crotalaria spectabilis*), camphor tree (*Cinnamomum camphora*), Chinese privet (*Ligustrum sinense*), and mimosa tree (*Albizia julibrissin*). As of 2006, torpedo grass (*Panicum repens*) accounted for 14 acres and is by far the most prevalent non-native invasive plant on CSF. This is an aggressively spreading species that occurs on many Cary Tract roads and firelines. As discussed earlier, this species will be a focus for treatment to stop its spread within the forest and prevent encroachment of wetlands. The District Biologist is pursuing a grant to assist with funding for this project.

Many infestations occur along the City of Jacksonville-managed Rail Trail along the southern end of the Norfolk Southern Tract. The City of Jacksonville currently treats their corridor and FFS will follow up with treatments on the state-owned side to eliminate these infestations. Japanese climbing fern has infested the power poles on the Cary Tract FPL right-of-way and FFS will continue to treat with herbicide and notify FPL of infestations so they can avoid these areas until eradicated. Adjacent landowners who are known to have these species on their property will be approached in an effort to cooperate on control measures.

The FFS will enlist support from the FWC in the effort to control non-native nuisance animals. Feral hogs (*Sus scrofa*) are present on some tracts of the CSF. The FWC has issued a feral hog control trapping permit to FFS for all state forests and the FFS will encourage hog removal on CSF. Hogs will be targeted for trapping in known problem areas. The Monticello and Norfolk Southern Tracts currently have widespread damage occurring to wetland and upland natural communities. Thomas Creek Tract will be further evaluated for hogs, but is expected to have a significant population due to lack of hunting for several years. Public hunting began on the Thomas Creek Tract in 2010-2011. Hunting appears to have kept the hog population in check on the Cary Tract, but some areas have severe impacts comparable to Monticello and Norfolk Southern Tracts. Feral hog monitoring will continue over the next ten-year period.

#### **D. Insects, Disease and Forest Health**

Laurel wilt fungus (*Raffaelea lauricola*.) and its non-native vector, redbay ambrosia beetle (*Xyleborus glabratus*), have been confirmed on CSF. The laurel wilt fungus, the

insect and disease complex, was first detected in Duval and Nassau Counties in 2005 and 2006 respectively. The forest's redbay (*Persea borbonia*) and swamp bay (*Persea palustris*) component have been impacted severely by this duo. The exact extent and long-term impacts of this fungus on the red and swamp bay population and species dependent on these trees, such as the palamedes swallowtail butterfly (*Papilio palamedes*), has not been determined. In addition to redbay, other hosts of the laurel wilt fungus include swamp bay, sassafras (*Sassafras albidum*), pondspice (*Litsea aestivalis*), and pondberry (*Lindera melissifolia*).

Based on field observations in recent years, it is expected the impact on red and swamp bays at CSF will be severe, particularly to large diameter trees. Laurel wilt fungus is predicted to spread throughout the entire native range of red and swamp bay. Though the forest is currently infected with laurel wilt, the spread of the disease can be avoided by limiting movement of host material infested with the redbay ambrosia beetle. Posters will be posted at CSF in order to inform people of the problem and hopefully help slow the spread to other regions.

No recent significant insect outbreaks have affected CSF other than the redbay ambrosia beetle, although minor Ips beetle (*Ips* sp.) infestations have occurred. In the event of an outbreak of Ips beetles, 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 agency in Nassau and Duval Counties will be notified of this designation.

As a result, prior to conducting any arthropod control activities on CSF, 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 CSF. 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.

#### **E. 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:

- *Reforestation* - As off-site pine species are removed and/or where wildfire/natural disaster damage may occur, contractual site preparation and tree planting will be considered.
- *Biological Assessments* - FNAI (non-profit) and other organizations and institutions will be considered for contracting natural community assessments and mapping, rare plant and animal surveys and other projects as necessary.
- *Restoration/Timber Stand Improvement* - Mechanical and/or chemical treatments used for non-native invasive species removal, hardwood control and other treatments as necessary will be considered. Mechanical fuel reduction and pre-merchantable thinning within naturally regenerating stands will also be considered.
- *Road Repair/Hydrology* - Road stabilization materials delivery may be contracted as needed for upgrade and repair projects. Engineering and environmental consulting firms will be considered for landscape level, highly technical projects, particularly hydrological restoration.

## **VII. Proposed Management Activities for Natural Communities**

In 2007, FNAI completed an inventory and natural community mapping project on 10,261 acres of CSF and a historic natural community type map (Exhibit O) was created. The results of this survey are summarized in Table 6 and Exhibit P. Historical and current community acreages are based on estimates by CSF staff for the Norfolk Southern Tract and the Foster-Milne acquisition within the Thomas Creek Tract. FFS estimates are provided since there have been no FNAI surveys on these parcels. FNAI's pine plantation and ruderal acreages were updated by CSF staff to reflect more accurate current values. The FNAI and FFS delineations are inexact and will be field checked and updated as necessary.

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 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. Related to this forest-wide process of assessment, FFS will make a determination for each area typed as "Pine Plantation" in the 2007 FNAI current natural community survey, as to whether or not the stand has intact native groundcover.

Fire return intervals are included for each natural community as a guide and may vary depending upon specific conditions. The intention is to use 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 6. Vegetation Types Found on CSF**

<b>Vegetation Types</b>	<b>Acres Mapped (Historical)*</b>	<b>Acres Mapped (Current)*</b>	<b>Acres Mapped (Current Pine Plantation)*</b>	<b>Burn Interval (Years)</b>
Mesic flatwoods	4,944	2,385	2,446	2 - 4
Basin Swamp	3,322	3,190	0	2 - 4
Wet Flatwoods	2,424	1,168	1,180	2 - 5
Sandhill	1,168	709	451	1 - 3
Bottomland Forest	366	348	0	Rare
Dome Swamp	296	298	0	2 - 4
Baygall	290	320	0	50 - 100
Floodplain Swamp	219	216	0	100 - 150
Depression Marsh	16	13	0	1 - 8
Basin Marsh	0	134	0	1 - 10
Pine Plantation	N/A	4,077	N/A	N/A
Other Altered Landcovers	N/A	187	0	N/A

\* 345 acres have not been mapped for vegetation type.

