



Florida Department of Environmental Protection

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2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

WETLAND RESOURCE/MITIGATION BANK PERMIT

PERMITTEE:

James Maulden*
c/o Ecological Resource Consultants, Inc.
100 Amar Place
Panama City Beach, FL 32413

PROJECT:

Sweetwater Mitigation Bank
Permit Number: 0281744-001
Date of Issue: November 16, 2009
Expiration Date: Perpetual
County: Bay

*James Maulden and Dorothy F. Simmons, individually and as trustee of the Dorothy F. Simmons Revocable Trust dated June 9, 1998, and as successor trustee of the Donald P. Simmons Revocable Trust dated June 9, 1998, and as trustee of the "Family Trust" created under the Donald P. Simmons Revocable Trust dated June 9, 1998

This permit is issued under the authority of Part IV of Chapter 373, F.S., and Chapter 62-342, Florida Administrative Code (F.A.C.). The activity is not exempt from the requirement to obtain this mitigation bank/wetland resource permit. Pursuant to operating agreements executed between the Department and the Water Management Districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing and taking final agency action on this activity.

This permit also constitutes certification of compliance with water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341, and a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Management Act.

A copy of this authorization also has been sent to the U.S. Army Corps of Engineers (USACOE) for review. The USACOE may require a separate permit. Failure to obtain this authorization prior to construction could subject you to enforcement action by that agency. You are hereby advised that authorizations also may be required by other federal, state, and local entities. This authorization does not relieve you from the requirements to obtain all other required permits and authorizations.

The above named permittee is hereby authorized to construct the work shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof. This permit is subject to the limits, conditions, and locations of work shown in the attached drawings, and is also subject to the attached General Conditions and Specific Conditions, which are a binding part of this permit. You are advised to read and understand these drawings and conditions prior to commencing the authorized activities, and to ensure the work is conducted in

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conformance with all the terms, conditions, and drawings. If you are utilizing a contractor, the contractor also should read and understand these drawings and conditions prior to commencing the authorized activities. Failure to comply with all drawings and conditions shall constitute grounds for revocation of the permit and appropriate enforcement action. Operation of the facility is not authorized except when determined to be in conformance with all applicable rules and with the general and specific conditions of this permit, as specifically described below.

PROJECT DESCRIPTION:

The project is to establish the Sweetwater Mitigation Bank (SMB) on an 850 (+/-) acre parcel. The project includes the restoration, enhancement, and preservation of ecological communities described in the permit as Basin Swamp, Shrub Bog, Bog, Wet Prairie, and Mesic Pine Flatwoods (FLUCCS codes 611, 614, 617, 620, 630, 631, 640, 643). It is intended to be used as mitigation for future unavoidable impacts to wetlands typical of these historical or disturbed habitats within the service area. Restoration and enhancement will be accomplished by filling 2 (+/-) acres ditches, removing 17 (+/-) acres of fill roads, installing low water crossings, reducing woody shrubs and planted pine density, decreasing bedding impacts, augmenting vegetation with native seeds, planting longleaf pine and wiregrass plugs, and the implementing of a long-term management program including frequent prescribed burns. The mitigation was assessed by the Uniform Mitigation Assessment Method (UMAM) (Chapter 62-345, F.A.C.) as having a potential of 192.06 freshwater credits (169.27 Wet Prairie/Hydric Flatwoods credits and 22.79 Forested Wetland Credits).

PROJECT LOCATION:

The SMB is located in Bay County, Florida. The project site lies exclusively within the Gulf Coastal Lowlands geomorphic division upon the coastal, Pleistocene-Miocene formed Silver Bluff Terrace. The SMB is located within the drainage basins of Bear Creek and Bayou George Creek (Class I Waters of the State), which are within the St. Andrew Bay Watershed (HUC #03140101), Figure 1. This project is located east of Highway 231 and south of Bear Creek Road, in Sections 29 & 32, Township 2 South, Range 12 West, Bay County Florida, Class III Waters of the State, and has a proposed mitigation service area incorporating portions of Bay, Gulf, and Calhoun counties (Figure 2). The property lies adjacent to the Bear Creek Florida Forever project (desired acquisition) and an approved 600 (+/-) conservation/mitigation parcel (Figure 3).

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GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations and restrictions set forth in this permit, are "permit conditions" and are binding and enforceable pursuant to sections 403.141, 403.727, or 403.859 through 403.861, F.S. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.
2. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.
3. As provided in subsections 403.087(6) and 403.722(5), F.S., the issuance of this permit does not convey any vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.
4. This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.
5. This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.
6. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.
7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be

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required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

- a. Have access to and copy any records that must be kept under conditions of the permit;
- b. Inspect the facility, equipment, practices, or operations regulated or required under this permit; and
- c. Sample or monitor any substances or parameters at any location reasonable necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

- a. A description of and cause of noncompliance; and
- b. The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules. A reasonable time for compliance with a new or amended surface water quality standard, other than those standards addressed in rule 62-302.500, F.A.C., shall include a reasonable time to obtain or be denied a mixing zone for the new or amended standard.

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11. This permit is transferable only upon Department approval in accordance with rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.
12. This permit or a copy thereof shall be kept at the work site of the permitted activity.
13. This permit also constitutes Certification of Compliance with State Water Quality Standards (Section 401, PL 92-500).
14. The permittee shall comply with the following:
 - a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
 - b. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
 - c. Records of monitoring information shall include:
 1. the date and georeferenced point of sampling or measurements;
 2. the person responsible for performing the sampling or measurements;
 3. the dates analyses were performed;
 4. the person responsible for performing the analyses;
 5. the analytical techniques or methods used; and
 6. the results of such analyses.
15. When requested by the Department, the permittee shall within a reasonable time furnish any information required by law, which is needed to determine compliance with the permit. If the permittee becomes aware the relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

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SPECIFIC CONDITIONS:

General

1. The permittee is hereby advised that Florida law states: "No person shall commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund or the Department of Environmental Protection under Chapter 253, until such person has received from the Board of Trustees of the Internal Improvement Trust Fund the required lease, license, easement, or other form of consent authorizing the proposed use." Pursuant to Florida Administrative Code Rule 18-14, if such work is done without consent, or if a person otherwise damages state land or products of state land, the Board of Trustees may levy administrative fines of up to \$10,000 per offense.
2. Prior to initiation of earth moving activities, a systematic professional archaeological and historic survey shall be conducted onsite with findings submitted to the Division of Historical Resources (DHR) for review and approval. The cover letter of that submittal shall be copied to the Department. If historical or archaeological artifacts are discovered at any time within the project site the permittee shall immediately notify the Bureau of Historic Preservation at (800) 847-7278, Division of Historical Resources, R. A. Gray Building, 500 S. Bronough St., Tallahassee, Florida 32399-0250.

Commencement requirements

3. At least 48 hours prior to commencement of the construction authorized by this permit, the permittee shall notify the Department in writing of this commencement.
4. Unless otherwise specified, all reports, notices and other information required for this permit shall be submitted to the Florida Department of Environmental Protection, Office of Submerged Lands and Environmental Resources, MS 2500, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.
5. This mitigation bank permit shall automatically expire five years from the date of issuance if the permittee 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.
6. Project Oversight. Prior to commencement of any construction activities, the permittee 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.

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- a. Although the permittee will have the ultimate responsibility, the QMS shall have the contractual obligation to ensure that the mitigation bank work and reporting is conducted in accordance with the permit.
- b. Within 30 days of issuance of this permit, the permittee shall submit the name of the QMS retained to oversee the mitigation work and provide supporting documentation demonstrating that the QMS is authorized and qualified to oversee this work. The Department must approve the QMS prior to commencement of the mitigation bank work.
- c. Within 30 days of the discharge of any approved QMS, the permittee shall submit the name and supporting documentation of a new QMS to the Department for review.
- d. The permittee 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 the Department concurs that any proposed modifications would improve the likelihood of mitigation success, the permittee shall submit the modification request to the Department for processing.

7. Protection and Preservation. Prior to construction or release of credits, the Sweetwater Mitigation Bank property shall be preserved and protected in accordance with a conservation easement (CE) granted to the Department of Environmental Protection and recorded in the Public Records of Bay County. A copy of draft language is contained in the permit application file; however, prior to recording the conservation easement, the permittee shall provide the final draft of the easement, survey and title commitment to the Department for approval.

After recording the CE, the permittee shall also provide the following:

- a. A title insurance policy for the easement updated to the date of conveyance.
- b. Subordination, release, or joinder agreements for any lien or title exception on the property, as identified by the Title Commitment, unless the Department determines that such lien or exception does not adversely affect the ecological viability of the Bank.
- c. A survey of the conservation easement signed by a Florida registered land surveyor.
- d. A clerk-of-the-court certified copy of the conservation easement.

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8. Security, Hunting, and Recreation. Prior to credit release, the site shall be secured at all entrances with gates and the boundary of the site shall be marked with conservation easement signs spaced at least every 1,000 feet. Signs shall indicate the project name and DEP and Corps permit numbers. The permittee will be responsible for all site maintenance and monitoring. The permittee shall approve and be responsible for any use of the site for hunting or recreational purposes, and such purposes must follow the restrictions provided in the security, hunting, and recreation plan (Attachment A). The use of ATV's is expressly prohibited and all vehicular access is limited to remaining roads (Figure 7).

9. Financial Assurance. Prior to construction or release of credits, the permittee shall provide the Department with the financial responsibility mechanisms required by Rule 62-342.700 F.A.C. and consistent with cost estimates (Attachment B). The permittee 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.

- a. The permittee shall establish the financial assurance for the construction and implementation in the form of Letter of Credit (LOC) (\$767,000) payable into a contemporaneously established Standby Trust Account. The amount of the LOC is based on the 110% of the estimated costs for construction, monitoring and maintenance prior to success. The permittee may request a partial reduction in the amount of the construction assurance after the successful completion of logging/mechanical work, hydrological improvements, and the first prescribed burn. The permittee 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.
- b. The permittee shall establish the financial assurance for long-term management in the form of Irrevocable Letter of Credit (\$203,000) together with the establishment of a standby trust to receive payments for long-term management. It is anticipated that a portion of credit proceeds shall be placed in the trust, but, regardless of sales, the long-term management trust fund shall be fully funded in cash by January 2015. The permittee may request a reduction in the letter of credit as the trust becomes funded in cash.
- c. All cost-estimates shall be reviewed and appropriate financial responsibility instrument adjustments shall be conducted every two years in accordance with Rule 62-342.700 (11) F.A.C. and prior to final credit release.

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- d. The Department may draw upon the financial mechanisms required for the bank when the permittee has materially failed to comply with the terms and conditions of the permit and continues to be in noncompliance after thirty (30) days written notice has been provided to the permittee.
- e. The interest earned from the principal deposited in the perpetual management trust may be withdrawn for use by the permittee or Department-authorized operating entity for long-term management purposes once the mitigation bank has been determined to have attained success criteria and received the final credit release. Disbursement shall be made by the trustee at the written direction of the Department in accordance with the trust agreement.

Mitigation Activities

Existing communities are shown in Figure 4. Habitat enhancement relies on the successful completion of the mitigation plan, as depicted in Figure 5 and Figure 6, and Attachment F. The communities expected to result from these enhancements are shown on Figures 7 and 8, and described in Attachment C.

10. Community restoration activities are as follows:

- a. Pine and Bedding Removal. Within the bank there are approximately 466 acres of upland and wetland slash pine (*Pinus elliottii*) plantation and 232 acres of slash pine dominated, fire-suppressed communities shown in Figure 4. Within one year of conservation easement recordation, the slash pine shall be thinned to less than 100 trees/ac. in a manner that is consistent with "Silviculture Best Management Practices for Florida", 1993, Florida Department of Agriculture and Consumer Services, 98 pp., herein referenced as "Silviculture BMPs". Pine harvesting will be conducted, under the supervision of the QMS, in a manner such that mechanical work and skidder trails will be perpendicular to bedding rows in order to reduce bed height and break up any drainage effect of the furrows with only temporary effect on groundcover. Bedding shall be further disked or bladed wherever furrows drain water toward ditches or depressions or where minimal herbaceous cover exists, regardless of whether drainage is occurring. The BMP checklist in the Monitoring Plan (Attachment I) will be completed during harvesting by the QMS and submitted with the status reports and the harvesting credit release request. The initial pine thinning allows for adequate tree density to provide enough needle-cast fuel for subsequent fires. Ultimate target density (as indicated in Specific Condition 23) may require additional thinning using hand-felling, girdling techniques or during the brush reduction detailed below rather than by a separate mechanical harvest.

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b. Woody Vegetation Reduction. After harvest activities, coverage of woody shrubs and remaining slash pine will be reduced with prescribed fire (as described in Specific Condition 12) and mechanical means within approximately 312 acres of fire suppressed Mesic Flatwoods, Shrub Bog, Bog, and Wet Prairie at the discretion and oversight of the QMS and certified burn specialist.

Mechanical clearing will be used to promote herbaceous cover and to carry fire without crown damage as directed by the QMS where prescribed burning alone is not likely to achieve success, and will be documented using the BMP checklist provided with the Monitoring Plan (Attachment I). For the purposes of this permit, "woody shrubs" for shrub reduction includes those species, typically reduced by fire to coppice, such as titi (*Cyrilla racemifolia*, *Cliftonia monophylla*), gallberry (*Ilex glabra*), fetterbush (*Leucothoe racemosa*, *Lyonia* spp.), yaupon (*Ilex vomitoria*) and wax myrtle (*Myrica cerifera*) that tend to become dominant and reduce the diversity of herbaceous species and desirable trees and shrubs in a fire suppressed system. The following types of mechanical treatment will be employed:

- i. *Mowing / "bush hogging"* will primarily be used to maintain roads;
- ii. *Mulching/Chipping "Gyrotracking"* will be used along roads to reduce fire suppressed woody shrubs, especially titi, that has reached sub-canopy height;
- iii. *Roller-chopping/" hydro-axing"* will be used where the size and density of the trees and shrubs can be chopped without significant sub-surface soil disturbance such as tip-up mounds (generally <15cm stems and < 500 trees/ac);
- iv. *Walkdown* will be used in bedded areas with little groundcover and larger or denser woody vegetation, and will be conducted perpendicular to bedding to knock down the beds.

c. Road/Ditch Revegetation. Native seeds collected from appropriate native communities on-site or near-site will be used to replant the graded road removal and ditch fill areas. After seed application, bi-monthly assessments will be conducted to assess the growth of the seeds. If significant bare areas (areas with less than 40% total coverage by appropriate native species) are noted 90 days after the initial seeding, the bare areas will be reseeded, as necessary to attain success criteria in Specific Condition 23.

d. Planting and Seeding. Following harvest activities and the initial fire and monitoring, planting and seeding shall be conducted in accordance with Attachment D, to ensure adequate species diversity and wiregrass (*Aristida stricta*) and longleaf pine (*Pinus palustris*) density to attain success criteria.

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11. Exotic and nuisance vegetation control. In the current condition invasive, exotic species are not noticeably present; however, a survey for exotic coverage shall be completed following harvest, mechanical treatment and the first prescribed fire. Any areas of infestation by species listed by the Florida Exotic Pest Plant Council (FLEPPC), 2007 (Internet: <http://www.fleppc.org/07list.htm>) (attached) shall be GPS-located and treated under the direction of the QMS by appropriate herbicide application and/or physical removal. The results of the survey and treatment shall be documented and submitted to the Department with the semi-annual progress report.

12. Fire Management Plan. Prescribed fire shall be implemented in accordance with this condition and the Fire Management Plan (Attachment E) to attain the proposed enhancement, and as a long-term management tool to sustain the communities and function. The site has initially been divided into 3 burn units (Figure 6) determined using existing roads/trails. Each prescribed burn event will be developed and supervised by a certified burn specialist. Following each prescribed burn conducted at the bank, the permittee shall submit documentation, signed by the QMS and certified burn specialist, providing a summary of the unit(s) and acres treated and an assessment of burn success, including photographs and the QMS-completed checklist (in Monitoring Plan, Attachment I). For the purposes of this permit, the first prescribed burn shall be deemed successful if the fire carries over a minimum of 70% of each target community (Mesic Flatwoods, Wet Prairie, Bog, and Shrub Bog) in each burn unit, and the herbaceous groundcover is regenerating (“greening up”) in the burned area. Subsequent prescribed burns will be considered successful if the fire carries over 70% of the Wet Prairie, Bog, and Mesic Flatwoods communities and over 40% of the Shrub Bog community in each burn unit.

13. Hydrologic Enhancements. Hydrologic enhancement include the removal of 17(+/-) acres of fill roads, filling 2(+/-) acres of ditches, and installation of 6 low-water crossings and 5 culverts in accordance with the construction drawings (Attachment F) and Figure 6.

- a. After pine removal activities have been completed within the wetland and upland pine plantation, and no longer than 2 years after recording the conservation easement, approximately 17 acres of existing access roads will be graded into the adjacent roadside borrow ditches to match natural grade. Extra fill from the road removal will be used to fill other roadside ditches on-site. Any additional off-site fill necessary for the ditch fill shall be construction grade clean sand material void of exotic vegetation and deleterious substances. Graded areas shall be planted in accordance with Specific Condition 10c.

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- b. Six low water crossings and five culverts will be installed no later than 2 years from recording the conservation easement where the remaining roads cross existing wetlands (Figure 6). At each low water crossing location, road fill will be excavated to at least six inches below the surrounding grade and stabilized with approximately 12 inches of sub-base material. During construction and stabilization, silt fences and staked hay bales and/or floating turbidity barriers shall be used to minimize turbid run-off into waters of the State. Attachment F shows a typical plan view and cross-sectional view of this proposed activity.
 - c. All discarded culverts and rubbish shall be removed from the site to an appropriate disposal area. Silt fences will be allowed to remain, and upgraded as needed, until such time as all grades have been stabilized. BMPs will be followed during construction activities. Standard construction equipment will be used. In wetter areas, tracked vehicles will be used to minimize soil disturbance. Work will not be conducted following rain events to prevent rutting and turbid runoff.
 - d. During construction, the permittee shall submit monthly electronic updates that summarize activities and completion of the work. In addition, when all activities described in this condition are substantially completed, and prior to credit release associated with this construction, the permittee shall submit as-built drawings and arrange a post-construction site visit that includes the Department, QMS, and any IRT members that are available to review the activities. The permittee shall submit a summary of the site visit with the annual progress report to facilitate future compliance reviews.
14. Turbidity controls. Best management practices for the control of turbidity and erosion shall be implemented during all work on site. All construction activities shall be conducted in accordance with state and federal NPDES regulations as set forth in Section 403.0885, F.S., Chapter 62-621.300(4), F.A.C. and an approved Stormwater Pollution Prevention Plan (SWPPP). Erosion and turbidity control measures shall be inspected regularly and turbidity monitored, as necessary, in accordance with Specific Condition 25 until work has been completed. The graded areas shall be stabilized within 48 hours of attaining final grades and at any other time necessary to prevent erosion, siltation and turbid discharges in violation of state water quality standards.
15. Work schedule. Initial restoration activities are expected to occur within 2-3 years of permit issuance, followed by continued monitoring and management until success. The sequence of activities and dates given below are relative estimates to be used as guidelines. Variation in this schedule may be authorized with concurrence of the Department upon written request from the permittee.

