

2011 FDOT Mitigation Plan



**Resource Projects Department
Environmental Section
2379 Broad Street
Brooksville, Florida 33604-6899**

*Southwest Florida
Water Management District*



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The District does not discriminate based on disability. Anyone requesting reasonable accommodations as provided for in the ADA should contact Regulation Performance Management Department at (352) 796-7211, (800) 423-1476, or TDD 231-6103.

Cover: Ekker Tract (SW 82) – aerial photograph during the spring, 2010 depicting construction activities that converted 158 abandoned tropical fish ponds to create wetland habitat (23 acres). The wetlands are buffered by the conversion of a pine plantation to restore pine flatwoods (32 acres) and enhanced live oak hammocks (29 acres) that border Bullfrog Creek in Gibsonton.

INTRODUCTION

The Florida Department of Transportation (FDOT) historically conducted mitigation for wetland impacts associated with roadway construction. The majority of these mitigation activities were primarily associated with creation and enhancement of limited habitat acreage adjacent to the roadway facilities. With existing and future commercial, industrial and residential development of property along roadways, constructed mitigation areas have to endure many limitations and risks to provide the desired ecological benefits to compensate for the unavoidable wetland impacts. In addition, such development has resulted in fewer opportunities and substantially more costs at taxpayer's expense to acquire property and conduct appropriate and adequate mitigation.

In order to conduct regional and ecologically significant mitigation activities rather than on a project-by-project basis, the State Legislature approved the FDOT Mitigation Program in 1996 (Section 373.4137, Florida Statutes). The statute language is located in this report following the listing of FDOT projects and before the Figures. The program is administered through the state's Water Management Districts, with collaboration and coordination with various regulatory and resource agencies, as well as public and private mitigation banks. This mitigation plan has been developed by the Southwest Florida Water Management District (District) in accordance with the program's statute requirements.

The FDOT had provided annual statewide inventories of projected construction related impacts to wetlands since commencement of the program in 1996. In July, 2010 the FDOT identified and provided projected impacts for roadway construction projects planned in Fiscal Years 2011 through 2016, and revised information pertaining to modifications to previously identified projects. In addition, advance information was provided for several larger projects scheduled beyond this planning horizon so that appropriate mitigation projects can be developed and avoid deferring wetland impacts back for FDOT to implement mitigation. For each roadway project, FDOT provides information related to the watershed location, acreage, habitat type and quality of the anticipated wetlands proposed for future impacts.

Based on the provided information, adequate and appropriate mitigation options are located and nominated for inclusion into the mitigation program to offset the wetland impacts anticipated within the District's geographic area. Proposed mitigation projects are intended to meet State (ERP) and Federal (Section 404) permitting criteria pertaining to wetland mitigation. These mitigation projects are required to adequately compensate for the loss of the associated wetland habitats with similar enhanced, restored and created habitat functions and values. In addition, the proposed mitigation-related activities are conducted within the same regional watershed basin where the projected wetland impacts are anticipated by FDOT. Figure 1 depicts the various regional watersheds in this District.

Selection of mitigation projects is conducted in consultation with staff from the U.S. Army Corps Engineers (USACOE), U.S. Environmental Protection Agency (USEPA), U.S. Fish & Wildlife Service (USFWS), National Marine Fisheries Commission (NMFC), Florida Department of Environmental Protection (FDEP), Florida Fish & Wildlife

Conservation Commission (FFWCC), and Florida Department of Transportation (FDOT) Other interested local and state agencies, representatives of private mitigation banks, and the public also provide input during the nomination and selection process.

It should be noted this plan does not represent approval from the District or any of the participating regulatory agencies for the wetland impacts identified in the inventory or any other ecological impacts that may be related to the inventoried FDOT projects. These agencies reserve their authority to fully evaluate permit applications for each of the FDOT construction projects according to applicable rules at the time of application.

This mitigation plan is not specifically designed to offset impacts to any State or Federally-listed species or any secondary impacts that may be incurred as a result of road construction. However, this does not mean the mitigation projects included herein could not be used for such purposes if subsequent analysis determines mitigation activities are appropriate and adequate to meet this requirement and need for compensation.

This plan attempts to provide sufficient flexibility to account for subsequent revisions that may be necessary to address specific permitting needs of the FDOT. Annual updates are conducted to add FDOT projects planned for future years and to revise previously inventoried roadway projects. Revisions are required to address changes to construction start dates, wetland impact information, and various mitigation activities. Revisions are also necessary to provide any additional mitigation that may be required by federal regulatory agencies.

WETLAND IMPACTS

Since the inception of the FDOT mitigation program in 1996, there are various transportation entities within this region that have conducted mitigation through the FDOT Mitigation Program. These include FDOT District 1 (Bartow), District 5 (DeLand), District 7 (Tampa), District 8 (Florida's Turnpike, Orlando), Tampa-Hillsborough Expressway Authority, and the Tampa International Airport. From 1996 through 2011, there are currently 177 construction projects with wetland impacts mitigated through the program. An additional 58 roadway projects with minimal wetland impacts have also been submitted over the years that the SWFWMD located and designated mitigation through the program. However, those roadway projects were ultimately permitted without wetland impacts and/or mitigation not being required by the agencies; including six projects during 2010. The FDOT transportation projects on the inventory have anticipated construction schedules through at least 2016 with additional large roadway projects scheduled during 2017-2020. Distributed over 13 drainage basins and covering 16 counties, the total wetland impact acreage projected by FDOT from all these projects since inception of the program is currently 776 acres. These impacts are associated with all the construction projects currently on the wetland impact inventory (Table 1). Figure 1 portrays the watershed basins within the SWFWMD, and Figures 2 and 3 depict the proposed FDOT project locations relative to those basins.

As representative of the last few years, there few new transportation projects submitted to the program for 2011. The new projects are highlighted in yellow on Table 1. The majority of the new projects include minor interchange and sidewalks, with conservative

wetland impacts less than 0.5-acre each. Typically by the time these types of projects are submitted for permit applications, the majority of these conservative wetland impact estimates are substantially minimized and/or avoided. The only exception for this year's plan includes various facilities associated with the proposed construction of the high speed rail (HSR) within the Interstate-4 corridor.

MITIGATION PROJECTS

The mitigation program has been fortunate to incorporate some of the most beneficial habitat acquisition and/or restoration projects in the region, and has primarily focused on assisting the habitat goals of various resource agencies other than the District. Only eight of the 44 designated mitigation projects to date are associated with property exclusively owned and managed by the District. The District's Departments involved with assisting with the mitigation program and the other resource agencies include the Surface Water Improvement & Management Section (SWIM), Land Resource Department (LAND), Resource Projects (Environmental and Engineering Sections), Strategic Program Office (SPO), and Operations (OPS). Almost all the SWIM-sponsored projects include restoration activities conducted on property owned by County Governments. The majority of the LAND sponsored projects include property owned by the District, but the majority of these tracts are co-owned and/or managed with county (Hillsborough, Pinellas, Polk), municipal (Tampa, St. Petersburg) and other state agencies (i.e. FDEP, FDOF, FFWCC). The program also includes six private mitigation banks and two Sarasota County regional off-site mitigation areas (ROMA's). The District's Environmental Section reviews potential mitigation options and prepares nominations for review by the previously referenced environmental regulatory and commenting agencies for incorporation into the mitigation program.

With fewer wetland impacts submitted to the program in recent years and sufficient credits available in the previously selected mitigation projects, there was no need to adopt additional habitat projects into the program for 2011. During 1999-2001, potential wetland impacts associated with transportation improvements within the I-4 corridor including the HSR were submitted for mitigation through the program. The HSR facility was subsequently discontinued from further evaluation and state funding, however the designated mitigation project (**SW 59 - Hampton Tract**) remained on the program to provide appropriate mitigation for other I-4 wetland impacts. With the recent resurrection and designated federal funding for the HSR, FDOT resubmitted the proposed wetland impacts to the program and the same Hampton Tract project has been selected to provide the associated mitigation.

To date the mitigation projects propose over 13,000 acres of various habitat acquisition and/or improvement activities to compensate for the wetland impacts associated with the FDOT construction activities. Figure 4 depicts the selected mitigation projects relative to their watershed basin, and the associated listing references the phase status of each project. A basin-by-basin summary of wetland impacts and the designated mitigation projects is provided below and on Table 1. Tables 2 & 3 summarize the various mitigation activities and acreage associated with each mitigation project. Information (narratives, location maps, aerials, designs) associated with the 44 designated mitigation projects is provided as separate project attachments.

MODIFICATIONS TO PREVIOUS MITIGATION PLANS

Minor impact revisions are anticipated for the majority of the FDOT projects, but in some cases the revisions can also be substantial. The anticipated wetland impacts typically decrease as the roadway design proceeds from planning, project development, and design phases prior to permitting and construction. Modifications proposed in this plan are required to adjust projected impact acreage to account for revisions to roadway designs, and reconcile anticipated versus permitted impact acreage following issuance of state and federal wetland permits. These modifications also include and update mitigation options, designs, and activities based on ecological attributes and options incorporated into the projects. Many FDOT projects with minimal wetland impacts (typically less than 0.3-acre for each project) were designated mitigation but ultimately removed from the program since the impacts could be avoided and/or mitigation was not required during the permitting process. In many cases, the mitigation credit designated for those dropped roadway projects can provide appropriate mitigation for other FDOT wetland impacts. Impact revisions of the FDOT projects and associated mitigation activities are so noted where they occur in the plan.

REPAYMENT OF ADVANCE FUNDING

Pursuant to Chapter 373.4137, F.S., the FDOT provided \$12 million in advance mitigation funding. These funds were distributed statewide to various habitat restoration projects proposed by the Water Management Districts. To the extent these projects offset the wetland impacts identified in the inventory, the FDOT received mitigation credit. Of the \$12 million distributed statewide, this District received \$1.9 million designated toward planning and design activities associated with several SWIM-sponsored projects selected for the mitigation program. The savings from cost-effective mitigation (i.e. projects costing less than the available funding based on impact acreage) remained in the FDOT Comptroller's escrow account and credited toward reimbursing FDOT for the advance funding. The SWFWMD officially closed sufficient FDOT projects to reimburse \$4.2 million of the program's debt.

In addition to the substantial ecological benefits provided by implementing larger-scale habitat projects for the mitigation program, conducting cost efficient mitigation activities has resulted in substantial savings to FDOT and the taxpayers. An analysis of selected mitigation projects demonstrated the tax savings exceed \$50 million in the Tampa Bay region and \$100 million District-wide compared to what FDOT would have anticipated expending to conduct mitigation through traditional on-site options. As a result of the substantial program savings demonstrated by the SWFWMD, in 2009 the Legislature passed Senate Bill 24A that suspended the remaining \$3 million balance. As a result, this District was credited with reimbursing \$7.2 of the \$12 million program debt.

Thank you for your support and interest in the FDOT Mitigation Program. If you have any questions, comments, requests or recommendations on the program or any of the designated mitigation projects, please feel free to contact the FDOT Mitigation Program Manager & Senior Environmental Scientist (Mark Brown, PWS, CPSS):

**Southwest Florida Water Management District
Resource Projects – Environmental (M. Brown)
2379 Broad Street
Brooksville, FL 34609-6899**

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e-mail: mark.brown@swfwmd.state.fl.us**

The following information lists all the FDOT projects with wetland impacts requiring mitigation since inception of the program in 1996, including anticipated roadway construction dates, wetland impact acreage, associated mitigation projects, and any project revisions from the previous annual mitigation plan. This information is also summarized on Table 1.

Alafia River Basin

Project: SR 563 – Pipkin Road to SR 572 (Drane Field Road)
FM#: 1973941
Date: Undetermined
Impacts: 11.00 acres
Mitigation: Balm Boyette – Stallion Hammock Restoration (SW 81)
Status: No revisions, project may be removed from the program in the future if funding is not appropriated for the roadway construction.