The following desired future conditions, current condition descriptions, and management recommendations are taken from the 2007 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 CSF.

#### **A. Mesic Flatwoods**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Mesic flatwoods consists of open-canopy forests of longleaf pine and slash pine. Average basal area ranges from 30-80 ft<sup>2</sup>/acre. There is little or no subcanopy, but a dense ground cover of herbs and shrubs. Common species include wiregrass, saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), bottlebrush threeawn (*Aristida spiciformis*), Curtiss' dropseed (*Sporobolus curtissii*), lopsided Indiangrass (*Sorghastrum secundum*), witchgrasses (*Dichanthelium* spp.), beaksedges (*Rhynchospora* spp.), dwarf huckleberry (*Gaylussacia dumosa*), blue huckleberry (*Gaylussacia frondosa* var. *tomentosa*), gopher apple (*Licania michauxii*), coastalplain staggerbush (*Lyonia fruticosa*), dwarf live oak (*Quercus minima*), highbush blueberry (*Vaccinium corymbosum*) and shiny blueberry (*Vaccinium myrsinites*). The open community structure of mesic flatwoods is maintained by frequent, low-intensity prescribed fires (approximately 2-4 years). The flatwoods are seasonally flooded.

### **Current Condition**

There are several good examples of mesic flatwoods on CSF, particularly the Cary Tract. This tract has a long history of prescribed fire at a 2-5 year interval. Longleaf and slash pine are the dominant overstory species within the higher quality stands of mesic flatwoods, while slash, longleaf, sand and loblolly pines are the dominants in the planted stands, respectively. Many of the flatwoods within the remaining tracts suffer from years of fire exclusion and have dense stands of planted pines. Prescribed fire has been reintroduced to these mesic flatwoods stands at an interval of 3-4 years. Between 2005 and 2010 FFS planted approximately 542 acres of mesic flatwoods with slash pine, most of which was cutover land inherited from prior landowners.

### **Management Actions**

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

Management activities for mesic flatwoods at CSF will focus on regular prescribed burning and minimizing soil disturbance. Prescribed fire will be the preferred tool for maintenance of the mesic flatwoods community. Management of this historical community will require thinning existing pine plantations and removing those which are off-site and reforestation with proper species. Even-aged management for predominately slash and loblolly stands, and uneven-aged for predominately longleaf stands will be implemented. Hydrologic restoration will be implemented in areas where access roads and silvicultural practices by previous landowners have disrupted the natural sheet flow. Appropriate water control structures such as culverts and low water crossings will be used to restore these areas where the natural hydrology has been negatively impacted.

Primarily natural and where needed artificial regeneration of longleaf and slash pines will be used to implement even and uneven-aged silvicultural management. Pine plantations will be thinned or clearcut once they become merchantable in order to improve forest health, restore proper overstory species, allow prescribed burning, increase groundcover species diversity and improve wildlife habitat. Mesic pine stands will initially be thinned to an average basal area of 60-80 ft<sup>2</sup>/acre. Natural regeneration cuts will leave a basal area of 30-40 ft<sup>2</sup>/acre. Exact stocking per stand will be dependent on management objectives, type of treatment, species, stand age and whether natural or planted. Artificially and naturally regenerated stands will be stocked to allow for development of quality, healthy timber while simultaneously maintaining groundcover and wildlife habitat.

Off-site pine species, including all sand pine plantations, will be harvested when they become merchantable and replaced with slash or longleaf pine. Site preparation methods prior to tree planting will be selected based on site assessment of native groundcover, soils, hydrology, amount of logging debris and type of vegetative competition present. Roller chopping and prescribed burning will be a primary site preparation method. Herbicides may be used for reforestation or restoration efforts.

Groundcover restoration will focus on practices that will promote wiregrass and various herbaceous species. A continued effort will be made to re-establish a two to four year fire return interval to restore groundcover. Dormant season burns will be used to initially reduce fuel loads in stands with long fire exclusion histories. Burning across ecotones will be implemented to the greatest extent possible. In areas where native groundcover is absent other methods to reintroduce the appropriate species will be considered for implementation on a case by case basis. Management activities will be monitored for stand establishment success and to be certain that hydrological alterations do not occur and non-native invasive species have not been introduced or spread.

## **B. Basin Swamp**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Basin swamps at CSF are characterized by irregularly shaped forested depressions that are dominated by hydrophytic trees and shrubs that can withstand an extended hydroperiod. The shrub layers are variable with sparse to dense herbaceous species cover. The canopy is dominated by pond cypress (*Taxodium ascendens*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), slash pine, and to a lesser extent, loblolly bay, swamp bay, and sweetbay (*Magnolia virginiana*). In most cases, shrubs should not form a dense layer below the canopy or in the ecotones of the swamps but rather be scattered throughout the swamp, although there may be some areas with heavier concentrations. Subcanopy tree and shrub species composition are similar to the species currently inhabiting the swamps, primarily myrtle dahoon (*Ilex cassine* var. *myrtifolia*), fetterbush (*Lyonia lucida*), and highbush blueberry (*Vaccinium corymbosum*). In the densely forested portions of basin swamps, herbs are sparse and consist mostly of netted chain fern (*Woodwardia areolata*), Virginia chain fern (*Woodwardia virginica*), cinnamon fern (*Osmunda cinnamomea*), and lizard's tail (*Saururus cernuus*). However, many of the basin swamps on CSF appear to be relatively shallow depressions and those that burn frequently (e.g., 3-10 years), herbaceous species should more closely resemble the desired future conditions of wet flatwoods. The grass/herbaceous ecotones of basin swamps are dominated by wiregrass and include species of beaksedges, yellow-eyed grasses (*Xyris* spp.), Carolina redroot (*Lachnanthes carolina*), tenangle pipewort (*Eriocaulon decangulare*), netted and Virginia chain fern, peelbark St. John's wort (*Hypericum fasciculatum*), and hooded pitcher plants.