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Activity	Condition Number	Approx. Due Date based on issuance
Record CE and Implement Security	7, 8	1-3 months
Establishment of Financial Assurances	9	1-3 months
Selection of Approved QMS	6	1-3 months
Baseline Monitoring / Reporting	27, 29	1-6 months
Initial Harvesting and Mechanical	10a,b	1-8 months
Semi-Annual Inspection/Reporting	28	Every 6 months
First Prescribed Fire	12	6-12 months
Hydrological Improvements	13	8 months - 1.5 yr.
Road and Ditch Revegetation	10c	9 month - 1.5 yr.
1st Annual Monitoring / Reporting	27, 29	1 st fall/winter
Exotic / Invasive Review	11	1 years - 1.5 years
Mechanical Preparation for Burn	9b	1 year - 1.5 year
2nd Prescribed Fire	12	1 year - 3 years
Annual Monitoring / Reporting	27, 29	Annually
Establishment of Seeding Transect	26a	2 years to 2.5 years
Seed Dispersal and longleaf planting	26a	2 years to 3 years
Mechanical maintenance (if necessary)	9	3 years - 5 years
3rd Prescribed Fire	12	3 years - 5 years
Additional Annual Monitoring / Reporting until success	27, 29	Annually (anticipate 5-8 years)

Banking Operations

16. This permit authorizes the permittee to implement a mitigation bank. The permittee is obligated to perform certain actions described herein. A material part of the reasonable assurances the Department is relying upon in issuing this permit is that the permittee will timely and completely implement all of the conditions in this permit. Failure to timely and completely comply with all of the conditions of this permit may result in a revocation or suspension of the permit, and release and withdrawal of mitigation credits may be suspended. If the permittee has not attained a modification for final credit release by January, 2020, or otherwise obtained a permit modification to revise the schedule, figures, criteria, credit assessment, or management to adjust for revised expectations, in accordance with the permit re-assessment in Specific Condition 20, any potential credits that have not been released shall be forfeited.

17. As specified in Rule 62-342.470(4) F.A.C., if at any time the bank is not in material compliance with the terms of this permit, no mitigation credits may be withdrawn. Mitigation credits shall again be available for withdrawal if the permittee comes back into compliance.

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18. Potential Credits. The total number of potential of credits was determined by the UMAM methodology, with calculations detailed in Attachments G. The 192.06 total potential credits for the bank are allocated to 22.79 Forested Wetland Credits and 169.27 Wet Prairie/Hydric Flatwoods Credits. These credits will be released and withdrawn in accordance with Specific Conditions 20.

19. Ledger. In order to track credit releases and withdrawals, a ledger shall be kept by both the permittee and the Department indicating all potential, released, withdrawn and available credits. The format for the ledger is attached as Attachment H.

20. Credit Release Schedule. Mitigation credits will be released for use according to the following Credit Release Schedule. The credit release timetable is an estimation only. All credit releases shall be allocated as Wet Prairie/Flatwoods (WP/WF) and Forested Wetland (FOR) credits according to the following table.

Release Activity	Specific Condition(s)	%Credits Released	Proposed Time*	Total Credits	WP/WF Credit	Forested Credits
Record CE / Financial Assurances / Security	7, 8, & 9	15	3 months	28.81	25.39	3.42
Logging/Mechanical Clearing	10a	10	6-12 months	19.21	16.93	2.28
Hydrological Improvements	13	5	2 years	9.6	8.46	1.14
First Prescribed Burn	12	10	2 years	19.21	16.93	2.28
BASELINE						
1st Interim Performance Standard	24	5	1 yr after baseline	9.6	8.46	1.14
2nd Interim Performance Standard	24	12.5	2-3 yrs	24.01	21.16	2.85
Second Prescribed Burn	12	5	2-4 years	9.6	8.46	1.14
3rd Interim Performance Standard	24	12.5	3-5 yrs	24.01	21.16	2.85
RE-ASSESS						
4th Interim Performance Standard	24	12.5	4-7 yrs	24.01	21.16	2.85
Third Prescribed Burn and Final Success Criteria	12, 23	12.5	5-8 yrs	24.01	21.16	2.85
Total	N/A	100	N/A	192.06	169.27	22.79

* Time from permit issuance or baseline. The actual credit release will be determined by when the specified activity is completed, which may be before or after the estimated date.

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Upon completion of a credit release activity, the permittee may submit a minor modification request (with fee), along with supporting documentation, for the release of the appropriate number of credits. The Department shall review the documentation 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.

Prior to the modification request for the forth interim credit release, the permittee shall meet with the Department to re-evaluate permit figures (community configuration) and criteria to determine whether current site conditions accurately reflect permit conditions and are expected to attain success criteria by January 2020. If not, the permittee shall submit a modification request to the Department for any requisite figure, criteria, credit assessment or release schedule revisions before the Department releases additional credits.

21. Mitigation Credit Withdrawal. Withdrawal of the mitigation bank credits as mitigation for wetland impacts shall be accomplished through a minor modification of this 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 within 60 days of issuance of the permit or agency action requiring credits. Minor modification requests shall only be submitted by the bank permittee. The modification request shall include:

- a. a complete list of all Department or NFWFMD (District) permits (or other applicable regulatory actions) that require mitigation credits from the Sweetwater Mitigation Bank,
- b. the permit number (or other regulatory action), issue date and Department or District contact,
- c. an identification of the number and type of wetland credits required under each of these permits.

Minor modification approvals for credit withdrawal shall be issued only to the bank permittee. An updated mitigation bank credit ledger sheet shall be included by the Department as an attachment to each minor modification approval for credit withdrawal.

22. Mitigation Service Area. The mitigation service area (MSA) is the geographic area within which adverse impacts may be offset by the bank. The MSA for the Sweetwater Mitigation Bank includes portions of Bay, Gulf, and Calhoun Counties north of the Intracoastal Waterway and within the St. Andrews Bay Watershed as depicted on Figure 2. Impacts within the range of Panama City crayfish (generally south and west of the bank site to bay) may require alternative or additional mitigation in accordance with guidance from Florida Fish and Wildlife Conservation Commission.

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Sweetwater Mitigation Bank

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- a. The MSA is bounded on the south by the Intracoastal Waterway and the St. Andrew Bay. The eastern boundary is the St. Andrew Watershed boundary. The northern sub-basin is excluded (because the majority of it lies within a different ecoregion. The western boundary is the Bay-Walton County line. Further, the Deer Point Lake Protection Zone, the Airport Conservation Area the Crooked Creek development site, and sub-watersheds for coastal and St. Joe Bay are not included in the MSA.
- b. The Wet Prairie/Hydric Flatwoods and Forested Wetland credits are intended for use as mitigation for future unavoidable impacts to wetlands typical of these historical or disturbed habitats (FLUCCS codes 611, 613, 614, 617, 621, 622, 624, 627, 630, 631, 640, 643, 646). Bank credits are not intended to offset impacts to ecological communities, such as estuarine/tidal resources, that are not typical of the proposed site conditions (see Attachment C for typical communities).
- c. Credits are not allowed for use outside of the MSA except as stipulated in Ch. 373.4136(6)(d), F. S. for linear projects, those with less than 1 acre of impact or those that are partially contained in the service area.

Success Criteria

23. Final Success. The overall goal of the mitigation bank is to reduce the planted pine and fire-suppressed plant communities shown in Figure 4 to a dense and diverse herbaceous groundcover with a sparse canopy of pine or cypress and a minor component of coppiced woody subcanopy that grades down to a canopied basin swamp as shown in Figure 7. A graphic representation of the success criteria is shown on Figure 8.

The bank will be deemed successful when all of the following criteria, in addition to the community descriptions in Attachment C, have been met for a period of at least one full year without intervention in the form of eradication of undesirable species, pine harvesting, or replanting of desirable vegetation.

- a. **Entire Site:**
 - 1) Cover of Category I and II invasive exotic plant species (pursuant to the FLEPPC) shall not exceed 1% total coverage per acre.
 - 2) Wetland hydrology shall indicate the presence, morphology and distribution of seasonal high saturation and seasonal high inundation, and/or hydric soil indicators sufficient to confirm that the appropriate saturation or inundation depths are achieved for the target ecosystem according to the following table for at least 3 typical rainfall winters.

Target Community Type	Depth of Water Table* (ft.)	Months
Bog and Shrub Bog	0 - 1.0**	Dec - May
Basin Swamp	+1.0 - 0**	Dec - May
Wet Prairie	+0.5 - 1.5**	Dec - May
* 0 represents soil surface. A "+" indicates a level above the soil surface and a "-" indicates a level below the soil surface. ** The permittee will not be responsible for meeting hydroperiod requirements during times of natural catastrophes such as flood and drought.		

- b. **Mesic Pine Flatwoods** (Wet Prairie / Flatwoods Credit) shall have:
- 1) At least 40 native, non-canopy species per transect (including coppice shrubs);
 - 2) Less than 10% bare ground, leaf litter and water (combined);
 - 3) At least 70% relative cover with herbaceous species (less than 30% relative cover with woody shrubs);
 - 4) At least 80% shrubs reduced to coppice <2m in height;
 - 5) An average of 30-70 pine trees per acre with at least 10% being longleaf pine (*Pinus palustris*) that is taller than grass-stage;
 - 6) Wiregrass (*Aristida stricta*) is among the top five dominant species by importance value (as defined in the monitoring plan).
- c. **Wet Prairie** (Wet Prairie / Flatwoods Credit) shall have:
- 1) At least 50 native, non-canopy, wetland (FACW or OBL) species per transect (including coppice shrubs);
 - 2) Less than 10% bare ground, leaf litter and water (combined);
 - 3) At least 80% relative cover with herbaceous species (less than 20% relative cover with woody shrubs);
 - 4) At least 80% shrubs reduced to coppice <2m in height;
 - 5) An average of less than 30 trees per acre, excluding cypress;
 - 6) Wiregrass (*Aristida sp.*) among the top five dominant species by importance value (as defined in the monitoring plan).
- d. **Bog** (Wet Prairie / Flatwoods Credit) shall have:
- 1) 40 or more native, non-canopy, wetland (FACW or OBL) species per transect (including coppice shrubs);
 - 2) Less than 20% bare ground, leaf litter and water (combined);
 - 3) At least 60% relative cover with herbaceous species (less than 40% relative cover with woody shrubs);
 - 4) At least 80% shrubs reduced to coppice <2m in height;
 - 5) An average of less than 50 trees per acre, excluding cypress.

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- e. **Shrub Bog** (Forested Wetland Credit)
 - 1) 40 or more native species per transect (trees, shrubs, herbs combined);
 - 2) Less than 50% bare ground, leaf litter and water (combined);
 - 3) Less than 50% total cover by woody shrubs;
 - 4) At least 70% shrubs reduced to coppice <2m in height;
 - 5) Relative herbaceous cover of at least 30%.
- f. **Basin Swamp** (Forested Wetland Credit) Because of the presence of remnant pitcher plants and of pond cypress in some basin swamp depressions, it is evident that at least portions of this community were historically more open with abundant sunlight, indicating fire regularly or occasionally passed through the depressions. While an intensive re-structuring of this habitat is not proposed (it is proposed for preservation only), no fire exclusion measures will be implemented for any communities onsite. As such, fire may burn across the landscape including basin wetlands and may cause high levels of canopy scorch or tree mortality. In such an event, the permittee shall contact the Department and any available IRT members to determine whether the areas would warrant re-mapping, planting or a modification of the following criteria.
 - 1) Vegetation healthy, with no sign of stress and reproducing in a manner appropriate to the species;
 - 2) At least 70% of shrubs in ecotone reduced to coppice.
- g. **Compliance:**
 - 1) There shall be at least 3 successful fires for final success ;
 - 2) All low water crossings and ditch fill areas have been installed, are stabilized and showing no signs of erosion;
 - 3) Road removal areas meet community success criteria;
 - 4) The permittee has conducted inspections, monitoring and management, including the appropriate schedule of prescribed burns, as defined in Specific Condition 12, and has submitted all required reports to the satisfaction of the Department;
 - 5) All security measures are established and in working order; and
 - 6) A long term management plan as defined in Specific Condition 26.c. and long term management entity has been submitted and approved, and the long term management trust fund has been funded in compliance with Specific Condition 9.b.
- h. **UMAM Assessment:** Using monitoring data and reports and in conjunction with the permittee and available members of the IRT, the Department shall inspect the site and conduct a UMAM analysis to ensure that all communities have reached, or are expected to reach and maintain, the “with mitigation” scores in Attachment G or community descriptions in Attachment C, under the permitted management requirements in Specific Condition 26.

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24. Interim release criteria. Progressive environmental enhancement or trending toward success provides environmental lift for which credit may be released incrementally prior to achieving all the final success criteria. Approximately forty percent of the potential credits are reserved for interim release as indicated in Specific Condition 20. Credits will be released at least one year after the baseline monitoring or the previous interim release and whenever inspection and representative monitoring data provided in Annual Reports indicated that the following criteria are met and are to be maintained under the required management plan:

- a. Exotic species are maintained or trending towards 1% cover or less;
- b. Harvesting and mechanical clearing has been conducted in accordance with Specific Condition 10;
- c. Prescribed fires have commenced and are being conducted in accordance with Specific Condition 12;
- d. Woody shrubs have been reduced and maintained in coppice;
- e. Road removal, ditch filling, and low water crossings have been installed and stabilized in accordance with Specific Condition 13;
- f. There is a 10% decrease in bare ground/leaf litter/water from baseline or previous year - or - it is approaching final success for the community;
- g. There is a 10% increase in relative cover of herbaceous species from baseline or previous year - or - it is approaching final success for the community;
- h. There is a 10% increase in species richness from baseline or previous year - or - it is approaching final success for the community;
- i. To attain the third interim release criteria, at least two successful fires shall have been documented.
- j. To attain the fourth interim release, a permit re-assessment, and, as necessary, a modification request as described in Specific Condition 20, shall be submitted.

25. Turbidity Monitoring. Monitoring during construction activities is intended to ensure compliance with best management practices, to minimize wetland impacts and to ensure that there are no turbidity plumes or violations of state water quality standards pursuant to 62-302, F.A.C. Turbidity monitoring shall be conducted daily using a portable turbidimeter whenever there is discharge to surface water beyond the limits of construction. The background monitoring site shall be placed upstream of the influence of the discharge. Compliance monitoring sites shall be within 10 feet of the discharge or turbidity curtain, and within any visible plume. The following measures shall be taken by the permittee whenever construction activities result in turbidity levels within waters of the state surrounding the project site exceed state water quality standards pursuant to Rule 62-302, F.A.C.:

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- a. Immediately cease all work contributing to the exceedance of the water quality standard.
- b. Modify the work procedures that were responsible for the exceedance, install more turbidity controls if necessary, and repair any non-functioning turbidity containment devices.
- c. Notify the Office Submerged Lands and Environmental Resources at 850-245-8492 within 24 hours of the time the exceedance is first detected.

26. Management and Maintenance. Monitoring data, observation and the QMS's professional judgment will dictate the type of management activity used in each ecological community to ensure long-term success. Additional brush reduction, exotic species treatment, vegetation seeding or planting, along with fire management, may be required to achieve and maintain success in perpetuity. At a minimum, the permittee shall conduct quarterly inspections of the property until criteria for the 3rd interim credit release is attained and semi-annual inspections thereafter, for the purpose of assessing and correcting the following management or maintenance needs:

- a. Reporting and timely maintenance, restoration, stabilization or repair of any damaged structures, fencing, signage, equipment, roads, erosion or dumping areas identified in the inspections;
- b. Conducting prescribed burns in accordance with the Specific Condition 12 at a frequency and season optimal to promote desirable vegetation and wildlife, with a minimum of one growing season burn every 4 years;
- c. Conducting exotic and nuisance plant control, as necessary, to maintain success criteria and avoid infestation of these species;
- d. Removing feral/exotic animals that threaten the mitigation activities or success, such as feral hogs.
- e. Augmenting vegetation in accordance with adaptive management and monitoring triggers and protocols outlined below and in Attachment D - Revegetation Plan:

i. Seed Bank Enhancement. Transects placed within the Wet Prairie, Shrub Bog and Bog will be traversed annually after the first prescribed fire. In areas (~15 ft²) along the transects where there is less than 50% groundcover (or near-complete dominance with only a couple of species), native seeds, collected from similar ecological communities within the bank or service area, will be scattered on the bare ground areas.

ii. Wiregrass (*Aristida stricta*) Planting. Wiregrass occurrence will be recorded in tenth acre plots every 1000 ft. along the longleaf pine/wiregrass transects in the Mesic Flatwoods and Wet Prairie communities. Monitoring plots that have less than 15% cover with wiregrass will be planted with at least 25 wiregrass plugs.

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- iii. Longleaf Pine (*Pinus palustris*) Planting. Longleaf pine occurrence will be recorded in tenth acre plots every 1000 ft. along the longleaf pine/ wiregrass transects in the Mesic Flatwoods and Wet Prairie communities. Data collected in the 1/10 acre plots will be used to determine the areas that need to be planted with bare-root seedlings, as described in Attachment D.
- f. Prior to final release, the permittee shall prepare a Department-approved, updated, stand-alone management plan for long-term management to be used as enforceable conditions for the long-term manager. The permittee may not transfer management responsibility until the final success criteria are met, a long-term manager is approved by the Department, and the long-term trust fund is fully funded.

27. Monitoring. Qualitative and quantitative monitoring of vegetation and community structure shall be required until the bank is determined to have achieved the success criteria in Specific Condition 23 or otherwise been transferred to long-term management. The Department has reviewed the proposed monitoring plan in Attachment I. This plan 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 permittee shall submit, for the Department's written approval, a final monitoring plan 60 days prior to conducting monitoring for this permit. The Department shall complete such review within 60 days of receipt of a written submittal of the final monitoring plan. This plan shall include the following attributes:

- a. a figure showing all sampling locations;
- b. a table indicating all sampling frequencies and/or dates;
- c. a detailed description of all sampling methodologies to be utilized;
- d. samples of field and data tables;
- e. photographic information;
- f. proposed reporting format;
- g. sample data summary tables and graphs;
- h. proposed analytical assessments and discussion contents; and
- i. a success/progress assessment.

28. Status Reports. Beginning the first January or July after permit issuance and every 6 months thereafter in perpetuity, the permittee shall submit semi-annual status reports/letters containing the following information regarding the project:

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- a. Dates that permitted activities were begun and completed;
- b. Brief description of work completed since the previous report or issuance;
- c. Copies of permit drawings indicating areas where work has been completed;
- d. A description of problems encountered and solutions undertaken;
- e. Inspection dates, checklists, hunt reports and findings;
- f. Site management tasks undertaken, including dates; and
- g. A brief description of the work and/or site management the permittee anticipates commencing, continuing or completing in the next six months.

29. Annual Reports. The Annual Report is a summary of the yearly monitoring for success and an assessment of the degree to which the bank is attaining success. This report shall be submitted after completion of the vegetation monitoring (conducted at end of growing season) and shall be prepared according to the format required and approved in accordance with Specific Condition 27. This report is due in January and shall be submitted annually until the Bank site has been determined to be successful. The Annual Report submitted to support a determination of final success criteria 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 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.

The Report requesting the final success determination shall be submitted to both the Department and the long-term manager.


List of Figures:

Fig. 1 - Location and Drainage Map
Fig. 2 - Location and Service Area Map
Fig. 3 - Surrounding Land Use Map
Fig. 4 - Existing Communities Map
Fig. 5 - Mitigation Plan Map
Fig. 6 - Hydrological Improvements and Fire Plan Map
Fig. 7 - Proposed Communities Map
Fig. 8 - Success Criteria Representation
FLEPPC Pest Species List

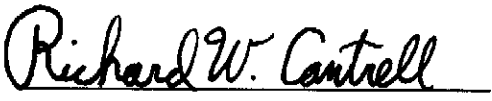
List of Attachments:

A - Security, Hunting and Recreation
B - Cost Estimate
C - Performance Standards
D - Revegetation Plan
E - Fire Management Plan
F - Hydrological Enhancements
G - UMAM
H - Credit Ledger
I - Monitoring Plan
J - References

signature page follows

Recommended by: 
56 pages attached.