Project: McMullen Road – Balm Riverview to Boyette Road
FM#: 4131361
Date: October, 2012
Impacts: 0.2 acre
Mitigation: Balm Boyette – Stallion Hammock (SW 81)
Status: No revisions

Project: I-75 Southbound Ramp at Gibsonton Drive
FM#: 4259461
Date: October, 2011
Impacts: 0.2 acre
Mitigation: Balm Boyette – Stallion Hammock (SW 81)
Status: No revisions

Charlotte Harbor Drainage Basin

Project: I-75 – Tucker's Grade to N. John's Loop Road
FM#: 4130423
Date: November, 2010
Impacts: 1.10 acres
Mitigation: Little Pine Island Mitigation Bank (SW 52)
Status: No Revisions

Hillsborough River Basin

Project: Interstate-4, County Line to Memorial Blvd., Sec. 1
FM#: 2012081
Date: October, 1997
Impacts: 13.55 acres
Mitigation: Upper Hillsborough 4 & 5 (SW 55)
Status: No revisions

Project: SR 54 - US 41 to Cypress Creek
FM#: 2563431
Date: October, 2000
Impacts: 14.2 acres
Mitigation: Lake Thonotosassa Restoration Project (SW 34)
Status: No revisions

Project: US 41 - Bell Lake to Tower Rd.
FM#: 2563151
Date: June, 2001
Impacts: 1.1 acres
Mitigation: Hillsborough River Corridor (SW 63)
Status: No revisions

Project: Bruce B. Downs Bike Path - Amberly Dr. to Hunter's Green
FM#: 2578071
Date: October, 1999
Impacts: 0.5 acre
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: Interstate - 4, W. of Memorial Blvd. To W. of US 98 (Section 2)
FM#: 2012171
Date: September, 2002
Impacts: 4.3 acres
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: SR 39, Blackwater Creek Bridge Replacement
FM#: 2555361
Date: August, 2001
Impacts: 2.1 acres
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: SR 56 – SR 54 to Bruce B. Downs Blvd.
FM#: 2587341
Date: July, 1999
Impacts: 5.3 acres
Mitigation: Jennings Tract, Cypress Ck. Preserve (SW 61)
Status: No revisions

Project: Bruce B. Downs Bikepath - Tampa City Limits to Amberly Drive
FM#: 2578072
Date: February, 2002
Impacts: 0.2 acre
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: SR 678 (Bearss Avenue) - Florida Ave. to Nebraska
FM# 2558591
Date: November, 2002
Impacts: 0.1 acre
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: Alexander Street - US 92 to Interstate-4
FM# 2578391
Date: September, 2004
Impacts: 2.6 acres
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: Alexander Street - On-Ramp to Westbound Interstate-4
FM# 2584491
Date: September, 2004
Impacts: 1.70 acres
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: Interstate-275 - US 41 to Pasco County Line
FM# 2584131, 2584132
Date: December, 2015
Impacts: 7.6 acres
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: Interstate-75 Off-Ramp at Bruce B. Downs
FM# 4084602
Date: December, 2001
Impacts: 0.5 acre
Mitigation: Jennings Tract, Cypress Ck. Preserve (West) (SW 61)
Status: No revisions

Project: SR 39 (Alexander St.), Interstate-4 to Knights Griffin Road
FM# 2555851
Date: November, 2014
Impacts: 14.2 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Interstate-75 - CR 581(BB Downs) to SR 56 (Ramps)
FM# 4218311
Date: October, 2009
Impacts: 31.3 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Interstate-75 - Fowler Ave. to CR 581
FM# 4084592
Date: September, 2011
Impacts: 23.6 Acres
Mitigation: Colt Creek State Park (SW 84)
Status: +6.0 acres from 2010

Project: US 92 – Eureka Springs to Thonotasassa Road
FM# 4113371
Date: September, 2007
Impacts: 1.6 acres – Hillsborough River Basin
 0.2 acre – Tampa Bay Drainage Basin
Mitigation: Hillsborough Basin - Colt Creek State Park (SW 84)
 Tampa Bay Basin – Ekker Tract (SW 82)
Status: No revisions

Project: SR 39 @ Hillsborough River
FM# 4089321
Date: July, 2009
Impacts: 1.7 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Interstate-75 – S of CR 54 to N of CR 54
FM# 4218314
Date: December, 2008
Impacts: 16.9 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Interstate -75 - CR 54 to SR 52
FM# 2587362
Date: January, 2018
Impacts: 10.2 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Interstate -75 - CR 54 (BB Downs) to SR 56 (Mainline)
FM# 4084593
Date: September, 2011
Impacts: 15.0 acres
Mitigation: Colt Creek State Park (SW 84)
Status: -0.9 acre from 2010

Project: Interstate -75 - SR 56 to S of CR 54
FM# 4084594
Date: January, 2011
Impacts: 11.7 acres, also 0.2 acre of upland habitat mitigated through the program
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Park Road - Interstate-4 to Sam Allen Road
FM# 2578622
Date: October, 2009
Impacts: 0.8 acre
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: US 301 (SR 41) - SR 39 to South of CR 54
FM# 2564222
Date: January, 2016
Impacts: 0.1 acre
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: SR 52 - CR 581 to Old Pasco Road
FM# 2562432
Date: January, 2017
Impacts: 0.8 acre
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Sam Allen Road - Alexander St. to Park Rd.
FM# 2578623
Date: February, 2016
Impacts: 1.7 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: SR 54 - Interstate-75 to US 301
FM# 4165611
Date: Construction schedule undetermined
Impacts: Early evaluation, impact acreage not available
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Interstate-75 Rest Areas
FM# 4079441 & 4079442
Date: October, 2008
Impacts: 2.2 acres
Mitigation: Colt Creek State Park (SW 84)
Status: +0.78 acre from 2010

Project: SR 52 - US 41 to CR 581
FM# 2563341
Date: February, 2018
Impacts: 26.3 acres – Hillsborough River Basin
 13.7 acres – Upper Coastal Basin
Mitigation: Colt Creek State Park (SW 84)
 Conner Preserve (SW 77)
Status: -2.0 acres from 2010

Project: SR 580 (Busch Blvd.) – Marelynn Lane to N. Armenia (Sidewalk)
FM# 4245571
Date: January, 2012
Impacts: 0.1 acre – Hillsborough River Basin
 0.1 acre – Tampa Bay Basin
Mitigation: Colt Creek State Park (SW 84)
 Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: SR 54 – CR 577 to Morris Bridge
FM# 4165612
Date: January, 2018
Impacts: 2.0 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: US 41/92 (SR 600) – 56th St. to Orient Road
FM# 4271491
Date: November, 2012
Impacts: 0.2 acre
Mitigation: Colt Creek State Park (SW 84)
Status: New project, 2011

Project: US /92 (SR 580/600) – Benjamin Road to Westshore
FM# 4271591
Date: January, 2013
Impacts: 0.2 acre
Mitigation: Colt Creek State Park (SW 84)
Status: New project, 2011

Project: SR 572 – Old Tampa Road
FM#: 4273101
Date: Undetermined
Impacts: 0.50 acre
Mitigation: Colt Creek State Park (SW 84)
Status: New project, 2011

Kissimmee River Basin

Project: US 27 - Lake Glenada to Hal McRae Rd.
FM# 1945101
Date: September, 2001
Impacts: 0.39 acre
Mitigation: Reedy Creek Mitigation Bank (SW 49)
Status: No revisions

Little Manatee River Basin

Project: US 301 - Sun City Center to Balm Road
FM#: 4154893
Date: October, 2010
Impacts: 0.9 acre – Little Manatee Basin
 7.5 acres – Tampa Bay Basin
Mitigation: Little Manatee – Little Manatee River, Lower Tract (SW 85)
 Tampa Bay – Ekker Tract (SW 82)
Status: No revisions; additional 2.9 impact acres being mitigated w/in on-site FDOT floodplain compensation area constructed w/in adjacent Hillsborough County ELAPP property

Lower Coastal Basin

Project: SR 789 - Ringling Causeway Bridge
FM# 1979421
Date: June, 2001
Impacts: 0.27 acre
Mitigation: Curry Creek Regional Mitigation Project (SW 79)
Status: No revisions

Project: US 41 Bus. (SR 45) - Venice Ave. to US 41 Bypass
FM#: 1980051
Date: September, 2000
Impacts: 0.32 acre
Mitigation: Curry Creek Regional Mitigation Project (SW 79)
Status: No revisions

Project: Interstate-75 – N. River Road (CR 577) to SR 681
FM#: 4063143
Date: March, 2010
Impacts: 15.32 acres
Mitigation: Fox Creek Regional Mitigation (SW 79)
Status: No revisions

Project: US 41 (Venice Bypass) - Center Road to US Bus. 41 North
FM#: 1980172
Date: July, 2012
Impacts: 0.2 acre
Mitigation: Fox Creek Regional Mitigation Project (SW 79)
Status: No revisions

Manatee River Basin

Project: US 301 (Ellenton) - 60th Ave. to Erie Rd.
FM#: 1960581
Date: October, 2000
Impacts: 0.59 acres
Mitigation: Terra Ceia (SW 50)
Status: No revisions

Project: SR 64 (Segment 1) – Interstate-75 to Lena Road
FM#: 1960221
Date: December, 2001
Impacts: 2.42 acres
Mitigation: Rutland Ranch (SW 65)
Status: No revisions

Project: SR 64 (Segment 2) – Lena to Lakewood Ranch Road
FM#: 1960223
Date: September, 2006
Impacts: 0.8 acre
Mitigation: Rutland Ranch (SW 65)
Status: No revisions

Project: SR 64 (Segment 3) – Lakewood Ranch to Lorraine
FM#: 1960224
Date: September, 2006
Impacts: 4.0 acres
Mitigation: Hidden Harbour (SW 80)
Status: No revisions

Project: SR 70 (Segment 1) – Interstate-75 to Lakewood Ranch Road
FM#: 1961211
Date: July, 2005
Impacts: 0.90 acre
Mitigation: Rutland Ranch (SW 65)
Status: No revisions

Project: SR 70 (Segment 2) – Lakewood Ranch Road to Lorraine Road
FM#: 4043232
Date: September, 2004
Impacts: 3.80 acres
Mitigation: Rutland Ranch (SW 65)
Status: No revisions

Project: US 301, Segment B – Erie Road to CR 675
FM# 4226031
Date: March, 2009
Impacts: 2.73 acres
Mitigation: Hidden Harbour (SW 80)
Status: No revisions

Project: SR 64 – Carlton Arms Blvd. to I-75
FM# 4161201
Date: Undetermined
Impacts: 0.76 acre
Mitigation: Hidden Harbour (SW 80)
Status: +0.36 acre from 2010

Project: US 301 – CR 765 to Moccasin Wallow Road
FM# 4279951
Date: Undetermined
Impacts: 1.00 acre
Mitigation: Hidden Harbour (SW 80)
Status: New project, 2011

Myakka River Basin

Project: SR 776 - CR 771 to Willow Bend Rd.
FM#: 1937941
Date: July, 1999
Impacts: 11.0 acres
Mitigation: 8.9 acres - Cattle Dock Point (SW 31)
 2.1 acres - Little Pine Island Mitigation Bank (SW 52)

Project: SR 72 - Deer Prairie to Big Slough
FM#: 1980131
Date: September, 1999
Impacts: 0.87 acre
Mitigation: Myakka River State Park (SW 51)
Status: No revisions

Project: SR 72 - Big Slough to Desoto County line
FM#: 1979251
Date: January 1999
Impacts: 1.49 acres
Mitigation: Myakka River State Park (SW 51)
Status: No revisions

Project: SR 72 - Myakka River to Big Slough
FM#: 4138871
Date: October, 2006
Impacts: 5.0 acres
Mitigation: Myakka River State Park (SW 51)
Status: No revisions

Ocklawaha River Basin

Project: SR 500 (US 27) - Levy Co. Line to CR 326
FM#: 238641
Date: September, 2002
Impacts: 3.5 acres
Mitigation: Ledwith Prairie (SW 58)
Status: No revisions

Project: SR 500 (US 27) - CR 464 to CR 225a
FM#: 238679
Date: September 1999
Impacts: 1.09 acres
Mitigation: Ledwith Prairie (SW 58)
Status: No revisions

Project: SR 40 - CR 328 to SW 80th
FM#: 238719
Date: June, 2004
Impacts: 0.08 acre
Mitigation: Ledwith Prairie (SW 58)
Status: No revisions

Project: US 27 - Blue Heron Bay to CR 547
FM#: 4038901
Date: August, 2003
Impacts: 1.9 acres
Mitigation: Lake Lowery Tract (SW 76)
Status: No revisions

Peace River Basin

Project: Ft. Green/Ona Rd. (Segment 1) - SR 62 to N. of Vandolah Rd.
FM#: 1986401
Date: May, 1999
Impacts: 2.08 acres
Mitigation: Boran Ranch Mitigation Bank (SW 53)
Status: No revisions

Project: SR 72 - Sarasota County Line to SR 70
FM#: 1938880
Date: October, 2000
Impacts: 1.19 acres
Mitigation: Boran Ranch Mitigation Bank (SW 53)
Status: No revisions