### **Current Condition**

Basin swamps occur throughout and are the dominant wetland community type by area on CSF. They are highly variable in size, shape, and species composition. Previous human disturbances are evident in most of the basin swamps and likely have changed the vegetation species composition and structure from the historical condition. Woods roads and fire breaks surround a significant portion of the outer edge of most of the basin swamps, contributing to the undesired, fire-suppressed condition of their ecotones. Prescribed fire is applied to these ecotones when conditions allow and when adjacent uplands are burned every 3-5 years. Young planted slash pines are also common in the basin swamp ecotones. During high water periods and heavy rains, the basin swamps function much like cypress strands in conveying water across the relatively flat landscape. Where forest roads cross the basin swamps, the

sheet flow is constricted to culverts placed under roadways. On the newer tracts, particularly Monticello and Norfolk Southern, the basin swamps were heavily logged by prior landowners. This has converted several areas into basin marsh and disturbed large areas of the groundcover and soil substrate. In particular, an approximate 134 acre portion of No Catch Swamp within the Monticello Tract, a basin swamp, burned in a wildfire prior to FFS ownership and was later logged, converting this area into a basin marsh (see basin marsh description section).

Generally, the basin swamp canopies at CSF are dominated by stunted pond cypress and swamp tupelo overtopped by slash pine. Many of the existing slash pine trees and stumps in the basin swamps have cat-faces (i.e., scars dating back to the early-mid 1900s incurred during turpentine operations). This suggests that slash pine was an important component of the relatively shallow basin swamps historically found at CSF. The subcanopy is comprised primarily of myrtle dahoon which can be very abundant just below the cypress and swamp tupelo. Shrub cover is dense (particularly in the ecotones) in most locations and consists primarily of fetterbush and myrtle dahoon, and to a lesser extent young swamp bay, loblolly bay, sweetbay and occasionally highbush blueberry, titi (*Cyrilla racemiflora*), gallberry, and large gallberry (*Ilex coriacea*). Little herb cover exists in the densely forested portions (basal area per acre of around 90-130 ft<sup>2</sup>) of the basin swamps, but herbs like Carolina redroot (*Lachnanthes caroliniana*), cinnamon fern, netted chain fern, Virginia chain fern, and sphagnum (*Sphagnum* sp.) can be abundant in areas where the canopy is less dense and along the fire-maintained ecotones.

### **Management Actions**

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

Judging from the 1953 aerial photo, the large slash pines in the canopy, and the frequency of pine stumps, many of the basin swamps on CSF will have more open canopies and subcanopies with a higher density of shrubs or herbaceous species. This vegetation structure and the resulting species composition will be obtained and maintained by allowing more frequent fire into these systems. Areas harvested by prior landowners will be allowed to continue to naturally regenerate and prescribed fire reintroduced to their ecotones.

#### *Prescribed Fire and Ecotones*

When possible, prescribed fires will be allowed to burn into basin swamps and extinguish naturally when burning adjacent uplands. These practices will assist the recovery to the grass-dominated ecotones while also reducing heavy fuel loads that might facilitate catastrophic wildfires during drier years. Entry of occasional fires into the basin swamps is necessary to maintain cypress and pine components.

Fire intervals in basin swamps vary between 5 and 150 years. The lowest portions of basin swamps rarely if ever burn through. The edges of these swamps will burn in conjunction with the adjacent uplands every 1-5 years. Additionally, non-forested inclusions such as

shrub bogs and basin marsh that occur sporadically in the basin swamps burned historically at more frequent intervals than the forested portions. These non-forested, species-diverse areas of the basin swamps' interiors and edges provide important habitat for rare species of plants and animals. Given the relative shallowness of the majority of the basin swamps on CSF they most likely burned at a higher frequency than what was the average frequency for basin swamps in Florida. Fire frequencies closer to every 5 to 15 years may have been typical for basin swamps that are now part of CSF.

### *Hydrology*

The projects included in the 2008 No Catch Swamp Hydrological Enhancement Project Proposal may be implemented through a mitigation project if possible. A large fire line has formed a canal and separates No Catch Swamp on the Monticello Tract and will be restored to improve flow through this large basin swamp. Several smaller firelines and roads in this area cross an intermittent unnamed stream that flows out of No Catch Swamp. Firelines separating basin swamps from uplands will be evaluated for possible abandonment and rehabilitation and future lines that are required in these areas will be kept out of ecotones.

With the assistance of the FFS Hydrology Section, and potentially the SJRWMD, CSF staff will evaluate the need for other hydrologic management or restoration, which will include small-scale restoration of individual roads, ditches and fire lines. Hydrologic restoration projects involving water control structures such as low water crossings, culverts and shallow earthen plugs may occur within and around parts of this community type.

## **C. Wet Flatwoods**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Wet flatwoods are an open-canopy forest of pine. Wet flatwoods exist on relatively flat, poorly drained land and can be inundated for one or more months per year. Wet flatwoods often grade into basin swamps and mesic flatwoods. Wet flatwoods have either a thick, shrubby understory with very sparse ground cover, or a sparse understory with a dense ground cover of hydrophytic herbs. Although the overstory structure of wet flatwoods is similar to mesic flatwoods, groundcover composition in wet flatwoods contain more hydrophytic species. Shrub species occupying the wet flatwoods at CSF are gallberry, myrtle dahoon, fetterbush, saw palmetto, loblolly bay, and titi. As in mesic flatwoods, the herbaceous layer in wet flatwoods includes species that help to maintain community structure by fueling prescribed fires. Wiregrass is the dominant grass in the herbaceous layer. Other herbaceous species include Carolina redroot, meadowbeauties (*Rhexia* spp.), yellow-eyed grasses, several species of beak-sedges, and hooded pitcherplant. Wet flatwoods burn every 2-5 years.

