

## DEPARTMENT OF THE ARMY PERMIT

**Permittee:** Florida Department of Transportation

**Permit No:** 200100650(IP-DH)

**Issuing Office:** U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

**Project Description:** To impact 60.7 acres of wetlands to widen U.S. Highway 98 from a two-laned highway to a four-laned highway eastward from Peach Creek to the Bay County line. The project includes the upgrade and modification of various intersections along the project route. The work is to be completed in accordance with the attached drawings and mitigation project description: Sheets 1 through 48, labeled "FDOT/60020-3522, 200100650(IP-DH), Project Drawings, September 26, 2001", and Sheets 1 through 32, labeled "FDOT/60020-3522, 200100650(IP-DH), US98 Mitigation Projects, September 26, 2001."

**Project Location:** The proposed project is located in wetlands connected to drainages to Peach Creek, Intracoastal Waterway, Camp Creek or Lake Powell, and along U.S. Highway 98 in Sections 5, 6, 7, 8, 9, 15, 16, 22, 23, 25, 26 and 36, Township 03 South, Range 18 West, Walton County, Florida.

### **General Conditions:**

1. The time limit for completing the work authorized ends on **September 27, 2006**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a

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good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

#### **Special Conditions:**

1. The permittee shall provide as-built drawings of the authorized work, and a completed As-Built Certification Form. The drawings and Certification Form are to be submitted within 60 days of completion of the authorized work, or at the expiration of the construction authorization of the permit, whichever comes first. The drawings and Certification Form must be signed and sealed by a professional engineer registered in the State of Florida. In the event that the completed work deviates from the approved permit drawings and special conditions, the permittee shall describe, on the Certification Form, the deviations between the work authorized by the permit and the work as constructed. A blank form is attached. Please note that the depiction and description of the deviations on the drawings and Certification Form does not necessarily mean that that the Corps will approve them. The drawings shall include the following: 1) Location of the authorized work footprint, as shown on the permit drawings, with an overlay

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of the work as constructed; 2) Clear indication of any deviations which have been described on the As-Built Certification Form; and 3) The Department of the Army Permit number. As-built drawings and Certification Forms shall be submitted to: U.S. Army Corps of Engineers. Mail the completed form to the Regulatory Division, Enforcement Branch, Post Office Box 4970, Jacksonville, Florida 32232-0019.

2. The permittee shall ensure that the mitigation projects, as described in the attached mitigation project descriptions, provided by the Northwest Florida Water Management District, is implemented. The mitigation project, as reviewed and approved by the Corps, shall be fully implemented within five years after the initiation of the permitted work.

3. This Corps permit does not authorize you to take a threatened or an endangered species, in particular the flatwoods salamander, *Ambystoma cingulatum*. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g., an ESA section 10 permit, or a biological opinion (BO) under ESA section 7, with "incidental take" provisions with which you must comply). The enclosed U.S. Fish and Wildlife Service (FWS) BO contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under the Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. However, the FWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA. For further clarification on this point, you should contact the FWS. Should the FWS determine that the conditions of the BO have been violated, normally the FWS will enforce the violation of the ESA, or refer the matter to the Department of Justice.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

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( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(x) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

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4. **Reliance on Applicant's Data:** The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. **Reevaluation of Permit Decision:** This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. **Extensions:** General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

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Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

*Frank Roberts*

(PERMITTEE)

*Dist Envir Permit Coord*

*FRANK ROBERTS*

*9-28-01*

(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

*Don Hamburg*

(DISTRICT ENGINEER)

James G. May  
Colonel, U.S. Army

*28 Sept 2001*

(DATE)

## REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION – Revision to Mitigation Number NW10 Previously Approved by Final Order, OGC No. 01-0488, signed 4/13/01					
Water Management District:	Northwest Florida Water Management District				
Mitigation Project Name:	Devils Swamp			Project Number: (to be provided by DEP)	
Project Manager:	Duncan Cairns			Phone Number:	850-539-5999
County(s):	Walton				
Location (central lat/long):	30° 22' 00" North / 86° 3' 00" West				
IMPACT INFORMATION					
DOT Work Program Item (WPI):	(FM 2206441) 3119124	ERP #:		COE #:	
Drainage Basin(s):	Choctawhatchee River & Bay				
Water Body(s):	Choctawhatchee Bay			SWIM Water Body?	Yes
Acres and Types of impact to be offset:	(Previously estimated by FDOT at 42.0 AC and 57.4 AC)		~60.0 Acres	615	(Fluccs code)
(Provide the above information for each WPI project, as needed.)					