STATE OF FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION


Richard W. Cantrell, Deputy Director
Division of Water Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies this PERMIT was mailed before the close of business on Nov 16, 2009 (date)

FILING AND ACKNOWLEDGMENT

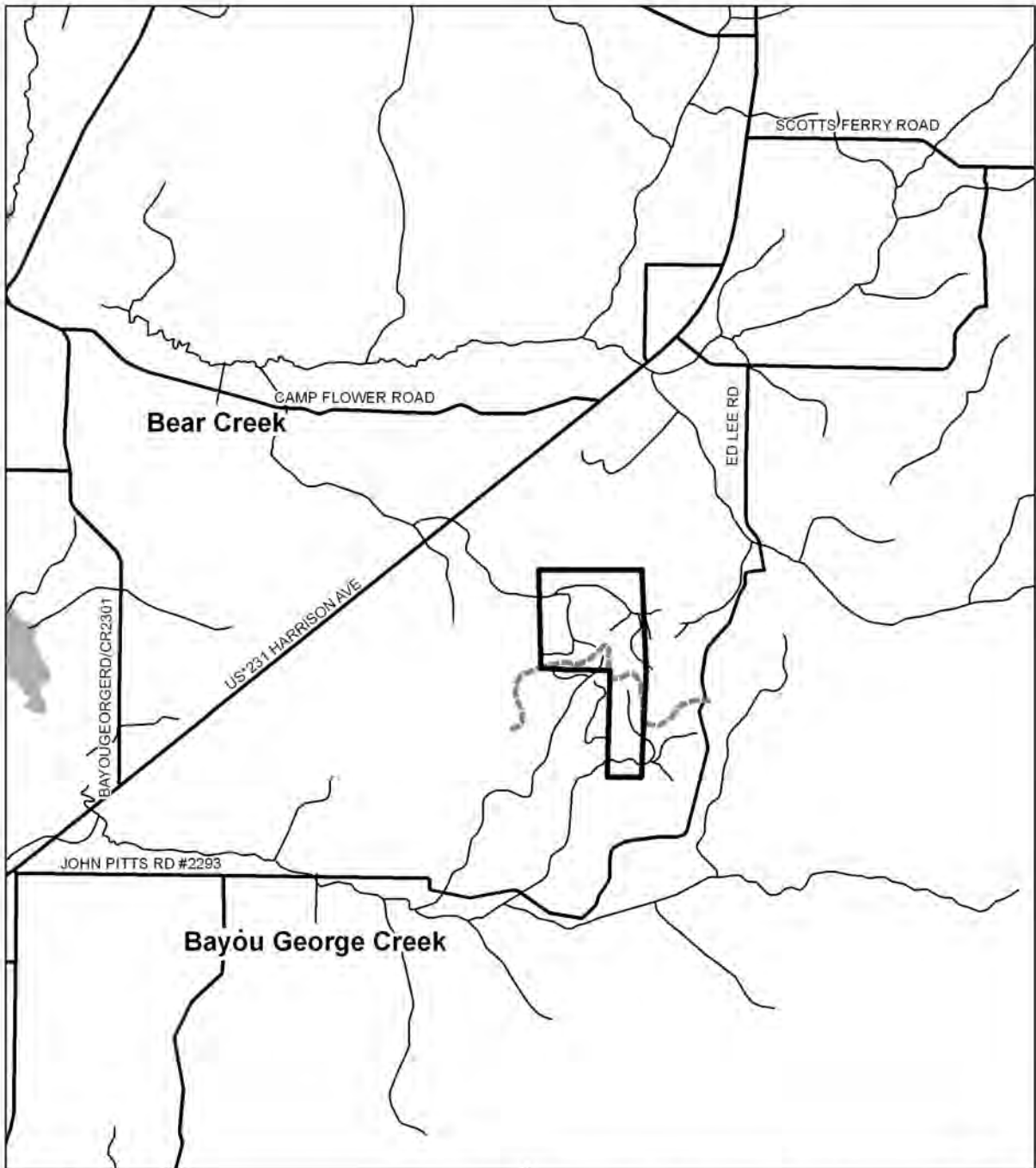
FILED, on this date, pursuant to 120.52(7) F. S.,
with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

Date



11/16/09



Legend:

- Project Boundary
- Topographical Break
- Mapped Streams
- Roads



0 3,500 7,000 14,000
 Feet

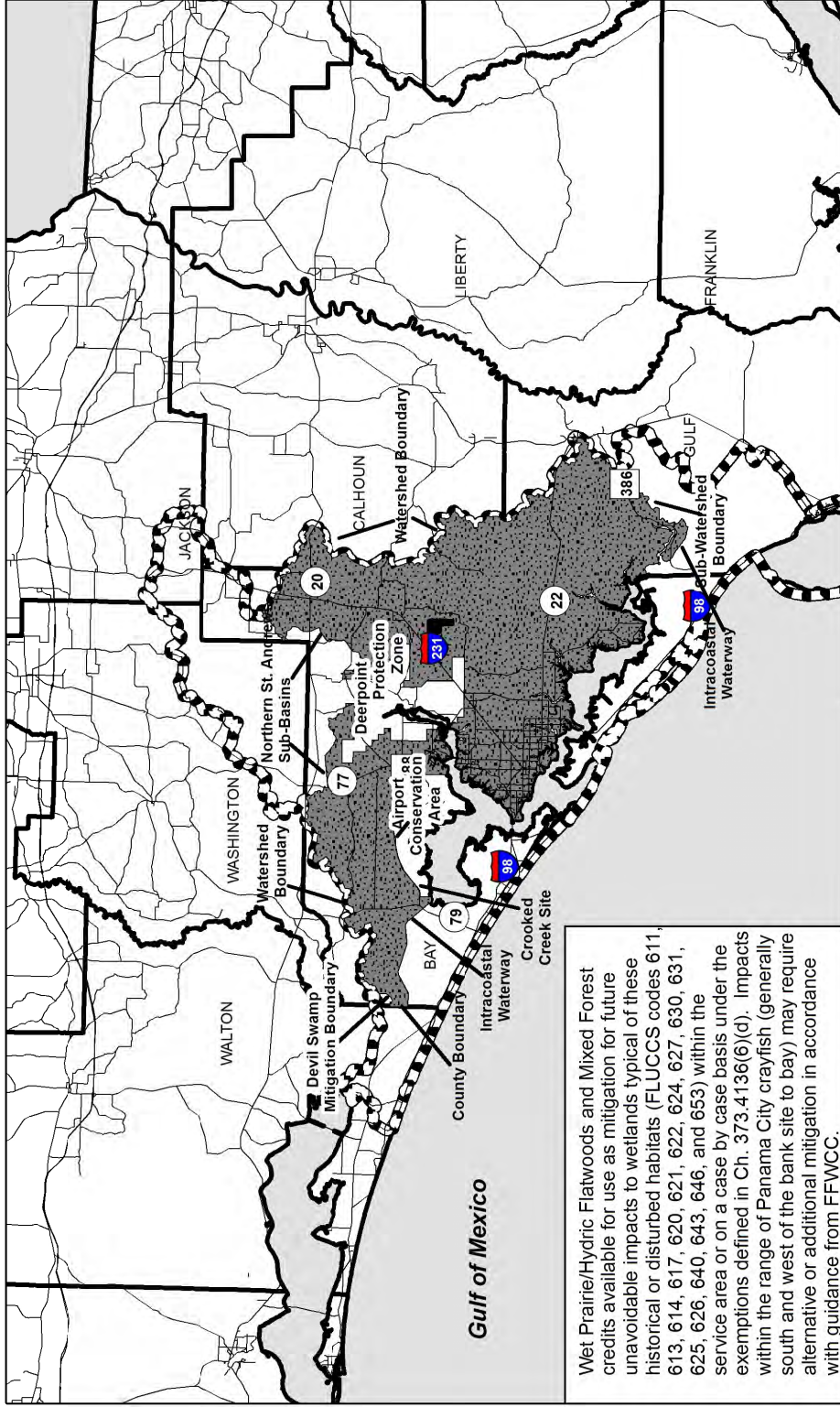
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Figure 1 : Location and Drainage Map

Sweetwater Mitigation Bank

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 Consultants, Inc.

MWC 03.17.2009
 ERC# 06-405



Wet Prairie/Hydric Flatwoods and Mixed Forest credits available for use as mitigation for future unavoidable impacts to wetlands typical of these historical or disturbed habitats (FLUCCS codes 611, 613, 614, 617, 620, 621, 622, 624, 627, 630, 631, 625, 640, 643, 646, and 653) within the service area or on a case by case basis under the exemptions defined in Ch. 373.4136(6)(d). Impacts within the range of Panama City crayfish (generally south and west of the bank site to bay) may require alternative or additional mitigation in accordance with guidance from FFWCC.

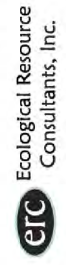
Figure 2: Location and Service Area Map
Sweetwater Mitigation Bank

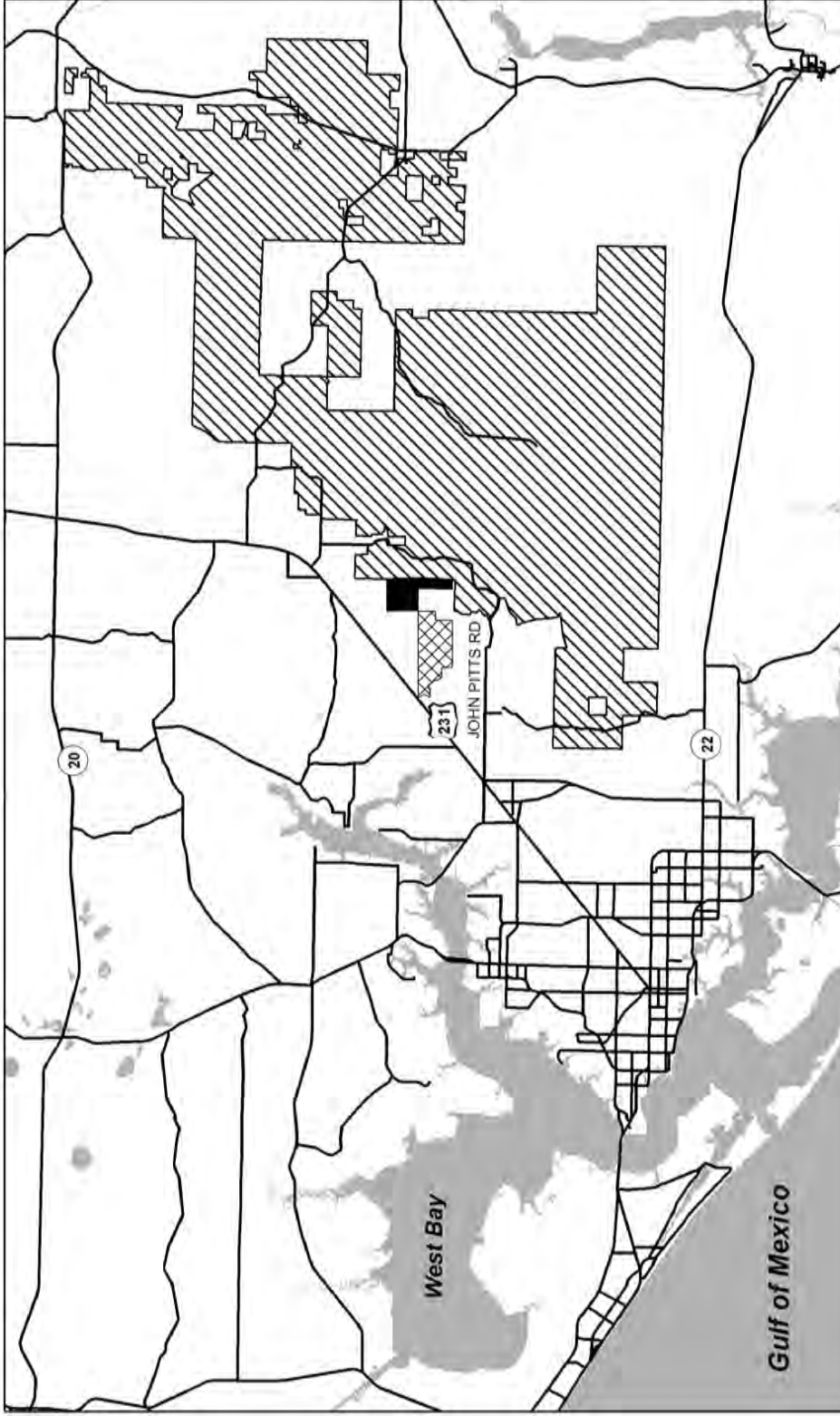
Legend:

- Major Roads
- ▭ County Boundaries
- ▨ Mitigation Service Area
- ▭ Project Boundary
- ▣ ST ANDREWS BAY





0 3 6 12 18 24 Miles

1:741,649





Legend:

-  Project Boundary
-  Bear Creek Forever Florida BOT Project
-  Conservation Easement
-  Roads



1:267,970

Figure 3 : Surrounding Land Use Map

Sweetwater Mitigation Bank



MWNC 03.17.2009
ERC# 06-405



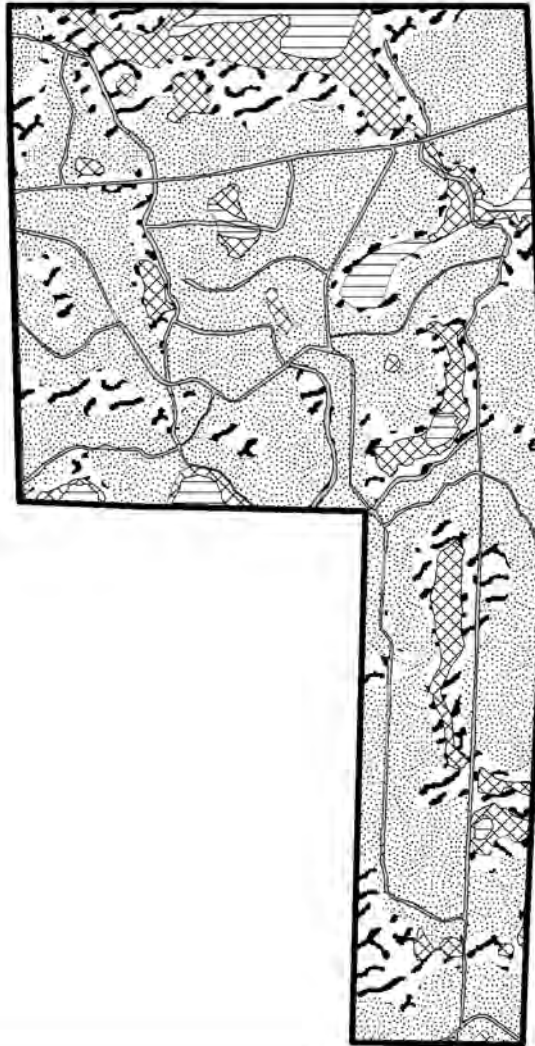
Legend:

-  Project Boundary
-  Harvested Basin Swamp 31.21 Acres
-  Fire Suppressed Shrub Bog 80.40 Acres
-  Planted in Pine Bog 92.63 Acres
-  Fire Suppressed Harvested Bog 161.72 Acres
-  Planted in Pine Wet Prairie 235.81
-  Fire Suppressed Harvested Wet Prairie 17.0
-  Planted Pine Mesic Pine Flatwoods 137.45
-  Fire Suppressed Mesic Pine Flatwoods 52.86 Acres
-  Road







0 750 1,500 3,000 Feet **1:18,000**



Figure 4 : Existing Ecological Communities Map
Sweetwater Mitigation Bank



Legend:


-  Project Boundary
-  Walkdown, Chopping, Prescribed Fire, Seeding
-  Walkdown, Prescribed Fire, Seeding
-  3. Harvesting, Prescribed Fire, Seeding
-  4. Allow Fire Intrusion
-  Mulching and Mowing/Chopping-Roads

0 750 1,500 3,000 Feet

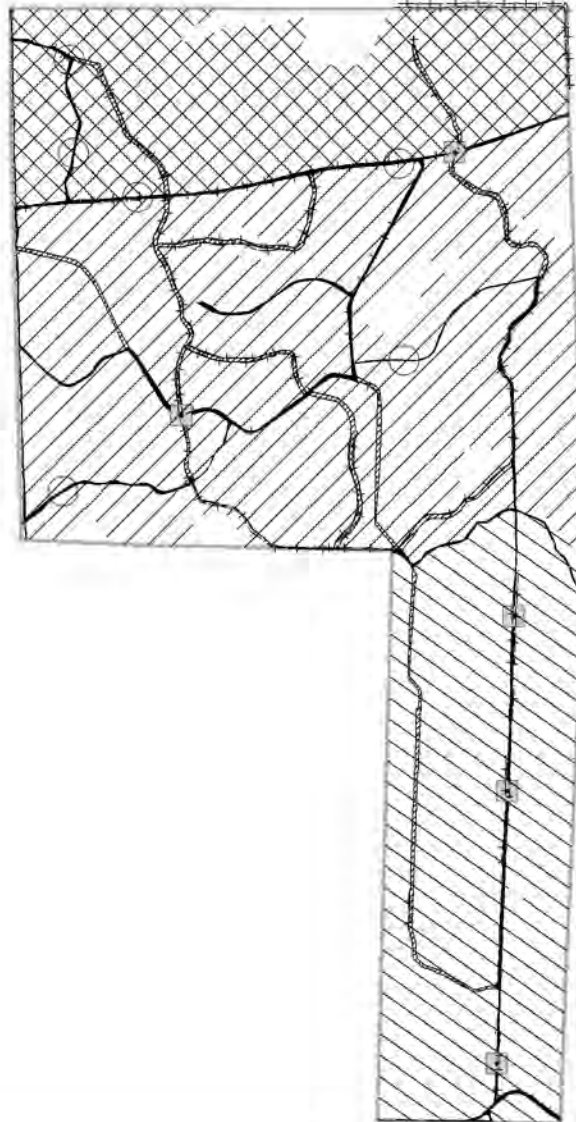
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Fig 5 : Mitigation Plan Map
Sweetwater Mitigation Bank

 Ecological Resources
 Consultants, Inc.

