APPENDIX B
FEDERAL MITIGATION BANK INSTRUMENT
FDEP MITIGATION BANK PERMIT

DEVIL'S SWAMP MITIGATION BANK

As part of the development of the U.S. Army Corps of Engineers' Regional General Permit (RGP) SAJ-86 (SAJ-2004-1861) and Florida Department of Environmental Protection's Ecosystem Management Agreement (EMA), the St. Joe Company elected to establish two mitigation banks to serve different basins within the RGP/EMA area. Both Federal and State agencies participated in the review of both the RGP/EMA and the mitigation banks as a Mitigation Bank Review Team (MBRT). The Devil's Swamp Mitigation Bank (DSMB) will serve the Devil's Swamp basin within the RGP/EMA. Authorizations for mitigation banks follow slightly different procedures and formats for the respective state and federal approvals. However, the actual activities, conditions and expected results are substantively the same. Therefore, this document will serve as both the federal Mitigation Bank Instrument (MBI) (SAJ-2004-1864) and the state Mitigation Bank Permit (0227475-001) (the "Permit"), The format of this document basically follows the federal MBI with some modifications to accommodate separate procedures. The state permit authorizes the mitigation bank implementation and operation, as well as the dredge and fill activities associated with it. However, the federal MBI requires an additional authorization for the actual dredge and fill activities associated with the bank, which will be in the form of a Nationwide Permit 27. Therefore, there are portions of the document specific to the state or federal MBI/Permit. These items will be specifically identified by a preface of either U.S. Army Corps of Engineers (Corps) or Florida Department of Environmental Protection (FDEP).

Corps: This MBI regarding the establishment, use, operation, and maintenance of DSMB is made and entered into by and among The St. Joe Company (hereinafter, Sponsor), the Corps, the U.S. Environmental Protection Agency (EPA), and the U.S. Fish and Wildlife Service (FWS). These agencies along with FDEP participated as the MBRT.

FDEP: This mitigation bank permit is issued under the authority of Part IV of Chapter 373, Florida Statutes (F.S.) and Chapter 62-342, Florida Administrative Code (F.A.C.). It constitutes all necessary permits under Part IV of Chapter 373, F.S. It also constitutes certification of compliance with state water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. 1341. Where applicable (such as activities in coastal counties), issuance of the wetland resource permit also constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Management Act.

I. PREAMBLE

A. Purpose: The purpose of this MBI/Permit is to establish guidelines and responsibilities for the establishment, use, operation, and maintenance of the Devil's Swamp Mitigation Bank. The DSMB will be used for compensatory mitigation for unavoidable impacts to waters of the State and United States, including wetlands, which result from activities authorized under the RGP and/or EMA to compensate for the loss of wetland functions within the Devil's Swamp basin.

B. Location and Ownership of Parcel: The St. Joe Company (Sponsor) owns 3,049.2 acres of land along Steele Field Road in Section 31, Township 1S, Range 18W, and Section 6-7, Township 2S, Range 18W in Bay County; and Sections 34-36, Township 2S, Range 18W, and Sections 1, 2, 11, and 12, Township 3S, Range 18W in Walton County, Florida, (FDEP Class III Waters). The proposed project is located north of the Intracoastal Waterway (ICW), south of Steele Field Road, about 5 miles east of Choctawhatchee Bay, and about 7.5 miles west of State Road (SR) 79 (Exhibit B-1-1).

C. Project Description: The Sponsor shall preserve, enhance and maintain the bank site by the removal of inappropriate vegetation and discontinuation of timber operations, the improvement of hydrology through low-water crossing and culvert installation, and by the implementation of an interim and long-term restoration management plan including prescribed burns. The Sponsor shall conduct these compensatory mitigation activities in accordance with the provisions of this MBI/Permit and its Attachments. The entire Bank consists of a total of 3,049.2 acres, but may be implemented in three discrete phases. The compensatory mitigation plan is expected to result in the restoration or enhancement of a mosaic of hydric pine flatwoods, savannah, mixed forested wetland, cypress swamp and upland pines.

D. Baseline Conditions: Historically, this site was a mosaic of hydric and mesic pine flatwoods with broad areas of mixed forested wetlands and cypress swamps, savannahs, and xeric pine communities. During the 1960s and 1970s, much of the proposed mitigation bank was planted in slash or sand pine plantation for silviculture. Approximately 54.4% and 4.5% of the site, respectively, is currently planted in pines of various ages (~5 years to 25 years)(Exhibit B-1-2). Some of the older plantings have recently been thinned every third row. Most of the site was furrowed during planting, and furrow depths are typically 6 to 8 inches deep. The understory/ground cover varies from open herbaceous to very dense thickets of hydric shrubs, primarily titi (*Cliftonia monophylla*). Due to fire suppression, shrub percent cover is much higher than would naturally occur in the historical natural communities. There has been no infrastructure constructed on the site other than logging roads and ditches to support silviculture.

In addition to the planted pine, other communities include titi swamp, shrub swamp, and cypress swamp (Table B-1 and Exhibit B-1-5). The planted pines occur primarily in historical hydric and mesic pine flatwoods, xeric sandhills, and savannah. Habitats on the property vary in quality from excellent to poor depending on the effects of management for pine silviculture. The degree of infestation by exotic or nuisance plant species is negligible.

In general, the current and historical communities at the bank site are typical of those in the RGP/EMA area. They are described in greater detail in Attachment B-1.

Table B-1. Devil's Swamp Mitigation Bank Existing Land Use

FLUCFCS Code	FLUCFCS Description	Total Acres	Percent of Pre-Restoration Wetlands	Percent of Pre-Restoration Site
441	Upland Pine Plantation	1,166.7	0.0	38.3
441H	Hydric Pine Plantation	627.0	34.2	20.6
533	Reservoir	4.8	0.3	0.2
614	Titi Swamp	713.4	38.9	23.4
621	Cypress Swamp	12.2	0.7	0.4
632	Shrub Swamp	477.4	26.0	15.7
814	Roads	47.6	0.0	1.6
TOTAL		**3,049.2**	100.0	100.0

E. Establishment and Use of Credits: In accordance with the provisions of this MBI/Permit and upon satisfaction of the success criteria contained herein, a total of 526.8 freshwater credits will be available to be used as compensatory mitigation in accordance with all applicable requirements. Credits are in the form of functional units pursuant to the Wetland Rapid Assessment Procedure (WRAP), as described in *Technical Publication REG-001 Wetland Rapid Assessment Procedure (WRAP) (Miller and Gunsalus, September, 1997)*, and as applied during the assessment of the wetlands within both the bank and RGP/EMA area. The credit assessment is described in detail in Attachment A-4.

F. The bank is for general use within the Devil's Swamp watershed portion of the area covered by the RGP. The St. Joe Company is the sponsor of the DSMB.

G. The Mitigation Banking Review Team (MBRT) consists of:
1. U.S. Army Corps of Engineers, Jacksonville District (Corps), Chair.
2. U.S. Environmental Protection Agency, Region IV (EPA).
3. U.S. Fish and Wildlife Service, Panama City Field Office (FWS).
4. Florida Department of Environmental Protection, Pensacola and Tallahassee (FDEP), Co-chair.

The bank sponsor has demonstrated through review by the MBRT that the DSMB meets both federal and state criteria for establishment of a mitigation bank.

H. Corps: Disclaimer: This MBI does not in any manner affect statutory authorities and responsibilities of the signatory parties.

I. Exhibits: The following exhibits are incorporated as attachments to this MBI/Permit:

Attachment B-1	Compensatory Mitigation Plan
Exhibit B-1-1	Location and Service Area Map
Exhibit B-1-2	Aerial Photo, 1999
Exhibit B-1-3	Quad Topography Map
Exhibit B-1-4	Soils Map
Exhibit B-1-5	Existing Land Use and Land Cover
Exhibit B-1-6	Proposed Land Use and Land Cover
Exhibit B-1-7	Phases, Hydrologic Improvements, and Monitoring Locations
Exhibit B-1-8	Historic Aerial, 1949
Exhibit B-1-9	Turbidity Details
Exhibit B-1-10	Existing Land Use and Land Cover (11x17 color)
Exhibit B-1-11	Proposed Land Use and Land Cover (11x17 color)
Attachment B-2	Fire Management Plan
Attachment B-3	Security Plan
Attachment B-4	WRAP Analysis
Attachment B-5	Site Suitability Index
Attachment B-6	Ledger
Attachment B-7	Desirable Species Lists
Attachment B-8	Monitoring Plan
Attachment B-9	Hydrologic Restoration Plan
Attachment B-10	References

Attachment B-11 Real-Estate Provisions
Attachment B-12 Financial Assurance
Attachment B-13 Hunting Lease Conditions
Attachment B-14 Cost Estimate
Attachment B-15 Principles for Forest and Wildlife Management

II. AUTHORITIES

The establishment, use, operation, and maintenance of the Bank is carried out in accordance with the following authorities:

A. Corps (Federal):
1. Clean Water Act (33 USC 1251 et seq.)
2. Rivers and Harbors Act (33 USC 403)
3. Fish and Wildlife Coordination Act (16 USC 661 et seq.)
4. Regulatory Programs of the Corps of Engineers, Final Rule (33 CFR Parts20-330)
5. Guidelines for Specification of Disposal Sites for Dredged and Fill Material (40 CFR Part 230)
6. Memorandum of Agreement between the Environmental Protection Agency and FDEP concerning the Determination of Mitigation Under the Clean Water Act, Section 404 (b)(1) Guidelines (February 6, 1990)
7. Federal Guidance for the Establishment, Use, Operation of Mitigation Banks (60 F.R. 58605 et seq.)

B. FDEP (State):
1. Part IV of Chapter 373, Florida Statutes (F.S.)
2. Chapter 62-342, Florida Administrative Code (F.A.C.)
3. Section 401 of the Clean Water Act, 33 U.S.C. 1341
4. Section 307 of the Coastal Management Act

These parties agree to the following:

III. ESTABLISHMENT OF THE BANK

A. The Sponsor agrees to perform all necessary work, in accordance with the provisions of this MBI/Permit and its Attachments, until it is demonstrated to the satisfaction of the authorizing agencies that the project meets the success criteria contained herein, and to maintain these conditions in perpetuity according to Part V Section G.

B. The Sponsor will obtain all appropriate environmental documentation, permits or other authorizations needed to establish and maintain the Bank. This MBI/Permit may not fulfill or substitute for all required authorizations.

C. Establishment of the Bank will be performed in three phases as described in the Compensatory Mitigation Plan (Attachment B-1), and the credits will become available in accordance with the schedule specified in Part IV, Section F of this MBI/Permit. In the event the Sponsor determines that modifications must be made in the MBI/Permit or the Compensatory Mitigation Plan to ensure successful establishment of habitat within the Bank, the Sponsor shall submit a written request for such modification to the MBRT for approval.

FDEP: For the state, this request shall be in the form of a major or minor modification with appropriate fee to be submitted to the FDEP Office of Submerged Lands and Environmental Resources in Tallahassee. The request will be reviewed in accordance to the procedures and timetables established in Ch. 120, F.S.

D. Financial Assurance Requirements.

1. Implementation Phase. The Sponsor shall provide FDEP with the financial responsibility mechanisms for the bank or phase thereof as required by Rule 62-342.700 F.A.C. The Sponsor shall secure financial assurance for construction activities, monitoring, maintenance, and reporting prior to success, and for long-term management activities after the bank has reached success.

The Sponsor shall establish FDEP-approved financial assurance for the construction and implementation of each phase at least 30 days prior to initiation of construction or release of credits for that phase. This assurance shall be in the form of performance bonds payable into a contemporaneously established Standby Trust Account (Attachment B-12). The amount of the performance bonds is based on 110% the estimated costs for construction, monitoring and maintenance prior to success, as shown in the table below by phases. The Sponsor may request a partial reduction in the amount of the construction assurance after the successful completion of implementation activities, as defined below. The Sponsor may request a release from its construction financial assurance obligation upon the determination that the bank has reached success criteria and the long-term management has been properly funded.

Financial Assurance Cost per Phase

Phase	Implementation Cost Estimate	110% of Estimate
1	$485,904	$534,495
2	$524,727	$577,200
3	$256,459	$282,105
Total	$1,267,090	$1,393,799

2. Perpetual Management Phase. Thirty days prior to the debit of mitigation credits, the bank sponsor shall establish a Standby Trust Fund Agreement (Attachment B-12) for the bank or phase thereof to be funded by either a bond, letter of credit, or cash for each phase, in the amount of $199.34 per acre, that is in the form of FDEP's approved forms for such mechanisms to implement the terms of the perpetual management plan for the bank.

3. Adjustments. The Sponsor shall be the responsible party for long-term management until the permit and the fully funded long-term management trust are transferred to a different long-term manager. The Sponsor shall provide FDEP with proof of permit and trust compliance prior to this transfer.

All cost-estimates shall be reviewed and appropriate financial responsibility instruments adjusted every two years in accordance with Rule 62-342.700 (11) F.A.C. In addition, the Sponsor shall conduct another cost estimate during the establishment of final construction plans, accounting for any changes in construction and implementation costs required by other permits or conditions, weather, contractors costs, and other such costs. Any significant change in the cost estimate (>10%) may result in a modification to the required deposits into the financial responsibility instruments.

E. Real Estate Provisions: Prior to any construction activities or release of credits, the Sponsor shall cause the property on which the Devil's Swamp Mitigation Bank or phase thereof is to be implemented to be preserved and protected in accordance with a conservation easement granted to FDEP and the Northwest Florida Water Management District (NWFWMD), with rights of enforcement to the Corps, as well. A copy of the draft language to be used for this conservation easement has been approved by the MBRT (Attachment B-11). However, prior to recording the Conservation Easement, the sponsor shall submit a final draft of the CE to the FDEP Office of Submerged Lands and Environmental Resources in Tallahassee along with:

1. A title insurance policy for the easement to be updated to the date of conveyance.
2. Subordination, release, or joinder agreements for any lien on the property, as identified by the Title Commitment, unless such lien does not adversely affect the ecological viability of the Bank (Rule 62-342.650 F.A.C.).
3. Legal descriptions and sketches of the conservation easement certified by a Florida registered land surveyor.

After agency approval, the easement shall be recorded and a clerk-of-the-court certified copy of the conservation easement shall be submitted.

F. Harvesting Requirements: The Sponsor agrees to remove planted pine in accordance with the Compensatory Mitigation and Principles for Forest and Wildlife Management (Attachments B-1 and B-16) and consistent with the restoration goals and timing defined in this MBI/Permit and Attachments. While traditional timber equipment may be used and marketable pine may be sold, the primary consideration for methods, species and density harvested, and timing of harvesting activities shall be for the restoration goals stated herein. All harvesting activities within a phase shall be completed and documented with harvest records, ground and aerial photographs, and a site visit prior to the release of credits associated with this activity.