MITIGATION ENVIRONMENTAL INFORMATION									
Mitigation Type:	Creation	<input checked="" type="checkbox"/>	Restoration	<input checked="" type="checkbox"/>	Enhancement	<input checked="" type="checkbox"/>	Preservation	Mitigation Area (acres):	~715
SWIM Project?	No	Aquatic Plant Control Project?	No	Exotic Plant Control Project?	No				
Mitigation Bank?	No	If yes, give FDEP/WMD Mitigation Bank Permit #:				COE #:			
Drainage Basin(s):	Choctawhatchee River & Bay								
Water Body(s):	Choctawhatchee River & Bay						SWIM Water Body?	Yes	
Project Description									
A. Overall project goal:									
To acquire, preserve, enhance and restore highly degraded wetlands at Devils Swamp in south Walton County, and to implement long-term natural resource management activities to assure the maintenance of high ecological value.									
B. Brief description of current condition:									
Devils Swamp (mostly FLUCCS 620, 639, 690 at project site) has been highly impacted by forestry activities including bedding, skidder trails, and clear cutting.									

C. Brief description of proposed work:
Acquisition, restoration (e.g., re-vegetation, hydrologic restoration, prescribed burns, etc.) and long-term ecological management of portions of Devils Swamp. This proposed mitigation has been expanded to accommodate recent increases in impact acreage.
D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):
The impacted wetlands are noted as FLUCCS 615 – Stream and Lake Swamp in poor condition. Restoration of forested wetlands (FLUCCS 620, 630, 690) at Devils Swamp to high quality wetlands of high ecological value will appropriately offset wetland functions and type lost as a result of the DOT project. The proposed mitigation area is one mile from impacts associated with the US 98 project in south Walton County.
E. Brief explanation of why a mitigation bank was/was not chosen, including a discussion of cost:
No permitted mitigation bank exists in the Choctawhatchee River and Bay watershed.
F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body:
No appropriate SWIM project exists.

MITIGATION PROJECT IMPLEMENTATION			
Entity responsible for construction:	Northwest Florida Water Management District		
Contact Name:	Duncan Cairns	Phone Number:	850-539-5999
Entity responsible for monitoring and maintenance:	Northwest Florida Water Management District		
Proposed timeframe for implementation	Commence Date:	ASAP	Complete Date: ASAP
Total Project Cost (\$): (attach itemized cost estimate)	\$ 4,936,860		

Attachment includes the following:	
X	1. Detailed description of existing site and proposed work. Table 3 or Section F of the ERP application may be used as guidelines.
X	2. Recent aerial photograph with date and scale.
X	3. Location map and design drawings of existing and proposed conditions. (See figures and typical drawings)
X	4. Detailed schedule for work implementation, including any and all phases.
X	5. Proposed success criteria and associated monitoring plan.
X	6. Long-term maintenance plan
X	7. Detailed explanation of how this work serves to offset the impacts of the specified DOT project(s).



## ATTACHMENT FOR FM 2206441 (US 98) MITIGATION PLAN (Devils Swamp)

### SCOPE

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The US 98 road widening (Financial Management Number 2206441) from Peach Creek east to the Bay Co. line is anticipated to impact approximately 60 acres of wetlands in south Walton County (Figure A1). The FDOT District-3 Environmental Impact Inventory provided to the NFWFMD classifies the impact wetlands as low quality, FLUCCS 615 – Stream and Lake Swamps. Measures taken to avoid and minimize wetland impacts are the responsibility of FDOT. Environmental consultants hired by FDOT assess and quantify wetland impacts caused by FDOT. The NFWFMD is responsible for designing and implementing mitigation for this project based on estimates of impacts (acreage and FLUCCS type) provided by FDOT.