Project: US 17 (SR 35) - SR 64 to North of Peace River Bridge
FM#: 1111286
Date: February, 2001
Impacts: 2.3 acres
Mitigation: Boran Ranch Mitigation Bank (SW 53)
Status: No revisions

Project: SR 540 - Thornhill Rd. to Recker Hwy.
FM#: 1974751
Date: July 2000
Impacts: 5.87 acres
Mitigation: Tenoroc/Saddle Creek Restoration Project (SW 47)
Status: No revisions

Project: SR 540 (Cypress Gardens) - 9th St. to Overlook
FM#: 1974711
Date: November 2000
Impacts: 0.41 acre
Mitigation: Tenoroc/Saddle Creek Restoration Project (SW 47)
Status: No revisions

Project: US 17 (SR 35) - North of CR 74 to CR 764
FM#: 1937911
Date: October 2000
Impacts: 0.27 acre
Mitigation: Boran Ranch Mitigation Bank (SW 53)
Status: No revisions

Project: Trabue Harborwalk Bike Path
FM#: 1984711
Date: October 2000
Impacts: 0.16 acres
Mitigation: Little Pine Island Mitigation Bank (SW 52)
Status: No revisions

Project: Ft. Green/Ona Rd. (Segment 2) - Vandolah to North of Vandolah
FM#: 1986381
Date: October 2000
Impacts: 7.22 acres
Mitigation: Boran Ranch Mitigation Bank (SW 53)
Status: No revisions

Project: Ft. Green/Ona Rd. (Segment 3) - SR 64 to Vandolah
FM#: 1986371
Date: October 2003
Impacts: 5.23 acres
Mitigation: Boran Ranch Mitigation Bank (SW 53)
Status: No revisions

Project: US 17 (SR 35) - CR 764 South to CR 764 North
FM#: 1937981
Date: October 2002
Impacts: 3.60 acres
Mitigation: Boran Ranch Mitigation Bank (SW 53)
Status: No revisions

Project: I-75 Bridge Widening over Peace River
FM#: 4046971
Date: January, 2002
Impacts: 6.06 acres
Mitigation: Peace River Restoration (SW 69)
 Little Pine Island Mitigation Bank (SW 52)
Status: No revisions

Project: US 27 – Towerview Rd. to SR 540
FM#: 1975331
Date: June, 2003
Impacts: 3.9 acres
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 17 (SR 35) - Peace River to Tropicana Rd.
FM#: 1940931
Date: October, 2002
Impacts: 4.42 acres
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 17 (SR 35) - Livingston to Hardee County Line
FM#: 1938991
Date: September, 2002
Impacts: 11.59 acres
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: SR 60A (Van Fleet Drive) - CR 555 to Broadway Avenue
FM#: 1971681
Date: August, 2002
Impacts: 0.46 acre
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 27 - SR 544 to Blue Heron Bay
FM# 1976791
Date: June, 2003
Impacts: 0.46 acre - Ocklawaha Basin
 1.50 acres - Peace Basin
Mitigation: Ocklawaha - Lake Lowery Tract (SW 76)
 Peace – Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 27 – SR 540 to SR 542
FM#: 1977061
Date: October, 2014
Impacts: 3.94 acres
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 27 – SR 542 to CR 546
FM#: 1977071
Date: July, 2007
Impacts: 0.6 acre
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 98 – Carpenter’s Way to Daugherty Road
FM#: 1976381
Date: August, 2003
Impacts: 0.1 acre
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 27 – SR 60 to Towerview Road
FM#: 1977051
Date: July, 2006
Impacts: 0.19 acre
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 27 - CR 546 to SR 544
WPI# 4110391
Date: October, 2009
Impacts: 1.96 acres
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Project: US 98 – Manor Drive to CR 540A
FM#: 4082685
Date: July, 2018
Impacts: 0.63 acre
Mitigation: Circle B Bar Reserve (SW 66)
Status: -3.37 acres

Project: US 17 – Charlotte C.L. to SW Collins
FM#: 4154901
Date: January, 2011
Impacts: 4.17 acres
Mitigation: 2.0 acres - Boran Ranch (SW 53)
 2.17 acres – Peace River Mitigation Bank (SW 85)
Status: No revisions

Project: SR 559 Extension – SR 655 (Recker Hwy.) to Derby Avenue
FM#: 1977014
Date: July, 2010
Impacts: 0.39 acre
Mitigation: Circle B Bar Reserve (SW 66)
Status: -0.77 acre from 2010

Project: SR 17 @ Mountain Lake Cutoff Intersection Improvements
FM#: 4251371
Date: December, 2011
Impacts: 0.16 acre
Mitigation: Circle B Bar Reserve (SW 66)
Status: No revisions

Tampa Bay Drainage

Project: SR 676 - Maritime Blvd. To SR 60
FM#: 2557341
Date: January, 2001
Impacts: 1.5 acres
Mitigation: Gateway Restoration (SW 45)
Status: No revisions

Project: US 19 (SR 55) - Drew St. to Railroad
FM#: 2569571
Date: September, 2002
Impacts: 0.50 acre
Mitigation: Cockroach Bay - Freshwater (SW 56)
Status: No revisions

Project: Interstate 275 - Roosevelt to Big Island Gap
FM#: 2588701
Date: May, 2002
Impacts: 9.10 acres
Mitigation: Gateway Restoration (SW 45)
Status: No revisions

Project: SR 679 (Bayway), Bunces Pass Bridge #150
FM#: 2569051
Date: February, 2000
Impacts: 0.60 acre
Mitigation: Gateway Restoration (SW 45)
Status: No revisions

Project: US 19 - CR 816 (Alderman) to SR 582 (Tarpon)
FM#: 4037701
Date: April, 2002
Impacts: 0.10 acre
Mitigation: Boyd Hill Nature Park (SW 67)
Status: No revisions

Project: US 19 - Coachman Rd. to Sunset Point
FM#: 2568881
Date: February, 2003
Impacts: 0.40 acre
Mitigation: Boyd Hill Nature Park (SW 67)
Status: No revisions

Project: SR 686 (Roosevelt) at 49th Street
FM#: 4062531
Date: November, 2003
Impacts: 0.20 acre
Mitigation: Gateway Restoration (SW 45)
Status: No revisions

Project: SR 60 - Cypress St. to Fish Creek
FM#: 2557031
Date: August, 2004
Impacts: 16.6 acres
Mitigation: 5.1 acres - Tappan (SW 62), 6.2 acres - Cockroach Bay-Fresh (SW 56) & Cockroach Bay-Braided Tidal (SW 75), 5.3 acres - Apollo Beach (SW 67)
Status: No revisions

Project: Interstate-275 - Howard Franklin to Himes Avenue
FM#: 2583981 and 2583982
Date: August, 2006
Impacts: 1.50 acres
Mitigation: Gateway Tract (SW 49)
Status: No revisions

Project: SR 60 - Courtney Campbell to Fish Creek
FM#: 2556301
Date: August, 2004
Impacts: 12.2 acres
Mitigation: Gateway Restoration (SW 45)
 0.2 acre of seagrass impacts has on-site mitigation by FDOT
Status: No revisions

Project: US 301 – Sligh Avenue to Tampa Bypass Canal
FM#: 2558881
Date: October, 2005
Impacts: 11.30 acres
Mitigation: Boyd Hill Nature Park (SW 67),
 Cockroach Bay – Freshwater (SW 56)
Status: No revisions

Project: Ulmerton Road – US 19 to 49th Street
FM#: 2571391
Date: September, 2005
Impacts: 0.10 acre
Mitigation: Cockroach Bay – Saltwater (SW 75)
Status: No revisions

Project: Himes Avenue to Hillsborough Avenue
FM#: 4082011
Date: September, 2003
Impacts: 0.10 acre
Mitigation: Boyd Hill Nature Park (SW 71)
Status: No revisions

Project: East-West Trail - Coopers Bayou to Bayshore
FM#: 4062561
Date: November, 2003
Impacts: 0.10 acre
Mitigation: Boyd Hill Nature Park (SW 71)
Status: No revisions

Project: US 19 – 49th St. to 118th Avenue
FM#: 2570701
Date: July, 2006
Impacts: 0.10 acre
Mitigation: Boyd Hill Nature Park (SW 71)
Status: No revisions

Project: CR 296 Connector - 40th St. to 28th St.
FM#: 2569941
Date: July, 2009
Impacts: 1.0 acre
Mitigation: Cockroach Bay – Freshwater (SW 56)
Status: No revisions

Project: SR 676 (Causeway Blvd.) – US 301 to US 41
FM#: 2555991
Date: August, 2007
Impacts: 1.4 acres
Mitigation: Cockroach Bay – Freshwater (SW 56)
 Boyd Hill Nature Park (SW 71)
Status: No revisions

Project: SR 686 (Roosevelt) – Interstate - 275 to 9th Street
FM#: 2569981
Date: November, 2014
Impacts: 2.8 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: Gandy Blvd. (SR 694) - US 19 to 4th Street
FM#: 2569311
Date: Undetermined
Impacts: 0.6 acre
Mitigation: Alligator Lake Management Area (SW 87)
Status: No revisions

Project: Tampa International Airport (TIA)
 (Full Build-Out, 17 Individual Projects)
FM#: 4143481
Date: 2007 through post-2025
Impacts: 35.05 acres
Mitigation: Bahia Beach (SW 78)
 Brooker Creek Buffer Preserve (SW 90)
Status: No revisions

Project: US 19 (SR 55) – Seville Dr. to SR 60
FM#: 2568812
Date: October, 2009
Impacts: 0.2 acre
Mitigation: Cockroach Bay- Freshwater (SW 56)
Status: No revisions

Project: SR 686 (Roosevelt) – Ulmerton Rd. to 40th St.
FM#: 2569951
Date: October, 2015
Impacts: 2.10 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: CR 296 Connector – Northbound I-275 (Ramp P) to
 Westbound SR 686
FM#: 2569942
Date: July, 2009
Impacts: 1.2 acres
Mitigation: Cockroach Bay – Freshwater (SW 56)
Status: No revisions

Project: US 19 (SR 55) – Whitney Rd. to Seville Drive
FM#: 2568811
Date: October, 2009
Impacts: 0.5 acre
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: SR 686 (Roosevelt) – 49th St. Bridge to Ulmerton Rd.
FM#: 2569971
Date: March, 2018
Impacts: 0.3 acre
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: SR 688 (Ulmerton Rd.) – Lake Seminole to Wild Acres
FM#: 4091551
Date: October, 2015
Impacts: 1.8 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: -1.7 acres from 2010

Project: Interstate-4 @ Selmon Expressway
FM#: 2584151
Date: November, 2009
Impacts: 5.67 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: Dale Mabry Sidewalks
FM#: 4152341
Date: October, 2011
Impacts: 0.2 acre
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: SR 60 (Adamo Drive) – US 301 to East of Falkenberg
FM#: 4055252
Date: May, 2018
Impacts: 2.0 acres
Mitigation: Brooker Creek Buffer Preserve (SW 90)
Status: Mitigation transfer

Project: SR 686 (Roosevelt Blvd.) and 49th Street
FM#: 2569961, goes with FM 2569971
Date: January, 2018
Impacts: 3.1 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: -0.1 acre from 2010

Project: US 301 – Balm Road to Gibsonton Drive
FM#: 4154892
Date: September, 2008
Impacts: 0.3 acre – Alafia Basin
 11.5 acres – Tampa Bay Basin
Mitigation: Alafia Basin - Balm Boyette – Stallion Hammock (SW 81)
 Tampa Bay Basin – Ekker Tract (SW 82)
Status: No revisions

Project: Gandy Blvd. (SR 694) - 9th Street to 4th Street North
FM#: 2569312
Date: April, 2017
Impacts: 3.3 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: Veteran's Expressway – Memorial Hwy. to Gunn Highway
FM#: 4061511
Date: January, 2011
Impacts: 4.68 acres
Mitigation: Bahia Beach (SW 78)
Status: -1.95 acres from 2010

Project: SR 688 (Ulmerton Road) - 38th to I-275
FM#: 2571471
Date: December, 2012
Impacts: 1.4 acres
Mitigation: Alligator Lake Management Area (SW 87)
Status: +0.9 acre from 2010

Project: SR 574 (MLK) @ I-75
FM#: 2558935
Date: January, 2009
Impacts: 0.2 acre
Mitigation: Brooker Creek Buffer Preserve (SW 90)
Status: No revisions

Project: SR 60 - Interstate-75 to Spruce St.
FM#: 4125311
Date: January, 2018
Impacts: 1.0 acre
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: Tampa Bay Intermodal Center – Gateway Site
FM#: 4153481
Date: Undetermined construction date
Impacts: 0.2 acre
Mitigation: Mobby Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: Dale Mabry Avenue - Veteran's Expressway to US 41
FM#: 4209331
Date: February, 2021
Impacts: 0.9 acre
Mitigation: Alligator Lake Management Area (SW 87)
Status: No revisions