G. Fire Management: The Sponsor agrees to implement a fire management plan in accordance with the Compensatory Mitigation and Fire Management Plans (Attachments B-1 and B-2) and consistent with the restoration goals and timing defined in this MBI/Permit and Attachments. At least 80% of the acreage in appropriate communities within a phase shall have been burned and documented with prescribed burn records, ground and aerial photographs, and a site visit prior to the release of credits associated with this activity.

H. Construction Requirements: The sponsor shall conduct the construction activities defined in Attachment B-9 and Exhibit B-1-7 to deter drainage from the site and enhance hydrologic connections. The activities planned for the site are installation of hardened low water crossings and bermed weir structures (Exhibit B-1-7). The Sponsor shall conduct all construction activities in accordance with BMPs regarding turbidity (Exhibit B-1-9), including timing these operations for low water conditions. Based on continued field data collection results during the first few years of the project, invert elevations of the structures will be manipulated, in consultation with the authorizing agencies to verify the final elevations for each structure. If these elevations differ from the as-built certification, a minor modification of the permit will be required.

The Sponsor agrees to submit as-built certifications, prepared by an engineer licensed in the State of Florida for each phase of the Bank within 60 days following completion of the construction portion of that phase of bank. The as-built report will describe in detail any deviation from the construction plans and figures for implementation activities within each phase (Attachment B-9) and a plan showing finished grades, and surface and groundwater elevations,

as appropriate. Approval of the as-built report shall be required prior to the credit release associated with Hydrologic Improvements on the Credit Release Table in Part IV, Section F(1).

I. Work Schedule: Restoration activities will be performed in phases, which are defined by geographical areas (Exhibit B-1-7) and would be stand-alone projects should the entire bank not be completed. Work begins on Phase 1 in year 1 with selective logging, shrub and brush removal, and initial burning, then installation of the hydrologic improvements and exotic control activities as detailed below. Other phases are anticipated to follow a similar schedule, with each successive phase being initiated on a yearly basis, as presented in the following table. However, the Sponsor, in consultation with the authorizing agencies, may elect to postpone the initiation of a phase. Conversely, the conservation easement and financial assurances may be implemented in advance of other implementation steps. Once initiated, the physical mitigation activities in the phase shall proceed in a timely manner, in accordance with the attached schedule (Attachment B-1).

IV. OPERATION OF THE BANK

A. Mitigation Service Area (MSA): The bank is established to provide compensatory mitigation for impacts to the waters of the State and United States, including wetlands, within the Devil's Swamp basin of the geographic area covered by RGP area. The MSA for the Devil's Swamp Mitigation Bank is located within Bay and Walton Counties as shown in Exhibit B-1-1.

B. The Sponsor will allow, or otherwise provide for, access to the site by the MBRT, as necessary, for the purpose of inspection and compliance monitoring consistent with the terms and conditions of this MBI/Permit. Inspecting parties shall provide reasonable notice, of not less than 24 hours, to the Sponsor, prior to inspection of Bank.

C. Projects Eligible to Use the Bank. Projects within the MSA authorized by the RGP and/or the EMA may use credits from this mitigation bank. The Corps and FDEP, in consultation with the other regulatory and resource agencies, will determine, on a case-by-case basis, the eligibility of projects within the MSA that do not qualify for either the RGP or EMA.

D. Assessment Methodology: Credits and debits will be assessed using WRAP.

1. Credits. The total number of potential of credits was determined by the WRAP methodology and the application of a Mitigation Bank Suitability Index (MBSI), and then assessed for time-lag and risk, with methodologies detailed in Attachments B-4 and B-5. A total potential of 526.8 freshwater credits can be allocated to the bank. These credits will be released and withdrawn in accordance with Part IV, Section F.

2. Debits. For purposes of offsetting impacts to low quality wetlands, as identified within the RGP and EMA, 0.65 credits per acre of impact must be debited from the bank. For purposes of offsetting impacts to high quality wetlands, 0.92 credits per acre of impact must be debited from the bank. Because the credits from this mitigation bank have been assessed for time lag and risk, these factors shall not be considered for impact permits.

E. Success Criteria: The compensatory mitigation for each phase shall be determined to be successful when all of the performance standards defined below have been met. Upon the determination of success, the phase may be released from the monitoring requirements in Part V, Section B, and the long-term management plan and inspections may be implemented as described in Part V, Section G.

1. Procedures.

a. Whenever the bank sponsor believes the mitigation bank or phase thereof has attained final success, as defined herein, they shall request a determination of success.
FDEP: For the state, this request shall be in the form of a minor modification with an appropriate fee, which shall be reviewed in accordance with Chapter 120, FS.
Corps: The notice shall be sent by certified mail to the Corps Panama City and Jacksonville offices.

b. The request for success determination shall be supported by documentation provided by the bank sponsor that the implementation of the project has been in accordance with the plans herein. The bank sponsor shall afford MBRT members the opportunity to schedule and conduct an on-site inspection of the mitigation area under review to verify that the criteria are met.

c. Corps: Within thirty (30) days of receipt of this notice (except with good cause), the Corps shall notify the bank sponsor by certified mail that the Corps determined either that the compensatory mitigation has been successfully completed; or that the compensatory mitigation is not successful, identifying specifically those elements of the compensatory mitigation that do not meet the performance standards.

2. Final Success Criteria. The bank or phase thereof shall be deemed successful when all of the following criteria have been met after a period of at least one full year without intervention in the form of artificial manipulation of water levels or replanting of desirable vegetation. The bank shall enhance or restore the following polygon types: mixed forested wetland, cypress swamp, savannah, hydric pine flatwoods, and upland pines as shown on Exhibit B-1-6. This plan was developed using historical aerial photographs, soils maps, and existing condition observations. As such, the expectation of actual area for each type of system is approximate. The ultimate goal of the plan is to restore natural processes to the site such that a self-sustaining, functioning ecosystem results. This concept shall override the specific acreage requirements in a general fashion.

a. Community Requirements
Mixed Forested Wetland and Cypress Swamps
1. Approximately 1147 and 74 acres (+/- 20%) shall be restored or enhanced to jurisdictional mixed forested wetland and cypress swamps, respectively, as described in Attachment B-1 and documented by monitoring data and ground and aerial photography.
2. Non-nuisance, native wetland ground and shrub species are healthy, reproducing naturally and exhibiting the cover and diversity typical of habitat as described in Attachment B-1 and reference wetland data, such as found in Florida Natural Areas Inventory natural community descriptions* or other such literature. This ground cover shall be 75% or greater (except in open water area) when canopy cover is less than 30% due to immature trees. As canopy matures, lower percentage ground cover may be appropriate due to shading, and this decrease will not preclude a success determination.
3. The desirable canopy tree cover is increasing annually. Success will be considered achieved when at least 30% canopy cover has been achieved, not including shrub species, such as titi.

* FNAI and Florida Department of Natural Resources. 1990. Guide to the Natural Communities of Florida. February.

4. The plants are reproducing naturally, either by normal, healthy vegetative spread (in ways that would be normal for each wetland species) or though seedling establishment, growth and survival.

Savannahs and Hydric Pine Flatwoods:

1. Approximately 391 and 838 acres (+/- 20%) shall be restored or enhanced to jurisdictional savannahs and hydric pine flatwoods, respectively, as described in Attachment B-1 and documented by monitoring data and ground and aerial photography.
2. Gallberry, yaupon, wax myrtle, titi, fetterbush, and other woody shrubs shall be no taller than the coppice sprouts that could have arisen from root crowns following the most recent fire.
3. Each sampling quadrat shall contain at least 75 desirable species (Attachment B-7, plant list). Some species not listed may be determined to be desirable for the purpose of this condition by providing a citation and/or third party professional botanist/ecologist determination, and, upon concurrence by MBRT, will thereafter be added to the list.
4. The average cover of graminoids shall be 75% or greater, with no one monitoring quadrat having less than 50% cover, and the collective cover of pioneer *Andropogon* spp. (except *A. liebmannii*) shall not exceed 25% of the graminoids found in each polygon. Additionally, each quadrat shall either attain at least 85% coverage with graminoid species or shall exhibit a clear trend over time of increasing graminoid coverage.
5. The plants are reproducing naturally, either by normal, healthy vegetative spread (in ways that would be normal for each wetland species) or though seedling establishment, growth and survival.
6. To be considered savannahs, basal area shall be less than 40 sq ft/ac, which is expected to be contained in an average of less than 28 desirable trees per acre. Greater canopy coverage would be considered pine flatwoods.
7. For hydric pine flatwoods, the desirable canopy trees are trending toward a basal area of 40 to 70 sq ft/ac, as evidenced by annual increase, which is expected to be contained in an average of about 60 to 112 trees per acre.

Upland Pines:

1. Approximately 545 acres (+/- 20%) shall be restored or enhanced to upland pines, as described in Attachment B-1 and documented by monitoring data and ground and aerial photography.
2. Each sampling quadrat shall contain at least 25 desirable species, fewer species being sufficient in xeric sand pine communities (Attachment B-7, plant list). Some species not listed may be determined to be desirable for the purpose of this condition by providing a citation and/or third party professional botanist/ecologist determination, and, upon concurrence by MBRT, will thereafter be added to the list.
3. The average cover of graminoids shall be at least 30%, with no one monitoring quadrat having less than 20% cover, the lower percent covers being sufficient in xeric sand pine communities. The collective cover of pioneer *Andropogon* spp. (except *A. liebmannii*) shall not exceed 25% of the graminoids found in each polygon. Additionally, each quadrat shall either attain at least 50% coverage with graminoid species or shall exhibit a clear trend over time of increasing graminoid coverage.

4. The plants are reproducing naturally, either by normal, healthy vegetative spread (in ways that would be normal for each wetland species) or though seedling establishment, growth and survival.
5. The desirable canopy trees, including longleaf pines, are trending toward a basal area of 40 to 70 square feet per acre, as evidenced by annual increase, which is expected to be contained in an average of about 60 to 112 trees per acre .

b. Compliance: All of the graded areas in the bank are stabilized. The low water crossing areas are effectively curtailing any channelized drainage from the site and have required no repairs beyond minor maintenance specified in Part V, Section A.2.e for at least three years. The Sponsor is in material compliance with the terms of this MBI/Permit.

c. WRAP Assessment: The Sponsor and the MBRT shall inspect the site and, utilizing the monitoring data and reports, conduct a WRAP analysis to determine that, under the permitted maintenance requirements, all polygons have reached, or are expected to reach and maintain, the criteria required to attain the "with bank" scores, as shown in Attachment B-4, that were used to determine the potential credits for the bank.

d. Nuisance species: Nuisance and exotic species are limited to 5% or less of total cover/acre, out of which exotic species are limited to 1% or less of the total cover/acre.

3. Interim Success Criteria: Prior to achieving the final success criteria described in Section E(2) above, and in order to qualify for the interim credit releases associated with "Performance Standards, Year X" in the release schedule in Section F.1. below, the standards that must be attained are:

a. All communities have reached their respective success criteria or are progressively and clearly trending toward these criteria, as supported by monitoring data and ground and aerial photography and verified by an on-site inspection by the MBRT.

b. At a minimum, the herbaceous ground cover of savannahs and hydric pine flatwoods communities shall attain the following standards:

-Year 1: Monitoring quadrats shall average at least 25 species from the list of desirable species and attain at least 40% cover with non-nuisance vegetation, of which 20% or more shall be graminoid species.
-Year 2: Monitoring quadrats shall average at least 40 species from the list of desirable species and attain at least 50% cover with non-nuisance vegetation, of which 30% or more shall be graminoid species.
-Year 3: Monitoring quadrats shall average at least 50 species from the list of desirable species and attain at least 60% cover with non-nuisance vegetation, of which 40% or more shall be graminoid species.
-Year 4: Monitoring quadrats shall average at least 60 species from the list of desirable species and attain at least 70% cover with non-nuisance vegetation, of which 60% or more shall be graminoid species.

c. At a minimum, the herbaceous ground cover of upland pine communities shall attain the following standards:

-Year 1: Monitoring quadrats shall average at least 10 species from the list of desirable species and attain at least 30% cover (15% sufficient in xeric sand pine communities) with non-nuisance vegetation, of which 20% or more shall be graminoid species.

-Years 2 and 3: Monitoring quadrats shall average at least 15 species from the list of desirable species and attain at least 40% cover (15% sufficient in xeric sand pine communities) with non-nuisance vegetation, of which 25% or more shall be graminoid species.

-Year 4: Monitoring quadrats shall average at least 20 species (15 sufficient in the xeric pine communities) from the list of desirable species and attain at least 50% cover with non-nuisance vegetation, of which 30% or more shall be graminoid species.

d. The bank is in compliance with the terms of this agreement.

F. Schedule of Credit Availability: Upon submittal of all appropriate documentation by the Sponsor, and subsequent approval by the Corps and FDEP, in consultation with the other members of the MBRT, it is agreed that credits will become available for use by the Sponsor or for transfer to a third party in accordance with the following schedule:

1. Credit Release Schedule. Mitigation credits shall be released from the bank or phase thereof when the financial assurance requirements described in this document are in place and a recorded conservation easement has been received by the Corps/FDEP. Mitigation credits will become available for impacts according to the credit release schedules below.

Credit releases shall be supported by documentation provided by the bank sponsor of the implementation of the project in accordance with the plans herein, attainment of the criteria, and upon the approval of the MBRT.

Credit Release Schedule Credit Release Schedule

Release Activity	***Permit Section***	***% Credits Released***	***Credits Phase 1***	***Credits Phase 2***	***Credits Phase 3***
Record Conservation Easement, Financial Assurances	III-D, III-E	10%	20.6	25.7	6.4
Logging, Selective Clearing, Brush Reduction, Exotic Control	III-F	20%	41.2	51.3	12.8
Prescribed Burn	III-G	15%	30.9	38.5	9.6
Hydrologic Improvements	III-H	5%	10.3	12.8	3.2
Performance Standards, Year 1 attained	IV-E(3)	10%	20.6	25.7	6.4
Performance Standards, Year 2 attained	IV-E(3)	10%	20.6	25.7	6.4
Performance Standards, Year 3 attained	IV-E(3)	10%	20.6	25.7	6.4
Performance Standards, Year 4 attained	IV-E(3)	10%	20.6	25.7	6.4
Performance Standards, Final attained	IV-E(2)	10%	20.6	25.7	6.4
Total (526.8 credits)		100%	206.0	256.8	64.0

2. Release procedure. Whenever the bank sponsor believes the mitigation bank or phase thereof has attained the criteria for a credit release, as defined herein, they shall request a determination of achievement and release of credits. The requests for credit releases shall be supported by documentation provided by the Sponsor that the release conditions and criteria have been met. The Sponsor shall afford MBRT members personnel the opportunity to schedule and conduct an on-site inspection of the mitigation area under review to verify that the criteria are met.