### PROJECT GOAL

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The goal of this mitigation plan is to adequately compensate for the loss of wetlands and wetland function associated with the FDOT project. To accomplish this, the NFWFMD intends to acquire and restore approximately 715 acres of highly degraded wetlands in Devils Swamp (Figure A1). The impact acreage had previously been estimated at 42.0 acres, revised to 57.4 acres, and then revised again to 60 acres. The exact boundaries for the mitigation effort have yet to be determined pending US Army Corps of Engineers evaluation of the NFWFMD WRAP analysis of Devils Swamp. However, there is no apparent difficulty in expanding the mitigation efforts within Devils Swamp to compensate for the increased impact acreage.

Specific restoration activities at Devils Swamp will include re-vegetation with appropriate wetland species, hydrologic restoration where appropriate and the development and implementation of natural resource management plans, including proper fire regime, to maintain high ecological value. Restored wetlands will be preserved and managed in perpetuity by the NFWFMD.

### SITE DESCRIPTION

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Devils Swamp is a heavily logged (Figure A2), depressional swamp system that prior to silvicultural disturbance was characteristic of a “bay swamp.” Much of Devils Swamp has been bedded and converted to pine production, although remnant cypress and blackgum remain in the wetter sections. Prior to logging and conversion to pine production, common tree species may have included sweetbay, slash pine, swamp bay, loblolly bay, blackgum, cypress, sweetgum, red maple, water oak and diamond-leaf oak. Understory species may have included wax myrtle, titi, pepperbush, fetterbush, gallberry, and various vines.

Groundcover may have included sphagnum moss, ferns, sedges and various grasses (Wolfe, Reidenauer, and Means 1988).

Devils Swamp and the FDOT impacts are both within the Choctawhatchee River and Bay watershed. The proposed mitigation site is approximately one mile from the wetland impacts associated with the FDOT project (see Figure A1). The swamp is approximately 10-15 feet higher in elevation than the Choctawhatchee River floodplain (Figure A3), and drains to the floodplain via intermittent streams which cross the adjacent NFWFMD-owned lands. Depression storage in this area is significant and when restored hydrologically, has significant potential to naturally attenuate stormwater flows.

The area being considered for mitigation activities is part of a larger parcel of approximately 2,760 acres (Figure A4). Approximately 715 acres will be acquired and restored to mitigate for FM 2206441. The remaining acreage is expected to be used to mitigate for other FDOT projects (see Figure A4). The Devils Swamp mitigation area may be expanded east and/or west, as needed, to mitigate for other FDOT projects.

Analysis of a FDEP (Florida Department of Environmental Protection) landuse GIS coverage, SCS (Soil Conservation Service) soils maps, and preliminary field reconnaissance suggests approximately 1,500 acres of the 2,760 acre tract are wetlands. Based on the FDEP landuse coverage, the wetlands consist (or consisted prior to logging) of FLUCCS 620 – Wetland Coniferous Forest (9%) , FLUCCS 630 – Wetland Forested Mixed (59%), FLUCCS 690 – Wetland Scrub Shrub (25%), FLUCCS 641 – Freshwater Marshes (6%), and FLUCCS 610 – Wetland Hardwood Forest (1%).

Devils Swamp is contiguous with NFWFMD-owned lands along the Choctawhatchee River floodplain. Connection between Devils Swamp and the NFWFMD-owned floodplain, coupled with restoration of this area to a natural condition, will provide a diverse and ecologically important wetland habitat and significant natural attenuation of storm event floodflows.

Hydric soils in the Devils Swamp area (Figure A5) include “Rutlege-Leon: Nearly level, very poorly drained and poorly drained soils that are sandy throughout,” and “Hurricane-Pamilco: Nearly level to gently sloping, somewhat poorly drained to very poorly drained soils; some are organic underlain by sandy material, and others are sandy throughout,” (*USDA-SCS Soil Survey of Walton County*).

## ACQUISITION

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Devils Swamp is currently owned by the St. Joe / Arvida company. Negotiations have been conducted regarding ownership of this land, with St. Joe / Arvida indicating a willingness to sell portions of Devils Swamp to the NFWFMD. The protocol for land acquisition is described generally in the “Northwest Florida Water Management District Acquisition Procedure Guidelines.”

## RESTORATION

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Restoration of Devils Swamp may include re-vegetation with appropriate wetland species (Figure A6), prescribed burns, and hydrologic restoration where needed. Relict bedding from forestry operations might also be breached in certain areas, although because of the heavy disturbance this would cause, this would be done only in very limited circumstances.