Project: US 92 (SR 600/Gandy) – Pelican Sound to Gandy Bridge
FM#: 4168381
Date: September, 2010
Impacts: 1.5 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: CR 296 – US 19 to Roosevelt / CR 296
FM#: 4136222
Date: January, 2018
Impacts: 4.1 acres
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: Lee Roy Selmon Crosstown Extension, Temporary Haul Road
FM#: N/A – Tampa Hillsborough Expressway Authority
Date: June, 2003
Impacts: 0.21 acre
Mitigation: Ekker Tract (SW 83)
Status: No revisions

Project: I-275 @ I-275 NB Off-Ramp to SR 60 Airport Flyover
FM#: 4125313
Date: June, 2009
Impacts: 0.9 acre
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: No revisions

Project: SR 60 – Pinellas/Hillsborough C.L. to Rocky Point Drive
FM#: 4245611
Date: June, 2010
Impacts: 0.2 acre
Mitigation: Mobbly Bayou Wilderness Preserve (SW 86)
Status: -0.8 acre from 2010

Upper Coastal Basin

Project: SR 54 - Mitchell to Gunn Hwy.
FM#: 2563361
Date: January, 2004
Impacts: 6.6 acres
Mitigation: Anclote Parcel (SW54)
Status: No revisions

Project: SR 54 – North Suncoast to West of US 41
FM#: 2563391
Date: January, 2003
Impacts: 7.00 acres
Mitigation: Anclote Parcel (SW54)
Status: No revisions

Project: Suncoast Parkway / Ridge Road Interchange
FM#: 2589581
Date: Undetermined construction date
Impacts: 2.0 acres
Mitigation: Conner Preserve (SW 77)
Status: -9.82 acres from 2010,

Project: SR 60 - Clearwater Harbor Bridge Replacement
FM#: 2570931
Date: January, 2002
Impacts: 1.50 acres
Mitigation: Gateway Restoration (SW 45) &
 on-site mangrove restoration by FDOT
Status: No revisions

Project: US 19 – Republic Drive to CR 816 (Alderman)
FM#: 4037711
Date: April, 2002
Impacts: 0.10 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: US 98 – Hernando Co. Line to US 19
FM#: 2571741
Date: August, 2003
Impacts: 1.40 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 688 (Ulmerton Road) - Oakhurst Rd. to 119th Street
FM#: 2570501
Date: May, 2004
Impacts: 0.20 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 52 – Moon Lake to Suncoast Parkway
FM#: 2563221
Date: October, 2005
Impacts: 6.5 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 54 - Rowan Rd. to Mitchell Bypass
FM#: 2563321
Date: July, 1996
Impacts: 3.60 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 586 (Curlew Road) – CR 1 to Fisher Road
FM#: 2568151
Date: July, 2004
Impacts: 0.10 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 52 – Hicks to Moon Lake
FM#: 2563161
Date: November, 1996
Impacts: 1.60 acres
Mitigation: Serenova 2,3,4,8 (SW 75)
Status: No revisions

Project: SR 682 (Bayway Bridge) - SR 679 to West Toll Plaza
FM#: 2569031
Date: September, 2003
Impacts: 0.80 acre
Mitigation: Ft. DeSoto Park (SW 70)
Status: No revisions

Project: US 41 (SR 45) – Tower Road to Ridge Road
FM#: 2563241
Date: October, 2009
Impacts: 8.9 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 699 (Gulf Blvd.) – 192nd Avenue to Walsingham/Ulmerton Road
FM#: 2570831
Date: June, 2011
Impacts: 0.1 acre
Mitigation: Ft. DeSoto Park (SW 70)
Status: No revisions

Project: SR 688 (Ulmerton Rd.) – Wild Acres to El Centro/Ranchero Blvd.
FM#: 4091541
Date: October, 2013
Impacts: 0.6 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: CR 578 (County Line Rd.) – East Rd. to Mariner Blvd.
FM#: 2572983
Date: August, 2017
Impacts: 0.4 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: CR 485 (Cobb Rd.) - SR 50 to US 98
FM#: 2572992
Date: May, 2018
Impacts: 6.2 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 54 – Gunn Highway to Suncoast Parkway
FM#: 2563371
Date: September, 2002
Impacts: 6.0 acres
Mitigation: Conner Preserve (SW 77), additional mitigation conducted by FDOT with on-site wetland creation adjacent to SR 54
Status: No revisions

Project: CR 578 (County Line Rd.) – Suncoast Parkway to US 41
FM#: 2572985
Date: February, 2018
Impacts: 0.3 acre
Mitigation: Conner Preserve (SW 77)
Status: -1.0 acre from 2010

Project: SR 52 – Suncoast Parkway to US 41
FM#: 2563231
Date: May, 2019
Impacts: 4.2 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: US 19 (SR 55) – Green Acres to Jump Ct.
FM#: 4058222
Date: October, 2016
Impacts: 1.53 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: CR 578 (County Line Rd.) – US 19 to East Rd.
FM#: 2572982
Date: August, 2008
Impacts: 0.6 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: US 19 (SR 55) – Continuous Right Turn Lane
FM#: 4188602
Date: October, 2010
Impacts: 0.40 acre
Mitigation: Conner Preserve (SW 77)
Status: +0.2 acre from 2010

Project: US 19 (SR 55), West Jump Court to Ft. Island Trail
FM#: 4058223
Date: August, 2017
Impacts: 5.3 acres
Mitigation: Conner Preserve (SW 77)
Status: +2.5 acres

Project: SR 50, Mariner to Suncoast
FM#: 4079512
Date: October, 2016
Impacts: 0.10 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 679 (Pinellas Bay Structure E) at Intercoastal Waterway
FM#: 4107551
Date: Undetermined construction date
Impacts: 0.4 acre
Mitigation: Ft. DeSoto Park (SW 70)
Status: No revisions

Project: Interstate-75 - SR 52 to Pasco/Hernando Co. Line
FM# 4110142
Date: October, 2015
Impacts: 9.7 acres – Hillsborough Basin
 9.2 acres – Upper Coastal Basin
 7.7 acres – Withlacoochee Basin
Mitigation: Hillsborough - Colt Creek State Park (SW 84)
 Upper Coastal – Conner Preserve (SW 77)
 Withlacoochee – Colt Creek State Park (SW 84)
Status: -3.1 acres from 2010

Project: US 41 – Ridge Road to SR 52
FM#: 2563242
Date: February, 2018
Impacts: 9.5 acres
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: US 19 (SR 55) – SR 580 to CR 95
FM#: 2567742
Date: February, 2018
Impacts: 0.9 acre
Mitigation: Conner Preserve (SW 77)
Status: No revisions

Project: SR 50 – US 19 to Mariner Blvd.
FM#: 4079513
Date: October, 2013
Impacts: 1.4 acres
Mitigation: Conner Preserve (SW 77)
Status: +0.3 acre from 2010

Project: US 19 – New York to Pasco/Hernando C.L.
FM#: 4271571
Date: February, 2013
Impacts: 0.2 acre
Mitigation: Conner Preserve (SW 77)
Status: New project, 2011

Withlacoochee River Basin

Project: SR 44 - CR 470 to County Line
FM#: 2571641
Date: December, 2002
Impacts: 13.90 acres
Mitigation: Baird Tract (SW 64)
Status: No revisions

Project: SR 44 - US 41 to CR 470
FM#: 2571631
Date: August, 2002
Impacts: 7.90 acres
Mitigation: Baird Tract (SW 64)
Status: No revisions

Project: Interstate-4 - US 98 to SR 33 (Section 3-5)
FM#: 2012092
Date: October 2002
Impacts: 1.88 acres – Peace Basin
 18.95 acres - Withlacoochee
Mitigation: Peace - Tenoroc/Saddle Creek Restoration (SW 47),
 Withlacoochee – Hampton Tract (SW 59)
Status: No revisions

Project: Interstate-4 - CR 557 to Osceola County (Seg. 6-7, 9)
FM#: 2012041
Date: September, 2002
Impacts: 2.35 acres – Kissimmee Basin
 3.88 acres – Withlacoochee Basin
 4.0 acres – Ocklawaha Basin
Mitigation: Kissimmee - Reedy Creek Mitigation Bank (SW 49)
 Withlacoochee – Hampton Tract (SW 59)
 Ocklawaha – Lake Lowery Tract (SW 76)
Status: No revisions

Project: Interstate -75 Bridge Widening over Lake Panasoffkee
FM#: 4063291
Date: November, 2000
Impacts: 5.93 acres
Mitigation: Lake Panasoffkee Restoration (SW 57)
Status: No revisions

Project: US 41 (SR 45) – Watson Street to SR 44 East
FM#: 2571841
Date: November, 2004
Impacts: 0.10 acre
Mitigation: Baird Tract (SW 64)
Status: No revisions

Project: CR 470 (Gospel Isle)
FM#: 4092071
Date: November, 2004
Impacts: 0.3 acre
Mitigation: Baird Tract (SW 64)
Status: No revisions

Project: US 41 (SR 45) - SR 44 to SR 200
FM#: 2571651
Date: January, 2018
Impacts: 0.70 acre
Mitigation: Halpata Tastanaki Preserve (SW 92)
Status: No revisions

Project: SR 200 – US 41 to Marion County Line
FM#: 2571882
Date: March, 2018
Impacts: 3.1 acres
Mitigation: Halpata Tastanaki Preserve (SW 92)
Status: No revisions

Project: Interstate 75 – SR 50 to Hernando/Sumter Co. Line
FM#: 4110122
Date: January, 2018
Impacts: 0.3 acre
Mitigation: Colt Creek State Park (SW 84)
Status: -1.0 acre from 2010

Project: Interstate 75 – Pasco/Hernando Co. Line to SR 50
FM#: 4110112
Date: August, 2019
Impacts: 15.1 acres
Mitigation: Colt Creek State Park (SW 84)
Status: +0.1 acre from 2010

Project: Interstate 75 – Hernando Co. Line to SR 470
FM#: 2426262
Date: Undetermined construction date
Impacts: 3.0 acres
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: Interstate 75 – SR 470 to Turnpike
FM#: 2426263
Date: Undetermined construction date
Impacts: 1.0 acre
Mitigation: Colt Creek State Park (SW 84)
Status: No revisions

Project: I-4 (SR 400) @ SR 559 & CR 557 Interchanges
 (improvements associated with construction of the High Speed Rail)
FM#: 1902581
Date: June, 2011
Impacts: 28.56 acres
Mitigation: Hampton Tract (SW 59)
Status: New project, 2011

Project: High Speed Rail (2 projects)
FM#: 1902581
Date: July, 2011
Impacts: 3.00 acres – Hillsborough Basin
 12.63 acres – Withlacoochee Basin
Mitigation: Hillsborough – Colt Creek State Park (SW 84)
 Withlacoochee - Hampton Tract (SW 59)
Status: New project, 2011

Project: SR 50 Bridge Removal over Van Fleet Trail
FM#: 4245241
Date: Undetermined
Impacts: 0.5 acre
Mitigation: Colt Creek State Park (SW 84)
Status: New project, 2011

Project: US 301/98 (SR 35/700)
FM#: 4271651
Date: January, 2013
Impacts: 0.2 acre
Mitigation: Colt Creek State Park (SW 84)
Status: New project, 2011

Project: High Speed Rail (2 projects)
FM#: 1902581
Date: July, 2011
Impacts: 3.00 acres – Hillsborough Basin
12.63 acres – Withlacoochee Basin
Mitigation: Hillsborough – Colt Creek State Park (SW 84)
Withlacoochee - Hampton Tract (SW 59)
Status: New project, 2011

Project: SR 50 Bridge Removal over Van Fleet Trail
FM#: 4245241
Date: Undetermined
Impacts: 0.5 acre
Mitigation: Colt Creek State Park (SW 84)
Status: New project, 2011

Project: US 301/98 (SR 35/700)
FM#: 4271651
Date: January, 2013
Impacts: 0.2 acre
Mitigation: Colt Creek State Park (SW 84)
Status: New project, 2011

Select Year: 2009

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The 2009 Florida Statutes

Title XXVIII
NATURAL RESOURCES; CONSERVATION,
RECLAMATION, AND USE

Chapter 373
WATER
RESOURCES

[View Entire
Chapter](#)

373.4137 Mitigation requirements for specified transportation projects.--

(1) The Legislature finds that environmental mitigation for the impact of transportation projects proposed by the Department of Transportation or a transportation authority established pursuant to chapter 348 or chapter 349 can be more effectively achieved by regional, long-range mitigation planning rather than on a project-by-project basis. It is the intent of the Legislature that mitigation to offset the adverse effects of these transportation projects be funded by the Department of Transportation and be carried out by the water management districts, including the use of mitigation banks established pursuant to this part.