FDEP: For the State, this request shall be in the form of a minor modification with an appropriate fee, which shall be reviewed in accordance with Chapter 120, FS. FDEP shall review the documentation, conduct a site visit to determine if the documentation is

representative of on-site conditions, and perform a compliance review of the permit, prior to the issuance or denial of the minor modification to release credits. An updated ledger indicating the additional available credits shall be attached to the minor modification.

Corps: The notice shall be sent by certified mail to the Corps, Panama City and Jacksonville offices. Within 30 days (except for good cause), the Corps shall make a determination that the criteria are met and credits may be released, or, if not, will specifically identify those elements not meeting criteria.

G. Conditions on Debiting:
Corps: A ledger listing available and potential credits shall be maintained by the Sponsor and updated with each transfer of credits. An updated copy of the ledger shall be provided to the Corps following each debit or release.

FDEP: Withdrawal of the mitigation bank credits as compensatory mitigation for wetland impacts shall be accomplished though a minor modification of the FDEP permit. Modification requests for credit withdrawal shall not require a modification fee. Modification requests shall be made in writing to the Office of Submerged Lands and Environmental Resources in Tallahassee. Minor modification requests shall only be submitted by the bank Sponsor. The modification request shall include:

1. a complete list of all permits (or other applicable regulatory actions) that require mitigation credits from the Devil's Swamp Mitigation Bank,
2. the permit number, issue date and wetland resource permit processor/reviewer,
3. an identification of the number of wetland credits required under each of these permits.

Minor modification approvals for credit withdrawal shall be issued only to the bank Sponsor. An updated official credit ledger shall be included by FDEP as an attachment to each minor modification approval for credit withdrawal.

H. Provisions For Uses of the Mitigation Bank Area: The Sponsor shall not:
1. Grant additional easements, right of way, or any other property interest in or to the project areas without the written consent of the Corps, FDEP, and NWFWMD, in consultation with the MBRT.
2. Use or authorize the areas within the Bank for any purpose which interferes with its conservation purposes other than those specified within this MBI/Permit.
3. The Sponsor may continue to allow hunting for legal game on the mitigation bank site in accordance with the attached Hunting Lease Conditions (Attachment B-13), so long as these hunting activities in no way negatively affect the ongoing restoration and rehabilitation effort or any conditions of this MBI/Permit, as determined by the MBRT.

V. MAINTENANCE AND MONITORING OF THE BANK

A. Maintenance Provisions: The Sponsor agrees to perform all necessary work to maintain the Bank consistent with the success criteria and restoration goals established in Sections A(2) and G below and in the Compensatory Mitigation, Fire Management, and Security Plans (Attachments B-1, B-2, and B-3). The Sponsor shall continue with such maintenance activities in perpetuity or until such time as the Sponsor transfers this permit, management responsibilities and the fully funded long-term management trust fund to another entity.

1. Monitoring and Management During Construction. Monitoring during construction activities is intended to ensure compliance with best management practices (BMPs), to minimize wetland impacts and to ensure that there are no turbidity plumes or violations of state water quality standards (Attachment B-1-9). Whenever possible, the Sponsor shall conduct construction and timbering activities in dry conditions such that there is no turbid discharge into open water systems. If activities must be conducted in or near open water systems, the Sponsor shall use turbidity and/or silt screens (Exhibit B-1-9 and Attachment B-9) in accordance with BMPs, and shall monitor the open waters upstream (or out of influence of the activity) and downstream of the activity. If, at any time, turbidity at the downstream site is 29 NTU or greater than at the upstream site, the Sponsor shall discontinue the activity and rectify the problem. It is the responsibility of the Sponsor to rectify any unauthorized wetland impacts or water quality problems found and to inform FDEP within 24 hours by phone, FAX or e-mail (with follow-up written memo) of the cause and remedies implemented.

2. Management for Success and Maintenance. The wetlands are expected to trend to success once the planted pine and other inappropriate species are removed and the hydrology and fire regime are restored. Prior to success determination, monitoring data, observation, professional judgment, and the adaptive management plan will dictate the type and frequency of short-term maintenance activities required to meet and maintain the restoration goals described in the Compensatory Mitigation Plan. Regular bank management and maintenance activities shall include, but are not limited to:

a. Conducting prescribed burns on a 2-3 year schedule in accordance with the goals and procedures described in the Fire Management Plan (Attachment B-2);
b. Annual treatment of vegetation, as necessary, to meet the success criteria in Part IV, Section E;
c. Removing feral/exotic animals that threaten the mitigation activities or success, such as feral hogs;
d. Planting of supplemental wetland vegetation as necessary to achieve and maintain the success criteria in Part IV, Section E;
e. Ensuring stability of all graded areas;
f. Maintaining site security (fencing and signage) and inspecting for poaching or dumping (Attachment B-3);
g. Collecting monitoring data as required in Part V, Section B, and submitting all required reports.

In addition to the regular maintenance activities, the Sponsor is responsible for quickly reporting and repairing any damage to the site, security or equipment as well as repairing any failure of ditch stabilization.

B. Monitoring Provisions: The Sponsor agrees to perform all necessary work to monitor the Bank to demonstrate compliance with the success criteria established in this MBI/Permit. The proposed monitoring plan (Attachment B-8) has been determined to be substantively adequate to evaluate progress toward restoration goals, identify potential roadblocks or impacts that may hamper attaining those goals, provide opportunities for scientific assessment of wetland functions and processes, and ultimately demonstrate that the Bank's success criteria have been met. However, in order to accommodate any changes necessitated by permitting conditions and/or operational restrictions, the Sponsor shall submit, for MBRT written approval, a final monitoring plan 60 days prior to conducting monitoring associated with the determination of success for this permit. The MBRT shall complete such approval within 60 days of receipt of a written submittal of the final monitoring plan. This plan shall include the following attributes:

1. a figure showing all sampling and photographic locations;
2. a table indicating all sampling and photographic frequencies and/or dates;
3. a detailed description of all sampling methodologies to be utilized;
4. samples of field and data tables;
5. photographic information.

In addition, this monitoring plan shall include a section detailing the proposed analyses and reporting that will be conducted utilizing the collected data. This section shall include:

6. proposed reporting format;
7. sample data summary tables and graphs;
8. proposed analytical assessments and discussion contents; and
9. a success/progress assessment.

C. Reports: The Sponsor shall submit to the MBRT the following reports:

1. Progress Reports. Beginning after permit issuance until final success determination of the bank or phase thereof, the Sponsor shall submit semi-annual progress reports, by January 1 and June 1 of each year, containing the following information regarding the bank or phase:

a. Date permitted activities were begun or are anticipated to begin;
b. Brief description and extent of work completed since the previous report or since permit was issued;
c. Copies of permit drawings indicating areas where work has been completed;
d. A description of problems encountered and solutions undertaken;
e. A brief description of the work and/or site management the Sponsor anticipates commencing, continuing or completing in the next six months; and
f. Site management undertaken, including type of management and dates each type was undertaken.

2. Annual Reports. The Annual Report is a summary of the annual monitoring for success and an assessment of the degree to which the bank is attaining success. This report shall be submitted by January 1 each year and shall be prepared according to the format required and approved in accordance with Part V, Section B. This report shall be submitted annually until the Bank site or phase thereof has been determined to be successful. The Sponsor may synchronize the reporting required in Part V, Section C(1), such that alternate progress reports may be included as a section in the Annual Report. The Annual Report that requests a determination of final success in accordance with Part V, Section E, shall also include the following information:

a. a summary of all previous Annual Reports, including, as appropriate, timeline graphics;
b. a list of each success criterion and documentation of how and when it was attained;
c. a notation of problems encountered in attaining the success criteria and how the problems were solved, and a notation of any exceptionally successful management activity;
d. a summary of compliance and/or enforcement submittals or actions during the implementation of the bank; and
e. any other information helpful for the continued success of the mitigation.

D. Accounting Procedure: In order to track credit releases and withdrawals, a ledger shall be kept by both the Sponsor and FDEP indicating all potential, released, withdrawn and available credits. The format for the ledger, indicating potential credits, is attached as Attachment B-6.

E. Adaptive Management: The MBRT accepts that all ecological restoration projects are site specific, that multiple endpoints are possible owing to the stochastic nature inherent in ecological processes, and that human activities offsite and beyond the control of the mitigation bank may influence the course of restoration. For these reasons, the MBRT may, in consultation with the Sponsor, change the restoration strategy, modify the objectives, and adjust the performance standards and monitoring protocols at any time prior to full project release. Such changes must be made in writing and must qualify as adaptive management toward the ultimate restoration goals in response to site-specific conditions.

F. Contingency Plans/Remedial Actions: In the event the Bank or a specific phase of the Bank fails to achieve the success criteria specified in Part IV, Section E, of this MBI/Permit, the Sponsor shall develop necessary contingency plans and implement appropriate remedial actions for the Bank or that phase in coordination with the MBRT. In the event the Sponsor fails to implement necessary remedial actions in a timely manner after notification by the Corps or FDEP of necessary remedial action to address any failure in meeting the success criteria, the authorizing agency(ies) will notify the Sponsor and recommend appropriate remedial actions.

If the authorizing agency(ies) determines that the Bank is selling credits prior to their release or are not in compliance with the terms of this agreement, debiting of credits will immediately cease, and the authorizing agency(ies), in consultation with the MBRT and the Sponsor, will determine what remedial actions are necessary to correct the situation. As determined by the FDEP or the Chair in coordination with the MBRT and the Sponsor, if conditions at the bank site do not improve or continue to deteriorate within a reasonable time frame from the date that the need for remediation was first identified in writing to the Sponsor by FDEP or the Chair of the MBRT, the financial assurance funds required in Part III, Section D, shall be transferred to the fund manager to undertake corrective measures at the project site.

G. Long-Term Management: After the banking operations are complete and the bank has been determined to be fully successful according to Part V, Section E, the Sponsor shall initiate the long-term management responsibilities as follows:

1. Quarterly inspection of the property for signs of trespassing, poaching or dumping and to ensure that the structures and security features are in good working order;
2. Immediate reporting and timely maintenance, restoration or repair of any damaged equipment, systems or property identified in the quarterly inspection;
3. Conducting exotic and nuisance plant control, as necessary, to maintain success criteria. At no time shall the cover of these species exceed 5% cover/acre prior to remedial eradication activities;
4. Conducting prescribed burns at a frequency and season optimal to promote desirable vegetation and wildlife, as specified in the mitigation plan;
5. Submitting an annual end-of-the-year report/letter summarizing the activities conducted during the year and describing the current conditions of the property.

VI. RESPONSIBILITIES OF THE MBRT

A. The agencies represented on the MBRT agree to provide appropriate oversight in carrying out provisions of this MBI/Permit.

B. The agencies represented on the MBRT agree to review and provide timely comments on all project plans, monitoring reports, credit review reports, contingency plans, and necessary permits for the Bank in a timely manner. Comments on the monitoring reports and credit review reports will be reviewed within 30 calendar days from the date of complete submittal, or, for minor modification requests, in accordance with Chapter 120 F.S. guidelines, except for good cause.

C. The agencies represented on the MBRT agree to review and confirm reports on evaluation of success criteria prior to approving credits within each phase of the bank.

D. The agencies represented on the MBRT shall conduct compliance inspections, as necessary, as determined by the authorizing agencies in consultation with the Sponsor, to verify credits available in the mitigation bank, recommend corrective measures (if any), until the terms and conditions of this MBI/Permit have been determined to be fully satisfied.

VII. OTHER CORPS PROVISIONS

A. Force Majeure: The sponsor will not be responsible for bank failure that is attributed to natural catastrophes such as flood, drought, disease, regional pest infestation, etc., that the MBRT, acting through the Chair, determine is beyond the control of the Sponsor to prevent or mitigate.

B. Dispute Resolution: Resolution of disputes about application of this Banking Instrument shall be in accordance with those stated in the Federal Guidance for the Establishment, Use and Operation of Mitigation Banks (60 F.R. 58605 et seq., November 28, 1995).

C. Validity, Modification, and Termination of the Banking Instrument: This Banking Instrument will become valid on the date of the last signatory's signature. This Banking Instrument may be amended or modified with the written approval of all signatory parties. Any of the MBRT members may terminate their participation upon written notification to all signatory parties. Participation of the MBRT members will terminate 15 days after written notification.

D. Specific Language of Banking Instrument Shall Be Controlling: To the extent that specific language in this document changes, modifies, or deletes terms and conditions contained in those documents that are incorporated into the Banking Instrument by reference, and that are not legally binding, the specific language within the Banking Instrument shall be controlling.

VIII. ADDITIONAL FDEP REQUIREMENTS

A. Commencement requirements. At least 48 hours prior to commencement of work authorized by this permit, the Sponsor shall notify FDEP of Environmental Protection, Office of Submerged Lands and Environmental Resources, MS 2500, 2600 Blair Stone Road, Tallahassee, Florida, 32399, and the Submerged Lands and Environmental Resources Compliance and Enforcement Section, Suite 308, Northwest District Office, 160 Governmental Center, Pensacola, Florida 32502-5794, in writing of this commencement.

B. Notices. Unless otherwise specified, all reports and other information required for this permit shall be submitted to the Florida FDEP of Environmental Protection, Office of Submerged Lands and Environmental Resources, MS 2500, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

C. The Sponsor shall not commence any construction activities authorized by this permit until the following requirements are completed and FDEP has been notified in writing:

1. A copy of the recorded clerk-of-the-court certified Conservation Easement has been received by FDEP as required in Part III, Section E;

2. A Qualified Mitigation Supervisor is retained as required in Part VIII, Section E; and

3. Proof of financial responsibility is obtained as required in Part III, Section D.

D. This mitigation bank permit shall automatically expire five years from the date of issuance if the Sponsor has not recorded a conservation easement in accordance with the permit and Rule 62-342.750 (2) F.A.C. Except as provided above, this mitigation bank permit shall be perpetual unless revoked or modified.

E. Project Oversight. Prior to commencement of any construction activities, the Sponsor shall retain a Qualified Mitigation Supervisor (QMS) (a person or persons) to oversee all aspects of mitigation bank site implementation, management, monitoring, and corrective actions in this permit until final success criteria are met.

1. The QMS shall have the responsibility to ensure that the mitigation bank work is conducted in accordance with the permit.

2. Within 30 days of issuance of this permit, the Sponsor shall submit the name of the QMS retained to oversee the mitigation work and provide supporting documentation demonstrating that the QMS is qualified to oversee this work. FDEP must approve the QMS prior to commencement of the mitigation bank work. FDEP shall complete such approval within 30 days of receipt of a written request from the Sponsor for QMS approval.

3. Within 30 days of the discharge of any approved QMS, the Sponsor shall submit the name and supporting documentation of a new QMS to FDEP for its review and approval.