Much of the surrounding uplands have been clear-cut. Eventual restoration of these upland areas to natural conditions (pine flatwoods or longleaf pine / wiregrass community) would provide a buffer of high ecological value for the wetland areas being restored for mitigation purposes. The Devils Swamp area also includes relatively isolated depression wetlands which provide critical ecological habitat for species not generally found on river floodplain.

Short-term activities will focus on the re-establishment of wetland vegetation communities (see Figure A6) and hydrologic restoration where appropriate. Long-term management activities will be undertaken to assure the continued health and viability of the restored wetlands and to maintain the high ecological value of the resultant restored/enhanced ecosystem.

Given the magnitude and vast extent of devastation throughout Devils Swamp, restoration efforts will be conducted in phases. Review and approval from federal permitting agencies will be solicited as detailed plans are developed for each phase of the Devils Swamp restoration.

Three other FDOT wetland mitigation projects are currently being planned for Devils Swamp. They are WPI 3119117, WPI 3119122, and FM 2206431 (formerly know as WPI 3119123) (see Figure A4). These projects will result in the restoration of the most highly disturbed portions of Devils Swamp.

## MITIGATION VALUE

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Wetlands restoration, preservation and natural resource management at Devils Swamp will be applied toward mitigating the US 98 (FM 2206441) project. Given the highly disturbed condition and high restoration potential of Devils Swamp, we anticipate needing to completely restore (re-vegetation and hydrologic restoration) approximately 715 acres to complete the needed mitigation (which would yield a mitigation ratio of ~12:1). The disturbed wetlands are some 80% forested wetland mixed with the remainder being scrub/shrub and marsh wetlands. The remainder of Devils Swamp will be restored and appropriately managed for the other ongoing wetland mitigation projects.

## SUCCESS CRITERIA

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Success criteria will be based on land acquisition and the establishment of appropriate wetland canopy and understory species, enhanced wildlife utilization, and improved hydrologic function. Appropriate monitoring will be conducted as necessary to ensure mitigation success.

## MONITORING AND LONG-TERM MAINTENANCE

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Appropriate monitoring will be conducted to ascertain the status and likelihood of restoration success. A formal, long-term management and monitoring plan will be developed within one year of land acquisition and formulated in accordance with the "Management Policies for Water Management Areas of the Northwest Florida Water Management District" (see Appendix IV). These criteria will be assessed through periodic site surveys, as well as the possible establishment of long-term vegetation transects, vegetation plots, time sequence photography, and installment of water level monitoring equipment. The long-term management plan will address issues such as water resources (e.g., NPS abatement), forest and plant resources, fish and wildlife resources, any unique environmental, archaeological and historical resources, public access, ecological research concerns, apiary leases, appropriate burn schedules, and other concerns that may arise. Annual reports on mitigation status will be submitted until it is determined that adequate compensation has been assured.

## CONTINGENCY PLANS

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If re-vegetation efforts fail due to unforeseen circumstances (e.g., drought), funds will be held in reserve for replanting efforts.

## FUNDING

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Funding for land acquisition would come from FDOT mitigation funds. At a maximum rate of \$ 82,281 per acre of impacted wetland, 60 acres of wetland impact would cost \$4,936,860 in funding. All reasonable attempts will be made to maximize cost savings throughout this project.

Mitigation Cost Estimates	
Pre-acquisition	296,211.60
Land Acquisition	1,678,532.40
Restoration	2,320,324.20
Long-term Management & Monitoring	641,791.80
Total	\$ 4,936,860.00

## NFWFMD PERSONNEL TO IMPLEMENT MITIGATION AND MONITORING

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Robert F. Lide – Environmental Scientist  
Peter A. Krottje – Environmental Scientist  
Judy K. Duvall – Associate Hydrologist  
Ron R. Potts – Senior Hydrologist  
Duncan J. Cairns – Chief of Environmental and Resource Planning Bureau  
Ron Bartel – Director – Resource Management Division  
Dan L. Tonsmeire – Associate Water Resources Planner  
V. Mark Herndon – Director of Field Operations, Div. of Land Management and Acquisition

Other NFWFMD personnel may be called upon as needed.

## WORK SCHEDULE

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Negotiations with St. Joe / Arvida are ongoing. Detailed restoration plans will be formalized as lands are acquired or substantial interest is obtained. The planned activities will be undertaken as soon as possible following acquisition of the targeted wetlands.