MWC 03.17.2009
 ERC# 06-405



Legend

- | | |
|--|--|
|  Road Removal |  Burnable Area Unit 3 |
|  Dirt Roads Remaining |  Low Water Crossing |
|  Burnable Area Unit 1 |  Replace/Install Culverts |
|  Burnable Area Unit 2 |  Ditches* |
|  Project Boundary | |


0 750 1,500 3,000 Feet

*All ditches will be recontoured or plugged. **1:18,000**

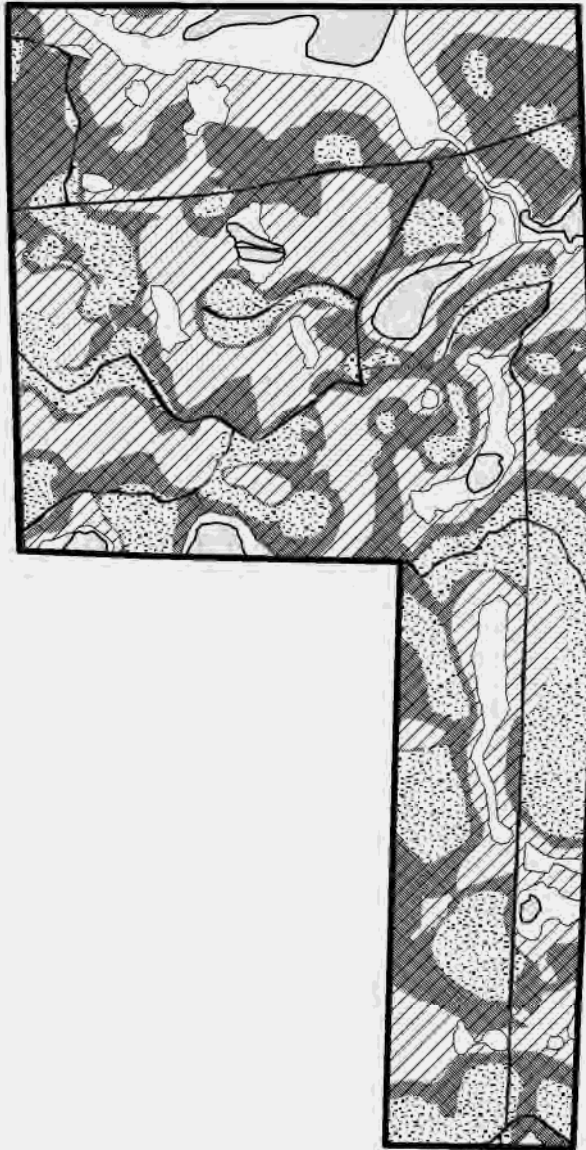


Figure 6 : Hydrologic and Fire Improvements

Sweetwater Mitigation Bank

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ERC# 06-405




Legend:

- | | |
|--|--|
|  Project Boundary |  Shrub Bog 81.10 |
|  Bog 264 Acres |  Wet Prairie/Flatwoods 259.71 Acres |
|  Basin Swamp 31.5 Acres |  Road |
|  Mesic Pine Flatwood 192.17 Acres | |

0 750 1,500 3,000 Feet 1:18,000



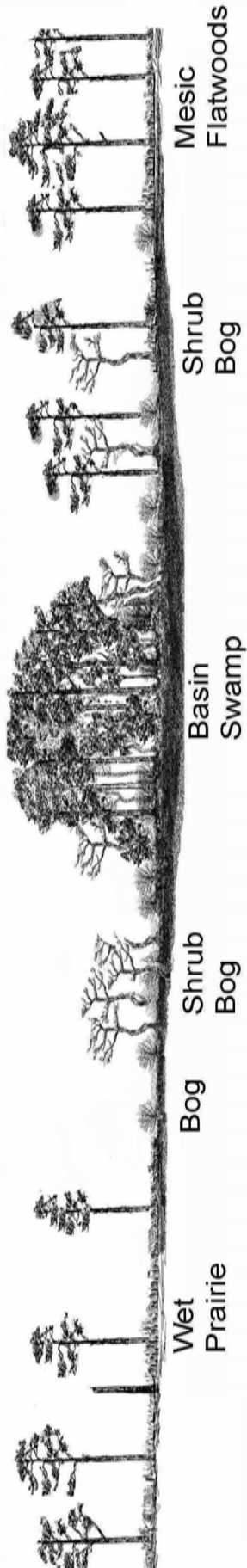
Figure 7 : Proposed Ecological Communities Map Sweetwater Mitigation Bank

 Ecological Resource Consultants, Inc.

MWC 03.17.2009
ERC# 06-405

Figure 8 - Community Specific Success Criteria and Cross Section

Restoration Targets	WP	BOG	SHRUB/BOG	BASIN SWAMP	SHRUB/BOG	MPF
Relative Cover Herbaceous Groundcover	80% or more	60% or more	30% or more	no performance requirement	30% or more	70% or more
Relative Cover Woody Shrubs	20% or less	30% or less	50% or less groundcover	no performance requirement	50% or less groundcover	30% or less
Total Cover Bareground/ Leaf Litter	10% or less	20% or less	50% or less	no performance requirement	50% or less	10% or less
Species Diversity	50 or more species with wiregrass in the top 5 dominants	40 or more species	40 or more species	no performance requirement	40 or more species	40 or more species with wiregrass as one of the top five dominants
Woody Shrub Coverage (as coppice)	10% or less 80% or more reduced to coppice	80% or more reduced to coppice	70% or more reduced to coppice	70% reduced to coppice in ecotone	70% or more reduced to coppice	80% or more reduced to coppice
Trees/Acre	30 or fewer trees excluding pond cypress	50 or fewer trees excluding pond cypress	no performance requirement	no performance requirement	no performance requirement	30-70 trees with at least 10% longleaf pine
Fire Frequency	approximate fire interval 2-3 years	approximate fire interval 2-3 years	approximate fire interval 2-3 years	ecotone burns on average every 2-3 years	approximate fire interval 2-3 years	approximate fire interval 2-3 years



Florida Exotic Pest Plant Council's 2009 List of Invasive Plant Species

Purpose of the List: *To focus attention on —*

- ▶ the adverse effects exotic pest plants have on Florida's biodiversity and plant communities,
- ▶ the habitat losses from exotic pest plant infestations,
- ▶ the impacts on endangered species via habitat loss and alteration,
- ▶ the need to prevent habitat losses through pest-plant management,
- ▶ the socio-economic impacts of these plants (e.g., increased wildfires in certain areas),
- ▶ changes in the seriousness of different pest plants over time,
- ▶ the need to provide information that helps managers set priorities for control programs.

CATEGORY I

Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. *This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.*

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
<i>Abrus precatorius</i>	rosary pea	I	N	C, S
<i>Acacia auriculiformis</i>	earleaf acacia	I		C, S
<i>Albizia julibrissin</i>	mimosa, silk tree	I		N, C
<i>Albizia lebbek</i>	woman's tongue	I		C, S
<i>Ardisia crenata</i> (<i>A. crenulata</i> misapplied)	coral ardisia	I		N, C, S
<i>Ardisia elliptica</i> (<i>A. humilis</i> misapplied)	shoebuttan ardisia	I	N	C, S
<i>Asparagus aethiopicus</i> (<i>A. sprengeri</i> ; <i>A. densiflorus</i> misapplied)	asparagus-fern	I		N, C, S
<i>Bauhinia variegata</i>	orchid tree	I		C, S
<i>Bischofia javanica</i>	bishopwood	I		C, S
<i>Calophyllum antillanum</i> (<i>C. calaba</i> and <i>C. inophyllum</i> misapplied)	santa maria (names "mast wood," "Alexandrian laurel" used in cultivation)	I		S
<i>Casuarina equisetifolia</i>	Australian-pine, beach sheoak	I	P, N	N, C, S
<i>Casuarina glauca</i>	suckering Australian-pine, gray sheoak	I	P, N	C, S
<i>Cinnamomum camphora</i>	camphor tree	I		N, C, S
<i>Colocasia esculenta</i>	wild taro	I		N, C, S
<i>Colubrina asiatica</i>	lather leaf	I	N	S
<i>Cupaniopsis anacardioides</i>	carrotwood	I	N	C, S
<i>Dioscorea alata</i>	winged yam	I	N	N, C, S
<i>Dioscorea bulbifera</i>	air-potato	I	N	N, C, S
<i>Eichhornia crassipes</i>	water-hyacinth	I	P	N, C, S
<i>Eugenia uniflora</i>	Surinam cherry	I		C, S
<i>Ficus microcarpa</i> (<i>F. nitida</i> and <i>F. retusa</i> var. <i>nitida</i> misapplied) ¹	laurel fig	I		C, S
<i>Hydrilla verticillata</i>	hydrilla	I	P, U	N, C, S
<i>Hygrophila polysperma</i>	green hygro	I	P, U	N, C, S
<i>Hymenachne amplexicaulis</i>	West Indian marsh grass	I		C, S
<i>Imperata cylindrica</i> (<i>I. brasiliensis</i> misapplied)	cogon grass	I	N, U	N, C, S
<i>Ipomoea aquatica</i>	water-spinach	I	P, U	C
<i>Jasminum dichotomum</i>	Gold Coast jasmine	I		C, S
<i>Jasminum fluminense</i>	Brazilian jasmine	I		C, S
<i>Lantana camara</i> (= <i>L. strigocamara</i>)	lantana, shrub verbena	I		N, C, S
<i>Ligustrum lucidum</i>	glossy privet	I		N, C
<i>Ligustrum sinense</i>	Chinese privet, hedge privet	I		N, C, S
<i>Lonicera japonica</i>	Japanese honeysuckle	I		N, C, S
<i>Ludwigia peruviana</i>	Peruvian primrosewillow	I		N, C, S
<i>Luziola subintegra</i>	Tropical American water grass	I		S
<i>Lygodium japonicum</i>	Japanese climbing fern	I	N	N, C, S
<i>Lygodium microphyllum</i>	Old World climbing fern	I	N	C, S

¹Does not include *Ficus microcarpa* subsp. *fuyuensis*, which is sold as "Green Island Ficus"

FLEPPC List Definitions:

Exotic – a species introduced to Florida, purposefully or accidentally, from a natural range outside of Florida.

Native – a species whose natural range includes Florida.

Naturalized exotic – an exotic that sustains itself outside cultivation (it is still exotic; it has not "become" native).

Invasive exotic – an exotic that not only has naturalized, but is expanding on its own in Florida native plant communities.

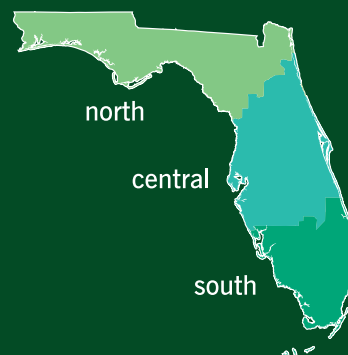
Abbreviations:

Government List (Gov. List):
P = Prohibited aquatic plant by the Florida Department of Agriculture and Consumer Services;

N = Noxious weed listed by Florida Department of Agriculture & Consumer Services;

U = Noxious weed listed by U.S. Department of Agriculture.

Regional Distribution (Reg. Dist.):
N = north, C = central, S = south, referring to each species' current distribution in general regions of Florida (not its potential range in the state). Please refer to the map below.



Changes to the 2009 List:

Luziola subintegra, added to list as Category I

Luziola subintegra (rice grass) was first discovered in Lake Okeechobee by Mike Bodle in 2007. This aquatic grass is spreading in the lake. It grows in water 2-3 m deep, spreads vegetatively and by seed, and aggressively outcompetes other native and exotic species. To date, 2,000 acres have been treated.

Nymphoides cristata, moved from Category II to Category I

Snowflake (*Nymphoides cristata*) is an Asian aquatic that became problematic in southwest Florida in the 1990s. It is now an abundant weed in canals and ponds in southwest Florida, and has spread throughout the peninsula where it has been documented in seven counties, from Collier to St. Johns. It has colonized the Big Cypress National Preserve where it is invading several strand swamps along Tamiami Trail, presumably introduced by fisherman using cast nets infested from waters outside of the preserve.

Salvinia minima, added to list as Category I

Water spangles (*Salvinia minima*), first found in Florida in 1928, remained a cryptic species during a period when opinions differed on its status as native or introduced in Florida. In 2001, a study of early herbarium voucher data revealed the introduction points and systematic spread of this free-floating fern into and throughout Florida. *S. minima* outcompetes more nutritive native duckweeds by overtopping their thinner fronds, which float flat upon the water surface.

Scleria lacustris, moved from Category II to Category I

Wright's nutrush (*Scleria lacustris*) is an annual tropical sedge that was first collected in Florida in 1988. In Florida, its distribution extends to more than 20 distinct natural areas in eight counties within four major drainage regions of the central and southern peninsula. Its unique growth habit obscures open water and drastically alters the naturally sparse and upright structure of preexisting native vegetation. Such domination may even displace native prey for the endangered Florida snail kite, a sight feeder inhabiting many locations where invasive colonization occurs.

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
<i>Macfadyena unguis-cati</i>	cat's claw vine	I		N, C, S
<i>Manilkara zapota</i>	sapodilla	I		S
<i>Melaleuca quinquenervia</i>	melaleuca, paper bark	I	P, N, U	C, S
<i>Melinis repens</i> (= <i>Rhynchelytrum repens</i>)	Natal grass	I		N, C, S
<i>Mimosa pigra</i>	catclaw mimosa	I	P, N, U	C, S
<i>Nandina domestica</i>	nandina, heavenly bamboo	I		N, C
<i>Nephrolepis cordifolia</i>	sword fern	I		N, C, S
<i>Nephrolepis brownii</i> (= <i>N. multiflora</i>)	Asian sword fern	I		C, S
<i>Neyraudia reynaudiana</i>	Burma reed, cane grass	I	N	S
<i>Nymphoides cristata</i>	snowflake	I		C, S
<i>Paederia cruddasiana</i>	sewer vine, onion vine	I	N	S
<i>Paederia foetida</i>	skunk vine	I	N	N, C, S
<i>Panicum repens</i>	torpedo grass	I		N, C, S
<i>Pennisetum purpureum</i>	Napier grass	I		N, C, S
<i>Pistia stratiotes</i>	water-lettuce	I	P	N, C, S
<i>Psidium cattleianum</i> (= <i>P. littorale</i>)	strawberry guava	I		C, S
<i>Psidium guajava</i>	guava	I		C, S
<i>Pueraria montana</i> var. <i>lobata</i> (= <i>P. lobata</i>)	kudzu	I	N	N, C, S
<i>Rhodomyrtus tomentosa</i>	downy rose-myrtle	I	N	C, S
<i>Rhynchelytrum repens</i> (See <i>Melinis repens</i>)				
<i>Ruellia brittoniana</i> ² (<i>R. tweediana</i> misapplied)	Mexican petunia	I		N, C, S
<i>Salvinia minima</i>	water spangles	I		N, C, S
<i>Sapium sebiferum</i> (= <i>Triadica sebifera</i>)	popcorn tree, Chinese tallow tree	I	N	N, C, S
<i>Scaevola taccada</i> (= <i>Scaevola sericea</i> , <i>S. frutescens</i>)	scaevola, half-flower, beach naupaka	I	N	C, S
<i>Schefflera actinophylla</i> (= <i>Brassia actinophylla</i>)	schefflera, Queensland umbrella tree	I		C, S
<i>Schinus terebinthifolius</i>	Brazilian pepper	I	P, N	N, C, S
<i>Scleria lacustris</i>	Wright's nutrush	I		C, S
<i>Senna pendula</i> var. <i>glabrata</i> (= <i>Cassia coluteoides</i>)	climbing cassia, Christmas cassia, Christmas senna	I		C, S
<i>Solanum tampicense</i> (= <i>S. houstonii</i>)	wetland nightshade, aquatic soda apple	I	N, U	C, S
<i>Solanum viarum</i>	tropical soda apple	I	N, U	N, C, S
<i>Syngonium podophyllum</i>	arrowhead vine	I		N, C, S
<i>Syzygium cumini</i>	jambolan plum, Java plum	I		C, S
<i>Tectaria incisa</i>	incised halberd fern	I		S
<i>Thespesia populnea</i>	seaside mahoe	I		C, S
<i>Tradescantia fluminensis</i>	small-leaf spiderwort	I		N, C
<i>Urochloa mutica</i> (= <i>Brachiaria mutica</i>)	Para grass	I		C, S

CATEGORY II

Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. *These species may become ranked Category I, if ecological damage is demonstrated.*

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
<i>Adenantha pavonina</i>	red sandalwood	II		S
<i>Agave sisalana</i>	sisal hemp	II		C, S
<i>Aleurites fordii</i> (= <i>Vernicia fordii</i>)	tung oil tree	II		N, C
<i>Alstonia macrophylla</i>	devil tree	II		S
<i>Alternanthera philoxeroides</i>	alligator weed	II	P	N, C, S
<i>Antigonon leptopus</i>	coral vine	II		N, C, S
<i>Aristolochia littoralis</i>	calico flower	II		N, C, S
<i>Asystasia gangetica</i>	Ganges primrose	II		C, S

²The Plant List Committee is uncertain as to the correct name for this species. Plants cultivated in Florida, all representing the same invasive species, have in the past been referred to as *Ruellia brittoniana*, *R. tweediana*, *R. caerulea*, and *R. simplex*.

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
<i>Begonia cucullata</i>	wax begonia	II		N, C, S
<i>Blechum pyramidatum</i>	green shrimp plant, Browne's blechum	II		N, C, S
<i>Broussonetia papyrifera</i>	paper mulberry	II		N, C, S
<i>Callisia fragrans</i>	inch plant, spironema	II		C, S
<i>Callistemon viminalis</i>	bottlebrush, weeping bottlebrush	II		S
<i>Casuarina cunninghamiana</i>	river sheoak, Australian-pine	II	P	C, S
<i>Cecropia palmata</i>	trumpet tree	II		S
<i>Cestrum diurnum</i>	day jessamine	II		C, S
<i>Chamaedorea seifrizii</i>	bamboo palm	II		S
<i>Clematis terniflora</i>	Japanese clematis	II		N, C
<i>Cryptostegia madagascariensis</i>	rubber vine	II		C, S
<i>Cyperus involucratus</i> (<i>C. alternifolius</i> misapplied)	umbrella plant	II		C, S
<i>Cyperus prolifer</i>	dwarf papyrus	II		C, S
<i>Dactyloctenium aegyptium</i>	Durban crowfootgrass	II		N, C, S
<i>Dalbergia sissoo</i>	Indian rosewood, sissoo	II		C, S
<i>Elaeagnus umbellata</i>	silverberry, autumn olive	II		N
<i>Elaeagnus pungens</i>	silverthorn, thorny olive	II		N, C
<i>Epipremnum pinnatum</i> cv. Aureum	pothos	II		C, S
<i>Ficus altissima</i>	false banyan, council tree	II		S
<i>Flacourtia indica</i>	governor's plum	II		S
<i>Hemarthria altissima</i>	limpo grass	II		C, S
<i>Hibiscus tiliaceus</i> (See <i>Talipariti tiliaceum</i>)				
<i>Hyparrhenia rufa</i>	jaragua	II		N, C, S
<i>Ipomoea carnea</i> ssp. <i>fistulosa</i> (= <i>I. fistulosa</i>)	shrub morning-glory	II	P	C, S
<i>Jasminum sambac</i>	Arabian jasmine	II		S
<i>Kalanchoe pinnata</i>	life plant	II		C, S
<i>Koeleruteria elegans</i> ssp. <i>formosana</i> (= <i>K. formosana</i> ; <i>K. paniculata</i> misapplied)	flamegold tree	II		C, S
<i>Leucaena leucocephala</i>	lead tree	II	N	N, C, S
<i>Landoltia punctata</i> (= <i>Spirodela punctata</i>)	Spotted duckweed	II		N, C, S
<i>Limnophila sessiliflora</i>	Asian marshweed	II	P, U	N, C, S
<i>Livistona chinensis</i>	Chinese fan palm	II		C, S
<i>Melia azedarach</i>	Chinaberry	II		N, C, S
<i>Melinis minutiflora</i>	Molassesgrass	II		C, S
<i>Merremia tuberosa</i>	wood-rose	II		S
<i>Murraya paniculata</i>	orange-jessamine	II		S
<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	II	P	N, C, S
<i>Panicum maximum</i> (= <i>Urochloa maxima</i> , <i>Megathyrsus maximus</i>)	Guinea grass	II		N, C, S
<i>Passiflora biflora</i>	two-flowered passion vine	II		S
<i>Pennisetum setaceum</i>	green fountain grass	II		S
<i>Phoenix reclinata</i>	Senegal date palm	II		C, S
<i>Phyllostachys aurea</i>	golden bamboo	II		N, C
<i>Pittosporum pentandrum</i>	Philippine pittosporum, Taiwanese cheesewood	II		S
<i>Pteris vittata</i>	Chinese brake fern	II		N, C, S
<i>Ptychosperma elegans</i>	solitaire palm	II		S
<i>Rhoeo spathacea</i> (see <i>Tradescantia spathacea</i>)				
<i>Ricinus communis</i>	castor bean	II		N, C, S
<i>Rotala rotundifolia</i>	roundleaf toothcup, dwarf Rotala	II		S
<i>Sansevieria hyacinthoides</i>	bowstring hemp	II		C, S
<i>Sesbania punicea</i>	purple sesban, rattlebox	II		N, C, S
<i>Solanum diphyllum</i>	two-leaf nightshade	II		N, C, S
<i>Solanum jamaicense</i>	Jamaica nightshade	II		C
<i>Solanum torvum</i>	susumber, turkey berry	II	N, U	N, C, S

Callistemon viminalis, added to list as Category II

Bottlebrush (*Callistemon viminalis*), a popular landscape tree, is now invading undisturbed short hydroperiod wetland communities in Miami-Dade, Collier, and Martin Counties, including those in Big Cypress National Preserve and Everglades National Park.