4. The Sponsor shall have the approved qualified QMS review the conditions of this permit that pertain to environmental improvement. The purpose of this review is to ascertain whether any criteria need to be modified to ensure ecological success. If FDEP concurs that any proposed modifications would improve the likelihood of compensatory mitigation success, these changes shall be incorporated into this permit as a minor modification.

Signature Page

Date: 6/29/04

By: John R Hall
John R. Hall
Chief, Regulatory Division
U.S. Army Corps of Engineers, Jacksonville District, Chair

Date: _____

By: _____
Ronald Mikulak
Section Chief, Wetlands Regulatory Section
U.S. Environmental Protection Agency, Region IV

Date: _____

By: _____
Gail A. Carmody
Field Office Supervisor
U.S. Fish and Wildlife Service, Panama City

Date: _____

By: _____
Robert M. Rhodes
Executive Vice President
The St Joe Company, Sponsor

This Mitigation Banking Instrument is in effect commencing on _____.

Signature Page

Date: _____

By: _____
John R. Hall
Chief, Regulatory Division
U.S. Army Corps of Engineers, Jacksonville District, Chair

Date: _____

By: _____
Ronald Mikulak
Section Chief, Wetlands Regulatory Section
U.S. Environmental Protection Agency, Region IV

Date: _____

By: _____
Gail A. Carmody
Field Office Supervisor
U.S. Fish and Wildlife Service, Panama City

Date: _____

By: Robert M. Rhodes
Robert M. Rhodes
Executive Vice President
The St Joe Company, Sponsor

This Mitigation Banking Instrument is in effect commencing on 6/30/04*.

note: Mr. Rhodes dated signature in wrong place. MB

Signature Page

Date:_____

By: _____
John R. Hall
Chief, Regulatory Division
U.S. Army Corps of Engineers, Jacksonville District, Chair

Date: 7/1/04

By: _____
Ronald Mikulak
Section Chief, Wetlands Regulatory Section
U.S. Environmental Protection Agency, Region IV

Date: _____

By: _____
Gail A. Carmody
Field Office Supervisor
U.S. Fish and Wildlife Service, Panama City

Date: _____

By: _____
Robert M. Rhodes
Executive Vice President
The St Joe Company, Sponsor

This Mitigation Banking Instrument is in effect commencing on _____.

Signature Page

Date: _____

By: _____
John R. Hall
Chief, Regulatory Division
U.S. Army Corps of Engineers, Jacksonville District, Chair

Date: _____

By: _____
Ronald Mikulak
Section Chief, Wetlands Regulatory Section
U.S. Environmental Protection Agency, Region IV

Date: 6/30/04

By: Gail A. Carmody
Gail A. Carmody
Field Office Supervisor
U.S. Fish and Wildlife Service, Panama City

Date: _____

By: _____
Robert M. Rhodes
Executive Vice President
The St Joe Company, Sponsor

This Mitigation Banking Instrument is in effect commencing on _____.

Mitigation Plan Documentation
Devils Swamp Mitigation Bank

Table of Contents

ATTACHMENT B-1 – COMPENSATORY MITIGATION PLAN

1. Introduction

The St. Joe Company (SJC) wishes to restore and enhance approximately 3,049 acres of wetlands and uplands that are primarily in silviculture within a portion of their property in Bay and Walton Counties, Florida. The proposed project, known as the Devil's Swamp Mitigation Bank (herein referred to as the "DSMB"), is located north of the Intracoastal Waterway (ICW), south of Steele Field Road, about 5 miles east of Choctawhatchee Bay, and about 7.5 miles west of State Road (SR) 79 (Exhibit B-1-1).

The mitigation plan contained herein provides technical documentation in support of issuance of a U.S. Army Corps of Engineers (Corps) Section 404 Regional General Permit (RGP) and a Florida Department of Environmental Protection (FDEP) Ecosystem Management Agreement (EMA) for the West Bay to East Walton RGP/EMA Project.

2. Goals and Objectives

The objective of this mitigation plan is to compensate for the loss of wetland functions within the Devil's Swamp basin that are associated with the RGP/EMA Project. This project may result in the permanent loss of up to 299 acres of low quality and about 26 acres of high quality Corps/FDEP-jurisdictional areas, representing only 20% and less than 3% of the low and high quality jurisdictional areas, respectively, in the RGP/EMA area.

The majority of the proposed impacts in the RGP/EMA project area will be to hydric pine plantation and wetlands that have been disturbed by silviculture and silviculture-related activities such as bedding, fire suppression, ditching, and road building and maintenance. These wetlands are considered to be low quality wetlands, as defined in the RGP/EMA. About 92% of possible impacts to wetlands would be to these low quality wetlands that have been disturbed by silvicultural or other anthropogenic activities.

The remaining proposed impacts in the RGP/EMA project area will be to relatively undisturbed wetlands. These wetlands have not been planted in pine as part of silvicultural or other anthropogenic activities unlike the low quality wetlands. These unplanted wetland types include titi swamps, mixed forested wetlands, cypress swamps, and stream swamps, and are considered high quality wetlands. About 8% of the wetland impacts would be to these high quality wetlands.

Functions that would be lost due to the development of disturbed on-site wetlands would be primarily to water quality and quantity, wildlife habitat, and flood storage capacity provided by the impact sites.

The ecological restoration project at the DSMB is designed to restore the pre-pine plantation/historical communities to the project site. Specifically, it entails the restoration[1] of a total of a mosaic of natural communitities. The proposed ecological goals for fulfilling the mission at the Devils Swamp site are threefold:

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[1] Terminology follows the Corps of Engineers' Regulatory Guidance Letter for Wetlands And Interagency National Wetlands Mitigation Action Plan, released 12/27/02. Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into: a.) Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Re-establishment results in rebuilding a former wetland and results in a gain in wetland acres; and b.) Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres. Under FDEP's rules "Re-establishment" equals "Creation" and "Rehabilitation" equals "Enhancement."

1. Recreate the landscape mosaic as it appears on 1949 aerial photographs. The 1949 landscape was that which existed immediately preceding conversion activities.
2. Re-establish the species composition and structure of the 1949 plant communities. The communities will resemble reference communities in the coastal counties of panhandle Florida on similar soils and at similar elevations above sea level with respect to life form distribution, vertical stratification, overall species abundance, and patterns of dominance.
3. Within the practical limits of future management requirements, rehabilitation efforts will return natural patterns of surface run-off by filling ditches and erosion areas, eliminating roads, installing equalizer culverts under and creating hardened low water crossings in permanent roads, and will implement a "natural" prescribed fire regime at the site.

The project site contains hydric pine flatwood, savannah,mixed forested wetland, cypress swamp, mesic pine flatwood and sandhill communities, most of which require rehabilitation.

3. Existing Conditions

3.1 Landscape Setting

The 3,049-acre DSMB is entirely within property owned by SJC (Exhibit B-1-1). Surrounding and nearby land uses include silviculture, conservation, residential, and industrial (Steele Field Road landfill on Steele Field Road in Bay County). The DSMB is located north of the Intracoastal Waterway (ICW), south of Steele Field Road, about 5 miles east of Choctawhatchee Bay, and about 7.5 miles west of State Road (SR) 79 (Exhibit B-1-1).

The DSMB is located within four drainage basins: Roaring Creek, Direct Runoff to Bay, Tenmile Branch, and Westbay Creek, which are within the Choctawhatchee Bay watershed (FGDL 2003; Fernald and Purdum 1998). The Choctawhatchee Bay watershed consists of approximately 5,349 square miles; the uplands primarily consist of mixed hardwood/pine forest and longleaf pine/xerophytic oak forests. Land is primarily used for silviculture, with agriculture more extensive in the northern portion of the watershed. Erosion/sedimentation are main concerns throughout the watershed; animal waste, urban stormwater, and septic tanks also are cited as problematic (FDEP 1999).

3.2 Topography and Hydrology

Topography across the DSMB varies from about 35 to 40 feet NGVD over the majority of the site and falls to about 20 feet NGVD in the northwestern connection to the NWFWMD lands. Natural drainage across the property flows north toward the Choctawhatchee River (Exhibit B-1-3). Most of the site has relatively gentle topography, except in the northwest corner where it can be sudden and steep from sandhill to cypress dome or stream. In the majority of the site the wetlands are like shallow, rimmed platters with low rises between deep wetland systems.

Streams on site are typically shallow, sandy bottomed, blackwater systems with side channels that intermittently contain flowing water. Streams widths vary from about 4 to 25 feet and bank heights vary from about 0 to 10 feet. On-site streams flow through titi swamp (614) and mixed forested wetland (630); descriptions of these vegetative communities follow. Very little to no emergent or aquatic vegetation was observed in on-site blackwater streams.

3.3 Soils

According to the Natural Resources Conservation Service (NRCS) soil surveys for Bay and Walton Counties, Florida (USDA 1981, 1984), eight soil units in Bay County and eight soil units in Walton County are present on the property (Table B-1). A general description of each soil unit present on the site is provided in. Locations of soil units are depicted on Exhibit B-1-4.

Table B-1. USDA NRCS Soil Types within the Devil's Swamp Mitigation Bank

Bay County

Soil Number	Soil Type	Hydric or Not Hydric
1	Albany Sand, 0 to 2 percent slopes	Not Hydric
13	Leon Sand	Hydric - Not Primary
25	Hurricane Sand	Not Hydric
28	Allanton Sand	Hydric – Not Primary
29	Rutlege Sand	Hydric – Primary
30	Pottsburg Sand	Hydric - Not Primary
50	Pickney Fine Sand	Hydric – Primary
51	Rutlege-Pamlico Complex	Hydric – Primary

Walton County

Soil Number	Soil Type	Hydric or Not Hydric
8	Dorovan-Pamlico Association, Frequently Flooded	Hydric – Primary
12	Foxworth Sand, 0 to 5 % Slopes	Not Hydric
17	Lakeland Sand, 0 to 5 % Slopes	Not Hydric
21	Leon Sand	Hydric - Not Primary
27	Rutlege Fine Sand	Hydric - Not Primary
57	Hurricane Sand, 0 to 5 % Slopes	Not Hydric
63	Pickney Sand, Depressional	Hydric – Primary
64	Pamlico Muck	Hydric – Primary

Bay County

Albany Sand: This somewhat poorly drained, nearly level sandy soil occurs along defined drainageways and on areas leading to lower wet areas. Natural vegetation consists of longleaf and slash pines; blackjack, post, and blue oaks; gallberry; wax myrtle; and wiregrass. This soil has a water table at a depth of 18 to 30 inches for 1 month to 3 months during most years.

Leon Sand: This poorly drained, nearly level soil occurs in pine flatwoods areas where the natural vegetation consists of a canopy of longleaf, pond, and slash pine; water oak and an understory of wax myrtle, saw palmetto, running oak, fetterbush, gallberry, and wiregrass. The unit has a water table within a depth of 10 inches for 1 month to 4 months and at a depth of 10 to 40 inches for about 9 months in most years.

Hurricane Sand: This somewhat poorly drained, nearly level soil occurs between the uplands and the lower wet flatwoods. Natural vegetation consists of slash and longleaf pines; bluejack, turkey, and post oaks; native shrubs; saw palmetto; gallberry; broomsedge; bluestem; and wiregrass. This soil has a water table at a depth of 40 to 60 inches for 3 to 6 months in most years and at a depth of 20 to 40 inches for 1 to 3 months in some years.

Allanton Sand: This poorly drained soil is on nearly level or slightly depressional areas along poorly defined drainageways. Natural vegetation consists of black titi, sweetbay, black gum, cypress, scattered slash and longleaf pines, gallberry, wax myrtle, and wiregrass. This soil has a water table at or near the surface for 4 to 6 months during most years, and most low-lying areas and drainageways are flooded for 4 to 6 months annually. The NRCS Ecological Community typical for this soil type is swamp hardwoods.

Rutlege Sand: This very poorly drained soil is on nearly level or slightly depressional areas along drainageways. The natural vegetation is black titi, sweetbay, black gum, cypress, and scattered slash pine. The understory is gallberry, wax myrtle, wiregrass, and various reeds and sedges. The Rutlege sand has a water table at or near the surface for 4 to 6 months during most years and is under ponded conditions for 4 to 6 months annually.

Pottsburg Sand: This poorly drained soil is on nearly level, low-lying areas of the flatwoods. The natural vegetation consists of sweetbay, black titi, black gum, water oak, scattered slash and longleaf pine, gallberry, sweet gallberry, saw palmetto, wax myrtle, and wiregrass. The soil unit has a water table within a depth of 10 inches for 4 to 6 months during most years. Some low-lying inclusions are ponded for 2 to 6 months annually.

Pickney Fine Sand: This very poorly drained soil is on nearly level, broad flats and slightly depressional areas along poorly defined drainageways. Natural vegetation consists of sweetbay, black gum, cypress, black titi, scattered slash and longleaf pine, sweet gallberry, wax myrtle, and wiregrass. This soil has a water table at or near the surface for 4 to 6 months during most years, and most low-lying areas are ponded for 3 to 6 months after flooding during rainy seasons.

Rutlege-Pamlico Complex: This nearly level, very poorly drained, frequently flooded soil complex occurs mainly in drainageways and a few wide depressional areas. The natural vegetation consists of sweetbay, black gum, red maple, sweet gum, slash pine, black titi, wax myrtle, sweet azalea, sweet gallberry, and smilax species. The Rutlege soils have a water table near the surface for 4 to 6 months in most years and may be ponded after flooding. The Pamlico soils may be ponded for 4 to 6 months in most years after flooding, and when the soils are not flooded, the water table is within 20 inches of the surface most of the time. Pantego soils (10% of unit) have a water table within 10 inches of the surface for 2 to 4 months during most years and at a depth of 40 inches for 3 to 6 months.

Walton County

Dorovan-Pamlico Association, frequently flooded: This complex of nearly level, very poorly drained soils occurs mainly in large, hardwood swamps and floodplains of major drainageways. Dorovan soils occur in the middle of the drainageways and Pamlico on the outer parts. Natural vegetation is mostly bald cypress, black gum, sweetbay, white titi, scattered slash pine, bracken fern, greenbrier, muscadine vine, and wax myrtle. The Dorovan soil has a high water table near or above the surface for most of the year and floods more often than once every two years for periods of more than 1 month. The Pamlico soil has a high water table near or above the surface for most of the year and floods more often than once every two years for periods of 7 days to 1 month.

Foxworth Sand, 0 to 5 % Slopes: This moderately well drained and nearly level to gently sloping soil occurs on uplands and in elevated areas in flatwoods. Natural vegetation is mostly slash pine, loblolly pine, longleaf pine, live oak, post oak, bluejack oak, turkey oak, laurel oak, red oak, water oak, huckleberry, gallberry, and dogwood. This soil has a water table that fluctuates between depths of 40 and 72 inches for 1 to 3 months during most years and between 30 and 40 inches for less than 1 month in some years.