(2) Environmental impact inventories for transportation projects proposed by the Department of Transportation or a transportation authority established pursuant to chapter 348 or chapter 349 shall be developed as follows:

(a) By July 1 of each year, the Department of Transportation or a transportation authority established pursuant to chapter 348 or chapter 349 shall submit to the water management districts a copy of its adopted work program and an environmental impact inventory of habitats addressed in the rules adopted pursuant to this part and s. 404 of the Clean Water Act, 33 U.S.C. s. 1344, which may be impacted by its plan of construction for transportation projects in the next 3 years of the tentative work program. The Department of Transportation or a transportation authority established pursuant to chapter 348 or chapter 349 may also include in its environmental impact inventory the habitat impacts of any future transportation project. The Department of Transportation and each transportation authority established pursuant to chapter 348 or chapter 349 may fund any mitigation activities for future projects using current year funds.

(b) The environmental impact inventory shall include a description of these habitat impacts, including their location, acreage, and type; state water quality classification of impacted wetlands and other surface waters; any other state or regional designations for these habitats; and a survey of threatened species, endangered species, and species of special concern affected by the proposed project.

(3)(a) To fund development and implementation of the mitigation plan for the projected impacts identified in the environmental impact inventory described in subsection (2), the Department of Transportation shall identify funds quarterly in an escrow account within the State Transportation Trust Fund for the environmental mitigation phase of projects budgeted by the Department of Transportation for the current fiscal year. The escrow account shall be maintained by the Department of Transportation for the benefit of the water management districts. Any interest earnings from the escrow account shall remain with the Department of Transportation.

(b) Each transportation authority established pursuant to chapter 348 or chapter 349 that chooses to participate in this program shall create an escrow account within its financial structure and deposit funds in the account to pay for the environmental mitigation phase of projects budgeted for the current fiscal year. The escrow account shall be maintained by the authority for the benefit of the water management districts. Any interest earnings from the escrow account shall remain with the authority.

(c) Except for current mitigation projects in the monitoring and maintenance phase and except as

allowed by paragraph (d), the water management districts may request a transfer of funds from an escrow account no sooner than 30 days prior to the date the funds are needed to pay for activities associated with development or implementation of the approved mitigation plan described in subsection (4) for the current fiscal year, including, but not limited to, design, engineering, production, and staff support. Actual conceptual plan preparation costs incurred before plan approval may be submitted to the Department of Transportation or the appropriate transportation authority each year with the plan. The conceptual plan preparation costs of each water management district will be paid from mitigation funds associated with the environmental impact inventory for the current year. The amount transferred to the escrow accounts each year by the Department of Transportation and participating transportation authorities established pursuant to chapter 348 or chapter 349 shall correspond to a cost per acre of \$75,000 multiplied by the projected acres of impact identified in the environmental impact inventory described in subsection (2). However, the \$75,000 cost per acre does not constitute an admission against interest by the state or its subdivisions nor is the cost admissible as evidence of full compensation for any property acquired by eminent domain or through inverse condemnation. Each July 1, the cost per acre shall be adjusted by the percentage change in the average of the Consumer Price Index issued by the United States Department of Labor for the most recent 12-month period ending September 30, compared to the base year average, which is the average for the 12-month period ending September 30, 1996. Each quarter, the projected acreage of impact shall be reconciled with the acreage of impact of projects as permitted, including permit modifications, pursuant to this part and s. 404 of the Clean Water Act, 33 U.S.C. s. 1344. The subject year's transfer of funds shall be adjusted accordingly to reflect the acreage of impacts as permitted. The Department of Transportation and participating transportation authorities established pursuant to chapter 348 or chapter 349 are authorized to transfer such funds from the escrow accounts to the water management districts to carry out the mitigation programs. For a mitigation project that is in the maintenance and monitoring phase, the water management district may request and receive a one-time payment based on the project's expected future maintenance and monitoring costs. Upon disbursement of the final maintenance and monitoring payment, the escrow account for the project established by the Department of Transportation or the participating transportation authority may be closed. Any interest earned on these disbursed funds shall remain with the water management district and must be used as authorized under this section.

(d) Beginning in the 2005-2006 fiscal year, each water management district shall be paid a lump-sum amount of \$75,000 per acre, adjusted as provided under paragraph (c), for federally funded transportation projects that are included on the environmental impact inventory and that have an approved mitigation plan. Beginning in the 2009-2010 fiscal year, each water management district shall be paid a lump-sum amount of \$75,000 per acre, adjusted as provided under paragraph (c), for federally funded and nonfederally funded transportation projects that have an approved mitigation plan. All mitigation costs, including, but not limited to, the costs of preparing conceptual plans and the costs of design, construction, staff support, future maintenance, and monitoring the mitigated acres shall be funded through these lump-sum amounts.

(4) Prior to March 1 of each year, each water management district, in consultation with the Department of Environmental Protection, the United States Army Corps of Engineers, the Department of Transportation, transportation authorities established pursuant to chapter 348 or chapter 349, and other appropriate federal, state, and local governments, and other interested parties, including entities operating mitigation banks, shall develop a plan for the primary purpose of complying with the mitigation requirements adopted pursuant to this part and 33 U.S.C. s. 1344. In developing such plans, the districts shall utilize sound ecosystem management practices to address significant water resource needs and shall focus on activities of the Department of Environmental Protection and the water management districts, such as surface water improvement and management (SWIM) projects and lands identified for potential acquisition for preservation, restoration or enhancement, and the control of invasive and exotic plants in wetlands and other surface waters, to the extent that such activities comply with the mitigation requirements adopted under this part and 33 U.S.C. s. 1344. In determining the activities to be included in such plans, the districts shall also consider the purchase of credits from public or private mitigation banks permitted under s. [373.4136](#) and associated federal authorization and shall include such purchase as a part of the mitigation plan when such purchase would offset the impact of the transportation

project, provide equal benefits to the water resources than other mitigation options being considered, and provide the most cost-effective mitigation option. The mitigation plan shall be submitted to the water management district governing board, or its designee, for review and approval. At least 14 days prior to approval, the water management district shall provide a copy of the draft mitigation plan to any person who has requested a copy.

(a) For each transportation project with a funding request for the next fiscal year, the mitigation plan must include a brief explanation of why a mitigation bank was or was not chosen as a mitigation option, including an estimation of identifiable costs of the mitigation bank and nonbank options to the extent practicable.

(b) Specific projects may be excluded from the mitigation plan, in whole or in part, and shall not be subject to this section upon the agreement of the Department of Transportation, or a transportation authority if applicable, and the appropriate water management district that the inclusion of such projects would hamper the efficiency or timeliness of the mitigation planning and permitting process. The water management district may choose to exclude a project in whole or in part if the district is unable to identify mitigation that would offset impacts of the project.

(5) The water management district shall be responsible for ensuring that mitigation requirements pursuant to 33 U.S.C. s. 1344 are met for the impacts identified in the environmental impact inventory described in subsection (2), by implementation of the approved plan described in subsection (4) to the extent funding is provided by the Department of Transportation, or a transportation authority established pursuant to chapter 348 or chapter 349, if applicable. During the federal permitting process, the water management district may deviate from the approved mitigation plan in order to comply with federal permitting requirements.

(6) The mitigation plans shall be updated annually to reflect the most current Department of Transportation work program and project list of a transportation authority established pursuant to chapter 348 or chapter 349, if applicable, and may be amended throughout the year to anticipate schedule changes or additional projects which may arise. Each update and amendment of the mitigation plan shall be submitted to the governing board of the water management district or its designee for approval. However, such approval shall not be applicable to a deviation as described in subsection (5).

(7) Upon approval by the governing board of the water management district or its designee, the mitigation plan shall be deemed to satisfy the mitigation requirements under this part for impacts specifically identified in the environmental impact inventory described in subsection (2) and any other mitigation requirements imposed by local, regional, and state agencies for these same impacts. The approval of the governing board of the water management district or its designee shall authorize the activities proposed in the mitigation plan, and no other state, regional, or local permit or approval shall be necessary.

(8) This section shall not be construed to eliminate the need for the Department of Transportation or a transportation authority established pursuant to chapter 348 or chapter 349 to comply with the requirement to implement practicable design modifications, including realignment of transportation projects, to reduce or eliminate the impacts of its transportation projects on wetlands and other surface waters as required by rules adopted pursuant to this part, or to diminish the authority under this part to regulate other impacts, including water quantity or water quality impacts, or impacts regulated under this part that are not identified in the environmental impact inventory described in subsection (2).

(9) The process for environmental mitigation for the impact of transportation projects under this section shall be available to an expressway, bridge, or transportation authority established under chapter 348 or chapter 349. Use of this process may be initiated by an authority depositing the requisite funds into an escrow account set up by the authority and filing an environmental impact inventory with the appropriate water management district. An authority that initiates the environmental mitigation process established by this section shall comply with subsection (6) by

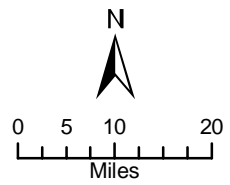
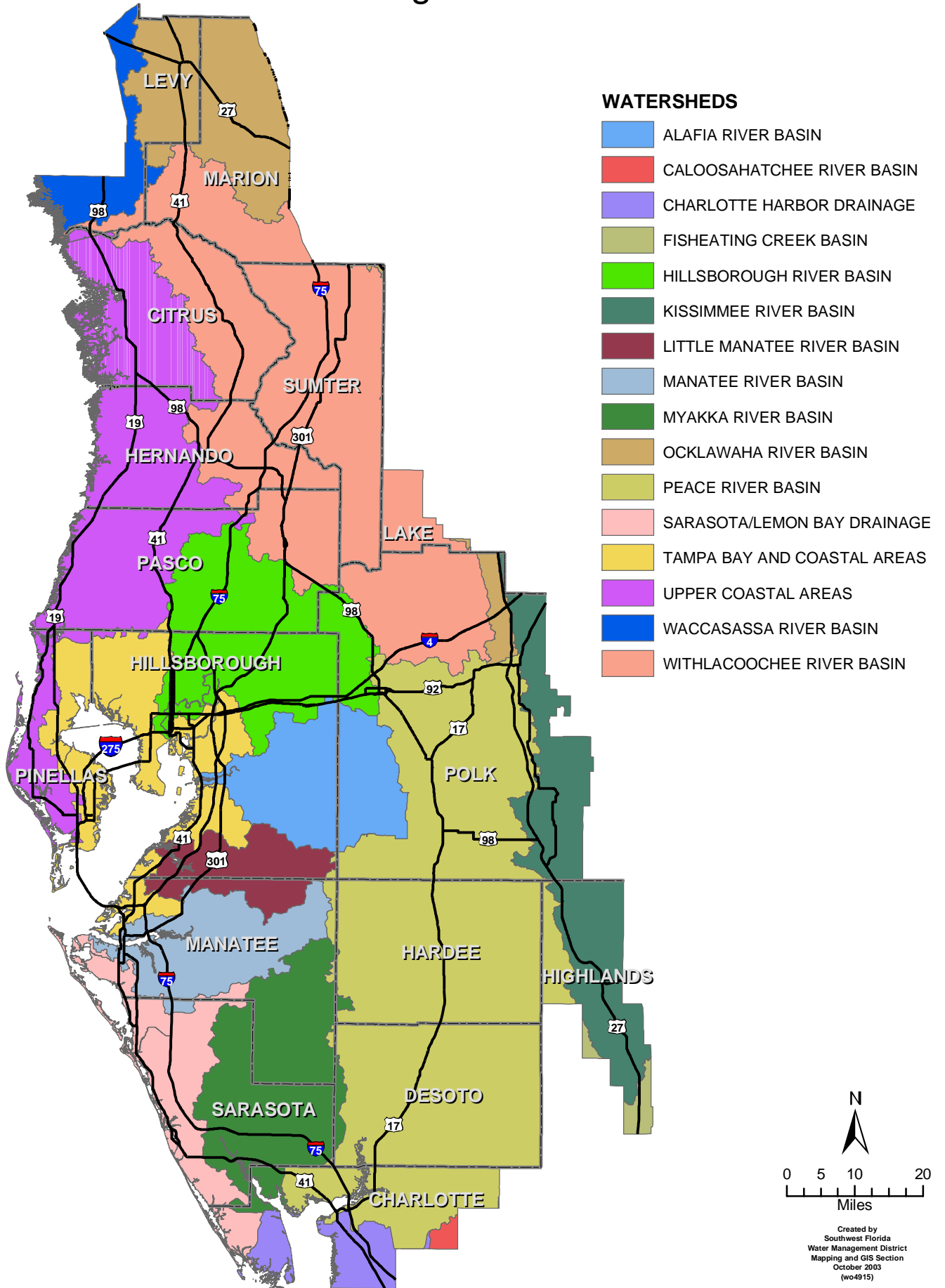
timely providing the appropriate water management district with the requisite work program information. A water management district may draw down funds from the escrow account as provided in this section.