Dactyloctenium aegyptium, added to list as Category II

Durban crowfootgrass (*Dactyloctenium aegyptium*) is an annual grass that is a widely distributed weed throughout the southeastern US. In Florida, this species has been documented in 54 counties. While it is primarily a weed of disturbed areas, it also invades beach dune communities in southern Florida, including those located within Everglades and Dry Tortugas National Parks. Dense growth of this species interferes with ground nesting birds in Dry Tortugas and competes with state and federally listed plant species on the mainland.

Elaeagnus umbellata, added to list as Category II

Autumn-olive (*Elaeagnus umbellata*) is an aggressive shrub capable of replacing entire native ecosystems, which it has done in numerous locations in other states. There are three known native locations in the eastern Florida panhandle; two are local escapes from cultivation. The third is a mixture of mature upland sand hill and pine communities where a wildlife planting has escaped. The entire 2,081 acre site is infested. The infestation ranges from 100% (12.5 acres), to 50% (49.9 acres), to 25% (38.3 acres), to 10% or less (1,683.4 acres).

Hyparrhenia rufa, added to list as Category II

Jaragua (*Hyparrhenia rufa*) is an annual grass that is known from 14 Florida counties. In Miami-Dade County it has been found in intact habitat in at least 12 pine rockland fragments, outcompeting native plant species.

Landoltia punctata, added to list as Category II

Spotted duckweed (*Landoltia punctata*) is a small floating aquatic plant that is native to Australia and Southeast Asia. Since it was first found in Missouri in the 1930s, it has spread to 22 states and been documented in 36 Florida counties. It invades a wide range of undisturbed aquatic habitats and outcompetes native species.

Syzygium jambos, formerly Category II, removed from List

The Committee has not been able to locate data showing this species behaves as a Category II invasive.

Use of the FLEPPC List

FLEPPC encourages use of the Invasive Species List for prioritizing and implementing management efforts in natural areas, for educating lay audiences about environmental issues, and for supporting voluntary invasive plant removal programs. When a non-native plant species is to be restricted in some way by law, FLEPPC encourages use of the List as a first step in identifying species worth considering for particular types of restriction. For more information on using the FLEPPC List of Invasive Plant Species, see *Wildland Weeds* Summer 2002 issue (Vol. 5, No. 3), pp. 16-17, or <http://www.fleppc.org/list/list.htm>

NOTE: Not all exotic plants brought into Florida become pest plants in natural areas. The FLEPPC List of Invasive Plant Species represents only about 10% of the nearly 1,400 exotic species that have been introduced into Florida and have subsequently established outside of cultivation. Most escaped exotics usually present only minor problems in highly disturbed areas (such as roadsides). And there are other exotics cultivated in Florida that are “well-behaved” — that is, they don’t escape cultivation at all.

Scientific Name	Common Name	FLEPPC Cat.	Gov. List	Reg. Dist.
<i>Sphagneticola trilobata</i> (= <i>Wedelia trilobata</i>)	wedelia	II		N, C, S
<i>Stachytarpheta cayennensis</i> (= <i>S. urticifolia</i>)	nettle-leaf porterweed	II		S
<i>Syagrus romanzoffiana</i> (= <i>Arecastrum romanzoffianum</i>)	queen palm	II		C, S
<i>Talipariti tiliaceum</i> (= <i>Hibiscus tiliaceus</i>)	mahoe, sea hibiscus	II		C, S
<i>Terminalia catappa</i>	tropical-almond	II		C, S
<i>Terminalia muelleri</i>	Australian-almond	II		C, S
<i>Tradescantia spathacea</i> (= <i>Rhoeo spathacea</i> , <i>Rhoeo discolor</i>)	oyster plant	II		S
<i>Tribulus cistoides</i>	puncture vine, burr-nut	II		N, C, S
<i>Urena lobata</i>	Caesar’s weed	II		N, C, S
<i>Vitex trifolia</i>	simple-leaf chaste tree	II		C, S
<i>Washingtonia robusta</i>	Washington fan palm	II		C, S
<i>Wedelia</i> (see <i>Sphagneticola</i> above)				
<i>Wisteria sinensis</i>	Chinese wisteria	II		N, C
<i>Xanthosoma sagittifolium</i>	malanga, elephant ear	II		N, C, S

Citation example:

FLEPPC. 2009. List of Invasive Plant Species. Florida Exotic Pest Plant Council. Internet: <http://www.fleppc.org/list/list.htm> or *Wildland Weeds* Vol. 12(4): 13-16. Fall 2009.

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FLEPPC Database – The Florida Exotic Pest Plant Database contains over 75,000 sight records of infestations of FLEPPC Category I and Category II species in Florida public lands and waters. 211 species are recorded. Nearly all of the records are from local, state, and federal parks and preserves; a few records document infestations in regularly disturbed public lands such as highways or utility rights-of-way. Natural area managers and other veteran observers of Florida’s natural landscapes submit these records, with many supported further by voucher specimens housed in local or regional herbaria for future reference and verification. New and updated observations can be submitted online at www.eddmaps.org/florida/. This database, along with other plant-data resources such as the University of South Florida Atlas of Florida Vascular Plants at www.plantatlas.usf.edu, the Florida Natural Areas Inventory database at www.fnai.org, and The Institute for Regional Conservation Floristic Inventory of South Florida database at www.regionalconservation.org, provides important basic supporting information for the FLEPPC List of Invasive Plant Species.

Images and/or distributional data of FLEPPC-listed species may be found at one or more of the following websites: University of South Florida Atlas of Florida Vascular Plants, www.plantatlas.usf.edu; the University of Florida Herbarium collection catalog, <http://www.flmnh.ufl.edu/herbarium/cat/>, and image gallery, <http://www.flmnh.ufl.edu/herbarium/cat/imagesearch.asp>; at Fairchild Tropical Botanic Garden’s Virtual Herbarium, www.virtualherbarium.org/vhportal.html, The Robert K. Godfrey Herbarium at Florida State University, <http://herbarium.bio.fsu.edu/index.php>; the University of Florida’s IFAS Center for Aquatic and Invasive Plants, <http://plants.ifas.ufl.edu>, and the USDA PLANTS database, <http://plants.usda.gov/>. Please note that greater success and accuracy in searching for plant images is likely if you search by scientific name rather than a common name. Common names often vary in cultivation and across regions. For additional information on plants included in this list, see related links and pages at www.fleppc.org.



ATTACHMENT A – SECURITY, HUNTING, AND RECREATION PLAN

I. Security

A. Gates: All entrance roads will be gated to control access as detailed on Figure 1A, “Security Plan Map.” Gates will be constructed of 4-inch steel channel, painted blaze orange, and equipped with reflective tape, and signage. Security housing around locks will be used to reduce the threat of illegal entry into the area. Gates will be monitored at least twice per month for signs of trespass and/or security breaches. Security gate damage will be repaired immediately.

B. Signs: The area boundary will be posted at 1,000 foot intervals, at access gates and along roads with the sign shown on Figure A-1. The permittee is responsible for replacement of damaged security signs.

II. Hunting

The property owner (permittee) and guests may hunt the property in accordance with the following conditions.

A. Conditions

1. Hunting pressure is limited to no more than 4 hunters on the site at one time, with a maximum weekly limit of 6 hunters. This limit will help control and manage deer, hog, and turkey populations.
2. All hunting must follow Florida Fish and Wildlife Conservation Commission (FWCC) regulations. Further, hunting is restricted to the following species:
 - a. White-tailed deer
 - b. Feral hog
 - c. Wild turkey
3. Only these species may be hunted. No other game or non-game species may be hunted, taken, harassed or otherwise disturbed. This applies to all other species, including reptiles and amphibians.
4. The use of dogs to hunt deer is prohibited.
5. Only adult male turkeys are legal to take.
6. There is no size restriction, bag limit or season on the taking of feral hogs, except as may be regulated by FWCC.
7. Permanent hunt stands or equipment, feed plots and baiting are prohibited.
8. Additional harvest restrictions may be established depending on harvest reports.
9. Semi-annual (2 reports per year) harvest reports must be included in the semi-annual progress/status reports.

B. Hunting Leases

If at any point the mitigation bank property will be used as part of a hunting club or lease, the lease must be approved by the Department, in consultation with the IRT to ensure that it is in compliance with the goals and conditions of the mitigation bank permit.

III. Recreational Activities

Recreation is limited to the following activities: Hiking, horseback riding on remaining monitoring roads only, bird and wildlife observation, non-professional beekeeping, sustainable seed collection for restoration, and educational field trips or research. All educational field trips shall be guided by the QMS or the permittee. Field trips will not exceed more than two visits per month. Attendees must follow the restrictions specified below. If at any time the QMS determines that any hunting or recreational activity would restrict ecological management or progress toward success criteria, such activities shall be discontinued and reported to the Department along with a plan for correction of the problem and/or modification of the permit.

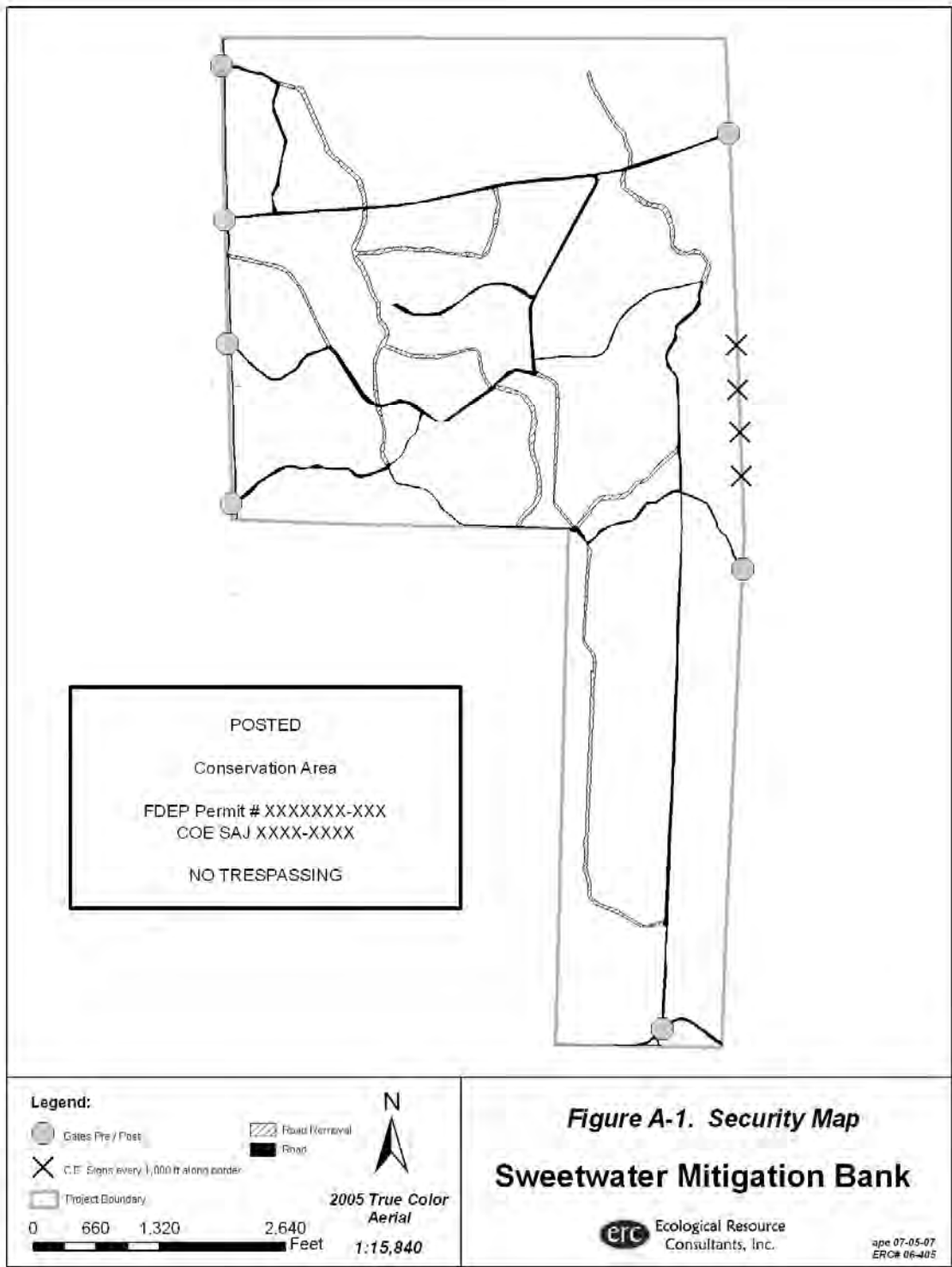
IV. Restrictions and Notifications

A. Restrictions

1. No modification or disturbance of habitats is allowed.
2. ATV four wheeler vehicles are prohibited, and *all* vehicle use is restricted to remaining roads only. The only allowable uses for vehicles are hunting and recreation specified herein, monitoring, restoration activities, and security.
3. Equestrian activities are limited to remaining roads that are not proposed for restoration. Five horses are allowed on site at a time. Loading and unloading areas will be limited to remaining roads. All equipment and trash must be removed from the site after the activity is complete.
4. Other than the game species allowed for hunting, no plants or animals may be removed. Destruction, harassment or taking of any Threatened and Endangered Species protected under Endangered Species Act, Chapter 5B-40, F.A.C., or Rule 68A-27, F.A.C., is prohibited.
5. The permittee will create a pamphlet stating the rules and restrictions contained in this plan and hand out to all persons or groups entering the property for hunting or recreational purposes. The pamphlet will state what can be done on the site, what cannot be done on the site, and who must be notified of any deviations.

B. Notification

1. All unauthorized persons, signs of trespassing, signs of illegal activities or disturbances, and violations of hunting terms must be reported to the permittee and QMS within 24 hours of discovery. A remedial plan will be developed by the sponsor or QMS within 30 days and submitted to the Department and IRT.
2. The sponsor must maintain a list of people or groups visiting the site for hunting recreation and educational purposes. This list must be available for review at the request of the Department or IRT.



POSTED

Conservation Area

FDEP Permit # XXXXXXX-XXX
COE SAJ XXXX-XXXX

NO TRESPASSING

Legend:

- Gates Pre / Post
- Road Removal
- C.E. Signs every 1,000 ft along border
- Road
- Project Boundary



2005 True Color
Aerial
1:15,840

0 660 1,320 2,640
Feet

Figure A-1. Security Map

Sweetwater Mitigation Bank

Ecological Resource
Consultants, Inc.

ape 07-05-07
ERC# 06-405

ATTACHMENT B - COST ESTIMATES

Attachment B - Sweetwater Mitigation Bank Cost Estimate

SECTION 1 - LEGAL/SECURITY		2009		2010		2011		2012		2013		2014		
ITEM	DESCRIPTION	UNIT	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL
1	Conservation Easement Recording	LS	1	\$ 500.00										
2	Conservation Easement Signs	EA	50	\$ 5,000.00										
3	Installation	EA	50	\$ 1,000.00										
4	Security Gates	EA	4	\$ 10,000.00										
				\$ 16,500.00										
SECTION 2 - LAND CLEARING		2009		2010		2011		2012		2013		2014		
ITEM	DESCRIPTION	UNIT	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL
1	Harvesting	AC	466	\$ -										
2	BMP Oversight	HR	40	\$ 5,800.00										
				\$ 5,800.00										
SECTION 3 - FIRE MANAGEMENT		2009		2010		2011		2012		2013		2014		
ITEM	DESCRIPTION	UNIT	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL
1	Walkdown	AC	312	\$ 31,200.00	0	\$ -								
2	Fire Breaks	LF	9,800	\$ 12,250.00	4,900	\$ 4,900.00			4,900	\$ 4,900.00				
2	Prescribed Fire Application	AC	796.98	\$ 39,849.00	796.98	\$ 39,849.00			796.98	\$ 39,849.00				
3	Oversight	HR	24	\$ 7,440.00	16	\$ 4,960.00			16	\$ 4,960.00				
4	Monitoring	HR	16	\$ 4,960.00	16	\$ 4,960.00			16	\$ 4,960.00				
5	Aerial Photograph	EA	1	\$ 2,500.00	1	\$ 2,500.00			1	\$ 2,500.00				
				\$ 98,199.00		\$ 57,169.00				\$ 57,169.00				
SECTION 4 - HYDROLOGICAL IMPROVEMENT		2009		2010		2011		2012		2013		2014		
ITEM	DESCRIPTION	UNIT	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL	QUAN	TOTAL
1	Low Water Crossing	EA	6.00	\$ 7,200.00										
2	Culverts (18")	EA	4	\$ 6,000.00										
3	Road Removal	AC	17.00	\$ 4,250.00										
4	Ditch Fill (48,663 lf)	CY	1,400	\$ 14,000.00										
5	Monitoring Wells	EA	6.00	\$ 1,500.00										
6	BMP Oversight	HR	24	\$ 7,440.00										
				\$ 40,390.00		\$ -								

[Handwritten Signature]
 13 July 09

ATTACHMENT C - PROPOSED SITE CONDITIONS

The target condition of SMB is one that, with appropriate continued management, will be similar to historical native structure and vegetation that grades from uplands to deeper swamps or stringers. After initial mechanical treatment of inappropriate vegetation, the landscape, except for the deepest wetlands, will be restored and managed primarily through the use of prescribed burning. *Mesic flatwoods* are relatively flat uplands and will be restored to historic conditions of widely spaced canopy of pines, in an open landscape with a species-rich groundcover dominated by wiregrass and other fire-dependent grasses and forbs and with shrubs maintained as coppice. Initially the canopy will be dominated by slash pine, but adequate numbers of longleaf pine will be present to ensure that they will replace the slash in dominance provided fire returns at a 2-4 year interval. The *wet prairie* landscape is found downslope of the mesic flatwoods. This nearly-treeless community would have a similar diverse groundcover, dominated by beak rushes, wiregrass and other grasses and forbs that carry fire. If trees are present, the canopy will consist of primarily pond cypress with lesser amounts of longleaf pine and slash pine. Shrubs, a minor component of this landscape, are maintained as coppice shrubs and often include titi and endemic bear tupelo. The restored groundcover will contain a diverse assemblage of wetland herbs as well as unusual and endemic insectivorous species.

The *bogs* and *shrub bogs* will also become open landscapes, with coppice shrubs of various heights depending on fire intensity, reticulated with tussocks and hummocks containing wetland grasses and forbs. These landscapes are transitional from wet prairie, found downslope and sometimes as part of the ecotones of basin swamps. The lowest portion of the landscape, *basin swamps*, will have a canopy of pond cypress, sweetbay, swampbay, swamp tupelo and slash pine. As these trees continue to grow in the future, the longer-lived pond cypress will eventually becoming the dominant trees in these landscapes. The natural microtopography of wet prairie, bog and shrub bog will support native, herbaceous wetland plants. The overgrown, fire suppressed shrub layer in all plant communities, except the interior of basin swamps, will be reduced to coppice sprouts by periodic prescribed burning. This will restore the groundcover plants to their appropriate lifeforms and enhance the diversity of the groundcover.