Lakeland Sand, 0 to 5 % Slopes: This excessively drained and nearly level to gently sloping soil occurs on broad ridgetops on uplands. Natural vegetation is mostly sand pine or longleaf pine, live oak, turkey oak, saw palmetto, wiregrass, bluestem grasses, and reindeer moss. This soil does not have a high water table within a depth of 6 feet.

Leon Sand: This soil consists of deep, poorly drained, moderately to moderately rapidly permeable soils that formed in thick, sandy marine sediment in broad, nearly level areas of the flatwoods. Natural vegetation is mostly longleaf pine, loblolly pine, slash pine, water oak, and wax myrtle. The water table is at a depth of 10 to 40 inches for more than 9 months during most years. During periods of high rainfall, the water table is less than 10 inches deep; the water table recedes to a depth of more than 40 inches during extended dry periods.

Rutlege Fine Sand: This unit consists of deep, very poorly drained, rapidly permeable soils that formed in thick, sandy sediment on marine terraces. It occurs in shallow depressions and on stream or creek floodplains and on flats. Natural vegetation consists of hardwoods, pond pines or slash and loblolly pines, huckleberry, wax myrtle, greenbriers, wiregrass, and sedges These soils are saturated in winter and early spring. The water table is at or near the surface for long periods, and shallow ponding is common.

Hurricane Sand, 0 to 5 % Slopes: This somewhat poorly drained and nearly level soil occurs on slightly elevated areas in flatwoods. Natural vegetation consists of slash pine, loblolly pine, longleaf pine, bluejack oak, turkey oak, post oak, yaupon, saw palmetto, gallberry, broomsedge, and wiregrass. This soil has a high water table within 20 to 40 inches of the soil surface for 3 to 6 months in most years and below a depth of 40 inches for the rest of the year

Pickney Sand, Depressional: This soil consists of deep, very poorly drained, rapidly permeable, sandy soils that formed in marine sediment on nearly level drainageways and in depressions on flatwoods. Natural vegetation consists of hardwoods, swamp cyrilla, bald cypress, yaupon, pond pines, slash pine, loblolly pine, greenbriers, wiregrass, sweet gallberry, and sedges. This soil is ponded for more than 4 months annually.

Pamlico Muck: This poorly drained and nearly level soil occurs in depressional areas of the flatwoods. Natural vegetation consists of swamp cyrilla, greenbrier, bald cypress, pond pine, and sweetbay. This soil has a water table up to 2 feet above the surface for 6 months in most years.

3.4 Vegetation Associations/Land Uses

The proposed mitigation bank is primarily planted slash or sand pine plantation, comprising approximately 54.4% and 4.5% of the site, respectively, of various ages from about 5 years to 25 years. Some of the older plantings have recently been thinned every third row. Much of the site was furrowed during planting, and furrow depths range from about 6 to 15 inches, typically 6 to 8 inches deep. The shrub stratum varies from open to very dense thickets of hydric shrubs, primarily titi (*Cliftonia monophylla*). Due to fire suppression, shrub percent cover is much higher than would naturally occur in the historical natural communities. There has been no infrastructure constructed on the site other than logging roads and ditches to support silviculture.

Other vegetative communities include titi swamp, shrub swamp, and cypress swamp (Table B-2 and Exhibit B-1-5). The planted pines occur primarily in historical hydric and mesic pine flatwoods, xeric sandhills, and savannah. Habitats on the property vary in quality from excellent to poor depending on the effects of management for pine silviculture. The degree of infestation by exotic or nuisance plant species is negligible.

The vegetative associations in the DSMB are the same as those in the RGP/EMA area.

Table B-2. Devil's Swamp Mitigation Bank Existing Land Use Characteristics

FLUCFCS Code	FLUCFCS Description	Total Acres	Acres of Pre-Restoration Wetlands	Percent of Pre-Restoration Wetlands	Percent of Pre-Restoration Site
441	Upland Pine Plantation	1,166.7	0.0	0.0	38.3
441H	Hydric Pine Plantation	627.0	627.0	34.2	20.6
533	Reservoir	4.8	4.8	0.3	0.2
614	Titi Swamp	713.4	713.4	38.9	23.4
621	Cypress Swamp	12.2	12.2	0.7	0.4
632	Shrub Swamp	477.4	477.4	26.0	15.7
814	Roads	47.6	0.0	0.0	1.6
TOTAL		**3,049.2**	1834.8	100.0	100.0

Fire suppression has allowed the prolific colonization of woody plants in the communities of this ecosystem. Herbaceous plants are suppressed or have been eliminated by woody competition. The demise of herbaceous vegetation was intensified by shade and organic litter accumulation contributed by planted pines and shrub debris. The most abundant woody colonizers were inkberry (*Ilex glabra*), large gallberry (*Ilex coriacea*), yaupon (*Ilex vomitoria*), fetterbush (*Lyonia lucida*), bamboo-vine (*Smilax laurifolia*), and in wetter areas, black titi (*Cliftonia monophylla*), swamp bay (*Persea palustris*), sweet bay (*Magnolia virginiana*), and swamp titi (*Cyrilla*

racemiflora). After planted slash pines were established and fires suppressed, some sites developed invasive understory vegetation of shrub thickets or, on wetter soils, titi thickets. Numerous young slash pines have appeared from seeds produced by the planted slash pines.

Water cover, depth, and flow direction across the site have been affected by activities related to silviculture – construction of ditches and logging roads, bedding and furrowing, and skidder trails – and by the ICW and spoil areas and reservoirs associated with and located along the ICW. In addition, dense pine plantings and shrub cover have undoubtedly increased evapotranspiration.

3.4.1 Pine Plantation (441)

This FLUCFCS classification was used to indicate areas of planted sand pines and mesic slash pines as well as inclusions within these planted pines of xeric longleaf pine-turkey oak communities.

Planted Sand Pine

The canopy is dense *Pinus clausa*. When sand pines mature, understory and ground cover species typically are shaded out. Subcanopy species include *Quercus chapmanii, Quercus laevis, Quercus geminata*; the understory/shrub stratum contains *Ilex vomitoria, Serenoa repens,* and *Vaccinium arboreum*; and the ground cover contains *Andropogon virginicus, Aristida stricta, A. purpurescens, Berlandiera pumila, Carex sp., Chrysoma pauciflosculosa, Crotalaria rotundifolia, Croton argyranthemus, Eriogonum tomentosa, Eupatorium compositifolium, Euphorbia inundata, Lespedeza spp., Liatris gracilis, Licania michauxii, Opuntia humistrata, Panicum virgatum, Quercus incana, Q. pumila, Schrankia microphylla, Smilax pumila,* and *Yucca flaccida*.

Wildlife observations include one abandoned gopher tortoise (*Gopherus polyphemus*) burrow.

Mesic Planted Slash Pine

The canopy is planted slash pine (*Pinus elliottii*) that ranges in ages from about 5 to 20 years old. Pine rows were approximately 3 to 5 meters apart and furrows were about 6 to 12 inches deep. The mesic pine plantations generally support facultative to upland species as the dominant species in the understory/shrub and ground cover stratums. However, fire suppression has encouraged the spread of typically hydric shrub species, especially titi (Cliftonia monophylla and Cyrilla racemiflora), uphill and into mesic conditions.

Slash pines have been planted in many former habitat types and evidence of these habitats frequently shows in the remnant shrub and ground cover species. Throughout the site, areas of planted slash pine grade into other habitat types, such as planted sand pine and xeric uplands, hydric planted slash pine, shrub swamps, cypress swamps, mixed forested wetland, and streams. Within these ecotones, the planted slash pines become less dominant to not present. Small areas of these other habitat types also occur encompassed within larger extents of planted pine, but within which planted slash pines are not dominant or not present. Slash pine also naturally occurs in many of the on-site unplanted wet systems.

The shrub stratum in mesic pine plantations typically is dominated by *Ilex glabra, Lyonia lucida, Myrica cerifera,* and *Serenoa repens*, and may also contain *Acer rubrum, Cliftonia monophylla, Cyrilla racemiflora, Gaylussacia mosieri, Ilex coriacea, I. myrtifolia, Quercus nigra, Vaccinium corymbosum elliottii*. Where planting was recent, a shrub stratum is not yet present.

The ground cover under pines 10 or 12 years old and older is often sparse because of thick pine duff and shading. Ground cover species observed in on-site mesic pine plantations include *Andropogon capillipes, A. glomeratus, Aristida stricta, Baptisia lanceolata, Carphephorus odoratissimus, Gaylussacia dumosa, G. frondosa, G. mosieri, Licania michauxii, Pteridium aquilinum, Quercus minima, Smilax auriculata, S. pumila, Vaccinium corymbosum, V. darrowii,* and *Vitis rotundifolia*.

Wildlife species observed within this area include cedar waxwing (*Bombycilla cedrorum*), cricket frog (*Acris gryllus*), and eastern towhee (*Pipilo erythrophthalmus*).

Longleaf Pine-Turkey Oak Inclusions

These xeric areas support a canopy and subcanopy of *P. palustris, Quercus laevis,* and *Pinus clausa*. The understory/ground cover typically consists of *Aristida stricta, Baptisia lanceolata, Mitchella repens, Pityopsis graminifolia, Polygala lutea, P. nana, Pteridium aquilinum, Quercus incana, Rubus cuneifolius, Serenoa repens, Smilax auriculata, S. pumila*, and *Yucca filamentosa*.

Wildlife observed includes pocket gopher (*Geomys floridana*) burrows.

3.4.2 Slash Pine Plantation – Hydric (441H)

The canopy is planted slash pine that ranges in ages from about 5 to 20 years old (about 10 to 40 feet). Pine rows were approximately 3 to 5 meters apart and furrows were about 6 to 12 inches deep. *Taxodium ascendens* and *Magnolia virginiana* were sometimes present in the subcanopy.

The shrub stratum in hydric pine plantations typically is dominated by *Cliftonia monophylla, Cyrilla racemiflora, Hypericum fasciculatum, Ilex myrtifolia, Lyonia lucida, Myrica cerifera*; and may also contain *Clethra alnifolia, Gaylussacia mosieri, Hypericum chapmanii, Ilex coriacea, I. glabra, Magnolia virginiana, Persea palustris, Pieris phillyreifolia, Quercus nigra, Serenoa repens (often scrawny), Taxodium ascendens, Vaccinium corymbosum,* and *V. elliottii*. Where planting was recent, a shrub stratum was nonexistent.

The ground cover under pines 10 or 12 years old and older is often sparse because of thick pine duff and shading. Ground cover species observed in on-site hydric pine plantations include *Andropogon glomeratus, Aristida stricta, Drosera capillaris, Eriocaulon compressum, Lachnanthes caroliniana, Lophiola americana, Osmunda cinnamomea, Polygala lutea, Rhexia alifanus, Rhexia sp., Sarracenia flava, S. leucophylla, S. psittacina, Sphagnum sp., Sporobolus floridanus, Utricularia purpurea, Woodwardia virginiana, Xyris caroliniana,* and *Xyris sp.*

Wildlife species included common yellowthroat (*Geothlypis trichas*), numerous crayfish burrows, green tree frog (*Hyla cinerea*), pinewoods tree frog (*H. femoralis*), and cottonmouth (*Agkistrodon piscivorus*).

3.4.3 Reservoir (533)

One large impoundment created by the U.S. Army Corps of Engineers (Corps) adjacent to the ICW is within the DSMB. Emergent and floating vegetation within this impoundment includes *Nymphaea* spp., *Panicum repens* (adjacent to the berm), *Utricularia* spp., and *Juncus* spp. The shallower areas contain *Taxodium ascendens* and *Hypericum fasciculatum*.

Wildlife observed include pig frog (*Rana grylio*), cricket frog, great crested flycatcher (*Myiarchus crinitus*), anhinga (*Anhinga anhinga*), red bellied woodpecker (*Melanerpes carolinus*), belted kingfisher (*Ceryle alcyon*), and great blue heron (*Ardea herodias*).

3.4.4 Titi Swamp (614)

Titi swamps are dominated by Cliftonia monophylla and Cyrilla racemiflora. Other subdominant canopy or subcanopy species are *Magnolia virginiana, Pinus elliottii,* and *Taxodium ascendens.* Titi swamps also contain *Ilex coriacea, I. myrtifolia, Lyonia lucida, Nyssa biflora, and Persea palustris in the subcanopy and shrub stratums, and Aristida spp., Drosera capillaris, Drosera tracyi, Lachnanthes caroliniana, Lycopodium spp., Sagittaria latifolia, Sarracenia leucophylla, Sarracenia purpurea, Sarracenia psittacina, Sphagnum spp., Woodwardia virginiana*, and *Xyris spp*. in the ground cover.

Some of the titi swamps are in seepage areas. Titi swamps are frequently intermixed with and/or grade into shrub swamps (632; see below), hydric slash pine plantations (441H), mixed forested wetlands (630), stream floodplains (510), and cypress swamps (621). Water depths in titi swamps varies greatly from no water to about 1 foot.

Wildlife observed include pygmy rattlesnake (*Sisturus miliarius*), pinewoods tree frog, gray catbird (*Dumetella carolinensis*), white tailed deer (*Odocoileus virginianus*), Carolina chickadee (*Poecile carolinensis*), hooded warbler (*Wilsonia citrina*), great crested flycatcher, bronze frog (*Rana clamitans*), cricket frog, pine warbler (*Dendroica pinus*), mourning dove (*Zanaida macroura*), prothonotary warbler (*Prothonotaria citrea*), northern cardinal, and eastern towhee.

3.4.5 Cypress Swamp (621)

The cypress swamps within the boundaries of the site are relatively deep-water cypress domes with *Ilex myrtifolia*. Water depths range from 0 to greater than 4 feet in cypress domes and swamps. Many of the cypress swamps exhibit hummocks that typically support a greater density of shrub and ground cover species. The northeastern section of the DSMB contains deeper cypress domes with *Ilex myrtifolia* dominant in the subcanopy surrounded by xeric uplands (sand pine plantations and longleaf pine-turkey oak [see 441]). The transition from xeric upland to cypress dome is sudden and the *Hypericum*-graminoid ecotone is very narrow (about 10 to 20 feet wide).

The canopy in cypress swamps is dominated by *Taxodium ascendens* with some *T. distichum*. *Pinus elliottii* is scattered throughout. *Cyrilla racemiflora, Cliftonia monophylla,* and *Ilex myrtifolia* often dominate the shrub stratum, which also contains *Aronia arbutifolia, Clethra alnifolia, Gaylussacia mosieri, Hypericum chapmanii, H. crux-andreae, H. fasciculatum, H. galioides, H. hypericoides, Ilex coriacea, I. glabra, I. myrtifolia, Lyonia lucida, Myrica cerifera, M. heterophylla, Nyssa biflora, Pieris phillyreifolia, Smilax laurifolia,* and *Vaccinium elliottii*.