### **Current Condition**

The vegetative structure of the wet flatwoods is highly variable and partially dependent on fire history, hydroperiod, and silviculture. For example, herb-dominated wet flatwoods with an open canopy typically fringe many of the basin and dome swamps. A second condition type is shrub-dominated with little herbaceous/grass groundcover. Finally, a third type,



which likely has the longest hydroperiod, has a dense canopy of pine and subcanopy of loblolly bay and holly (*Ilex* sp) with scattered shrubs and shade-adapted herbs.

On the newly acquired parcels the historical wet flatwoods have largely been converted to slash and loblolly pine plantations and have a dense overstory with a dense shrub layer dominated by bay trees. The wet flatwoods overstory is dominated by slash pine with an occasional loblolly bay, loblolly pine, or pond pine. When present, the subcanopy typically includes myrtle dahoon, dahoon (*Ilex cassine*) and pond cypress, with occasional swamp tupelo, swamp bay, and loblolly bay.

The herbaceous/grass-dominated wet flatwoods have decreased dramatically since the 1953 aerial photograph was taken. Most have graded into shrub-dominated wet flatwoods as a result of fire exclusion. However, the herbaceous/grass dominance has returned in areas that have burned recently at an interval of 3-5 years.

### **Management Actions**

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

#### *Prescribed Fire and Groundcover*

Groundcover restoration will focus on practices that will propagate various herbaceous species. Prescribed fire will be the preferred tool for maintenance of the wet flatwoods community. A continued effort will be made to re-establish a two to five year fire return interval but many areas will be burned on a two to four year interval with adjacent mesic flatwoods. This will reduce woody encroachment, sustain herbaceous species and aid in prevention of catastrophic wildfires. As restoration and improvements progress, these areas within both mesic and wet flatwoods may become potential seed sources for reseeded projects.

Areas with extremely heavy fuel loads within densely planted plantations may require mechanical vegetation removal in tandem with frequent fire intervals for initial restoration. In most areas, burning alone will be adequate but stands will be further evaluated prior to burning. Night prescribed burns may be utilized in these areas and younger pine stands to expedite the safe and successful return of fire.

#### *Hydrology*

Appropriate water control structures such as culverts and low water crossings will be used to restore areas where the natural hydrology has been impacted by roads and silvicultural practices that occurred before the property was acquired by the state. Presuppression firelines will be kept in the upland mesic community and out of ecotones, whenever possible. Existing roads and wetlands will be used for firebreaks whenever possible. New and established firelines will be rehabilitated.

Ground disturbance will be avoided when possible to prevent impacts on hydrological processes such as sheet flow.

#### *Silviculture*

Fire excluded pine plantations will be priority for thinnings and prescribed burns to determine if these treatments will be adequate for management. Primarily natural, and when needed, artificial regeneration of mainly slash pine will be used to implement primarily even-aged silvicultural management. Pine plantations will be thinned or clearcut if off-site species are present once they become merchantable in order to improve forest health, restore proper overstory species, allow prescribed burning, increase groundcover species diversity and improve wildlife habitat. Wet flatwoods pine stands will be thinned to an average basal area of 60-80 ft<sup>2</sup>/acre. Natural regeneration cuts will leave a basal area of 30-40 ft<sup>2</sup>/acre. Stocking per stand will be dependent on management objectives, type of treatment, species, stand age and whether natural or planted. Artificially and naturally regenerated stands will be stocked to allow for development of a quality, healthy timber stand while simultaneously maintaining groundcover and wildlife habitat.

Off-site species will be harvested when they become merchantable and replaced with the appropriate pine species. Site preparation methods prior to tree planting will be selected based on site assessment of native groundcover, soils, hydrology, amount of logging debris and type of vegetative competition present. Prescribed burning will be the primary site preparation method in the wet flatwoods.

Mechanical and herbicide treatments may be used for reforestation or restoration efforts. Management activities will be monitored for stand establishment success and to be certain that hydrological alterations do not occur and non-native invasive species have not been introduced or spread.

#### **D. Sandhill**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. North Florida sandhills are forests of mature longleaf pine, typically with a subcanopy of turkey oak (*Quercus laevis*) and or sand post oak (*Quercus margaretta*), with a sparse understory of deciduous oaks and a fairly dense ground cover of grasses and herbs. Sandhills are fire-maintained communities that occur on relatively well-drained, deep sands. Burn intervals in sandhills are 1-3 years. The understory includes scattered saw palmetto, wooly pawpaw (*Asimina incana*), deerberry (*Vaccinium stamineum*), shiny blueberry, Chapman's oak (*Quercus chapmannii*), gopher apple, littleleaf buckbrush (*Ceanothus microphyllus*), wax myrtle, Adam's needle (*Yucca filamentosa*), and dwarf huckleberry. Herbs/grasses dominate the understory, with wiregrass being the dominant species. Other herbs include lopsided Indian grass, pineywoods dropseed (*Sporobolus junceus*), shortleaf gayfeather, fragrant eryngo (*Eryngium aromaticum*), whitetop aster (*Sericocarpus tortifolius*), snakeroot (*Pterocaulon pycnostachyum*), witch grasses, summer farewell (*Dalea pinnata*), queensdelight (*Stillingia sylvatica*), tall jointweed (*Polygonella gracilis*), narrowleaf silkgrass (*Pityopsis graminifolia*), Elliott's milkpea (*Galactia elliotii*), coastalplain chaffhead, pinewoods milkweed (*Asclepias humistrata*), whorled milkweed (*Asclepias*

*verticillata*), rabbitbells (*Crotalaria rotundifolia*), sensitive brier (*Mimosa quadrivalvis*), coastalplain goldenaster (*Chrysopsis scabrella*), coastalplain dawnflower (*Stylisma patens*), coastalplain honeycombhead (*Balduina angustifolia*), dogtongue wild buckwheat (*Eriogonum tomentosum*), Florida Indian plantain (*Arnoglossum floridanum*) and Florida mountain mint (*Pycnanthemum floridanum*), among many others.