Overall, the landscape will be restored to an open landscape that will resemble historic conditions as shown in Photographs 1-4*, and as graphically depicted in Figure C-1. Table 1 summarizes the current and target plant communities at the bank, and Table 2 provides a list of communities for which the credit types may be appropriate offsets.

*Photo's are in color on original permit and can be obtained from the file upon request.

The photographs provided below are examples of structure within the range of expected outcomes for the named communities that reflect appropriate targets, but may vary in species and/or density of individual plants or strata.



Photograph 1 – Mesic Flatwoods targets – open landscape, slash pine with viable longleaf pine for long-term dominance, little shrub strata, lush, diverse groundcover.



Photograph 2 – Wet Prairie targets – open landscape, sparse canopy of pine and cypress, little shrub strata, lush, diverse groundcover.



Photograph 3 – Bog targets – Mixed canopy mostly pine and cypress, open shrub strata, often dominated by *Hypericum*, lush, diverse groundcover.



Photograph 4 – Shrub Bog targets – Mixed canopy of pine and cypress, shrub strata coppiced but open enough for diverse groundcover.

Current Plant Community	Target Plant Community (FNAI)	Target Plant Community (FLUCCS)	Acres	Management
Harvested Basin Swamp	Basin Swamp	630 – Wetland Forested Mix	31.21	Enhancement
Ditch	Basin Swamp	630 – Wetland Forested Mix	0.29	Restoration
Fire-suppressed, Harvested Shrub Bog	Shrub Bog	626 – Hydric Pine Savannah	80.40	Enhancement
Road	Shrub Bog	626 – Hydric Pine Savannah	0.70	Restoration
Planted Pine Bog	Bog	626 – Hydric Pine Savannah	92.63	Enhancement
Fire-suppressed, Harvested Bog	Bog	626 – Hydric Pine Savannah	161.72	Enhancement
Road	Bog	626 – Hydric Pine Savannah	9.61	Restoration
Ditch	Bog	626 – Hydric Pine Savannah	0.036	Restoration
Fire Suppressed, Harvested Wet Prairie	Wet Prairie	643 – Wet Prairies	17.0	Enhancement
Planted Pine Wet Prairie	Wet Prairie	643 – Wet Prairies	235.81	Enhancement
Road	Wet Prairie	643 – Wet Prairies	5.40	Restoration
Ditch	Wet Prairie	643 – Wet Prairies	1.50	Restoration
Planted Pine, Mesic Pine Flatwoods	Mesic Pine Flatwoods	411 – Pine Flatwoods	137.45	Enhancement
Fire Suppressed Mesic Pine Flatwoods	Mesic Pine Flatwoods	411 – Pine Flatwoods	52.86	Enhancement
Ditch	Mesic Pine Flatwoods	411 – Pine Flatwoods	0.184	Restoration
Road	Mesic Pine Flatwoods	411 – Pine Flatwoods	1.68	Restoration
Road	Road		21.52	N/A

Table 1. Current and target plant communities (following FNAI, 1990).

Credit Type	FNAI	FLUCCS
1. Mixed Hardwood Wetlands	Baygall, Basin Swamp, Dome Swamp, Bottomland Forest	611, 613, 614, 617, 620, 621, 622, 624, 627, 630, 631
2. Wet Prairie/ Hydric Flatwoods	Wet Prairie, Wet Flatwoods, Hydric Hammock, Seepage Slope, Bog, Shrub Bog, Depression Marsh	625, 626, 640, 643, 646

Table 2. Credit types. Each credit type is given with the associated Florida Natural Areas Inventory (FNAI) and Florida Land Use, Cover and Forms Classification System (FLUCCS) codes.

Figure C-1 - Community Specific Success Criteria and Cross Section

Restoration Targets	WP	BOG	SHRUB/BOG	BASIN SWAMP	SHRUB/BOG	MPF
Relative Cover Herbaceous Groundcover	80% or more	60% or more	30% or more	no performance requirement	30% or more	70% or more
Relative Cover Woody Shrubs	20% or less	30% or less	50% or less groundcover	no performance requirement	50% or less groundcover	30% or less
Total Cover Bareground/ Leaf Litter	10% or less	20% or less	50% or less	no performance requirement	50% or less	10% or less
Species Diversity	50 or more species with wiregrass in the top 5 dominants	40 or more species	40 or more species	no performance requirement	40 or more species	40 or more species with wiregrass as one of the top five dominants
Woody Shrub Coverage (as coppice)	10% or less 80% or more reduced to coppice	80% or more reduced to coppice	70% or more reduced to coppice	70% reduced to coppice in ecotone	70% or more reduced to coppice	80% or more reduced to coppice
Trees/Acre	30 or fewer trees excluding pond cypress	50 or fewer trees excluding pond cypress	no performance requirement	no performance requirement	no performance requirement	30-70 trees with at least 10% longleaf pine
Fire Frequency	approximate fire interval 2-3 years	approximate fire interval 2-3 years	approximate fire interval 2-3 years	ecotone burns on average every 2-3 years	approximate fire interval 2-3 years	approximate fire interval 2-3 years

ATTACHMENT D - Revegetation Plan

With appropriate management, most areas are expected to progress toward success through ecological succession with the existing seed bank. However, this re-vegetation plan describes monitoring methods and contingencies if observations do not indicate sufficient groundcover, wiregrass, or longleaf pine necessary to attain success criteria.

1. Seeding: After harvesting and the initial prescribed fire, the site will be qualitatively monitored along seed dispersal transects of similar length and coverage as the one shown in Figure D-1 - Seeding Transect Map to locate areas requiring additional density or diversity in the groundcover. Whenever the total coverage of coppice and herbaceous species in the groundcover is less than 50% (i.e. there is more than 50% coverage of bare ground/leaf litter) in approximate 15' X 15' areas, or when those areas are dominated by only one or two species, native seeds appropriate to the plant community will be scattered onto bare ground in those areas. Seeds of native species collected in restored landscapes at SMB and other nearby sites will be the seed source for supplemental planting. Seeds will be hand collect from all native species fruiting in late summer-fall and scattered by hand.

2. Wiregrass: After harvesting and the initial prescribed fire, the progress of the wiregrass restoration will be assessed in Mesic Flatwoods and Wet Prairie communities along the longleaf pine and wiregrass assessment transects of similar length and coverage as the one shown in Figure D-2 Longleaf Pine and Wiregrass Assessment Transects. Along these transects, at intervals of 1,000 feet, 1/10 acre plots will be assessed for wiregrass total coverage. If the wiregrass coverage is less than 15%, at least 25 wiregrass plugs will be planted within the 1/10 acre plot. This should facilitate the distribution of this species across the bank, ensure that it is present in areas where it has been extirpated, and provide a seed source for this keystone species to colonize these two plant communities as ecological restoration of the site progresses.

3. Longleaf Pine: The distribution of Longleaf pine will be monitored within the Mesic Flatwoods polygons along the longleaf pine and wiregrass assessment transects. As described in the above section the, 1/10 acre plots will be distributed every 1,000 feet along the assessment transects and will be monitored after the initial prescribed burn. Supplemental planting of longleaf pine seedlings, at a rate of 30-70 trees/ac., will occur if the presence of longleaf pine is less than 10% of the total trees, as follows. If most plots within any given section or "polygon" of mesic flatwoods indicate less than 10% of the trees are longleaf pine, then the entire polygon will be planted with adequate density to achieve the success criteria defined in the permit. After planting, the trees will be monitored, and re-planted as necessary, to ensure at least 80% survival.

Figures: Figure D-1 - Seeding Transect; Figure D-2 - Wiregrass/ Longleaf Transects




Legend:

-  Project Boundary
-  Seeding Evaluation Transect
-  Harvested Basin Swamp
-  Fire Suppressed Shrub Bog
-  Planted Pine Bog
-  Fire Suppressed Harvested Bog
-  Planted Pine Wet Prairie
-  Fire Suppressed Harvested Wet Prairie
-  Planted Pine Mesic Pine Flatwoods
-  Fire Suppressed Mesic Pine Flatwoods
-  Road

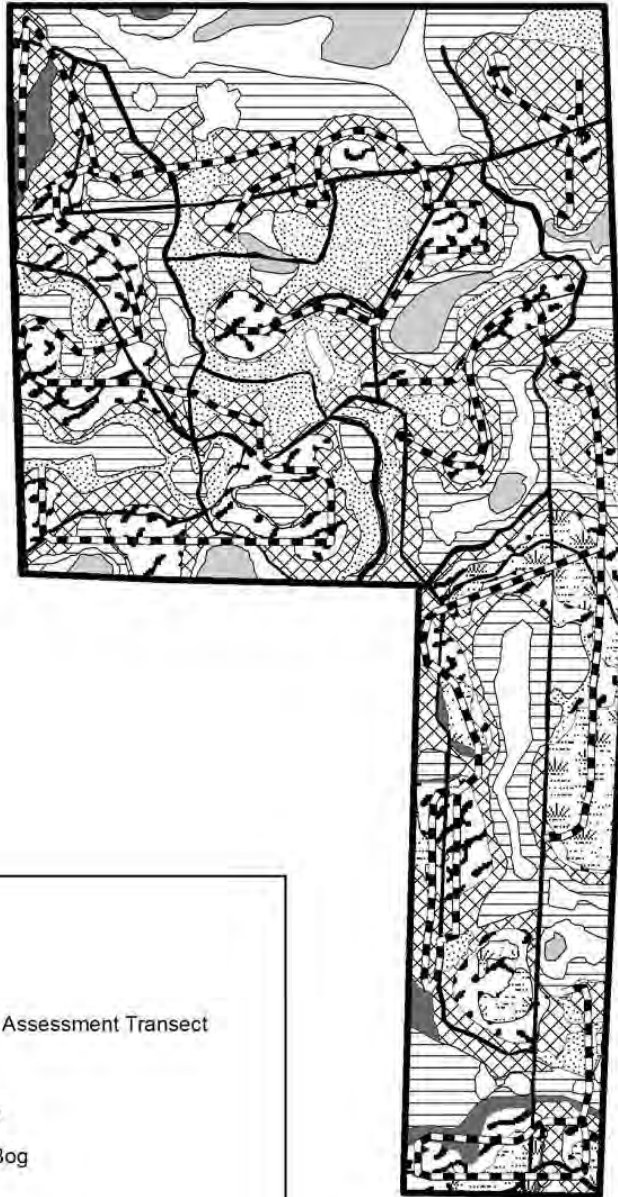
0 750 1,500 3,000 Feet **1:18,000**



**Figure D-1 Seeding Evaluation
Transect Map
Sweetwater Mitigation Bank**

 Ecological Resource
Consultants, Inc.

MWC 05.28.2009
ERC# 06-405



Legend:

-  Longleaf Pine Wiregrass Assessment Transect
-  Project Boundary
-  Harvested Basin Swamp
-  Fire Suppressed Shrub Bog
-  Planted Pine Bog
-  Fire Suppressed Harvested Bog
-  Planted Pine Wet Prairie
-  Fire Suppressed Harvested Wet Prairie
-  Planted Pine Mesic Pine Flatwoods
-  Fire Suppressed Mesic Pine Flatwoods
-  Road

0 750 1,500 3,000 Feet **1:18,000**



**Figure D-2 Longleaf Pine Wiregrass Assessment Transect
Sweetwater Mitigation Bank**

ATTACHMENT E - Fire Management Plan

Summary

The overall goals for prescribed burns are to mimic natural fire regimes and restore a more natural and historically based ecological equilibrium to the communities on site. Initial burns are intended to reduce woody vegetation, while subsequent burns will maintain a more open landscape, maintain appropriate life forms, and select for fire dependent species. As a result, shrubs will be reduced to coppice, intermediate strata below the canopy will be removed, and light will penetrate to the ground. The physical disturbance created by fire will selectively increase the number of species, overall density and coverage of fire-dependent groundcover plant species, which are appropriate for this landscape and create habitat for native fauna.

I. Burning Sequencing

Restoring the natural ecosystems will require an intensive prescribed fire sequence as detailed below. The initial burning regime will be integral for successful enhancement.

1. Mechanically treat vegetation in early spring (Jan-April) year one
2. Allow the vegetation to dry by late spring (April-May) year one
3. Prescribe burn when mechanically treated vegetation dries (May-June) year one
4. After the initial burn, allow vegetation to grow throughout the summer (July-November) year one
5. Vegetation is allowed to grow throughout spring and early summer (March-June) year two
6. If vegetation is not adequate to carry fire, the site will be roller chopped (June)
7. Second prescribed burn (June-August) year two
8. Mechanically treat vegetation as needed year two
9. Allow vegetation to grow in year three and four after burning and mechanical work in year two
10. Prescribe burn as soon as conditions allow (Jan-June) year five

Note: Because of the number of variables to be considered for a burn, weather conditions, fuel, safety and goals, timing and sequencing is dependent on vigilant awareness and forecasting by QMS and fire team. In general, a protocol that maximizes burn frequency (burn as often as conditions allow) is a good general plan for the first 10 years or so until site is ready to move into long-term management. Selective burning and mechanical treatment may be used in any areas that might need supplemental treatments throughout all years of management. Specific burn frequencies for particular plant communities will begin after the initial intensive prescribed burn sequence.

II. Site Preparation

The site has been divided into three large burn units (see Figure 6). The burn units were established by following the site boundary and the existing roads on the SMB site. A permanent firebreak that utilizes existing features will be maintained along the entire mitigation boundary. In light of the ecological objectives of this management activity, disking or gyrotracking will be utilized in lieu of plowing. Disking will cause minimal soil disturbance while exposing enough mineral soil to serve as a firebreak. No mechanical fire breaks will be used internally between communities except as may be established using burning techniques (eg. backfires or wet-lines or chemical retardants). Fire management on site has been discussed with consultation from James Beach and Tommy Beach (both are certified foresters and experienced burn bosses), and Chuck Hess, US Forest Service – Restoration Ecologist, Apalachicola National Forest. Event-specific prescriptions will be drafted and filed prior to each burn, and may change at the discretion and judgment of the Prescribed Burn Manager. Burn coverage of 70% of burnable area is generally accepted as a realistic and acceptable coverage to maintain fire dependent ecosystems of northwest Florida. Limiting crown fire and ensuring a sufficient level of tree survival is also critical.

B. Safety Considerations

Numerous safety zones are present including roads throughout the mitigation bank and deep swamps located along the boundary. All personnel present at the burn will carry Personal Protective Equipment (PPE). All radio communications will utilize plain language. Signs will be available for posting on U.S. Highway 231 in the event conditions cause low visibility on this roadway. This prescription will pass smoke screening provided that wind prescriptions for each burn unit are employed. Based on fuel type and burn unit area, a smoke-sensitive radius of 5 miles is warranted. Highway 231 and a public school are within the smoke-sensitive radius. All prescriptions for the burn units are sensitive to this feature.

III. Prescribed Fire Objectives/Standards

Because this is a large site, it has been divided into three burn units to facilitate management and tracking of the burn activities. In general, objectives include:

- Burn coverage of the majority of each unit
- Limited occurrence of crown fire, and survival of a majority of trees.

A. Performance Standards

A successful burn that achieves the objectives above will meet the following standard:

- i. First Prescribed Fire – At least 70% of the burnable area (Mesic Pine Flatwoods, Wet Prairie, Bog, and Shrub Bog) has been burned in each burn unit (Table 1,

below; see also Figure 6). Note: The initial burn is anticipated to be relatively intense and cover >70%; 70% was chosen as a minimum standard.

Table 1. First Prescribed Fire: Burnable Area per Burn Management Unit

Unit	Total Acres	Burnable Acres	Successful Burn Acres*
1	190	178	124
2	430	410	287
3	229	227	159

* Successful Burn = 0.7 x Burnable Acre

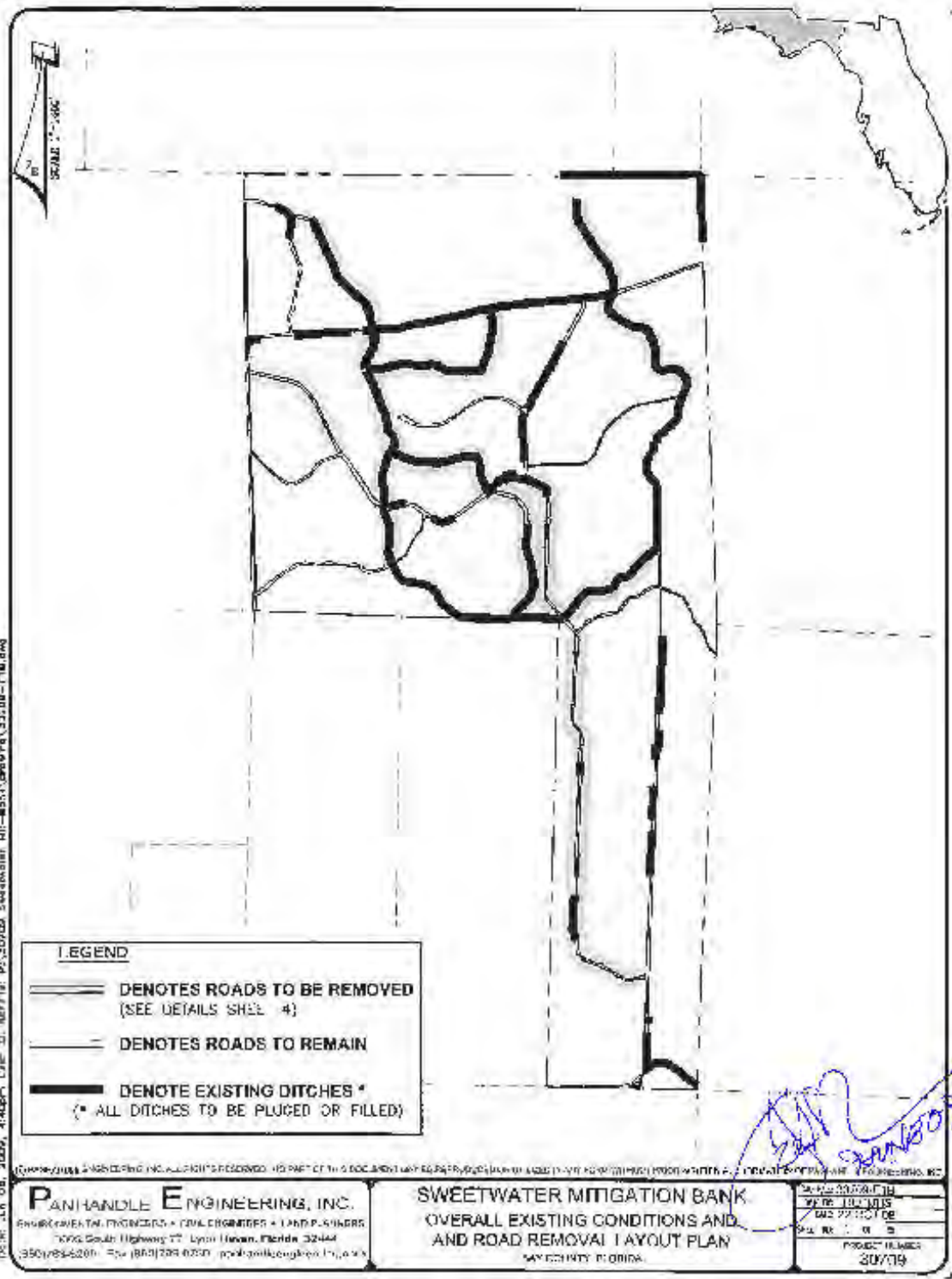
ii. Second and Third Prescribed Fires – 70% of the Mesic Pine Flatwoods, Wet Prairie, and Bog has been burned in each burn unit. 40% of the Shrub Bog has been burned in each burn unit.