Ground cover in cypress swamps is abundant and healthy to sparse or nonexistent, due to ranges in hydrology and shading. In the deeper systems, emergent herbaceous species include *Carex* spp., *Cladium jamaicense, Rhynchospora inundata, Utricularia purpurea, U. subulata, Xyris* spp., *Proserpinaca pectinata,* and *Sagittaria latifolia.* Species commonly occurring in the wet ecotones around the cypress domes are *Calamovilfa curtissii, Aristida stricta, Drosera capillaris, D. intermedia, Drosera tracyi, Eriocaulon compressum, Lachnanthes caroliniana, Lachnocaulon anceps, Lophiola americana, Lycopodium alopecuroides, L. appressum, L. caroliniana, Panicum scabriusculum, P. virgatum, Pleea tenuifolia, Rhexia mariana*, and *Scleria* spp.

Wildlife species observations in this area included white tailed deer, raccoon (*Procyon lotor*), gray fox (*Urocyon cinereoargenteus*), great crested flycatcher, eastern towhee, red-bellied woodpecker, red eyed vireo (*Vireo olivaceus*), northern parula warbler (*Parula americana*), common grackle (*Quiscalus quiscala*), common yellowthroat, northern cardinal, pine warbler (*Dendroica pinus*), pileated woodpecker (*Dryocopus pileatus*), and prothonotary warbler, Gulf Coast box turtle (*Terrapene carolina*), green anole (*Anolis carolinensi*), southern leopard frog (*Rana utricularia*), pinewoods tree frog, cricket frog, and freshwater invertebrates.

3.4.6 Shrub Swamp (632)

The shrub swamps on the site typically have less than 10% canopy by trees and no one species is dominant in the shrub stratum; however, some areas are dominated by *Hypericum chapmanii* (i.e., Hypericum bog) or *Cliftonia monophylla*. These systems vary from wet soil to open water that is often about 12 inches deep (but can be up to 4 feet deep) and typically contain vegetation on tussocks or hummocks. On-site, these systems are naturally occurring, but may have a greater density of shrubs or *Pinus elliottii* than historical shrub swamps due to fire suppression and seeding-in by pines from adjacent plantation. Some of the shrub swamps have succeeded from savannah/wet prairie systems due to fire suppression. Many of these systems continue to support a sparse ground cover of species on tussocks or hummocks that are characteristics of savannah/wet prairie systems. On-site shrub swamps typically exhibit a fairly high species diversity. These large shrub swamp systems have been disturbed by logging of large cypress and slash pines. Trails through vegetation from the logging equipment remain obvious, and soils have been compacted about 0.5 to 2 feet deeper than the original grade. Vegetation and hydrology

within some of the trails seem to have recovered, but in other areas, the trails remain unvegetated.

Subcanopy/shrub species include *Cliftonia monophylla, Cyrilla racemiflora, Hypericum brachyphyllum, H. chapmanii, H. fasciculatum, H. galioides, Ilex coriacea, I. myrtifolia, Lyonia lucida, Magnolia virginiana, Myrica heterophylla, Nyssa biflora, Persea palustris, Smilax* spp., *Pinus elliottii*, and *Taxodium ascendens*. The sparse canopy trees are *Magnolia virginiana, Pinus elliottii, Taxodium ascendens*, and *T. distichum*. Planted *Pinus elliottii* does not usually do well in these wetter systems.

Ground cover species include *Aletris lutea, Andropogon capillipes, Aristida stricta, Cladium jamaicense, Drosera capillaris, D. tracyi, Eriocaulon compressum, Fuirena spp., Lachnanthes caroliniana, Lachnocaulon anceps, Lachnocaulon spp., Lophiola americana, Lycopodium alopecuroides, Panicum spp., Pleea tenuifolia, Proserpinaca pectinata, Rhexia* spp., *Rhynchospora* spp., *Sagittaria latifolia, Sarracenia flava, S. psittacina, S. leucophylla, Smilax laurifolia, Sphagnum* spp., *Utricularia purpurea, U. lutea, Woodwardia virginiana, Xyris* spp., and *Zigadenus densus*.

Wildlife observations include gray fox, white tailed deer, red-shoulder hawk (*Buteo lineatus*), gray catbird, eastern towhee, common grackle, Carolina chickadee, northern cardinal, hooded warbler, great crested flycatcher, white eyed vireo (*Vireo griseus*), northern parula warbler, pine warbler, mourning dove, prothonotary warbler, pygmy rattlesnake, cricket frog, pinewoods tree frog, pig frog, bronze frog, and crayfish (*Procambarus apalachicolae, P. latipleureumys, P. rogersi*). One corn snake (*Elaphe guttata guttata*) was observed on the adjacent upland road.

3.4.7 Roads (814)

Unpaved logging roads criss-cross the site and traverse both upland and wetland communities. Most of the on-site roads are clearly visible on the 1949 aerials of the DSMB, which was well before pine planting was begun on the site. Most roads are 30 to 40 feet wide. At least one north-south road (County Line Road) and one east-west road (17 Road) are wider, about 50 feet. Road crossings of wetlands are more often culverted; where crossings are not culverted, they are sometimes slightly raised, but may flood frequently. Road 17 crosses a blackwater stream, Doe Branch, via an old, wooden bridge.

3.5 Protected Species

Survey Methods

Before beginning field surveys, lists of threatened and endangered species and species of special concern that occur in Bay and Walton Counties were obtained from various sources, including the Florida Natural Areas Inventory (FNAI), the Florida Department of Agriculture and Consumer Services (FDACS), Florida Fish and Wildlife Conservation Commission (FFWCC), the United States Fish and Wildlife Service (USFWS), and the Northwest Florida Water Management District (NWFWMD). WilsonMiller conducted comprehensive biological surveys of the project site using survey methodologies that were generally consistent with FFWCC guidelines (FFWCC 1988).

The survey teams typically consisted of one to two biologists performing meandering pedestrian transects through the site. These transects were conducted in the mornings, afternoons, and evenings by WilsonMiller personnel in April 2003 and by both WilsonMiller and Biological Research Associates personnel in May 2003. The biologists periodically stopped, looked for protected plants and wildlife, signs of wildlife, and listened for wildlife vocalizations.

Protected Species Observed On Site

No federally protected species have been observed on site. Five state-listed plant species were identified on-site including the endangered white-topped pitcher plant, and the threatened parrot pitcher plant, purple pitcher plant, spoon-leaved sundew, and Curtiss' sandgrass.

Evidence of one faunal species, an old gopher tortoise (Gopherus polyphemus) burrow was observed on site. The gopher tortoise is state-listed as a species of special concern.

White-topped pitcherplant (*Sarracenia leucophylla*): The white-topped pitcher plant naturally occurs in bogs, wet prairies, and cypress flats. Within the DSMB, it was observed in high numbers at numerous locations within shrub bogs/cypress flats and titi swamps and in roadside drainage ditches near these systems.

Parrot pitcher plant (*Sarracenia psitticina*): The parrot pitcher plant occurs in bogs, wet prairies, and ecotonal areas of swamps. Within the DSMB, it was observed in high numbers at numerous locations within shrub bogs/cypress flats and titi swamps and in roadside drainage ditches near these systems.

Purple pitcher plant (*Sarracenia purpurea*): The purple pitcher plant occurs in bogs from Escambia to Gadsden Counties in Florida. This species was observed in a titi swamp in the southern portion of the site.

Spoon leaved sundew (*Drosera intermedia*): The spoon-leaved sundew occurs in seepage slopes, wet flatwoods, depression marshes, sinkhole lakes, and drainage ditches. On the project site it was observed in numerous locations in shrub bogs/cypress flats and in roadside drainage ditches near these systems. In several locations, robust populations of many individuals were found.

Curtiss' sandgrass (*Calamovilfa curtissii*): Curtiss' sandgrass occurs in pinelands, wet prairie, and freshwater marsh. This species was observed in one location 50 feet outside the eastern boundary of the mitigation bank; it is expected to occur within the mitigation bank.

Gopher tortoise (*Gopherus polyphemus*): During field surveys in 2003, one old gopher tortoise burrow was observed in the northwest portion of the DSMB property in a sandhill area. A recorded occurrence of gopher tortoise (no date) was reported by FNAI in a slash pine plantation in the southwest portion of the site, but surveys conducted specifically for that burrow were unsuccessful. Suitable habitat for the gopher tortoise occurs throughout the northwest portion of the site.

4. Historical Conditions

4.1 Landscape Setting

The DSMB is located in Bay and Walton Counties, Florida. The project site lies exclusively within the Gulf Coastal Lowlands geomorphic division upon the coastal, Pleistocene–Miocene formed Silver Bluff Terrace. The mitigation bank occurs 5 miles north of the Gulf of Mexico, 7 miles southeast of the mouth of the Choctawhatchee River at its confluence with Choctawhatchee Bay, and 9 miles northwest of West Bay. The primary stratigraphic areas of the mitigation bank occur from 0 to 20 feet above sea level and are contiguous within its landward margin and below an historical coastal escarpment rising to 25 feet above sea level. This general east to west escarpment orientation separates the low lying areas of the project site from those of the River Valley Lowlands of the Choctawhatchee River, which flows east to west within 3 miles north of the project site.

High annual precipitation, high average temperatures, consistently high humidity, and persistent sea breezes characterize the climate and influence soil formation in the Devil's Swamp region. Rainfall averages about 60 inches annually. The area has a warm, humid climate that is moderated by its immediate proximity to the water bodies of the Choctawhatchee Bay, West Bay,

and the Gulf of Mexico. The area has an average of 273 frost-free days. Periodic tropical hurricanes with significant physical and chemical influences are reasonably common during summer and early fall seasons. Due to the warm climate and abundance of rainfall, chemical and biological actions are rapid. The abundant rainfall leaches much of the nutrients from the sandy soils leaving them relatively infertile and acidic. Vegetation structure and composition have also been and remain influenced by these climatic factors.

4.2 Site

Northwestern portions of the project site occur upon the escarpment formation. Areas in the northwestern portions historically have had minor fluvial influence evidenced by drainage patterns. The larger, interior sections of the project site are gently sloping plains to nearly flat topography and basin depressions, which contain or are dissected by broad sheet flow drainages and minor streams. With the exception of the well drained soils located on or adjacent to the escarpment, the majority of the project site hydrology exhibits moderate to low infiltration and slow water transmission. Hydrology is essentially vertical within many areas of the broader flats. Depths to seasonally high water table is generally within 10 inches of the surface. During periods of seasonal or heavy precipitation, surface water frequently stands above the subsoil strata and inundates the surface soil matrix for extended periods of time. Surface drainage is generally low to moderate, yet rather rapid where topographic gradients of 2% or greater exist. Primary landscape drainages transect the uplands and are evident on current and historical 1949 aerial photographs. During droughts and seasonal drier periods, groundwater is unobtainable and below the subsoil levels. Plant and soil communities are under heavy stress from saturation during wet seasons and from dehydration during dry seasons. This change can occur rapidly and frequently during the year.

The soils on the DSMB consist of beds of sandy and loamy materials that were transported and deposited by waters of the Gulf, which covered the area a number of times during the Mio-Pleistocene Epochs. Sediments were eroded and reworked to form this marine terrace caused by changes in sea level and level plain topography. The dominant geological materials are inert. The sands are almost pure quartz and highly resistant to weathering. The differences in the soils occurring on the site resulted from periodic deposition over time, site topography and broad landscape drainage, high water table, the influences of silt and organic material accumulations, chemical translocation, and mineral leaching. Soils of the tract are deeply underlain by Suwannee Limestone.

Naturally occurring fire events maintained the integrated mosaic of vegetation communities and ecotypes that influenced and defined the biotic composition of the project site and surrounding landscape. The variation within the landscape, resulting from soil composition and topography, occasioned the development of persistent vegetation types, and regular, periodic fire established or maintained sandhill, mesic pine flatwood, hydric pine flatwood, titi swamp, cypress swamp, and mixed forested wetland vegetation communities. Historical aerial photographs from 1949 reveal that the project site was once a landscape mosaic composed of pine flatwood and xeric pine communities traversed by mixed hardwood, cypress and shrub drainages, which were interlaced by broad areas of wet prairie and cypress flat savannah. Each of the vegetation communities existing within the DSMB landscape are fire dependent, fire maintained or fire influenced. Ecosystem integrity is dependent on regular fires. Fire frequency intervals, or return periodicity, was probably every two to four years, or possibly longer during wetter periods.

5. Proposed Conditions

The planned mitigation and restoration efforts involve restoring the site to the pre-pine plantation/historical communities. Specifically, efforts entail the restoration[2] of approximately 2,

[2] Terminology follows the Corps of Engineers' Regulatory Guidance Letter for Wetlands And Interagency National Wetlands Mitigation Action Plan, released 12/27/02. Restoration: The manipulation of the physical, chemical, or biological

064.3 acres of wetlands and 984.9 acres of uplands within the DSMB to the historical natural vegetation communities discussed below. Table B-3 presents the pre and post vegetation communities and acreages. The proposed condition vegetation types are described below. To the extent possible, the rehabilitated DSMB will contain the indigenous vascular plant and wildlife species that are characteristic of these communities as they occur throughout the coastal counties of the region on similar soils and at similar elevations above sea level. To attain success, the rehabilitated communities will resemble reference communities with respect to life form distribution, vertical stratification, overall plant size, species abundance, and patterns of dominance, and will substantively conform to the descriptions below. The rehabilitation will concentrate on three levels of diversity: (1) landscape mosaic, (2) plant community structure, and (3) plant species composition.

Table B-3. Matrix of Existing to Post Restoration Land Uses and Acreages

	Post-Restoration Land Use							
Existing Types	**Cypress Swamp**	**Hydric Pine Flatwoods**	**Mixed Forested Wetlands**	**Roads**	**Savannah**	**Upland Pines**	**Water Bodies**	**Grand Total**
Upland Pine Plantation	2.8	524.0	24.2		70.1	545.6		1,166.7
Hydric Pine Plantation	15.9	256.8	129.2		225.1			627.0
Reservoir							4.8	4.8
Titi Swamp	2.3	48.2	583.6		79.4			713.4
Cypress Swamp	12.2							12.2
Shrub Swamp	41.2	9.1	410.0		17.1			477.4
Roads				47.6				47.6
Grand Total	**74.4**	**838.1**	**1,147.0**	**47.6**	**391.6**	**545.6**	**4.8**	**3,049.2**

The actual acreage of each type is less important than achieving a healthy, integrated mosaic of communities with approximately these percentages of component communities, as described below.