History.--s. 1, ch. 96-238; s. 36, ch. 99-385; s. 1, ch. 2000-261; s. 93, ch. 2002-20; s. 39, ch. 2004-269; s. 30, ch. 2005-71; s. 12, ch. 2005-281; s. 1, ch. 2009-11.

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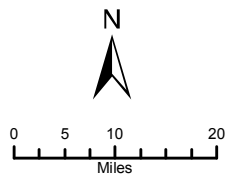
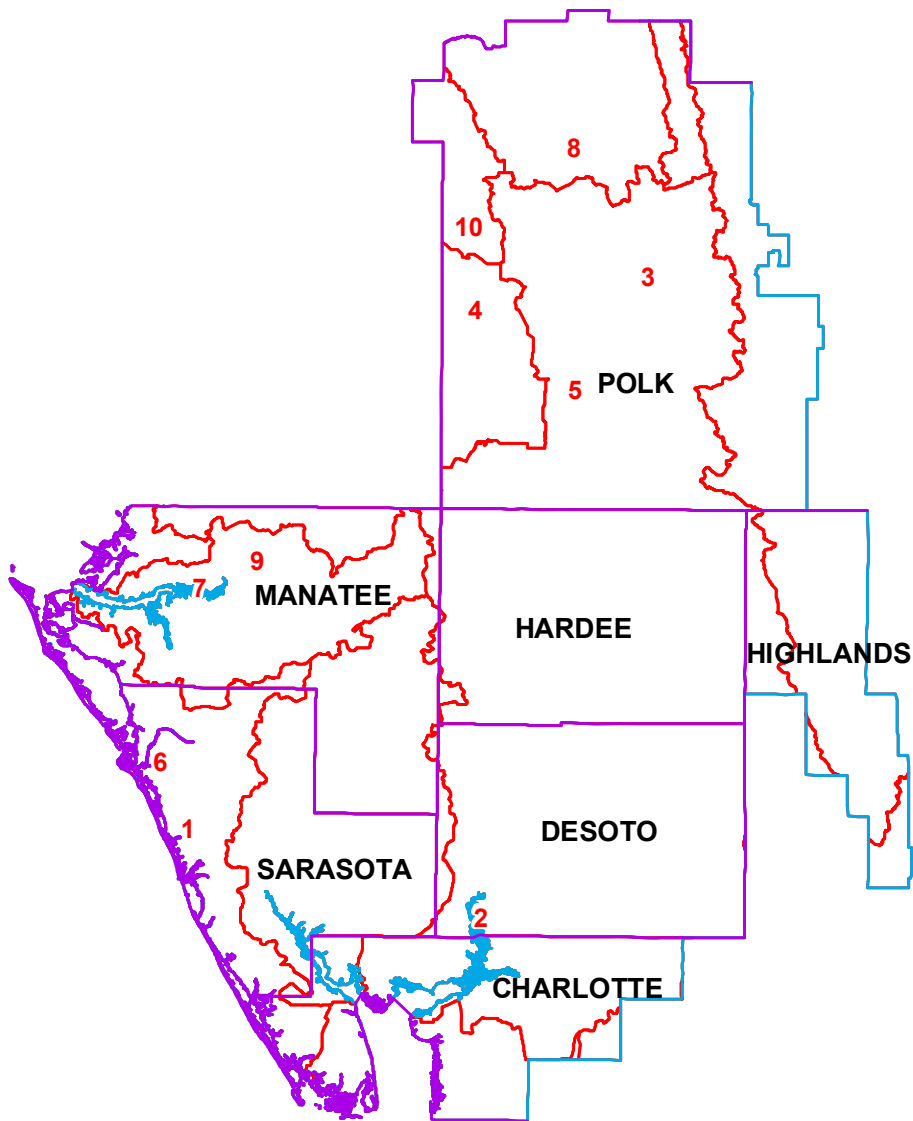
ERP Watersheds/Basins in the S.W.F.W.M.D.

Figure 1



Created by
Southwest Florida
Water Management District
Mapping and GIS Section
October 2003
(wo4915)

**FDOT Wetland Impact Inventory
(District 1)
Anticipated Construction Commencement
2010-2020
Figure 2**



**FIGURE 2 – FDOT Project Location
 FDOT Wetland Impact Inventory (District 1 – 15 Projects)
 Anticipated Construction Commencement – 2010-2018**

Map#	County	Project Number & Name	Const.
1	Sarasota	4063143 – I-75, N. River Rd. to SR 681	Jan – 2010
2	DeSoto	4154901 – US 17, Charlotte C.L. to SW Collins	Jan - 2011
3	Polk	1977061 – US 27, SR 540 to SR 542	Oct - 2014
4	Polk	1973941 – SR 563, Pipkin Rd. to SR 572	Undetermined
5	Polk	4082662 – US 98, Manor Drive to CR 540A	Undetermined
6	Sarasota	1980172 – US 41, Center Rd. to US Bus. 41 North	Undetermined
7	Manatee	4161201 – SR 64, Carlton Arms Blvd. to I-75	Undetermined
8	Polk	1902581 – High Speed Rail (Includes Improvements to I-4, SR 559, CR 557)	2011
9	Manatee	4279951 – US 301, CR 765 to Moccasin Wallow Rd.	Undetermined
10	Polk	4273101 – SR 572 @ Old Tampa Road	Undetermined

**FDOT Wetland Impact Inventory
(District 5, District 7, Turnpike)
Anticipated Construction Commencement
2010-2020
Figure 3**

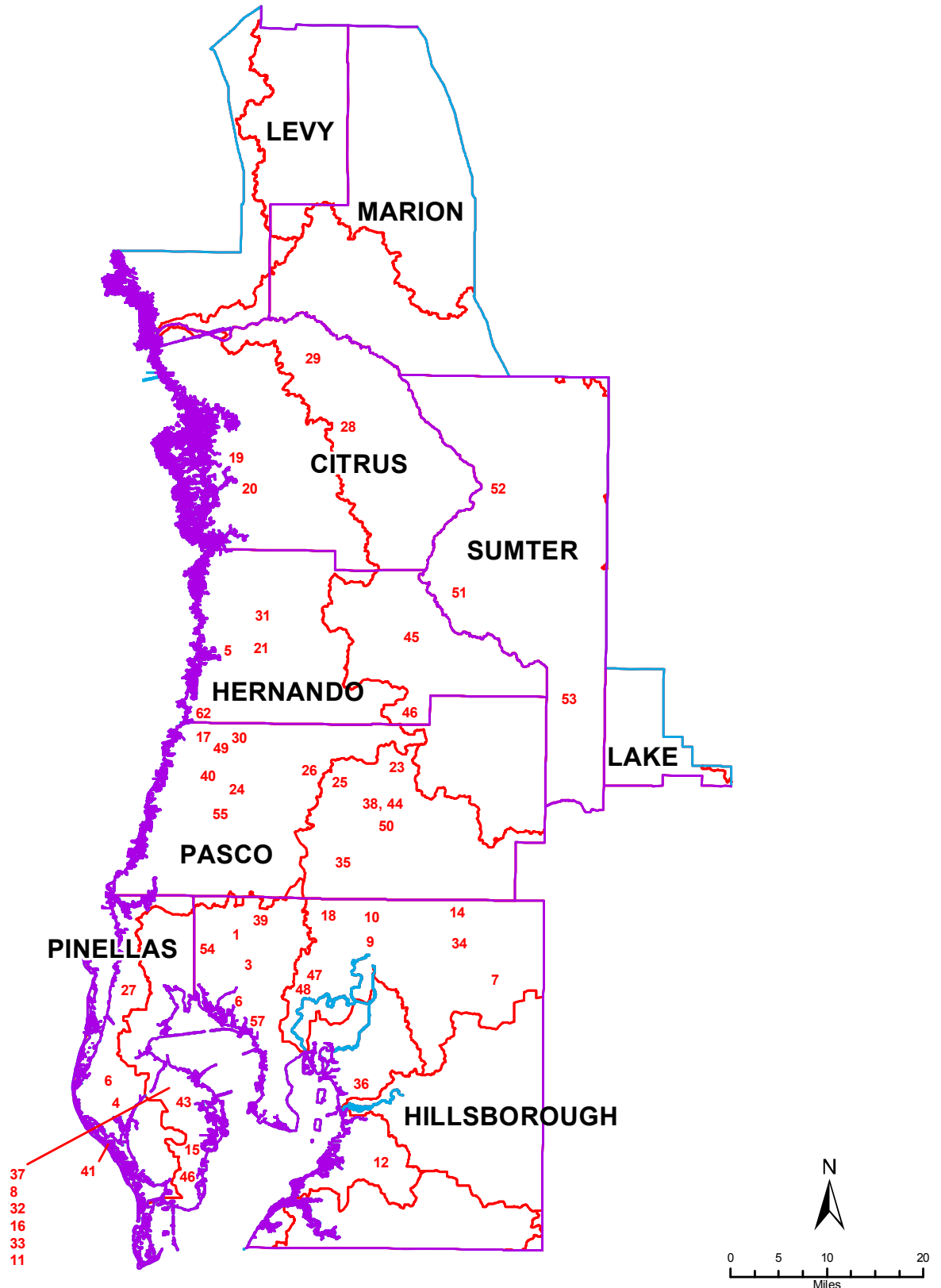


FIGURE 3 – FDOT Project Location
FDOT Wetland Impact Inventory (District 5 – 2 Projects,
District 7- 46 Projects, Turnpike – 2 Projects)
Anticipated Construction Commencement Dates – 2010-2018