B. Assessment Methods and Reporting

Whenever possible, the permittee or QMS shall notify the Department prior to or at the initiation of a prescribed burn, to allow an opportunity for observation, if time allows. Individual prescribed fires will be assessed in accordance with protocol in the Monitoring Plan (Attachment I) and established checklists. Documentation of the prescribed burn will be included within the semi-annual and/or annual monitoring report. Any catastrophic events, such as complete crown scorching through the deep wetland systems will be reported to the Department and IRT within sixty days and an appropriate contingency plan will be developed. The contingency plan must contain the following:

1. Area disturbed by the prescribed burning event
2. Percent coverage of canopy species disturbed by crown fire
3. Remedial plan including specific planting schemata to restore the disturbed area
4. Measure of success based on survival of planted species
5. Percentage of credits affected by disturbed area

ATTACHMENT F - Engineer Figures

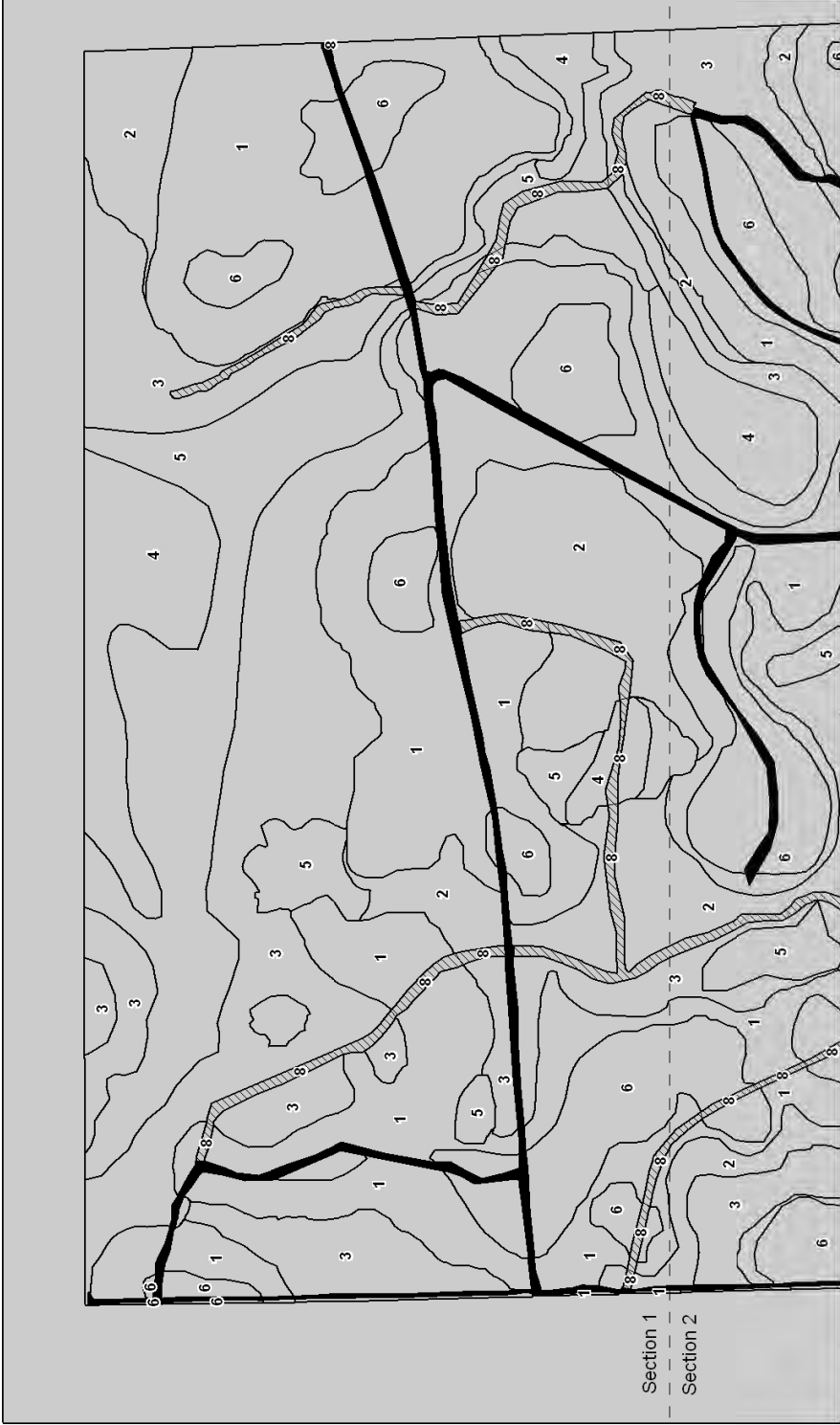


ATTACHMENT G - UMAM Credit Assessment Summary

Sweetwater Mitigation Bank - UMAM Assessment 10.17.08 (updated 6.2.2009)																	
Assessment Area	FLUCCS	AREA (acres)	SCORE						UMAM W/OUT MIT.	UMAM WITH MIT.	DELTA	TIME LAG	RISK	P	RFG	CREDIT	TYPE
			AND LANDSCAPE		WATER ENVIRONMEN		COMMUNITY STRUCTURE										
			W/OUT W/ CUR. MIT.	WITH W/ CUR. MIT.	W/OUT W/ CUR. MIT.	WITH W/ CUR. MIT.	W/OUT W/ CUR. MIT.	WITH W/ CUR. MIT.									
Hydric Pine Plantation to Wet Flatwoods/Prairie	643	235.81	7.00	9.00	7.00	9.00	4.00	9.00	0.60	0.90	0.30	1.14	1.25	0.21	49.64	WF/ WP	
Hydric Pine Plantation to Bog	626	92.63	7.00	9.00	7.00	9.00	4.00	9.00	0.60	0.90	0.30	1.14	1.25	0.21	19.50	WF/ WP	
Harvested Bog/Prairie Enhancement	626/643	178.72	7.00	9.00	7.00	9.00	5.00	9.00	0.63	0.90	0.27	1.00	1.25	0.21	38.13	WF/ WP	
Shrub Bog Enhancement	626	80.40	7.00	10.00	7.00	9.00	5.00	9.00	0.63	0.93	0.30	1.00	1.25	0.24	19.30	FOR	
Basin Swamp Preservation	630	31.21	9.00	10.00	8.00	9.00	7.00	9.00	0.80	0.93	0.13	1.00	1.00	0.09	2.91	FOR	
Pine Plantation to Mesic Flatwoods	411	137.45	7.00	9.00			4.00	9.00	0.55	0.90	0.35	1.00	1.25	0.28	38.49	WF/ WP	
Mesic Flatwoods Enhancement	411	52.86	8.00	10.00			5.00	9.00	0.65	0.95	0.30	1.00	1.25	0.24	12.69	WF/ WP	
Koos/Ditch Restoration	N/A	19.80	0.00	10.00	0.00	9.00	0.00	8.00	0.00	0.90	0.90	1.25	1.25	0.58	11.40	WF/ WP	
TOTALS		828.88													192.06		

WF/WP = wet flatwoods/wet prairie credits

FOR = forested wetland credits



UMAM Assessment Areas Map #1

Sweetwater Mitigation Bank



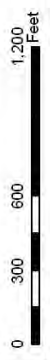
MMC 03.17.2009
ERC# 06-403

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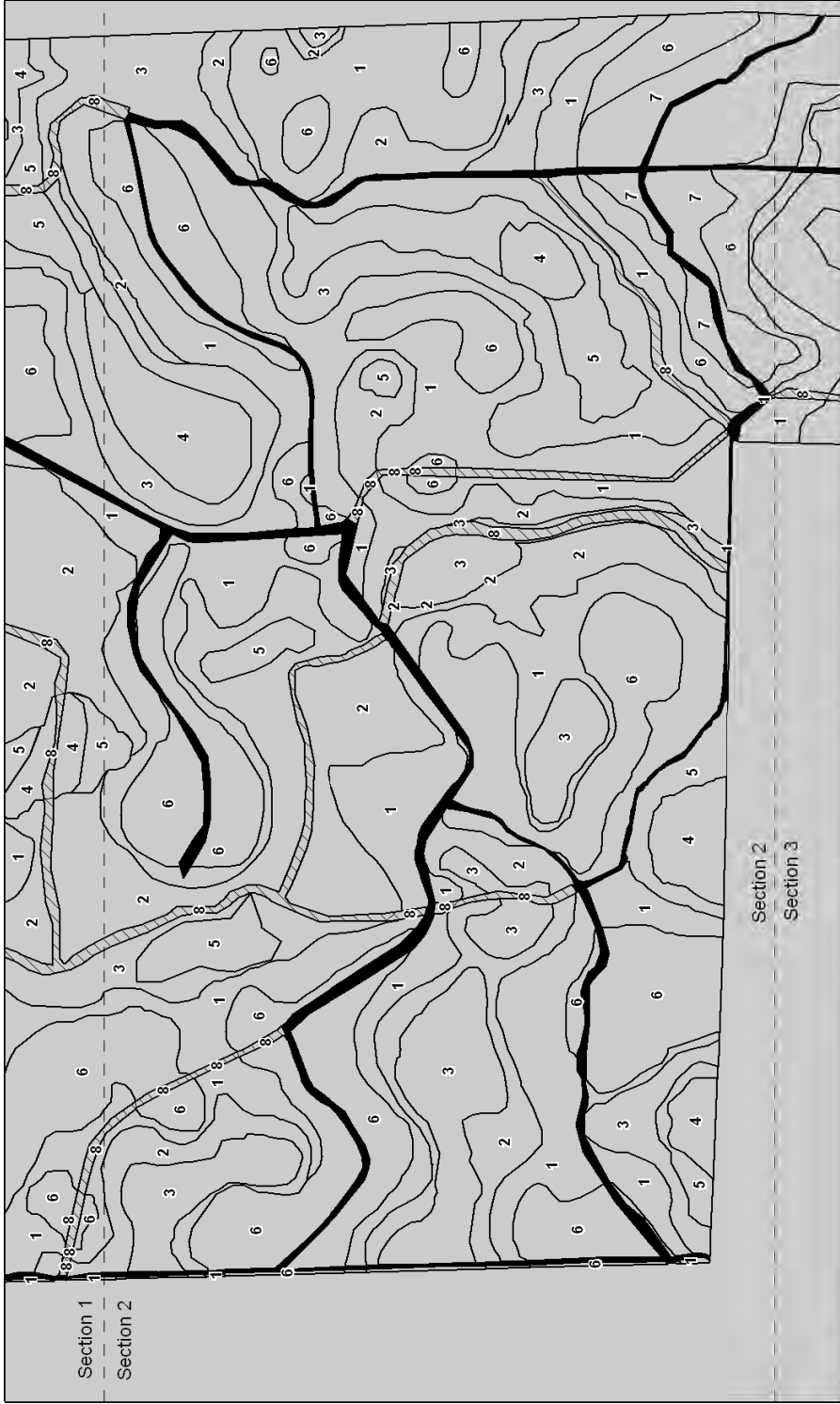
- 1-Hybrid Pine Plantation to Wet Flatwoods/Prairie - 265.81 Acres
- 2-Hybrid Pine Plantation to Bog - 92.63 Acres
- 3-Harvested Bog/Prairie Enhancement - 175.72 Acres
- 4-Shrub Bog Enhancement - 80.40 Acres
- 5-Basin Swamp Preservation - 31.21 Acres
- 6-Pine Plantation to Mesic Flatwoods - 137.45 Acres
- 7-Mesic Flatwoods Enhancement - 92.86 Acres
- 8-Road/Ditch Restoration - 19.88 Acres
- Remaining Roads
- Project Boundary
- Matchline



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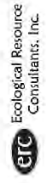


Section 1
Section 2



UMAM Assessment Areas Map #2

Sweetwater Mitigation Bank



MMC 03.17.2009
ERC# 06-103

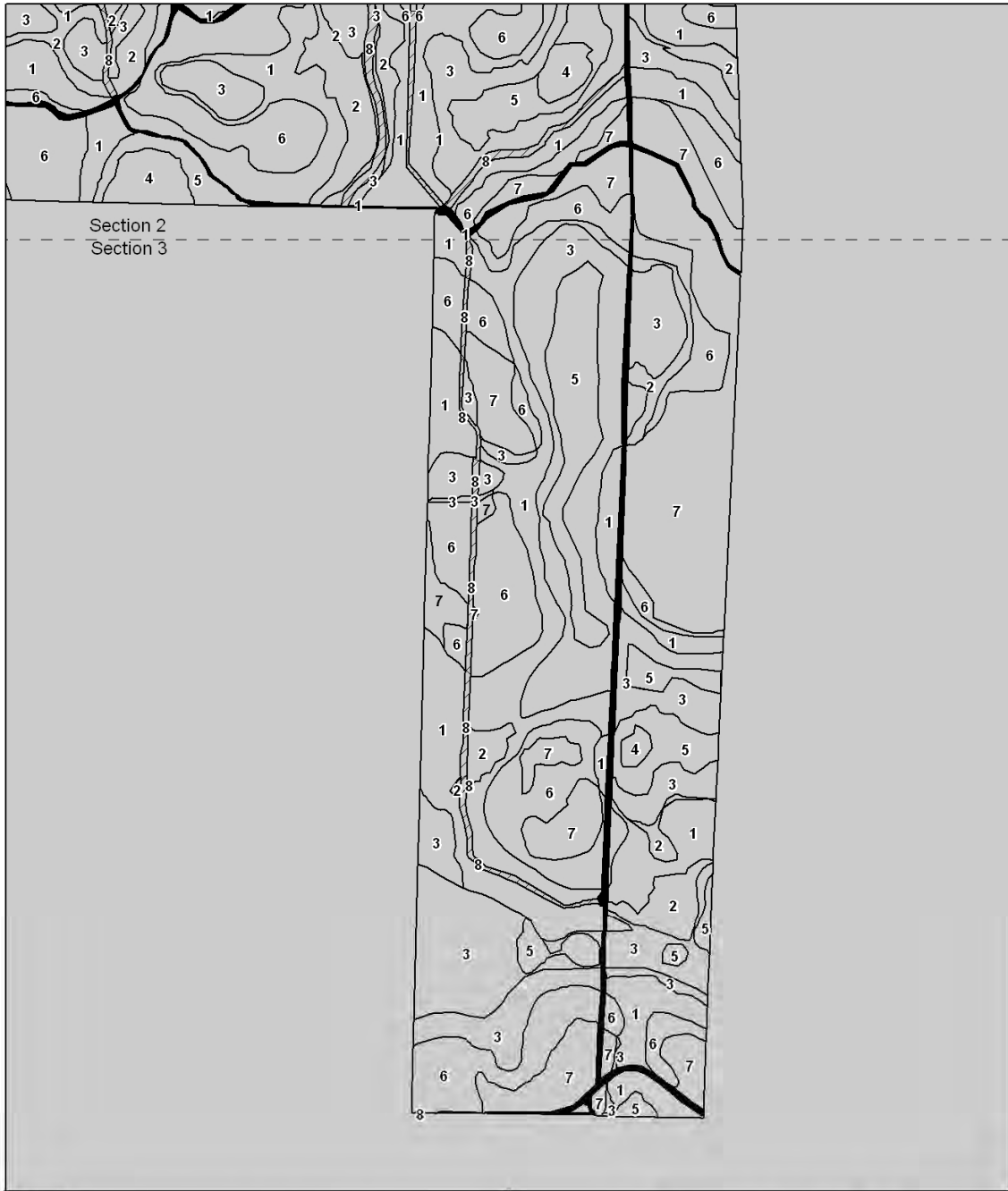
Legend:

- Road
- 5-Basin Swamp Preservation - 31.21
- 1-Hybrid Pine Plantation to Wet Flatwoods/Prairie - 235.81
- 6-Pine Plantation to Mesic Flatwoods - 137.45
- 2-Hybrid Pine Plantation to Bog - 92.63
- 7-Mesic Flatwoods Enhancement - 52.86
- 3-Harvested Bog/Prairie Enhancement - 178.72
- 4-Shrub Bog Enhancement - 80.40
- 8-Prairie Restoration - 19.80
- Project Boundary
- Matchline



1:7,200





Section 2
Section 3

Legend:

0 300 600 1,200 1,800 Feet

N
1:9,600

UMAM Assessment Areas Map #3
Sweetwater Mitigation Bank

Ecological Resource Consultants, Inc.

MRNC 03.17.2009
ERC# 06-405

Sweetwater Mitigation Bank Ledger
Permit No. 0281744-001
November 2009

ATTACHMENT H: LEDGER

Freshwater Wet Flatwoods/Wet Prairie Credits: Total Potential Credits = 169.27

<u>Release Mod./</u> <u>Impact Permit</u>	<u>Permit</u> <u>Date</u>	<u>Issuing</u> <u>Agency</u>	<u>Ledger</u> <u>Modification</u>	<u>Credits</u> <u>Added</u>	<u>Credits</u> <u>Used</u>	<u>Balance</u>
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Freshwater Forested Wetlands Credits: Total Potential Credits = 22.79

<u>Release Mod./</u> <u>Impact Permit</u>	<u>Permit</u> <u>Date</u>	<u>Issuing</u> <u>Agency</u>	<u>Ledger</u> <u>Modification</u>	<u>Credits</u> <u>Added</u>	<u>Credits</u> <u>Used</u>	<u>Balance</u>
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ATTACHMENT I - Monitoring Plan

Summary

To evaluate the success of the restoration methods, a systematic and scientifically defensible monitoring protocol is necessary. Annual monitoring provides quantitative and qualitative information that can be objectively analyzed. The results of the analysis allow for interpretations and conclusions to be made with respect to the adequacy of the ecological response to restoration – methods can then be adaptively adjusted as necessary.

Ecological monitoring or sampling techniques as described in this monitoring plan allow for the objective determination of species composition, species richness, and proportional distribution for each of three main structural habitat forms (groundcover, shrubs and vines, and canopy). Further, this plan provides assessment methodologies for evaluating the hydrological improvements and prescribed fires.

I. Vegetative Monitoring

A. Quantitative Methods

The initial quantitative monitoring will be carried out, pre-restoration, in the late summer/fall and annually thereafter until success criteria are attained as specified in the permit. The primary methodology for describing changes in each plant community is a quantitative transect-based series of procedures to objectively measure changes in habitat structure. Habitat structural categories are evaluated and include groundcover, shrubs, and trees (with notes regarding vines and subcanopy when present). Specific quantitative methods for evaluating each category are described below.

1. *Groundcover, Shrubs, and Vines*

- a) Identify and choose polygons to represent each habitat type. A particular habitat type may not be contiguous throughout the site, and thus may be represented by more than one polygon. The most representative polygons for each habitat type are chosen.
- b) Within the representative polygons, establish pairs of two permanent perpendicular 50 meter transects, as shown on the attached map (Figure I-1). All transects will be located and recorded on a GPS unit, marked with metal poles and photographed for visual reference.
- c) Establish sample points every 10 meters per transect, for a total of five (5) sampling points per transect. For each transect, the first sampling point is located at 10 meters and the fifth point is located at 50 meters. Each point is georeferenced and permanently marked by inserting an iron stake.

d) Measure and apply three adjacent 1m X 1m quadrats (plots). Three quadrats are placed perpendicular to the transect at each of the five sample points. In total, 15 quadrats are used to sample each transect. The plots are arranged in a rectangular sampling area of 3 square meters perpendicular to the transect. Each plot is photographed to provide visual support to the quantitative data collected. This methodology samples 3 square meters at each point for a total of 15 square meters per 50 meter transect. The organization of transects, points, quadrats and plots is shown in Figure I-2.

e) Identify and estimate coverage for each species. All groundcover, shrub, and vine species are identified. Data collected for each plot includes species name, percent cover by species, percent bare ground, and notes. The total coverage of each species within the plot is estimated using the following percentage classes: 100%, 75%, 50%, 25%, 12%, 6%, 3%. These classes represent successive divisions of the square by one-half (after 75%), and are readily and consistently applied in the field. Bare ground/leaf litter and/or open water will also be recorded using the same coverage classes listed above.