5.1 Hydric Pine Flatwoods

Hydric Pine Flatwoods occur as open forests of scattered pines with a dense ground cover of grasses, sedges, and forbs with patches of saw palmetto and low, hydrophytic shrubs. The understory stratum, when present, consists of irregular shrubby patches of tall shrubs and saplings. Hydric pine flatwoods occur on nearly level topography with poorly drained acidic sands, often overlaying hardpan or clay subsoil. The dominant canopy species is longleaf pine (*Pinus*

characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into: a.) Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Re-establishment results in rebuilding a former wetland and results in a gain in wetland acres; and b.) Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres. Under FDEP's rules "Re-establishment" equals "Creation" and "Rehabilitation" equals "Enhancement."

palustris) or slash pine (*Pinus elliottii*). The community type and its species are fire dependent and similar to mesic pine flatwoods except for a longer hydroperiod and the increased presence of hydrophytic vegetation. Hydric pine flatwoods commonly grade into mesic flatwoods, savannah, and mixed forested wetland. This community type typically forms a zone separating mesic pine flatwoods from savannahs, shrub bogs or acid swamps or occurs as expansive seepage areas.

In the rehabilitated landscape, the hydric pine flatwoods will occur as a gradation from the mesic flatwoods to the mixed hardwood-cypress swamp system, often containing large patches of savannah.

Because of the historic land use as plantation the restored communities may retain some of the characteristic of bedding; however, these topographic disturbances will gradually erode to a level topography. It is likely that slightly different plant associations will be present on the beds and furrows, but groundcover shall be native and appropriate to the overall community and function to covey fire. In order to be determined to be successful, the bed and furrow topography shall not convey waters in such a way as to drain the site. Additionally, the bedding has disturbed the soils and as such there may be some differences between the restored site and reference communities, but soils shall exhibit hydric indicators or be trending toward hydric conditions.

5.2 Savannahs

Savannahs are flat, poorly drained communities that support a treeless to open canopy of pond cypress. Characteristic species tolerate both flooding and extensive dry periods. Plant composition varies with soils, fire regime, and hydroperiod. The community is composed of a dense ground cover of grasses, sedges, and herbaceous forbs. The ground cover is very diverse and species-rich, with a dominance of grasses and sedges.

Hydrophytic shrubs and trees are absent, widely scattered, or confined to the ground cover as coppice sprouts. Occasionally, isolated pines establish on sandy knolls with improved aeration and represent small distinctive and isolated flatwood “islands” within this community. In wetter areas, pond cypress, black gum, sweet bay, red maple, and titi may establish as isolated patches or coppicing groups. Shrubs such as St. John’s-wort and bayberry (*Myrica heterophylla*) are the only shrubs of significance and rarely survive the frequent fires essential for the maintenance of this community. The community type and its species are fire dependent.

Soils are generally infertile, sandy loams with some clay component particularly in the lower profile. Where soils have peaty sand in the upper soil horizon, the soils remain saturated during wet periods and maintain marginally wetter conditions during the growing season. Fire periodically reduces this peat substrate. The flat terrain prevents appreciable surface runoff and soils prohibit internal percolation. Hydrology is essentially vertical. Savannah communities commonly grade into hydric and mesic pine flatwoods, cypress swamps, and mixed forested wetlands.

In the rehabilitated landscape, the savannahs will occur as a gradation from the hydric and mesic flatwoods to the mixed hardwood-cypress swamp system, often containing large patches of flatwoods.

5.3 Mixed Forested Wetlands

Mixed forested wetlands on the DSMB project are typical of acid forested basin swamps (FNAI and FDNR 1990). Some of these swamps on site occur along drainages or streams with distinctive stream channels, particularly in the northwestern portion of the site and are vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod. These swamps also are evident in the 1949 aerial photos throughout the DSMB tract. In this ecosystem, pond cypress (*Taxodium ascendens*) and slash pine (*Pinus elliottii*) are often important canopy components, as well as several broadleaf tree and shrub species tolerant of hydric conditions, such as sweet bay (*Magnolia virginiana*), myrtle-leaf holly (*Ilex myrtifolia*), swamp tupelo (*Nyssa*

biflora), and titi (*Cliftonia* and *Cyrilla*). Community composition varies, with no single species or species group exhibiting canopy dominance, and includes various combinations of these large and small tree species. The mixed forested wetland community type commonly grades into hydric pine flatwoods, savannahs, and cypress swamps. The species composition of Basin Swamps frequently overlaps with Floodplain Swamp, Strand Swamp, and Baygall.

Many of these systems have large open swathes of land that support a ground cover of species that are characteristic of savannah/wet prairie systems, including sphagnum moss, pitcher plants, sundews, arrowheads, golden club, arum bog buttons, hatpins, yellow-eyed grass, bloodroot, rush-featherling, cinnamon fern, wiregrass, beakrushes, meadow beauties, colic-root, pipeworts, bladderworts, crow poison, and various sedges and grasses. These species occur much less densely when present underneath thick shrubs.

Titi-dominated areas are dominated by at least one titi species, *Cliftonia monophylla*, *Cyrilla racemiflora*, or *Cyrilla racemiflora* var. *parvifolia*, and mostly occur on the higher, better-drained parts of acid swamps. Individual shrubs range up to 50 feet tall. Vegetation is not differentiated into strata. Large gallberry, fetterbush, and sweet bay may be abundant. Black gum and other woody shrubs and vines are usually present. Canopy trees of slash pine and pond cypress frequently establish as widely spaced individuals.

Sweet bay-dominated areas occupy those portions of acid swamps that are wetter and less frequently burned than titi-dominated acid swamps. The hydrophytic trees are moderately tall in mature stands; individuals in these swamps range up to 75 feet tall. The understory is usually undifferentiated from the canopy, except when slash pines are more abundant and form a distinct, but sparse, overstory. Black gum is commonly abundant as individuals and may assume co-dominance in wetter bay swamps. Swamp bay is invariably common but not a principle dominant.

Soils are infertile, strongly acidic, highly organic sands that are sometimes to often overlain with peat accumulations. The soil is densely shaded, consistently waterlogged or shallowly inundated during the growing season and only occasionally dries during extended droughts. Much of this system occurs on Pamlico Muck and Rutlege Sand. The swamps in the western portion of the site are on Pamlico Muck, which is ponded up to 2 ft. above the surface for 6 months of the year. Whereas Rutlege soils pond much more shallowly for 4 to 6 months.

Fires more often occur at the ecotones adjacent to fire-maintained communities (e.g., pine flatwoods and savannahs) and influence the mixed forested wetland with unequal intensities, leaving an uneven peaty substrate and allowing a few trees and shrubs to survive. Differentiation between fire-maintained communities and mixed forested wetlands is usually distinct and abrupt due to the lack of fine fuels within the acid swamp and the wet setting. Cypress and pines are very tolerant of light surface fires, but muck fires burning into the peat can kill the trees, lower the ground surface, and transform a swamp into a pond or lake, as has occurred on certain parts of the site, such as in the Poley Islands area in the northeast portion of the site.

5.4 Cypress Swamps

Cypress Swamps characteristically occur as large basins or flats and as depressions or domes. An impermeable hardpan is characteristic of the soil conditions in these communities, retarding percolation, prolonging flooding, and establishing persistent saturation, although in this particular setting the persistence of a high water table is also prevalent. A deciduous canopy composed of long-lived pond cypress and black gum dominates the vegetation. Mature cypress trees tolerate permanent inundation indefinitely. Commonly, black gum forms a tall understory with open, sparse hydrophytic shrub undergrowth. The community is simply structured and organized, with low species richness. The species in the undergrowth are usually the same as those of acid swamps, such as described above, but of smaller stature and much less dense. Graminoids and herbaceous forbs are limited to a few scattered plants, with conspicuous ferns. Some examples of this community type have herbaceous species typical of shallow basin marsh communities (e.g., sawgrass, arrowhead, water lilies). Most ground cover vegetation occurs around the

buttresses of the canopy trees or on hummocks. Many shrubs and trees also originate on hummocks.

Fire is normal to this community, particularly the sandy soil-based swamps and domes. These communities are often distinct, but may intergrade with better-drained acid swamps and mixed forested wetlands along edges and with creek swamps along the upper reaches of defined stream courses.

5.5 Upland Pines

Upland pine encompasses two upland community components, depending on the local soils and topography: sandhill, and mesic pine flatwoods. These two community types commonly grade into each other, and mesic pine flatwoods commonly grade into hydric flatwoods and shrub-dominated drainages.

5.5.1 Sandhills

Sandhill communities occur on rolling hills of deep, infertile sand, and generally consist of an open, longleaf pine forest with dense grass-dominated ground cover and a sparse deciduous oak-shrub understory. Saw palmetto is sometimes present but not dense. Pineland three-awn (wiregrass) is the characteristic ground cover species important in facilitating low intensity ground fires, and is the key ground cover component in successful red-cockaded woodpecker habitat. The vegetation is xerophytic and pyrogenic, requiring fire on a regular basis.

5.5.2 Mesic Pine Flatwoods

Mesic Pine Flatwoods occur as open forests of scattered pines with a moderate to dense ground cover of grasses (principally wiregrass) and forbs, with a low stratum of sometimes-dense saw palmetto and other low shrubs. An understory is generally absent. Mesic pine flatwoods occur on nearly level topography with moderately to poorly drained acidic sands, often overlaying hardpan or clay subsoil. The dominant canopy species is longleaf pine or slash pine. Both pines may be present, but the occurrence of both together is restricted to second-growth pinewoods. The shrub species of the ground cover may be more conspicuous than the herbaceous species, except during the early period following a fire. The community type and its species are fire dependent.

Because of the historic land use as plantation the restored communities may retain some of the characteristic of bedding; however, these topographic disturbances will gradually erode to a level topography. It is likely that slightly different plant associations will be present on the beds and furrows, but groundcover shall be native and appropriate to the overall community and function to covey fire. In order to be determined to be successful, the bed and furrow topography shall not convey waters in such a way as to drain the site.

6. Restoration Implementation

6.1 Plan Implementation

Restoration of the site generally entails conversion from a plantation land use through appropriate tree removal and restoring the primary abiotic processes that mold this type of landscape: hydrology and fire. Short-term activities will focus on hydrologic restoration and re-establishment of wetland communities. Restoration of a natural fire regime will help in restoring the vegetation and habitat dynamics of the site. Long-term management activities will continue to enhance the health and viability of the restored wetlands and to maintain the high ecological value of the restored ecosystem. Table B-4 presents the proposed restoration activities by target vegetation community and the associated acreages.

To ensure that the performance standards are met, an adaptive management approach will be an integral part of project implementation. If the Corps/FDEP decides, based on the selected performance standards

and the annual monitoring reports, that the mitigation project is not meeting its goals, SJC will coordinate with the Corps/FDEP and professional ecologists to develop and implement remedial measures. SJC has set aside financial assurances to provide for such an effort.

The plan is divided into post-project community types with sections on proposed future conditions, thinning and clearing for community objectives, burning and hydrology.

6.1.1 Hydric Pine Flatwoods

Proposed Conditions. Hydric Pine Flatwoods occur as open forests of scattered pines with a dense ground cover of grasses, sedges, and forbs with patches of saw palmetto and low, hydrophytic shrubs. The understory stratum, when present, consists of irregular shrubby patches of tall shrubs and saplings. Hydric pine flatwoods occur on nearly level topography with poorly drained acidic sands, often overlaying hardpan or clay subsoil. The dominant canopy species is longleaf pine (*Pinus palustris*) or slash pine (*Pinus elliottii*). The community type and its species are fire dependent and similar to mesic pine flatwoods except for a longer hydroperiod and the increased presence of hydrophytic vegetation. Hydric pine flatwoods will grade into mesic flatwoods, savannah, and mixed forested wetland.

Existing Conditions. Upland and hydric pine plantation, titi swamp, and shrub swamp.

Acreage. 838.1 acres.

Restoration. Restoration of this community type will focus on slash pine thinning, prescribed burning, and hydrologic restoration.

Canopy. The pines will be thinned to achieve a more typical pine woods tree density, about 60 to 112 trees per acre (≤25% cover) to achieve a basal area of 40 to 70 ft^2/acre. The removal of canopy trees will be done mechanically with typical logging equipment when site conditions warrant its use. During times when site conditions are not conducive to use of such equipment, other appropriate means will be used to remove the trees such that impacts to the substrate will not occur. In areas where the pines are too small to harvest, the areas will be roller chopped and then pines cut with a hydro-axe to adjust the fuel structure of the site, preparing it for burning.

Burn Prescription. Growing season burns every 2 to 8 years (growing season is April through July based on James et al. (2003)). Initial years will be on a 2 to 4 year schedule to foster redevelopment of the ground cover. See Fire Management Plan (Attachment B-2).

Ground Cover. Plant species observations collected during field activities within the DSMB site indicate that sufficient species and individuals presently exist in the ground cover to regenerate the desired communities. Ground cover species are expected to seed in from the surrounding forests and from the seed bank. The proposed prescribed fire should stimulate species in the seed bank and declining and moribund individuals. If after three years the species diversity and density are not clearly trending toward successful establishment of target conditions, then native sod plugs, seeding or plantings will be done.

Hydrology. Hydric and mesic sites that have been bedded for pine plantation will be roller chopped at periodic intervals to restore a more natural internal drainage pattern. The road and drainage network will be re-engineered to retain water on the site for longer periods of time, restoring historical hydroperiod and hydrologic processes. Exhibit B-1-7 shows the locations of the hydrologic work proposed at the DSMB. The activities planned for the site are installation of hardened low water crossings and bermed weir structures (Exhibit B-1-7). The crossings will be used on the interior of the site on permittee-owned roads. The bermed weirs will be used where the site meets Steele Field Road and will be constructed immediately upstream of the road right-of-way. The elevation of the crossings will be set initially by installing risers on the existing culverts (Exhibit B-1-7 & Attachment B-9) for the interior roads and by installing the weirs next to Steele Field Road. Surface and ground water level data and field-verification that the appropriate elevation has been set will be used to verify the invert elevations at each crossing. If the invert elevations of the structures are found to be too high or low, they will be manipulated based on the field data collection results during the first few years of the project. That data will be used to verify the final elevations for each structure.

6.1.2 Savannahs

Condition. Savannahs are flat, poorly drained communities of graminaceous vegetation that support a treeless to open canopy of pine &/or pond cypress. Characteristic species tolerate both flooding and extensive dry periods. Plant composition varies with soils, fire regime, and hydroperiod. The community is composed of a dense ground cover of grasses, sedges, and herbaceous forbs. The ground cover is very diverse and species-rich, with a dominance of grasses and sedges, especially wiregrass, beakrushes, nutrushes, sedges and pitcher plants. Hydrophytic shrubs and trees are absent, widely scattered, or confined to the ground cover as coppice sprouts. Pond cypress, swamp tupelo, sweet bay, red maple, and titi may establish as isolated patches or coppicing groups. The community type and its species are fire dependent. Savannah communities commonly grade into hydric and mesic pine flatwoods, cypress swamps, and mixed forested wetlands.