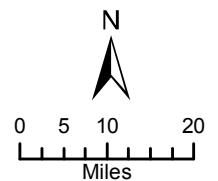
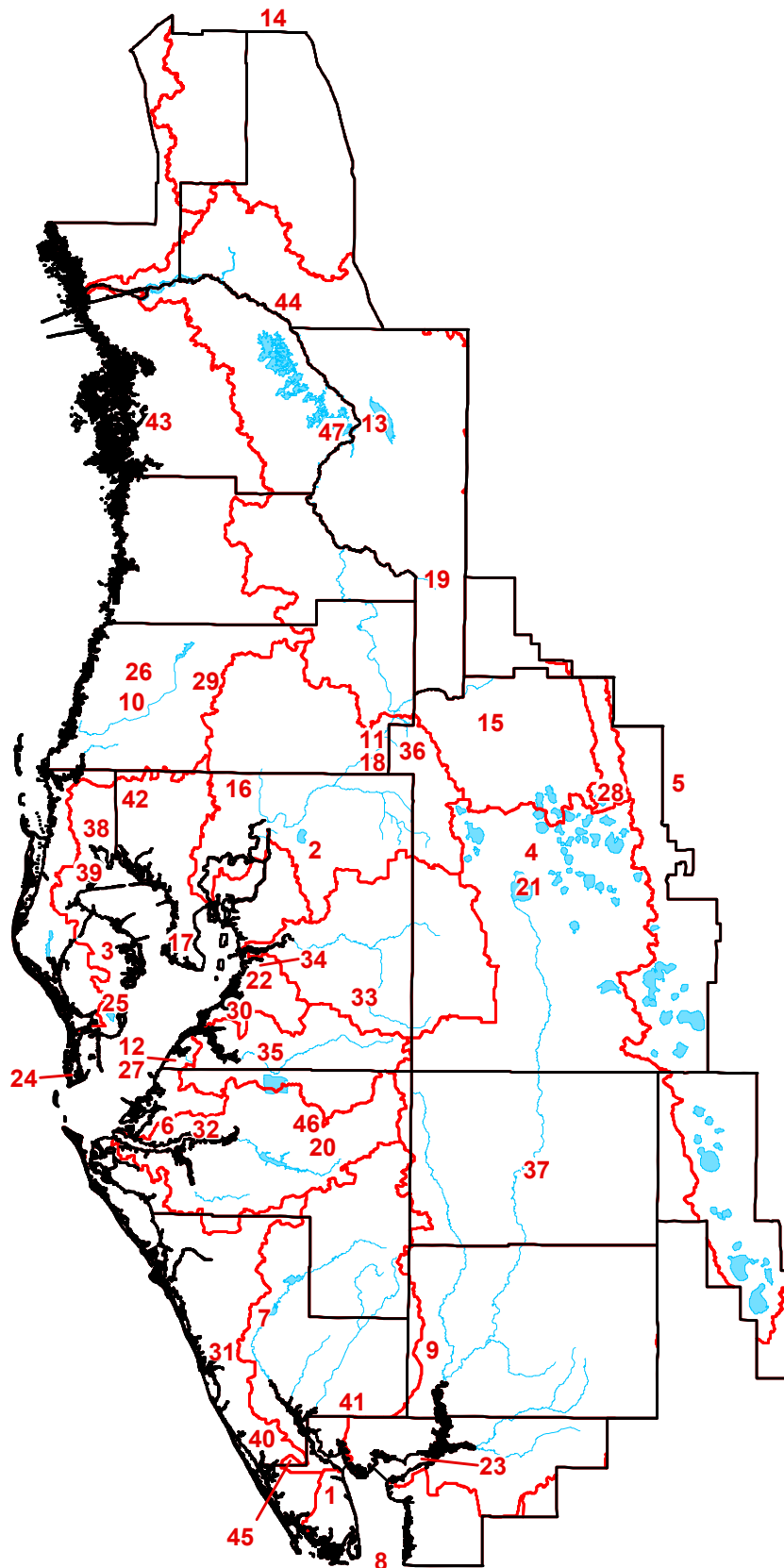
Map#	County	Project Number & Name	Const.
District 7			
1	Hillsborough	4161611 – Dale Mabry, Fletcher to Bearss (sidewalk)	March - 2010
2	Pinellas	4168381 – US 92, Pelican Sound to Gandy Bridge	June – 2010
3	Hillsborough	4168451 – SR 580, Double Branch to Silver Mill (sw)	Aug – 2010
4	Pinellas	4188602 – US 19, Continuous Turn Lane	Aug - 2010
5	Hernando	4079513 – SR 50, US 19 to Mariner	Oct – 2013
6	Pinellas	4091541 – SR 688 (Ulmerton), Wild Acres Rd. to El Centro/Ranchero	June - 2013
7	Hillsborough	2555851 - SR 39, I-4 to Knights Griffin Rd.	Nov -2014
8	Pinellas	2569981 – SR 686, I-275 to 9 th Street	Oct – 2012
9	Hillsborough	4084592 - I-75, Fowler Ave. to CR 581	Oct – 2014
10	Hillsborough	4084593 - I-75, CR 581 to SR 56	Oct - 2014
11	Pinellas	4091551 – SR 688 (Ulmerton), Lake Seminole to Wild Acres	Nov – 2014
12	Hillsborough	4154893 - US 301, Sun City to Balm Road	Oct – 2014
13	Hillsborough	4259461 – I-75 SB Ramp @ Gibsonton Drive	Oct - 2014
14	Hillsborough	2564222 – US 301, SR 39 to CR 54	Jan - 2016
15	Pinellas	2569312 – Gandy Blvd., 9 th Street to 4 th Street	April – 2016
16	Pinellas	2569951 - SR 686 (Roosevelt), Ulmerton to 40 th	Oct – 2015
17	Pasco	2572983 – CR 578 (County Line Rd.), East Road to Mariner Blvd.	Aug – 2016
18	Hillsborough	2584131 - SR 93 (I-275), US 41 to Pasco C.L.	Oct -2015
19	Citrus	4058222 – US 19, Green Acres to Jump Court	Oct – 2015
20	Citrus	4059223 – US 19, West Jump Ct. to CR 44	Aug - 2016
21	Hernando	4079512 – SR 50, Mariner to Suncoast Parkway	Oct – 2015
22	Pasco	4084594 – I-75, SR 56 to S of CR 54	Oct - 2015
23	Pasco	4110142 – I-75, SR 52 to Pasco/Hernando C.L.	Oct - 2015
24	Pasco	2563242 – US 41, Ridge Rd. to SR 52	Feb – 2017
25	Pasco	2562432 – SR 52, CR 581 to Old Pasco Rd.	Jan – 2017
26	Pasco	2563341 – SR 52, US 41 to CR 581	Feb – 2017
27	Pinellas	2567742 – US 19, SR 580 to CR 95	May – 2017
28	Citrus	2571651 – US 41, SR 44 to SR 200	Jan – 2017
29	Citrus	2571882 - SR 200, US 41 to Marion County Line	Jan – 2017
30	Pasco	2572985 – CR 578 (County Line Rd.) Suncoast Parkway to US 41	Feb - 2017
31	Hernando	2572992 - CR 485 (Cobb Rd.), SR 50 to US 98	May –2017
32	Pinellas	2569961 – Roosevelt Blvd. and 49 th Street	Jan – 2018
33	Pinellas	2569971 – SR 686, 49 th St. Bridge to Ulmerton Rd.	Mar – 2018

Figure 3 (continued) - Wetland Impact Inventory (Districts 5, 7, Turnpike)

Map#	County	Project Number & Name	Const.
34	Hillsborough	2578623 – Sam Allen Rd., Alexander St. to Park Rd.	Feb – 2018
35	Pasco	2587362 – I-75, N of CR 54 to SR 52	Jan - 2018
36	Hillsborough	4055252 – SR 60, US 301 to Falkenburg	Jan - 2018
37	Pinellas	4136222 – CR 296, US 19 to Roosevelt / CR 296	Jan – 2018
38	Pasco	4165612 – SR 54, CR 577 to Morris Bridge	Jan - 2018
39	Hillsborough	4209331 – Dale Mabry, Veteran's Exp. to US 41	Feb -2018
40	Pasco	2563231 – SR 52, Suncoast Parkway to US 41	Oct – 2018
41	Pinellas	4107551 – SR 679 (Structure E) @ Intercoastal	Undetermined
42	Pinellas	2569311 - Gandy Blvd. (SR 694), US 19 to 4 th St.	Undetermined
43	Pinellas	4153481 – Tampa Bay Intermodal Center-Gateway	Undetermined
44	Pasco	4165611 – SR 54, I-75 to US 301	Undetermined
45	Hernando	4110122 – I-75, SR 50 to Hernando/Sumter C.L.	Jan - 2018
46	Hernando	4110112 – I-75, Pasco/Hernando to SR 50	Aug – 2018
47	Hillsborough	4271491 – US 41/92, 56 th St. to Orient Road	Nov – 2012
48	Hillsborough	4271591 – US 92, Benjamin Road to Westshore	Jan - 2013
49	Pasco	4271571 – US 19, New York to Pasco/Hernando	Feb – 2013
50	Pasco	4271651 – US 301 – Pioneer Museum to Mosstown	Jan - 2013
District 5			
51	Sumter	2426262 – I-75, Hernando C.L. to SR 470	Undetermined
52	Sumter	2426263 – I-75, SR 470 to Turnpike	Undetermined
53	Pasco	4245241 – SR 50 Bridge Removal	Undetermined
Turnpike			
54	Hillsborough	4061511 – Veteran's Expressway Memorial Hwy. to Gunn Hwy.	July, 2010
55	Hernando	2589581 – Suncoast & Ridge Road Interchange	Undetermined

FDOT Mitigation Projects

Figure 4



Created by
Southwest Florida
Water Management District
Mapping and GIS Section
January 2011
(w04915)

Figure 4
2011 FDOT Mitigation Plan
Mitigation Projects & Sponsors

- Construction Complete, Maintenance & Management Activities

@ - Design Complete, Construction Scheduled (2010-2012)

**** - Current Design Phase, Construction Scheduled (2013-2014)**

- #1 SW 31 - Cattle Dock Point, Phase II (FDEP / SWFWMD – SWIM)**
- #2 SW 34 - Lake Thonotassassa Shoreline Restoration (SWFWMD – SWIM)**
- #3 SW 45 - Gateway Restoration (Pinellas County / SWFWMD – SWIM)**
- #4 SW 47 - Tenoroc / Saddle Creek (FDEP / FFWCC)**
- #5 SW 49 - Reedy Creek Mitigation Bank (Private Mitigation Bank)**
- #6 SW 50 - Terra Ceia Restoration (FDEP / SWFWMD – SWIM)**
- #7 SW 51 - Myakka River State Park (FDEP)**
- #8 SW 52 - Little Pine Island Mitigation Bank (Private Mitigation Bank)**
- #9 SW 53 - Boran Ranch Mitigation Bank (Private Mitigation Bank)**
- #10 SW 54 - Anclote Parcel (SWFWMD – LAND)**
- #11 SW 55 - Upper Hillsborough 4&5 (SWFWMD – LAND)**
- #12 SW 56 - Cockroach Bay, Freshwater (Hillsborough Co. / SWFWMD – SWIM)**
- #13 SW 57 - Lake Panasoffkee Restoration (SWFWMD - SWIM)**
- #14 SW 58 – Barr Hammock - Ledwith Prairie (Alachua County)**
- @15 SW 59 - Hampton Tract (SWFWMD – LAND)**
- #16 SW 61 - Cypress Ck. Preserve, Jennings Tract (Hillsborough County)**
- #17 SW 62 - Tappan Tract (City of Tampa / SWFWMD – SWIM)**
- #18 SW 63 - Hillsborough River Corridor (SWFWMD - LAND)**
- @19 SW 64 – Withlacoochee State Forest - Baird Tract (FDEP / FDOF)**
- #20 SW 65 - Rutland Ranch (SWFWMD - LAND)**
- #21 SW 66 – Circle B Bar Reserve (Polk County / SWFWMD – LAND)**
- #22 SW 67 – Apollo Beach (Hillsborough County / SWFWMD – SWIM)**
- #23 SW 69 – Peace River Bridge Restoration (FDOT / SWFWMD)**
- #24 SW 70 - Fort DeSoto Park (Pinellas County / SWFWMD – SWIM)**

- #25 SW 71 - Boyd Hill Nature Preserve (City of St. Petersburg)
- #26 SW 74 - Serenova Preserve, Sites 2,3,4,8 (SWFWMD – LAND)
- #27 SW 75 – Cockroach Bay – Saltwater (Hillsborough Co. / SWFWMD-SWIM)
- #28 SW 76 - Lake Lowery Tract (Polk County / SWFWMD – LAND)
- #29 SW 77 – Conner Preserve (SWFWMD – LAND)
- @30 SW 78 - Bahia Beach (Hillsborough County / SWFWMD-SWIM)
- #31 SW 79 – Fox Creek Regional Mitigation Project (Sarasota County)
- @32 SW 80 – Hidden Harbour (Manatee County)
- **33 SW 81 - Balm Boyette – Stallion Hammock (Hills. Co. / SWFWMD-SWIM)
- #34 SW 82 – Ekker Tract (Hillsborough County / SWFWMD-SWIM)
- #35 SW 83 - Little Manatee River – Lower Tract (Hillsborough County)
- @36 SW 84 – Colt Creek State Park (FDEP / SWFWMD - LAND)
- #37 SW 85 – Peace River Mitigation Bank (Private Mitigation Bank)
- @38 SW 86 – Mobbly Bayou Wilderness Preserve (Pinellas County)
- @39 SW 87 – Alligator Lake Management Area (Pinellas County)
- #40 SW 88 – Curry Creek Regional Mitigation Project (Sarasota County)
- #41 SW 89 – Myakka Mitigation Bank (Private Mitigation Bank)
- @42 SW 90 – Brooker Creek Buffer Preserve (Hills. Co. / SWFWMD-SWIM)
- #43 SW 91 – Upper Coastal Mitigation Bank (Private Mitigation Bank)
- #44 SW 92 – Halpata Tastanaki Preserve (SWFWMD - LAND)