### **Current Condition**

There are currently no sandhill communities in desired future condition on CSF. The dominant overstory species are planted stands of longleaf, slash, and sand pine. For the most part, the dominant pines are younger and rarely exceed eight inches in diameter at breast height. The midstory contains scattered turkey, sand post and sand live oak (*Quercus geminata*). Stands of nearly pure oak overstory exist on the Thomas Creek Tract where most natural longleaf pine was removed many years ago and has been long fire-suppressed. This allowed oak species to naturally regenerate, but in unnatural densities, shading out natural longleaf pine regeneration and herbaceous groundcover. Between 2008 and 2010 FFS planted approximately 170 acres of sandhill with longleaf pine. The remaining understory composition of sandhill stands across CSF is generally shaded by densely planted pines and in some stands fire has been excluded while others have had 2-3 year fire return intervals reestablished. Some bedding exists in the sandhill community.

The native groundcover in some areas of sandhill is largely intact. In particular, the planted sandhills along Southern and Creek Roads on the Thomas Creek Tract and those in the eastern portion of the Monticello Tract have relatively intact groundcover. Dominant groundcover species include wiregrass, broomsedge bluestem (*Andropogon virginicus*), bracken fern, fragrant eryngo, witchgrasses, yankeeweed (*Eupatorium compositifolium*), Elliott's bluestem (*Andropogon gyrans*), manyflower beardtongue (*Penstemon multiflorus*), Florida Indian plantain, and dogtongue wild buckwheat. High densities of lichens indicate fire exclusion and are abundant in some areas and include British soldiers (*Cladonia leporina*) and reindeer lichens (*Cladina evansii* and *C. subtenuis*). The clasping milkweed (*Asclepias amplexicaulis*) and 8 other milkweed species occur on the Thomas Creek Tract.

### **Management Actions**

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

Most sandhill areas will be managed by thinning pine plantations and prescribed fire. Forest-wide, the sandhill community may be the most restorable natural community. Restoration challenges exist in dense sand pine plantations where there is currently little to no groundcover.

#### *Prescribed Fire and Groundcover*

Like mesic and wet flatwoods, the application of frequent prescribed fire will be the main management tool for groundcover on sandhills. Historical fire return intervals of one to three years will be used. Approximately 154 acres will be replanted with longleaf pine in fiscal

year 2011/2012, dependent on funding and weather conditions. Many longleaf and slash pine sandhill plantations have already had one or two prescribed burns.

#### *Hydrology*

Hydrological impacts from silviculture, roads, ditches and firelines exist but are less severe and widespread in comparison to mesic and wet flatwoods. These issues will be evaluated and corrected as they are discovered. Due to topography associated with the sandhills on CSF, any ground disturbing activities will be minimized and those which are necessary will be carefully planned to minimize erosion. Firelines will be minimized in transition areas between sandhills and neighboring communities, particularly wetlands. These sandhill/wetland ecotones, some of which contain seepages, are some of the more diverse and unique areas on the forest. Hydrology and groundcover will be considered before installing firelines within sandhills.

#### *Silviculture*

Silvicultural activities on sandhills will focus on thinning, clearcutting and prescribed burning. Existing longleaf pine plantations will be initially thinned to an average basal area of 60-80 ft<sup>2</sup>/acre once merchantable and prescribed burned. Maturing longleaf pine stands will be considered for uneven-aged management using natural regeneration, where appropriate. These stands will be cut to an average basal area of 30-40 ft<sup>2</sup>/acre for regeneration harvests. All merchantable off-site sand, loblolly and slash pine will be removed from sandhills by clearcutting. These areas will be replanted with longleaf pine.

Most offsite, planted sand pine and loblolly stands may require more intensive groundcover restoration. Many of these areas currently have little to no understory or groundcover. These areas may be evaluated to determine if seeding/revegetation efforts are feasible or if their native groundcover will grow back on its own. They will be clearcut, burned and planted with longleaf pine when appropriate.

The gopher tortoise population will be considered during sandhill restoration efforts. As discussed, a current Monticello Tract gopher tortoise mortality issue is occurring in sandhill areas under mostly dense sand pine plantations with compacted soils and nearly no understory.

Mechanical and herbicide treatments will be used for reforestation or restoration efforts if applicable. A 75 acre sandhill stand with an overstory of nearly pure oak species on the Thomas Creek Tract was treated aerially with Velpar ULW herbicide and burned to prepare the site for reforestation of longleaf pine and release the groundcover. This treatment was successful in removing just enough oaks to allow natural and artificial longleaf pine regeneration. The groundcover has strongly responded on all 75 acres and restoration is in progress. Similar areas have been identified and will be evaluated for this type of treatment. Photo plots have been installed in this area for long-term monitoring.

### **E. Bottomland Forest**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community.

Bottomland forest is a deciduous, or mixed deciduous/evergreen, closed-canopy forest on terraces and levees within riverine floodplains and in shallow depressions. Bottomland forests are infrequently inundated and seasonally dry out. The dense hardwood canopy maintains relatively high humidity levels thus fires are rare. The majority of this community at Cary has a canopy of live oak, swamp laurel oak (*Quercus laurifolia*), sweetbay, swamp tupelo, sweetgum, bald cypress and red maple (*Acer rubrum*). A subcanopy of younger canopy species is present. Shrubs include saw palmetto, American beautyberry (*Callicarpa americana*), coastal doghobble (*Leucothoe axillaris*), wax myrtle, fetterbush and highbush blueberry among others. Herbs are generally sparse due to the closed canopy and dense shrub layer.