- 2000 Acquisition of Devils Swamp  
to Design of restoration strategy for appropriate Devils Swamp areas  
2001
- 2001 Implementation of phased mitigation and monitoring  
to Annual reports to the Corps of Engineers describing progress of mitigation  
2006 Obtainment of phased approval from federal permitting agencies as detailed plans are developed for mitigation.

## TASKS COMPLETED

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1. A preliminary wetland functional analysis was performed for portions of Devils Swamp in August 1999. Results indicated substantial potential of environmental lift from mitigation activities (e.g., re-vegetation with appropriate species, introduction of appropriate fire regime, breaching of pine bedding, possible filling of ditches and relict tramlines).
2. Initial discussions were held with St. Joe in 1999 and 2000 concerning the NFWFMD obtaining portions of Devils Swamp for mitigation of US 98 impacts. Discussions with St. Joe officials concerning Devils Swamp are ongoing.
3. Estimates for the acquisition of large-scale, current aerial photography of Lower Choctawhatchee and the Devils Swamp tract were obtained in the fall of 1999.

4. Cost estimates for acquisition of Airborne Laser Swath Mapping for Devils Swamp were obtained in Spring 2000.
5. Initial planning for the re-vegetation of Devils Swamp based on soil type and topography was done during late 1999. Species and planting densities were recommended by personnel in the NFWMD Lands Division (see Figure 5 for species and planting densities).
6. An elevation survey of roads crossing or obstructing streams in the Lower Choctawhatchee area was recently conducted by NFWMD field staff. Staff are in the process of creating topographic profiles for the purpose of designing stream crossings and using BMPs. Elevations were tied to a known elevation monument outside of the restoration area. Three 200' transects (two perpendicular to the road and one that follows the stream channel) were made at 12 potential hydrologic restoration sites.

#### ANTICIPATED TASKS

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1. Purchase of portions of Devils Swamp from St. Joe / Arvida.
2. Continued development of restoration and management plans for Devils Swamp.
3. Detailed design and finalization of restoration plans.
4. Implementation of mitigation.
5. Long-term monitoring and management.

#### LEGALLY BINDING COMMITMENT

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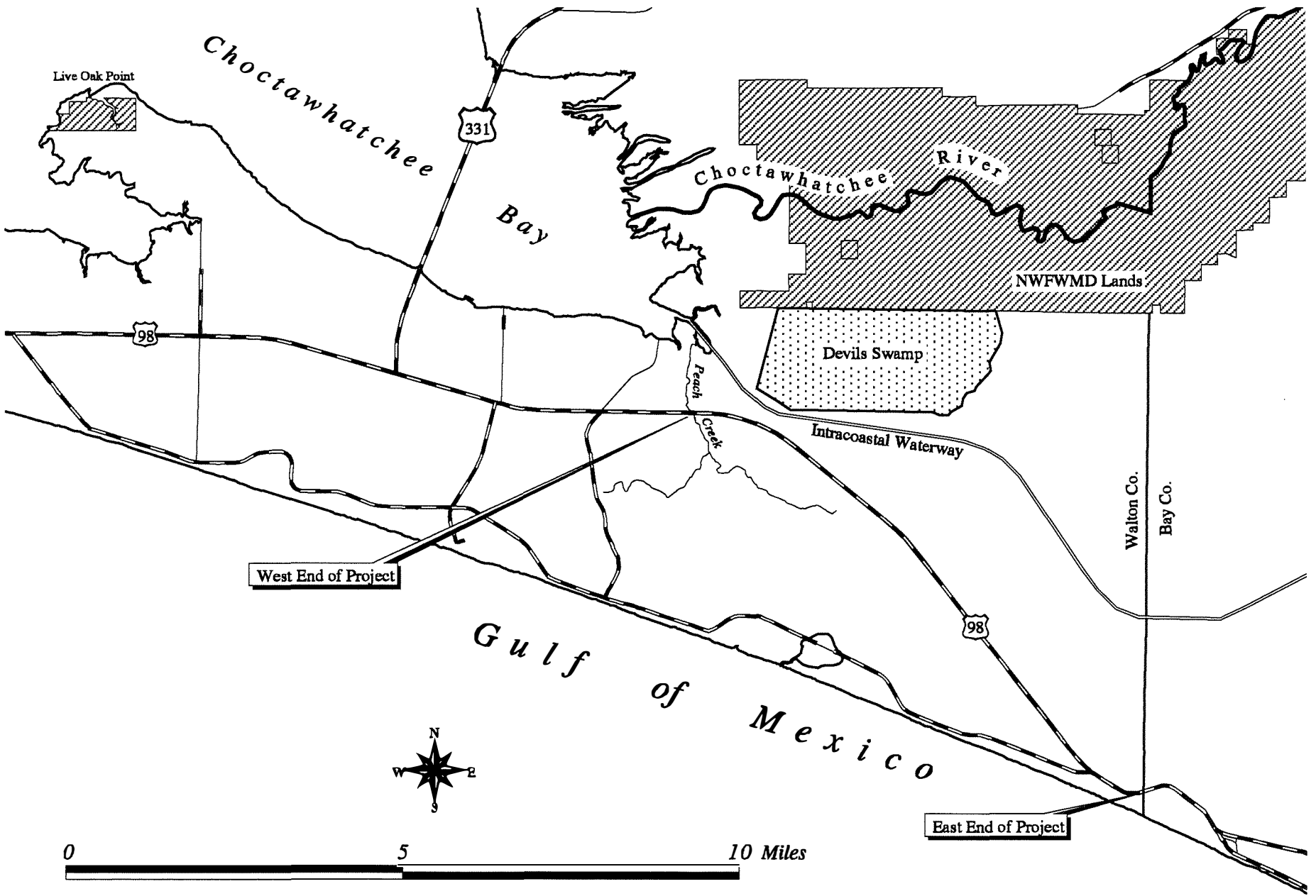
The Florida Statutes specify how NFWMD lands must be managed and used:

*373.139(1)(a) – Lands titled to the governing boards of the districts shall be managed and maintained to the extent practicable, in such a way as to ensure a balance between public access, general public recreational purposes, and restoration and protection of their natural state and condition.*

#### WORKS CITED

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- Overing, J.D., and F.C. Watts. 1989. *Soil survey of Walton County, Florida*. U.S Dept. of Agriculture, Soil Conservation Service.
- Wolfe, S.H., J.A. Reidenauer, and D.B. Means. 1988. *An ecological characterization of the Florida Panhandle*. U.S. Fish and Wildlife Service Biological Report 88(12); Minerals Management Service OCS Study\MMS 88-0063; 277 pp.



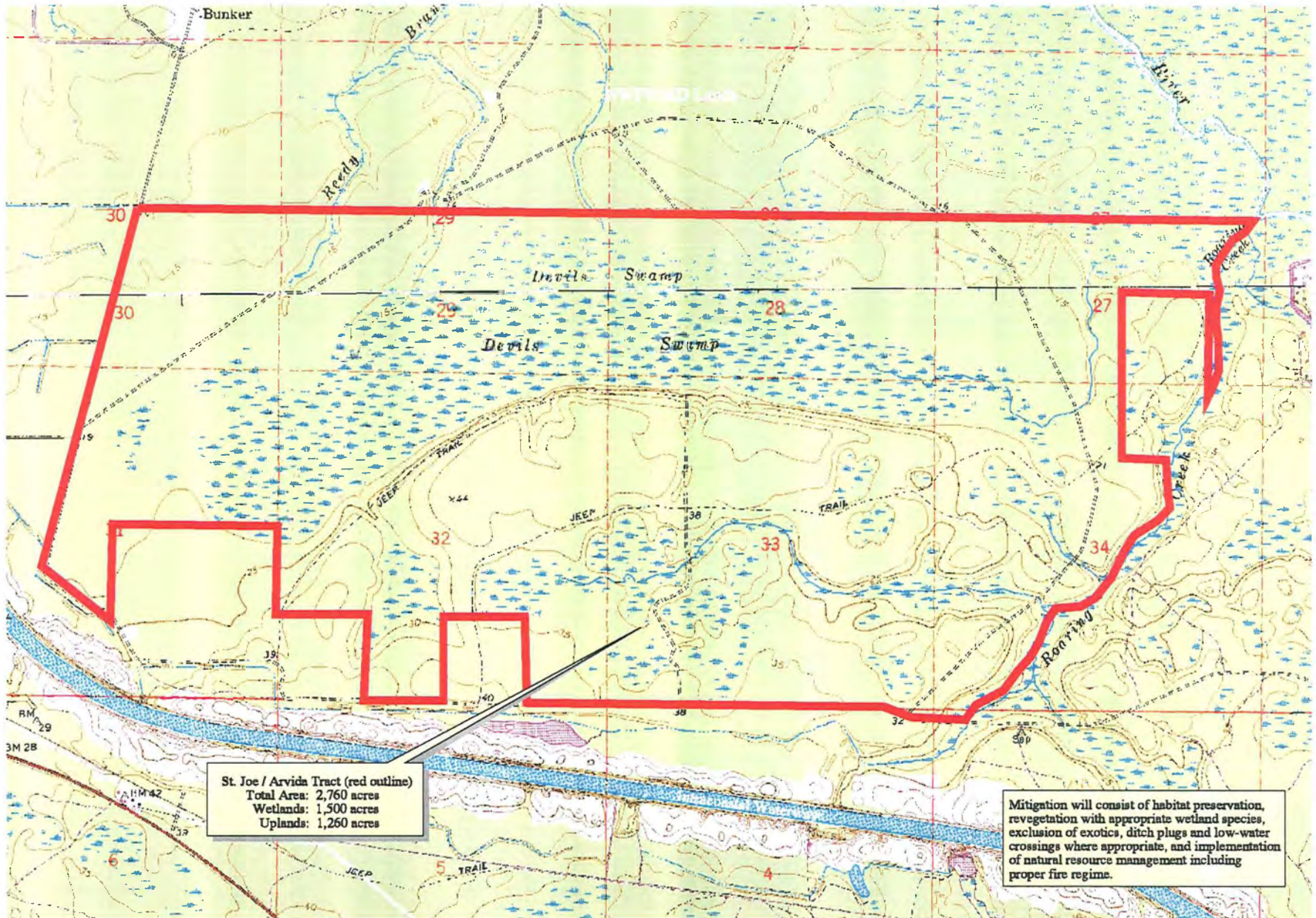
(US 98 from Peach Creek east to Bay Co. line; ~60 acres of impact)

Figure A1: FM 2206441

Figure A2: Logged Area of Devils Swamp







St. Joe / Arvida Tract (red outline)  
 Total Area: 2,760 acres  
 Wetlands: 1,500 acres  
 Uplands: 1,260 acres

Mitigation will consist of habitat preservation, revegetation with appropriate wetland species, exclusion of exotics, ditch plugs and low-water crossings where appropriate, and implementation of natural resource management including proper fire regime.