Existing Conditions. Upland and hydric pine plantation, titi swamp, and shrub swamp.

Acreage. 391.6 acres.

Restoration. Restoration of this community type will focus on slash pine removal, prescribed burning, and hydrologic restoration.

Canopy. The pines will be thinned to achieve a more typical savannah tree density, 0 to 28 trees per acre to result in less than 10% canopy cover and a basal area less than 40 ft^2/acre (Haddock 2001; Rheinhardt et al 2002). Some pine trees will be left in the initial years to provide pine needles for fuel. If these trees need to be thinned further, they will be felled in place and left to burn. Existing cypress will be retained. The removal of canopy trees will be done mechanically with typical logging equipment when site conditions warrant its use. During times when site conditions are not conducive to use of equipment, other appropriate means will be used to remove the trees such that impacts to the substrate will not occur. In areas where the pines are too small to harvest, the areas will be roller chopped and then pines cut with a hydro-axe to adjust the fuel structure of the site, preparing it for burning. The savannah sites will be managed to achive a goal of <40 BA.

Burn Prescription. Growing season burns every 2 to 4 years (growing season is April through July based on James et al. (2003)). See Fire Management Plan (Attachment B-2).

Ground Cover. Plant species observations collected during field activities within the DSMB site indicate that sufficient species and individuals presently exist in the ground cover to regenerate the desired communities. Ground cover species are expected to seed in from the surrounding forests and from the seed bank. The proposed prescribed fire should stimulate species in the seed bank and declining and moribund individuals. If after three years the species diversity and density are not clearly trending toward successful establishment of target conditions, then native sod plugs, seeding or plantings will be done.

Hydrology. Hydric and mesic sites that have been bedded for pine plantation will be roller chopped at periodic intervals to restore a more natural internal drainage pattern. The road and drainage network will be re-engineered to retain water on the site for longer periods of time, restoring historical hydroperiod and hydrologic processes. Exhibit B-1-7 shows the locations of the hydrologic work proposed at the DSMB. The activities planned for the site are installation of hardened low water crossings and bermed weir structures (Exhibit B-1-7). The crossings will be used on the interior of the site on permittee-owned roads. The bermed weirs will be used where the site meets Steele Field Road and will be constructed immediately upstream of the road right-of-way. The elevation of the crossings will be set initially by installing risers on the existing culverts (Exhibit B-1-7 & Attachment B-9) for the interior roads and by installing the weirs next to Steele Field Road. Surface and ground water level data and field-verification that the appropriate elevation has been set will be used to verify the invert elevations at each crossing. If the invert elevations of the structures are found to be too high or low, they will be manipulated based on the field data collection results during the first few years of the project. That data will be used to verify the final elevations for each structure.

6.1.3 Mixed Forested Wetlands

Proposed Condition. These acid, forested basin swamps are vegetated with hydrophytic trees and shrubs that can withstand an extended hydroperiod. In this ecosystem, pond cypress and slash pine are often important canopy components, as well as several broadleaf tree and shrub species tolerant of hydric conditions, such as sweet bay, myrtle-leaf holly, swamp tupelo, and black and white titi. Community composition varies, with no single species or species group exhibiting dominance over substantial areas, and these communities may exhibit a mosaic of shrub swamp, cypress swamp, mixed forested wetland, and savannah. Most ground cover vegetation and many shrubs and trees occur around the buttresses of the canopy trees or on hummocks. This community type commonly grades into hydric pine flatwoods, savannahs, and cypress swamps. Soils are infertile, strongly acidic, highly organic sands that are sometimes to often overlain with peat accumulations. The soil is densely shaded, consistently waterlogged or shallowly inundated during the growing season and only occasionally dries during extended droughts.

Existing Conditions. Upland and hydric pine plantation, titi swamp, and shrub swamp.

Acreage. 1,147.0 acres.

Restoration. Restoration of this community type will focus on slash pine removal, shrub cover reduction, and hydrologic restoration.

Canopy. Mixed forested wetlands will be managed to suppress excessive cover by shrubs and encourage development of an appropriate canopy stratum. Where in plantation conditions, the pines will be thinned to about 60 trees per acre, about 40 ft^2/acre basal area ($\leq$10% cover). If necessary to reduce shrub density, these wetlands will be partially cleared using the Gyro-Trac or by hand clearing. Pond cypress and/or hardwoods, such as swamp tupelo, are proposed for planting in areas where these species are not present or where natural re-seeding is not expected to be effective. One-gallon trees will be planted randomly at a density of 100 trees/acre on irregular centers.

Burn Prescription. Fire will be allowed to burn in from surrounding communities. See Fire Management Plan (Attachment B-2).

Ground Cover. Plant species observations collected during field activities within the DSMB site indicate that sufficient species and individuals presently exist in the ground cover to regenerate the desired communities. Ground cover species are expected to seed in from the surrounding forests and from the seed bank. The proposed prescribed fire should stimulate species in the seed bank and declining and moribund individuals. If after three years the species diversity and density are not clearly trending toward successful establishment of target conditions, then native sod plugs, seeding or plantings will be done.

Hydrology. Hydric and mesic sites that have been bedded for pine plantation will be roller chopped at periodic intervals to restore a more natural internal drainage pattern. The road and drainage network will be re-engineered to retain water on the site for longer periods of time, restoring historical hydroperiod and hydrologic processes. Some expansion of wetland jurisdictional area is expected. Exhibit B-1-7 shows the locations of the hydrologic work proposed at the DSMB. The activities planned for the site are installation of hardened low water crossings and bermed weir structures (Exhibit B-1-7). The crossings will be used on the interior of the site on permittee-owned roads. The bermed weirs will be used where the site meets Steele Field Road and will be constructed immediately upstream of the road right-of-way. The elevation of the crossings will be set initially by installing risers on the existing culverts (Exhibit B-1-7 & Attachment B-9) for the interior roads and by installing the weirs next to Steele Field Road. Surface and ground water level data and field-verification that the appropriate elevation has been set will be used to verify the invert elevations at each crossing. If the invert elevations of the structures are found to be too high or low, they will be manipulated based on the field data collection results during the first few years of the project. That data will be used to verify the final elevations for each structure.

6.1.4 Cypress Swamps

Proposed Condition. These communities occur as depression swamps or domes. An impermeable hardpan is characteristic of the soil conditions in these communities, retarding percolation, prolonging flooding, and establishing persistent saturation, although in this particular setting the persistence of a high water table is also prevalent. A deciduous canopy composed of long-lived pond cypress and myrtle-leaf holly in domes or swamp tupelo in depression swamps dominates the vegetation. The community is simply structured and organized, with low species richness. Hydrophytic species in the undergrowth are usually the same as those in mixed forested wetlands, but of smaller stature and much less dense. Graminoids and herbaceous forbs are limited to a few scattered plants, which may include ferns, sawgrass, arrowhead, and water lilies. Most ground cover vegetation and many shrubs and trees occur around the buttresses of the canopy trees or on hummocks. These communities are often distinct, but the depression swamps may intergrade with savannahs, shrub swamps, and mixed forested wetlands along edges. Cypress domes may intergrade with creek swamps along the upper reaches of defined stream courses.

Existing Conditions. Upland and hydric pine plantation and titi, cypress, and shrub swamps.

Acreage. 74.4 acres.

Restoration. Restoration of this community type will focus on slash pine removal and hydrologic restoration.

Canopy. Existing stands of pond cypress will be retained. Planted pines will be removed by logging. The removal of canopy trees will be done mechanically with typical logging equipment when site conditions warrant its use. During times when site conditions are not conducive to use of such equipment, other means will be used to remove the trees such that impacts to the substrate will not occur. In areas where the pines are too small to harvest, the areas will be roller chopped and then pines cut with a hydro-axe to adjust the fuel structure of the site, preparing it for burning. Pond cypress are proposed for planting in areas where pond cypress are not present or where natural re-seeding is not expected to be effective. One-gallon pond cypress will be planted randomly at a density of 150 trees/acre on irregular centers.

Burn Prescription. Fire will be allowed to burn into cypress swamps from surrounding communities. See Fire Management Plan (Attachment B-2).

Ground Cover. Plant species observations collected during field activities within the DSMB site indicate that sufficient species and individuals presently exist in the ground cover to regenerate the desired communities. Ground cover species are expected to seed in from the surrounding forests and from the seed bank. The proposed prescribed fire should stimulate species in the seed bank and declining and moribund individuals. If after three years the species diversity and density are not clearly trending toward successful establishment of target conditions, then native sod plugs, seeding or plantings will be done.

Hydrology. Hydric and mesic sites that have been bedded for pine plantation will be roller chopped at periodic intervals to restore a more natural internal drainage pattern. The road and drainage network will be re-engineered to retain water on the site for longer periods of time to restore historical hydroperiod and hydrologic processes. Exhibit B-1-7 shows the locations of the hydrologic work proposed at the DSMB. The activities planned for the site are installation of hardened low water crossings and bermed weir structures (Exhibit B-1-7). The crossings will be used on the interior of the site on permittee-owned roads. The bermed weirs will be used where the site meets Steele Field Road and will be constructed immediately upstream of the road right-of-way. The elevation of the crossings will be set initially by installing risers on the existing culverts (Exhibit B-1-7 and Attachment B-9) for the interior roads and by installing the weirs next to Steele Field Road. Surface and ground water level data and field-verification that the appropriate elevation has been set will be used to verify the invert elevations at each crossing. If the invert elevations of the structures are found to be too high or low, they will be manipulated based on the field data collection results during the first few years of the project. That data will be used to verify the final elevations for each structure.

6.1.5 Upland Pines

Proposed Condition. Upland pine encompasses two upland community types, sandhill, and mesic pine flatwoods. These two community types commonly grade into each other, and mesic pine flatwoods commonly grade into hydric flatwoods and shrub-dominated drainages. Both communities are fire-dependent. Sandhill communities occur on rolling hills of deep, infertile sand, and generally consist of an open, longleaf pine forest with dense grass-dominated ground cover and a sparse deciduous oak-shrub understory. Saw palmetto is sometimes present but not dense. Wiregrass (*Aristida stricta*) is the characteristic ground cover species important in facilitating low intensity ground fires, and is the key ground cover component in successful red-cockaded woodpecker habitat.

Mesic pine flatwoods occur as open forests of scattered pines with a moderate to dense ground cover of grasses (principally wiregrass) and forbs, with a low stratum of sometimes-dense saw palmetto and other low shrubs. An understory is generally absent. Mesic pine flatwoods occur on nearly level topography with moderately to poorly drained acidic sands, often overlaying hardpan or clay subsoil. The dominant canopy species is longleaf pine or slash pine. Both pines may be present, but the occurrence of both together is primarily restricted to ecotones and second-growth. Ground cover shrub species may be more conspicuous than herbaceous species, except soon after a fire.

Existing Conditions. Upland pine plantation.

Acreage. 545.6 acres.

Restoration. Restoration of this community type will focus on slash pine thinning and prescribed burning.

Canopy. Thin pine canopy to about 60 to 112 trees per acre (≤25% cover) to achieve a basal area of 40 to 70 ft^2/acre. The removal of canopy trees will be done mechanically with typical logging equipment when site conditions warrant its use. During times when site conditions are not conducive to use of equipment, other appropriate means will be used to remove the trees such that impacts to the substrate will not occur. In areas where the pines are too small to harvest, the areas will be roller chopped and then pines cut with a hydro-axe to adjust the fuel structure of the site, preparing it for burning. Grass-stage longleaf pines may be planted under the thinned plantation pine canopy to facilitate the restoration of an appropriate canopy cover. In cases where very few or no pines exist in a planting polygon, longleaf pines may be planted at a density of 400 trees per acre, in a staggered manner. The stand will be managed toward the goal of 40 to 70 BA.

Burn Prescription. Growing season burns every 2 to 6 years (growing season is April through July based on James et al. (2003)). See Fire Management Plan (Attachment B-2).

Ground Cover. Plant species observations collected during field activities within the DSMB site indicate that sufficient species and individuals presently exist in the ground cover to regenerate the desired communities. Ground cover species are expected to seed in from the surrounding forests and from the seed bank. The proposed prescribed fire should stimulate species in the seed bank and declining and moribund individuals. If necessary, the shrub understory will be reduced using a Gyro-Trac. If after three years the species diversity and density are not clearly trending toward successful establishment of target conditions, then native sod plugs, seeding or plantings will be done.

Hydrology. Sites that have been bedded will be roller chopped at periodic intervals to restore a more natural internal drainage pattern. No other hydrologic changes are necessary.

6.2 Schedule

Restoration activities will be performed in phases, which are defined by geographical areas (Exhibit B-1-7) and would be stand-alone projects should the entire bank not be completed. Work begins on Phase 1 in year 1 with selective logging, shrub and brush removal, and initial burning, then installation of the hydrologic improvements and exotic control activities as detailed below. Other phases are anticipated to follow a similar schedule, with each successive phase being initiated on a yearly basis, as presented in the following table. However, the Sponsor, in consultation with the authorizing agencies, may elect to postpone the initiation of a phase. Conversely, the conservation easement and financial assurances may be implemented in advance of other implementation steps. Once initiated, the physical mitigation activities in the phase shall proceed in a timely manner, such that the logging and hydrologic improvements are completed within one year, and the burn is implemented as soon as conditions are appropriate.

Table B-5. Schedule for Implementation of Restoration and Monitoring Activities

Phase	Task	2004	2005	2006	2007	2008	2009	2010
1	Financial assurances & conservation easement	X						
1	Selective Logging & brush reduction	March-Dec						
1	Burn		Mar-Aug		Mar-Aug		Mar-Aug	
1	Hydrologic improvements		March–May					
1	Exotic control		All	All	All	All	All	All
1	Monitoring		Oct.	Oct.	Oct.	Oct.	Oct.	Oct.
1	Annual Report		Dec.	Dec.	Dec.	Dec.	Dec.	Dec.
2	Financial assurances & conservation easement	X						
2	Selective Logging & brush reduction	August-Dec	Jan-June					
2	Burn			Mar-Aug		Mar-Aug		Mar-Aug
2	Hydrologic improvements			March–May				
2	Exotic control			All	All	All	All	All
2	Monitoring		Oct.	Oct.	Oct.	Oct.	Oct.	Oct.
2	Annual Report		Dec.	Dec.	Dec.	Dec.	Dec.	Dec.
3	Financial assurances & conservation easement	X						
3	Selective Logging & brush reduction		March-Dec					
3	Burn			Mar-Aug		Mar-Aug		Mar-Aug
3	Hydrologic improvements			March–May				
3	Exotic control			All	All	All	All	All
3	Monitoring		Oct.	Oct.	Oct.	Oct.	Oct.	Oct.
3	Annual Report		Dec.	Dec.	Dec.	Dec.	Dec.	Dec.