2. *Trees*

A direct measurement of canopy coverage, while sometimes estimated, is difficult in trees. Alternatively, the basal area is generally accepted by the scientific community as proportional to coverage; however, this is not useful when the canopy is young because the desired basal area is based on a mature natural forested ecosystem with mixed age classes of canopy species. For the purposes of restoration and management of the plant communities found on this site, it is more informative to measure the density of trees per acre. Within this landscape, allowing the appropriate tree species to mature at the appropriate density will eventually result in the desired basal area. To record the change in the canopy resulting from management, a tenth-acre plot will be established at one representative point along each 50 meter transect. Trees will be identified, counted within the tenth acre plot, and a diameter tape will be used to measure the trunk of each tree species at breast height (or 1.5 m above the ground). Trees will be defined and separated from the other vegetative categories as follows:

- a) Trees include all woody plants (excluding typical shrub species such as titi that may become tree-like due to fire suppression) with a main trunk greater than 10 cm (4 in) diameter at breast height (1.5 m) and have a stem at least 3 m tall. Diameter at breast height (DBH) of trees is determined from trunk circumference measured 1.5 m above the ground.
- b) Saplings include all other woody plants that typically develop into trees (excluding typical shrub species such as titi that may become tree-like due to fire suppression) such as cypress, tupelo, pines, sweet bay, swamp bay, loblolly bay

and red maple and/or longleaf pine seedlings that have a stem at least 0.5 meters tall (i.e., beyond "grass-stage").

- c) Tenth Acre Plot Method - Two samples or plots are established, one at each end of each transect (see Figure I-2). Each plot is a circle with a radius of 37.2 ft (11.34m). The area of a circle of this radius is equivalent to a tenth of an acre. Within each plot, the species and DBH of each tree are recorded. Saplings will also be counted. To calculate the number of trees or saplings per acre the total number of trees or saplings measured per plot is multiplied by 10.

B. Plot Sampling Statistics

1. Methodology

From the raw data and for each separate transect, sum separately:

- (1) the % coverage of each species from all plots
- (2) the # of individuals (stems or clumps) of each species from all plots
- (3) the total % cover of all species sampled in plots (i.e., 100% - % non-vegetated area)
- (4) the #'s of individuals of all species sampled in plots

2. Relative Coverage

To calculate the **Relative Coverage**, divide the total coverage of each species by the total coverage of all species.

$$RC = (1)/(3)$$

3. Relative Density

To calculate the **Relative Density**, divide the total # of individuals of each species by the total #'s of individuals of all species

$$RD = (2)/(4)$$

4. Relative Frequency

(5) Determine species frequency as the total # of sample plots that a species occurred in divided by total # of plots

(6) Sum species frequency for all species

To calculate the **Relative Frequency**, divide the frequency of each species by the total frequencies of all species.

$$RF = (5)/(6)$$

5. Importance Value Percentage

The **Importance Value Percent** is the sum of all Relative values for each species * 100.

$$\text{Importance Value} = (RC+RD+RF) * 100$$

C. Qualitative Monitoring.

The initial qualitative monitoring will be carried out, pre-restoration, in the late summer/fall and annually thereafter through the time period as specified in the permit. Qualitative monitoring includes walking transects to record species coverage, diversity and observations on the overall health, fecundity, distribution, and wildlife usage and natural history, as well as sightings of invasive exotics. The five (5) qualitative transects (~1000-2000 ft. long) are depicted on the attached map, Figure I-1. The walking paths are designed to provide thorough coverage of all typical landscape/plant community types. Permanent points are established along the transect within each plant community traversed. Descriptive data and photos are taken at the points to show landscape changes annually. The qualitative transects are designed to capture the management and change in plant communities at the landscape scale and to augment the quantitative data.

Observations will be made for each segment of the transect representing a different community type. The specific parameters to be observed and recorded on the walking transects for each community type include the following:

1. Type of plant community sampled.
2. Date, time and weather conditions.
3. Estimate of aerial coverage of plants in the canopy, subcanopy and shrub strata and identification of the three dominant species in the canopy, subcanopy and shrub strata.
4. Estimated coverage of graminoids (grasses, sedges and rushes) and total coverage of groundcover including graminoids and forbs, based on the following cover classes as per a modified Braun/Blanquet scale (Barbour, et al., 1999): 1= 0-1%; 2= 1-5%; 3=5-25%; 4=25-50%; 5=50-75%; 6=75-100%.
5. Identification of the four dominant species in the groundcover.
6. Estimated abundance of weedy or ruderal species based on the following scale: 1 =absent; 2= occasional <5% of a given area; 3=5% of a given area.
7. Notes on the wildlife usage and natural history.
8. Identification of exotic species and estimated coverage of exotics as per Braun/Blanquet scale (Barbour, et al., 1980).
8. Estimate of appropriateness of tree density and health.
9. Notes on surface waters and hydrologic indicators.
10. Notes on the general aspect of the site, fuel loads and how adaptive management techniques might be used to better move toward restoration target/goals.

II. Prescribed Fire

The following methods will be employed to assess success with respect to the performance standards in Specific Condition 12 of the permit.

A. Burnable Area

Low-flown planes will take aerial photographs after each burn. Photographs will be georeferenced using ArcGIS and used to determine the total acreage burned.

B. Post-burn Survey and Tree Survival

Using the Checklist D attached herein, the QMS and staff will conduct a survey following each prescribed to note conditions onsite. Estimates of the number of trees affected by crown scorch* will be documented and the locations will be georeferenced using sub-meter GPS equipment. Tree survival within each unit will be documented during semi-annual or annual monitoring events, depending on the timing of the burn (e.g. dormant season or growing season burn).

*In the unlikely even of complete crown scorching through deep wetland systems, this will be reported to the IRT within sixty days and an appropriate contingency plan will be developed if needed.

III. Hydrological Monitoring

Soil Morphology is used by soil scientists to infer physical, chemical, biological and hydrological properties in the soil. Important indicators that can be observed in the field to infer hydrology include organic matter percent, thickness of O and A horizons (types of topsoil layers), and color and color patterns in each horizon. Hydrologic conclusions include depth to seasonal high saturation (SHS) within the soil profile, inundation (seasonal high inundation, SHI), evidence of flooding, and confirmation that the soil is hydric. Morphologic indicators in soils that predict hydrologic status are called Redoximorphic Indicators or features. Redoximorphic indicators persist during wet and dry periods, however practices that disturb the soil such as tillage, site preparation, excavation or other forms of human disturbance can dilute or redistribute components of hydromorphic indicators sufficiently that they cannot easily be observed. Redoximorphic features allow estimation of SHS or SHI by their mere presence, the intensity of their development, their color, the distinctness of their boundaries, their abundance, and the depth at which they begin in the soil profile.

Fourteen sampling transects will be measured with at least three wells along each transect as depicted on Figure I-3 Hydrological Monitoring Location Map. The sampling transects will begin at an ecotone and sampling wells will be evaluated within each of the different plant communities. At each sampling well, soil profiles will be

fully described to a minimum depth of at least 12 inches deeper than the appearance of redoximorphic features but no less than 12 inches from the soil surface. The profiles will be described and photographed for each well site on an annual schedule. Hydric soil indicators will be reported per Field Indicators of Hydric Soils in the United States (USDA, 2006) or an updated version released and additionally The Fieldbook for Sampling and Describing Soils, (USDA, 2002).

During the monitoring period required for bank success, the criteria for success will be the presence, morphology and distribution of SHS, SHI and/or hydric soil indicators sufficient to confirm that the appropriate saturation or inundation depths are achieved and maintained for the target ecosystem as outlined in the following table:

Table 1. Hydroperiod Chart. Depth of water table and typical months of soil saturation or inundation are given for each plant community based on predominant soil mapping units from the Bay County Soil Survey (USDA-NRCS, 1983).

Target Community Type	Depth of Water Table* (ft.)	Months
Bog and Shrub Bog	0 - 1.0**	Dec - May
Basin Swamp	+1.0 - 0**	Dec - May
Wet Prairie	0.5 - 1.5**	Dec - May
<p>* 0 represents soil surface. A "+" indicates a level above the soil surface and a "-" indicates a level below the soil surface. ** The sponsor will not be responsible for meeting hydroperiod requirements during times of natural catastrophes such as flood and drought.</p>		

The properties of redoximorphic features used to infer the depth of SHS/SHI will be obtained from The Hydric Soils Handbook of Florida: Using Soil Morphology For The Identification of Seasonal High Saturation. (Hurt, GW, Watts, FC and Galbraith, JM, Florida Association of Environmental Soil Scientist, 2007)

An additional requirement shall be a detailed analysis of any changes in soil morphology that occur during the monitoring period.

IV. Compliance Inspections

Compliance inspections will be conducted following major activities such as harvesting, mechanical clearing, prescribed fires, road removal, and ditch plugging. The site will be visited at least every month to document compliance with BMPs and the proposed work schedule. A compliance monitoring checklist has been developed as part of this monitoring plan to track site progress and maintain compliance with the specific conditions. Additional checklists have been prepared for event-specific compliance inspections including harvesting, road removal, low water crossing installation, and prescribed fire. The checklists will be used to prepare both the Semi-Annual Progress Reports and Annual Reports.

V. List of Figures and Checklists

Figure I-1 Monitoring Plot Location Map

Figure I-2 Diagram of Monitoring Plots

Figure I-3 Hydrological Monitoring Location Map

- A. Compliance Checklist (references specific conditions)
- B. Harvesting and Mechanical work compliance checklist
- C. Low Water Crossing compliance checklist
- D. Road Removal compliance checklist
- E. Prescribed Fire compliance checklist

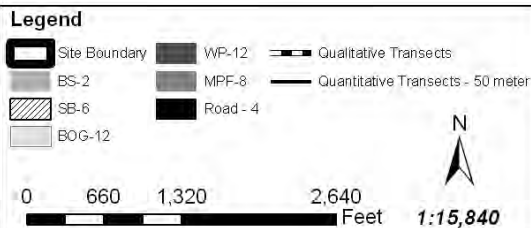
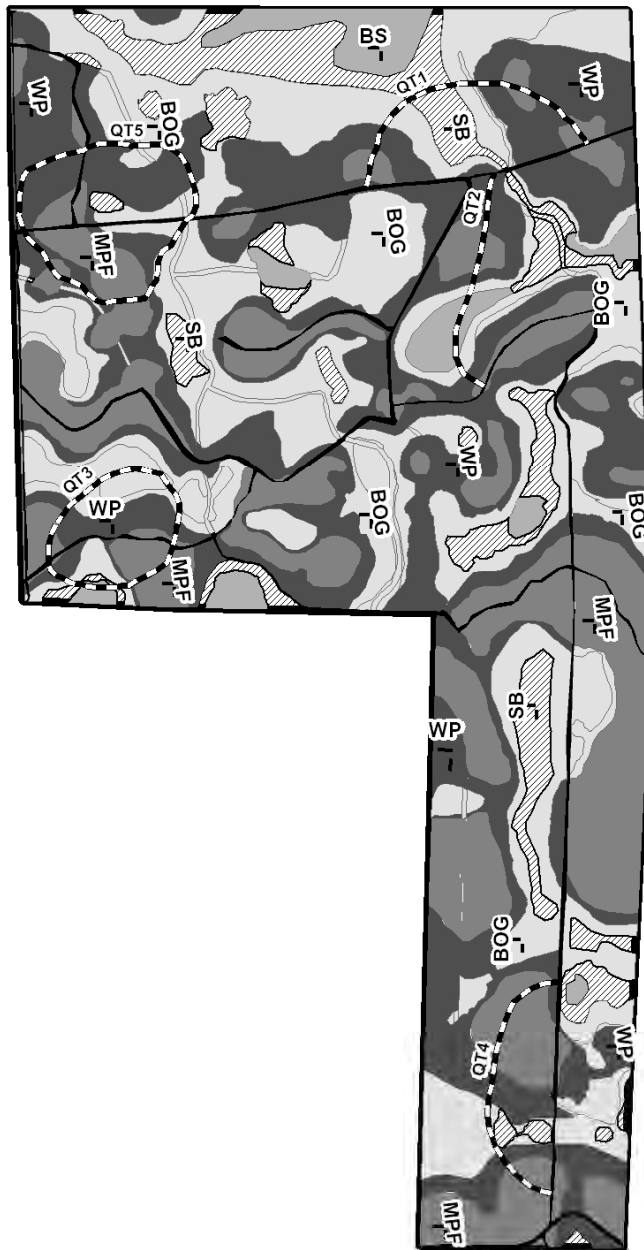


Figure I-1. Monitoring Plot Location Map
Sweetwater Mitigation Bank

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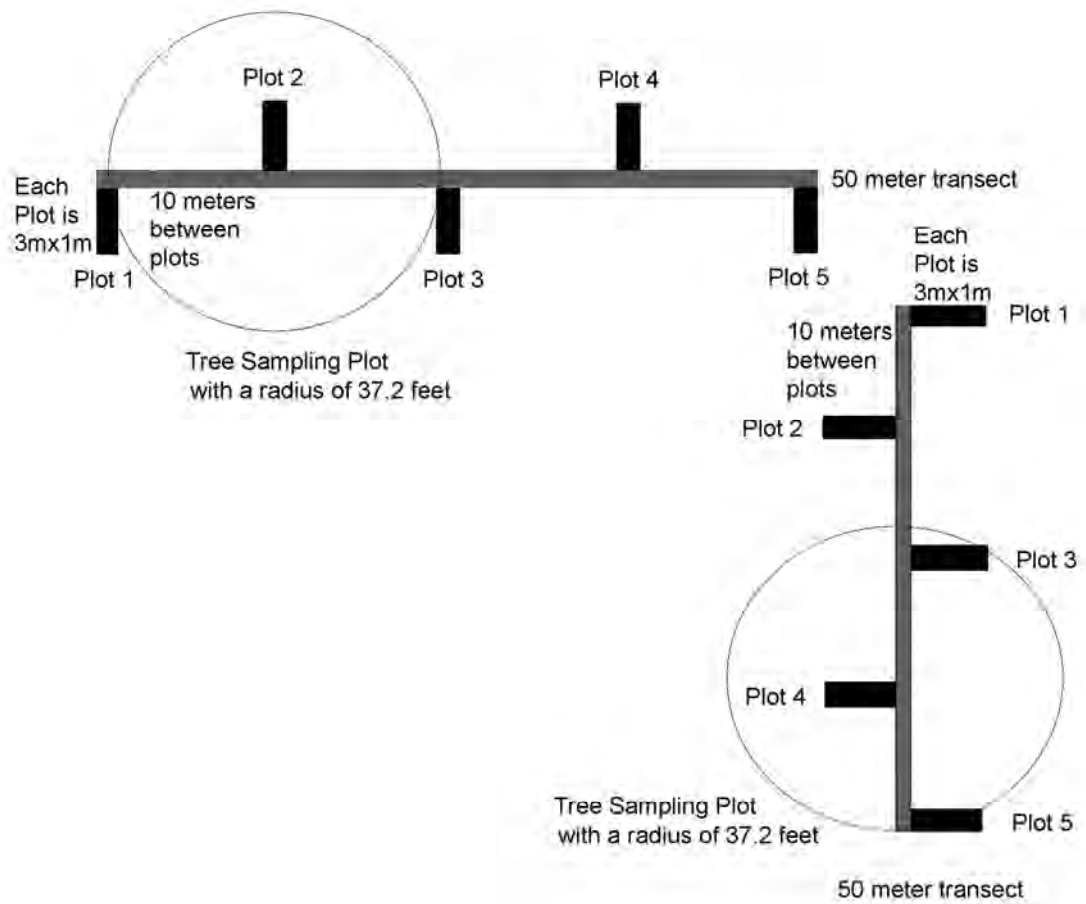
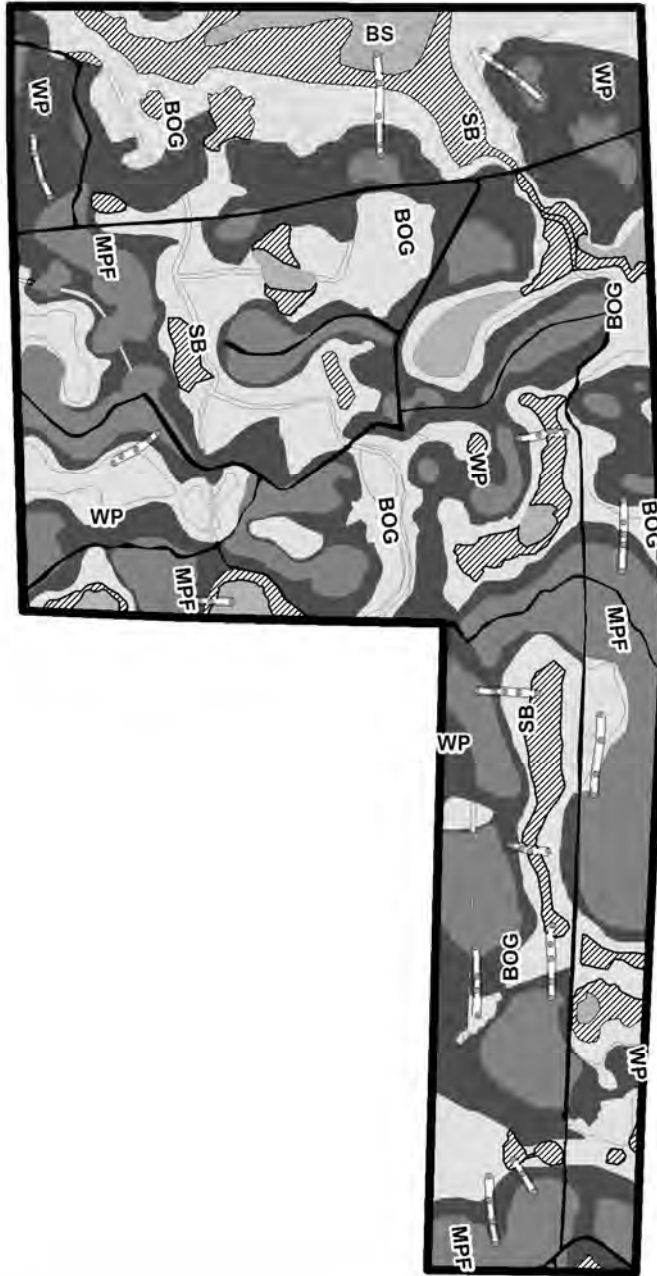


Figure 1-2 Diagrammatic arrangement of two, 50 meter transects with five, 3mx1m plots, used to measure herbs and shrubs; and two circular tree sample plots with a radius of 37.2 feet, used to measure all trees 10 cm or greater in diameter at breast height.



- Legend**
- Site Boundary
 - BS-2
 - SB-6
 - BOG-12
 - WP-12
 - MPF-8
 - Road - 4
 - Hydrological Monitoring Transects

0 660 1,320 2,640 Feet **1:15,840**



**Figure I-3. Hydrological Monitoring Location Map
Sweetwater Mitigation Bank**

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JJL 9-18-09
ERC# 06-405

ATTACHMENT J - REFERENCES

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