### **Current Condition**

The current condition varies little from the desired condition. Generally the habitat is in the later stages of succession and species composition is typical of bottomland forests in northeast Florida. The bottomland forest on CSF occurs along portions of Thomas Creek and an unnamed creek bottom on the Monticello Tract. Floodplain swamp is often included within or adjacent to the bottomland forest community along Thomas Creek.

Bottomland forests currently found on CSF show evidence of partial logging and changes to the hydrology, particularly near road crossings such as Acree/Thomas Creek Road. An emergent canopy of slash pine, loblolly pine and infrequently pond pine exist in some areas. Other areas have a closed canopy of live oak, swamp laurel oak, swamp chestnut oak, sweetbay, southern magnolia, swamp tupelo, sweetgum and red maple.

### **Management Actions**

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

Since the current condition varies little from the desired condition, minimal management efforts are required. Rather, minor ecological improvements and maintenance activities may be considered.

Management activities in CSF bottomland forests will focus on maintaining natural hydrologic patterns and allowing prescribed fires from adjacent communities to burn into the community to maintain ecotones. The variability of water levels and fire return intervals allows this community to support a diverse assemblage of species.

Fire intervals are infrequent in bottomland forests, occurring only during times of extreme drought. This community may be treated as a natural fire-break that may experience some burning at its margins. Prescribed fires from surrounding communities may be allowed to spread and extinguish themselves in the bottomland forest. This can be achieved by burning adjacent communities every 1-5 years and only when the creek bottom and associated forest is wet. Pre-suppression firelines along this community may not be installed except in

extreme circumstances. If required, pre-suppression firelines will be installed in the upland community.

#### **F. Dome Swamp**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Dome swamp is an isolated, forested, depression wetland occurring within a fire-maintained community such as mesic flatwoods. The characteristic dome shape results from smaller trees growing around the edges and larger trees growing in the interior. Like basin swamps, dome swamps often have fire-maintained herbaceous ecotones that are species-diverse and important for rare plants and animals. Dome swamps are distinguished from basin swamps principally by their more circular shape, smaller size, and higher historical fire frequency.

The mature canopies are dominated by pond cypress or swamp tupelo with sparse subcanopy and shrub layers. Typical dominant shrubs include myrtle dahoon, gallberry, fetterbush, wax myrtle, and highbush blueberry. The herbaceous layer is sparse to dense and will become denser with greater frequency of fire and the resulting mortality of shrub and woody plant species. Slash pine can be scattered throughout the dome but typically should not be the most dominant species.

The herbaceous ecotones are dominated by wiregrass and also include blue maidencane, beaksedges, yellow-eyed grasses, Carolina redroot, netted chain fern, Virginia chain fern, tenangle pipewort, flattened pipewort, fox club moss, sphagnum moss, peelbark St. John's wort and hooded pitcher plant.

#### **Current Condition**

Dome swamps of CSF typically have canopies dominated by pond cypress and/or swamp tupelo with scattered emergent slash pine. The density of swamp tupelo appears to be related to the dome's fire history. Domes with little to no swamp tupelo have burned more regularly or had higher intensity fires in the past than domes dominated by swamp tupelo.

Many dome swamps at CSF have an unnatural vegetation structure caused by logging and planting of slash pines prior to state acquisition and/or fire exclusion. Furthermore, the hydrology of many domes may be compromised. Typically, fire breaks ring the outer edge and are connected to a maze of ditches and firelines that traverse the surrounding flatwoods. Structurally, these alterations act as shallow conduits during wetter periods. A large proportion of these ditches are evident on the 1953 photo.

Dome swamps on the Cary Tract have had more frequent prescribed fire in recent years as old fire lines have been abandoned. These domes are burned 2-5 years with adjacent uplands. Fire has been excluded by prior landowners for many years on the newer tracts and has recently been reintroduced at 2-5 year intervals.

#### **Management Actions**

To achieve the objectives outlined in this plan, the following management activities will be performed during the next ten year planning period. Goals, desired future conditions,

standards, and guidelines provide management area direction. These goals and desired future conditions may take many planning cycles to attain.

Fire is essential for the maintenance of dome swamps. Without periodic fire, hardwood invasion and peat accumulation can cause the dome swamp to succeed to baygall. Fire frequency is greatest at the periphery of a dome swamp, where a historical fire interval might be as short as two to four years. In this, dome margins would burn along with adjacent uplands. In contrast, fires may occur as infrequently as every 100 years in the interior portions.

Management of these ecotones will entail the application of frequent prescribed fire, rehabilitation of fire breaks, closure of drainage channels, and the thinning or clearcutting of dense stands of planted slash pine where encroaching on the swamp ecotones. Initially, burning around dome swamps during years of normal precipitation, avoiding drought years, will reduce heavy fuel loads that can facilitate catastrophic fires.

#### **G. Baygall**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Baygall is an evergreen forested wetland of bay species situated at the base of a slope or in a depression. Loblolly bay, sweetbay, and/or swamp bay form an open to dense tree canopy and are also dominant in the understory. Loblolly pine, slash pine, and/or pond pine are often found in the canopy, as well as sweetgum. Baygall communities are best managed with a landscape level focus on maintaining high quality adjacent natural uplands and upland-wetland ecotones. The dominant baygall species are fire-intolerant. When possible, fires from adjacent communities should be allowed to extinguish naturally at the edges of the baygall to prevent encroachment of bay species into other communities and to maintain open, grassy wetland/upland ecotones.

#### **Current Condition**

Generally, the interior of the majority of the baygall on CSF are in a desirable condition. The ecotones tend to be fire suppressed with bay trees spreading into the adjacent natural communities. Baygall ecotones are burned with adjacent uplands every 2-5 years.

Currently, baygall on CSF are more extensive than they were historically because they have encroached into what was once predominantly wet flatwoods. Baygall on CSF include loblolly bay, sweetbay, swamp bay, pond pine, and slash pine. Red maple and swamp tupelo are also present.