Figure A3: Topography of Devils Swamp

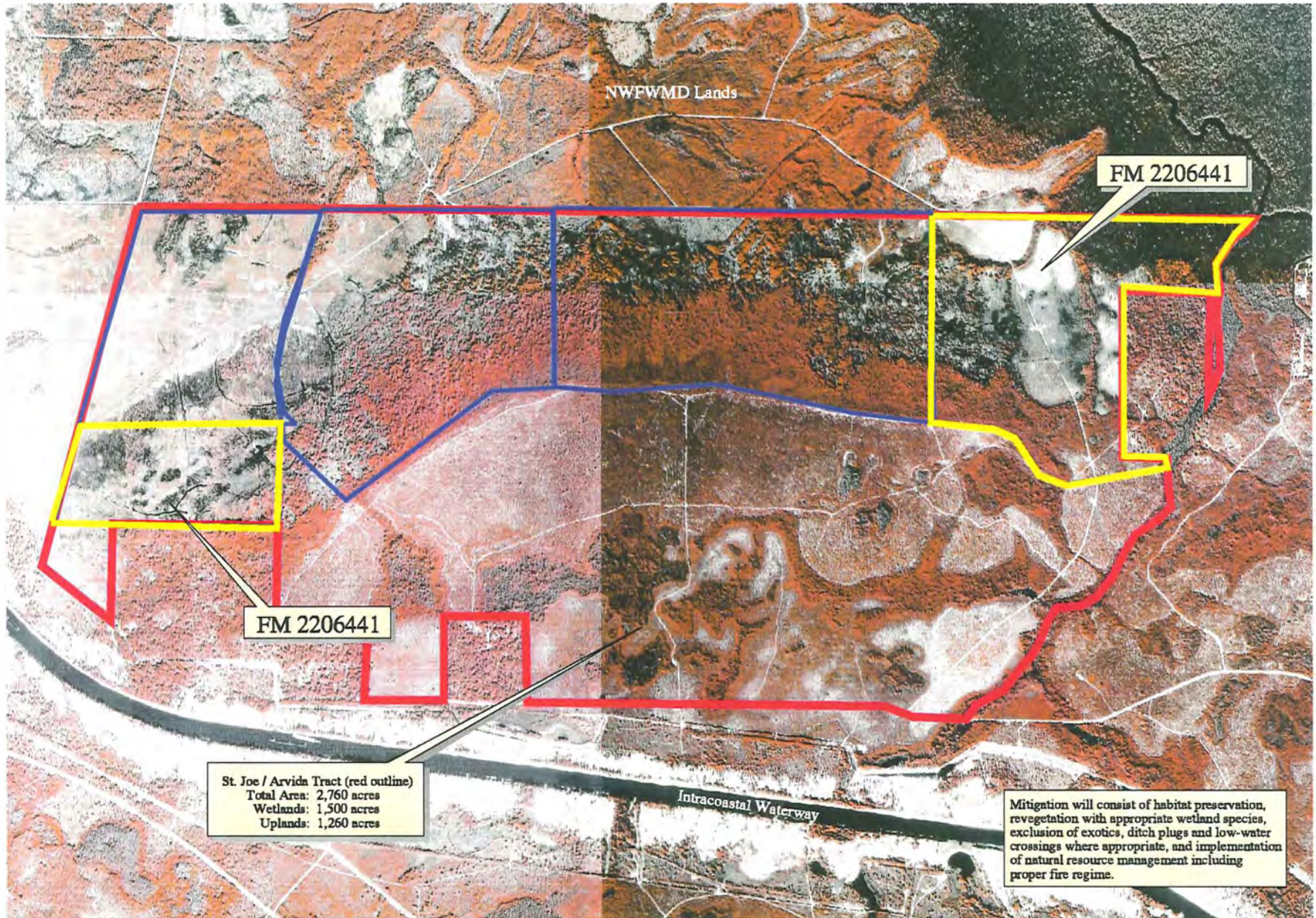


Figure A4: Devils Swamp Mitigation Area

Mitigation areas for FM 2206441 are outlined in yellow. The internal mitigation boundaries are conceptual and will likely change as mitigation plans are further developed.



Figure A.5: Soils of Devils Swamp



- ARENDS, 2 TO 8 PERCENT SLOPES
- CHIPLEY SAND, 0 TO 5 PERCENT SLOPES
- DOROVAN-PAMLICO ASSOCIATION, FREQUENTLY FLOODED
- FOXWORTH SAND, 0 TO 5 PERCENT SLOPES
- HURRICANE SAND, 0 TO 5 PERCENT SLOPES
- LAKELAND SAND, 0 TO 5 PERCENT SLOPES
- LEON SAND
- MAUREPAS MUCK, FREQUENTLY FLOODED
- PAMLICO MUCK
- PICKNEY SAND, DEPRESSIONAL
- RUTLEGE FINE SAND, FREQUENTLY FLOODED

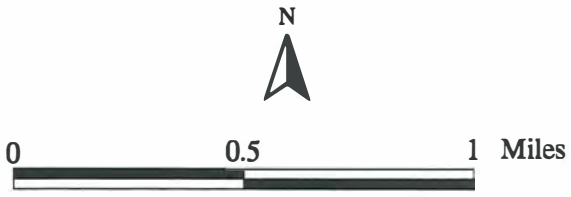


Figure A6: Draft re-vegetation plan for Devils Swamp



- Pinus elliottii*, *Liquidambar styraciflua*, *Quercus hemisphaerica*, *Acer rubrum*, *Magnolia virginiana*
- Pinus elliottii*, *Liquidambar styraciflua*, *Quercus hemisphaerica*, *Acer rubrum*, *Magnolia virginiana*
- Pinus palustris*, *P. elliottii*, *P. taeda*, *Quercus marilandica*, *Q. margaretta*, *Q. laevis*
- Taxodium distichum*, *Nyssa aquatica*, *N. sylvatica*, *Fraxinus caroliniana*, *Acer rubrum*, *Magnolia virginiana*

(Planting densities 700-900 per acre)