#### **Management Actions**

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

Improvements of baygall will focus on the ecotones since most interior areas are in desirable condition. Management activities for baygall on CSF will serve to return the baygall to its historical size. This may entail the harvest of baygall species such as loblolly bay that have migrated into adjacent flatwoods communities due to lack of fire. Hydrologic alterations, such as ditches, roads and firelines will be improved. Any further hydrological disturbances will be avoided. Mechanical soil disturbance in the ecotones between baygall and adjacent uplands will be avoided.

Prescribed fires will be run into baygalls when safely possible. Areas to target include those where pond pine is dominant and bays are encroaching into the adjacent flatwoods. Baygall burns infrequently, about every 50-100 years. However, fires from adjacent pyrogenic upland communities will be allowed to burn into the baygall every 1-5 years to maintain ecotones and when adequate moisture is present. This may be particularly important if there were historically seepage slopes on CSF that have succeeded into baygall.

A more detailed survey for areas that may have contained seepage slope communities will be necessary to help direct restoration activities for this particularly rare and vulnerable community type. Locating former seepage slopes on CSF is extremely difficult given the current condition of the majority of the flatwoods and baygall ecotones subjected to many years of fire exclusion and forest operations.

#### **H. Floodplain Swamp**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Floodplain swamps are forested wetlands associated with rivers or streams and inundated for much of the year. A higher ridge/levee, often found along the riverbank, may be included within the swamp, although these ridges can harbor species that are more typical of drier communities. Floodplain swamp is common along Thomas Creek. Floodplain swamp is a semi-closed to closed canopy dominated by pond and/or bald cypress. Swamp tupelo, water tupelo, swamp laurel oak, sweetgum, swamp bay, red maple, myrtle dahoon, Carolina ash (*Fraxinus caroliniana*), southern magnolia, tulip poplar (*Liriodendron tulipifera*) and pond pine (*Pinus serotina*) form a semi-closed subcanopy and may also be found in the canopy. Swamp laurel oak, southern magnolia and pond pine are found on the higher levees within the swamp, usually along the banks. The understory is comprised mostly of shrubs with herbs sparse in most areas but frequent to abundant in light gaps. Floodplain swamps are usually too wet to support fires. However, fires in surrounding uplands that creep into the swamp edges are important to reduce pine and bay species encroachment. The large floodplain swamps associated with Thomas Creek rarely or never burn. Larger floodplain swamps historically burned more frequently along their margins around every three to five years and less frequently in their interior areas at around every 100-150+ years.

#### **Current Condition**

The floodplain swamps currently found on CSF have been affected by partial logging activities in the past. Some areas are close to desired future condition while others need further maturation. The canopy is semi-open to closed and consists of pond cypress, slash pine, sweetbay, sweetgum, swamp tupelo and red maple. The subcanopy is typically closed



and made up of swamp laurel oak, swamp bay, red maple, American hornbeam (*Carpinus caroliniana*), dahoon, Carolina ash and southern magnolia.

### **Management Actions**

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

Most of floodplain swamp on CSF is at or close to desired future condition. Management of this community will include maintenance of natural hydrology and allowing prescribed fires from surrounding uplands to burn into the swamp edges every 1-5 years. Natural hydrology is crucial for maintaining species diversity and water quality. Hydrologic alterations associated with roads, ditches, berms, and firelines will be minimized. Opportunities to improve or restore hydrology by installing culverts and low water crossings, plugging ditches/canals and restoring stream banks and channels will be considered. Allowing fires from surrounding uplands to burn into the swamps will enhance diversity in ecotones and decrease baygall and pine encroachment.

### **I. Depression Marsh**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Depression marshes are generally circular, shallow, herb-dominated wetlands found in slumps in sand substrate. Depression marshes typically occur in landscapes occupied by fire-maintained matrix communities such as mesic or wet flatwoods. Frequently there are concentric zones of vegetation that respond to the hydroperiod and edaphic conditions within each zone. The concentric zones or bands of vegetation are related to length of the hydroperiod and depth of flooding. Depending on depth and configuration, depression marshes can have varying combinations of these zones and species within each zone. Depression marshes often burned with the surrounding landscape and are seasonally inundated. The frequency of fire in depression marshes is a function of the fire frequency in the surrounding matrix community, as well as the fire-carrying characteristics of the marsh vegetation. Fires in surrounding communities should be allowed to burn into depression marshes and extinguish naturally or burn through them.

### **Current Condition**

Currently, many of the depression marshes on CSF are encroached by woody species due to lack of frequent fire. Slash pine has been planted through the majority of the depression marshes and there is evidence of past ditching and bedding. The herbaceous species component contains many of the species mentioned in the desired future conditions section, but also include typically more weedy species (i.e., species indicative of past disturbance) such as broomsedge bluestem and soft rush (*Juncus effusus* var. *solutus*). In some instances, wetlands currently appearing as depression marshes were historically dome swamps and were converted due to past logging events.

### **Management Actions**

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

Prescribed fire will be used to decrease woody species abundance and hydrologic and soil disturbances will be minimized. Frequent prescribed burns will aid in decreasing woody species abundance. Areas will be surveyed prior to logging to identify and mark depression marsh boundaries so that heavy equipment does not pass through the marsh. This will aid in minimizing hydrologic and soil disturbances. If conditions are dry and equipment won't cause significant soil and groundcover disturbance, planted pines may be removed during harvest operations. Existing firelines, ditches, beds, berms and other hydrological impacts will be evaluated for restoration opportunities and avoided within and around this community in the future.

Depression marshes require frequent, light intensity fires to maintain a high herbaceous species component and reduce woody encroachment. The natural fire return interval for depression marshes is every one to eight years. Prescribed burns will be implemented more often (1-5 years) for depression marshes with encroachment by woody species.

### **J. Basin Marsh**

The following, utilizing CSF staff knowledge and the 2010 FNAI Guide to the Natural Communities of Florida, describes the desired future condition for this natural community. Basin marshes at CSF are large, irregularly shaped, depressions, or herbaceous dominated areas imbedded in basin swamps, that are dominated by hydrophytic plants that can withstand an extended hydroperiod such as sawgrass, maidencane and pickerelweed. They have dense herbaceous species cover, variable density of shrubs, and little to no trees. The mature canopy is dominated by widely scattered pond cypress and swamp tupelo with occasional slash pine, loblolly bay, swamp bay and sweetbay. Subcanopy trees are widely scattered or in patches and shrub species composition should be primarily buttonbush, fetterbush and Carolina willow (*Salix caroliniana*) with occasional myrtle dahoon and highbush blueberry. Shrub cover is sparse or patchy, except for the shrub dominated ecotones, in most locations. In most cases, shrubs do not form a dense layer but are scattered throughout the marsh, although there may be areas with heavier concentrations. Natural fires probably occasionally burned basin marshes at the end of the dry season. Frequency of fire varies depending on the hydrology of the marsh and its exposure to fire from surrounding areas. Historical fire intervals in basin marshes are one to ten years. During high water periods the lowest portions of basin marshes dominated by floating macrophytes rarely burn, while the grass-dominated marginal portions burn in conjunction with the adjacent uplands. Prescribed burns in marshes have to be conducted with caution to avoid peat fires that will kill the dominant species, especially in areas where the water table has been artificially lowered for human consumption.

### **Current Condition**

Three basin marshes were delineated throughout CSF. These basin marshes were all portions of No Catch Swamp (a large basin swamp) that have been converted into basin marshes as a result of an intense muck/peat fire during the 1980s and subsequent logging activities. These fire management and logging operations have altered the hydrology and species composition in this area. Basin Road and the associated ditches that bisect No Catch Swamp have also long impacted the natural hydrology and species composition in this area. Fire exclusion since the 1980s wildfire has also made an impact.

### **Management Actions**

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

Management will focus on restoring historic hydrological regimes to No Catch Swamp and applying fire to the marsh and adjacent uplands every 2-5 years. The 2008 No Catch Swamp Hydrological Enhancement Project Proposal outlines priority projects. Prescribed fires will be allowed to burn into the basin marshes and extinguish naturally. These practices will assist the recovery of the herbaceous/grass-dominated ecotones while also reducing heavy fuel loads that might facilitate catastrophic wildfires during drier years. Entry of occasional fires into the basin marshes is necessary to maintain the dominant herbaceous groundcover, while swamp tupelo, hardwoods, and shrubs will dominate basin marshes that burn less often.

Two broad management options for managing this community in the future have been discussed. Prescribed fire can be excluded from all but the ecotones to allow the basin marsh to naturally succeed back into basin swamp. The second and currently more favored option is to promote prescribed fire in and around the marshes to maintain and enhance these areas as basin marshes. Prescribed fire would be utilized to improve herbaceous groundcover and prevent a dense overstory from reforming the marsh back to basin swamp. However, several challenges exist. The fuels are scattered and interspersed throughout the marsh and it is yet to be determined if it can currently carry a fire. The feasibility of conducting a prescribed burn in this area will be further evaluated. Until then, the ecotones will be burned within the dense pine plantations surrounding the marsh. A helicopter prescribed burn may be the most feasible option for burning through these basin marshes.

These marsh areas are inhabited by a wide variety of wildlife species, some of which are only seen in this area of CSF. Wood storks (*Mycteria americana*), wood ducks (*Aix sponsa*), alligators (*Alligator mississippiensis*) and a variety of fish, snakes and wading birds have been seen in this area along with concentrated sightings of coyote (*Canis latrans*), deer and feral hogs. This unique wildlife habitat will be maintained as a basin marsh.

These marshes also provide opportunities to expose the public to a unique area on CSF for wildlife viewing and environmental education. There is potential for construction of a public

wildlife observation tower overlooking the marsh which would promote both wildlife viewing and the CSF education program (Exhibit K).

## **VIII. References**

Division of Historical Resources. Revised 2007. Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Lands. Department of the State, Division of Historical Resources. Tallahassee, Florida.

Florida Department of Agriculture and Consumer Services. Revised 2008. Silviculture Best Management Practices (BMPs) for Florida. Florida Department of Agriculture and Consumer Services, Florida Forest Service.

Florida Department of Agriculture and Consumer Services. Revised 2004. State Forest Handbook. Florida Department of Agriculture and Consumer Services, Florida Forest Service.

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

## **IX. Glossary of Abbreviations**

ARC .....Acquisition and Restoration Council  
BMP .....Best Management Practice  
BOT.....Board of Trustees  
COJ .....City of Jacksonville  
CSF .....Cary State Forest  
DACS.....Department of Agriculture and Consumer Services  
DEP .....Florida Department of Environmental Protection  
DHR .....Division of Historical Resources  
DOD .....U.S. Department of Defense  
DRP.....Division of Recreation and Parks  
DSL.....DEP Division of State Lands  
FAS .....Forest Area Supervisor  
FCC .....Florida Conservation Committee  
FNAI .....Florida Natural Areas Inventory  
FNPS .....Florida Native Plant Society  
FFS.....Florida Forest Service  
FPL.....Florida Power and Light  
FWC.....Florida Fish and Wildlife Conservation Commission  
GIS .....Geographic Information System  
JEA.....Jacksonville Electric Authority  
LMB, LLC .....Loblolly Mitigation Bank, LLC  
OALE.....Office of Agricultural Law Enforcement

SJRWMD.....St. Johns River Water Management District  
SOR.....Save Our Rivers  
TNC.....The Nature Conservancy  
USFWS .....United States Fish and Wildlife Service  
USGS .....United States Geological Survey  
WMA .....Wildlife Management Area