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 31 - Cattle Dock Point (DEP / WMD-SWIM) Myakka Basin - Charlotte Co.	Charlotte Co. Borrow Pit – 2.2 ac. Mangrove - 3.1 ac. Exotic Hardwood - 1.38 ac. Ditch (Fresh) - 2.14 ac. Total - 8.82 acres	Mangrove (Enhancement) - 1.2 ac. Mangrove & Salt-marsh Creation – 8 ac. Marsh (Intertidal) Creation – 6.0 ac. Marsh (Fresh) Enhancement – 0.1 ac. Upland Habitat (Creation) – 1.5 ac. Total – 16.8 acres	Cattle Dock Point (Phase II) is an expansion of adjacent Phase I restoration (18 acres) also providing FDOT mitigation.
SW 34 - Lake Thonotasassa (WMD-SWIM / Hills. Co. Parks) Hillsborough Basin –Hillsborough Co.	Pasco Co. Inland Pond - 0.8 ac. Scrub-Shrub - 4.1 ac. Cypress - 4.6 ac. Marsh (Fresh) – 4.7 ac. Total - 14.20 acres	Marsh (Fresh) Enhancement - 14 ac. Marsh (Fresh) Restoration - 85 ac. Cypress Planting in Restored Area Total - 97 acres	The Lk. Thonotasassa project is a large-scale habitat restoration project that also provides water quality treatment & attenuation of contributing watershed flow into the lake.
SW 45 - Gateway Restoration (Pinellas Co. / WMD-SWIM) Tampa Bay Drainage Basin - Pinellas Co.	Hillsborough & Pinellas Co. Mangrove - 12.5 ac. Exotic Hardwood - 3.7 ac. Marsh (Salt) - 5.3 ac. Bay & Estuary - 3.8 ac. Marsh (Fresh) - 0.5 ac. Ditch (Fresh) - 0.8 ac. Total - 26.6 acres	Mangrove Enhancement - 42.50 ac. Marsh (Salt) Restoration - 42.93 ac. Bay & Estuary – 10.63 ac. Upland Habitat Enhancement – 10.25 ac. Total – 106.31 acres	This phase of Gateway is adjacent to several hundred acres of proposed mangrove enhancement on existing Pinellas County property.
SW 47 - Tenoroc / Saddle Creek (DEP / FFWCC) Peace Basin - Polk Co.	Polk Co. Forested (Fresh) - 6.33 ac. Marsh (Fresh) - 1.25 ac. Total - 8.17 acres	Forested Wetland Creation – 21.4 ac. Marsh (Fresh) Creation – 3.7 ac. Total – 25.1 acres	The creation & restoration of wetland habitat at Tenoroc is part of an overall habitat & watershed management plan that covers over 6,000 acres of public land.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 49 - Reedy Creek Mitigation Bank (Private Mitigation Bank) Kissimmee Basin - Polk & Osceola Co.	Polk Co. Marsh (Fresh) – 1.16 ac. Hardwood Forest - 1.58 ac. Total - 2.74 acres	Forested Wetland Enhancement & Upland Habitat Restoration Total – purchase 2.74 credits	The mitigation bank covers over 3,500-acres of wetland and upland enhancement & restoration.
SW 50 - Terra Ceia Restoration (DEP / WMD - SWIM) Manatee Basin – Manatee Co.	Manatee Co. Mangrove - 0.18 ac. Shrub – 0.41 ac. Total - 0.59 acre	Mangrove Enhancement - 12.0 ac. Upland Habitat Enhancement - 8.0 ac. Total – 20.0 acres	This mitigation is part of a 1,700-acre public land tract designated for major wetland & upland enhancement & restoration.
SW 51 - Myakka River State Park (DEP - Parks) Myakka - Sarasota Co.	Sarasota Co. Hardwood Forest – 0.3 ac. Marsh (Fresh) – 4.1 ac. Ditch – 3.0 ac. Total - 7.4 acres	Stream Swamp Enhancement - 194 ac. Marsh (Fresh) Enhancement - 1074 ac. Marsh (Fresh) Restoration - 6 ac. Total – 1,274 acres	The project includes removal of a railroad grade berm (9 miles) and filling ditches to restore the hydrology of substantial wetland acreage.
SW 52 - Little Pine Island Mitigation Bank (Private Mitigation Bank) Charlotte Harbor - Lee Co.	Charlotte Co. Bay & Estuary - 2.24 ac. Mangrove – 2.75 Freshwater Marsh – 1.10 ac. Total – 6.09 acres	Saltwater Marsh Restoration & Mangrove Enhancement Freshwater Marsh Total - purchased 6.09 credits	The mitigation bank includes eradication of exotic vegetation from 1,565 wetland acres on state-owned property.
SW 53 - Boran Ranch Mitigation Bank (Private Mitigation Bank) Peace Basin - DeSoto Co.	Hardee & DeSoto Co. Hardwood Forest - 9.49 ac. Marsh (Fresh) – 14.36 ac. Total - 23.85 acres	Freshwater wetland & upland restoration & enhancement Total – purchased 23.4 credits	Bank includes restoration and enhancement of 132 acres of wetlands, enhancement of 272 upland acres (total 404 acres).

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 54 - Anclote Parcel (WMD - Land Resources) Upper Coastal Basin - Pasco Co.	Pasco Co. Mixed Hardwood - 4.1 ac. Scrub-Shrub - 0.8 ac. Cypress - 4.6 ac. Marsh (Fresh) - 2.7 ac. Ditch - 1.4 ac. Total - 13.6 acres	Acquisition & enhancement of 185-acres that includes mixed hardwood swamp, cypress, pine flatwoods, and oak hammocks. Creation of a 6-acre marsh from an existing borrow pit. Total - 185 acres	The acquired tract is adjacent to over 25,000-acres of publicly-owned native habitat (Starkey Wilderness Preserve).
SW 55 - Upper Hillsborough 4 & 5 (WMD - Land Resources) Hillsborough Basin - Pasco Co.	Polk Co. Mixed Hardwood - 6.57 ac. Marsh (Fresh) - 6.98 ac. Total - 13.55 acres	Cypress & Mixed Hardwood Enhancement & Restoration - 113 ac. Forested & Marsh Restoration - 12 ac. Marsh & Shrub Enhancement - 9 ac. Total - 134 acres	Backfilled 1.3 miles of ditch to hydrologically enhance forested and non-forested wetlands, within portion of WMD - Upper Hills. Tract covering several thousand acres.
SW 56 - Cockroach Bay - Fresh (Hills. Parks / WMD - SWIM) Tampa Bay Basin - Hills. Co.	Pinellas & Hills. Counties Canal - 0.2 ac. Shrub - 1.4 ac. Marsh (Fresh) - 6.2 ac. Hardwood - 0.2 Total - 8.0 acres	Marsh (Fresh) Creation - 26 ac. Upland Hardwood Hammock Enhancement - 7 ac. Total - 33 acres	Entire Cockroach Bay tract covers 651 acres of various fresh & saltwater wetland creation & restoration, along with upland habitat restoration.
SW 57 - Lake Panasoffkee Restoration (WMD - SWIM) Withlacoochee Basin - Sumter Co.	Sumter Co. Open Water - 5.93 ac. (Bridge impact over Lk. Panasoffkee) Total - 5.93 acres	Lake Enhancement - 75 ac. Total - 75 acres	Mitigation includes portion of lake bottom dredging to remove 5 million cub.yds. of sediment from 1,010 acres of the lake.
SW 58 - Barr Hammock - Ledwith Prairie (Alachua Co.) Ocklawaha Basin - Alachua Co.	Marion Co. Marsh (Fresh) - 4.67 ac. Stream & Waterway - 0.11 ac. Total - 4.78 acres	Acquisition & enhance 60 acres of marsh and 10 acres of mixed forested hardwood wetland. Total - 70 acres	Entire acquisition is a 2303-acre tract of marsh, forested wetland, and forested upland habitat.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 59 - Hampton Tract (WMD - Land Resources) Withlacoochee Basin - Polk Co.	Polk Co. Forested Hardwood – 42.61 ac. Marsh – 13.51 ac. Cypress – 3.9 ac. Shrub – 2.8 ac. Open Water / Ditches – 1.2 Total – 64.02 acres	Mixed Forest Wetland Enhancement – 1558 ac. Marsh Enhancement - 48 ac. Total – 1,606 acres	Entire Hampton Tract covers 7,660 acres, adjacent to Green Swamp Wilderness Preserve (99,775 acres). Installation of 52 ditch blocks and 2 berm breaches to restore wetland hydrology.
SW 61 - Cypress Ck. Preserve, Jennings Tract (Hillsb. Parks / WMD-Land) Hillsborough Basin – Hillsborough Co.	Hillsborough, Pasco, Polk Co. Forested – 18.3 ac. Ditch (Forest) – 1.84 ac. Marsh (Fresh) – 3.6 ac. Willow – 0.5 ac. Cypress – 0.7 ac. Total - 24.9 acres	Preservation through acquisition, Enhancement, Management Mixed Forest Wetland – 146 ac. Upland Hardwood Hammock – 98 ac. Pine Flatwoods – 19 ac. Palmetto Prairie – 15 ac. Pine Flatwood Restoration - 20 ac. Total - 298 acres	This parcel acquisition is adjacent to several hundred acres of native habitat owned and managed by Hills. Co. Parks (ELAPP).
SW 62 - Tappan Tract (City of Tampa / WMD – SWIM) Tampa Bay Drainage Basin - Hillsborough County	Hillsborough Co. Mangrove – 0.3 ac. Ditch (Salt) - 3.5 ac. Ditch (Fresh) - 0.6 ac. Pond – 0.1 ac. Canal – 0.6 ac. Total - 5.1 acres	Mangrove Enhancement - 0.77 ac. Marsh (Salt) Create & Enhance - 5.86 ac. Marsh (Fresh) Create - 0.55 ac. Hardwood Hammock Restore - 1.2 ac. Total - 8.38 acres	Entire tract is 33-acres, the 8.4-acres includes habitat improvements which will enhance the remaining 24.6 acres.
SW 63 - Hillsborough River Corridor (WMD - Land Resources) Hillsborough Basin – Pasco Co.	Pasco Co. Cypress - 1.1 ac. Total - 1.1 acres	Preservation through acquisition - Forest Wetland Floodplain - 10.0 ac. Total - 10 acres	This parcel is along the Hills. River floodplain and adjacent to several thousand acres of the WMD's Upper Hillsborough Tract.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 64 - Baird Tract (FDEP / DOF) Withlacoochee Basin – Sumter Co.	Citrus, Hernando & Sumter Co. Forest – 12.2 ac. Shrub – 3.2 ac. Marsh (Fresh) – 6.8 ac. Total - 22.2 acres	Marsh Enhancement - 158 ac. Forested Wetland Enhance. - 2268 ac. Total – 2,426 acres	The Baird Tract covers over 11,000 acres within the Withlacoochee State Forest, located adjacent to over 100,000 acres of additional public lands in the Green Swamp.
SW 65 - Rutland Ranch (WMD-Land Resources) Manatee Basin – Manatee Co.	Manatee Co. Forest - 3.08 ac. Marsh - 4.84 ac. Total – 7.92 acres	Marsh Enhancement – 73 ac. Marsh Restoration – 5 ac. Upland Restoration – 10 ac. Upland Enhancement – 25 ac. Total - 113 acres	The South Tract of Rutland Ranch covers 900 acres of WMD property, enhancement includes hydrologic restoration of several heavily drained marshes, and upland habitat corridors.
SW 66 - Circle B Bar Reserve (Polk Co. Natural Resource & WMD-Land Resources) Peace Basin - Polk County	Polk Co. Forest - 9.9 ac. Shrub – 2.1 ac. Marsh - 13.1 ac. Ditches – 4.7 ac. Total - 29.8 acres	Marsh Restoration & Enhancement – 445 ac. Forested Wetland Enhancement – 91 ac. Forested Wetland Restoration – 64 ac. Upland Habitat Restoration - 19 ac. Marsh Creation – 4 ac. Total – 623 acres	Circle B Bar Reserve covers 1,256 acres, co-owned by Polk Co. & WMD. Primarily restoration of wet pastures to marsh and forested wetland habitat within the core of the property. Additional upland habitats not for mitigation are being restored and enhanced by Polk Co.
SW 67 - Apollo Beach Nature Preserve (Hills. Co. Parks / WMD-SWIM) Tampa Bay Basin - Hills. Co.	Hillsborough Co. Marsh (Salt) – 5.3 ac. Total - 5.3 acres	Marsh (Salt) Creation - 13.8 ac. Total – 13.8 acres	The site includes a total of 33 acres of saltwater wetland creation and 5 acres of upland preservation and enhancement.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 70 - Ft. DeSoto Park (Pinellas County / WMD – SWIM) Upper Coastal Basin, Pinellas Co.	Pinellas Co. Canal & Ditch – 0.2 ac. Marsh – 0.3 ac. Seagrass – 0.5 ac. Mangrove – 0.1 ac. Bay Bottom – 0.4 ac. Total – 1.5 acres	Seagrass Enhancement – 16 ac. Total – 16 acres	Bridge construction restores tidal flow connections to interbay areas within the Park, resulting in a minimum 200 acres of seagrass enhancement, with additional enhancement to mangrove and other tidal ecosystems.
SW 71 - Boyd Hill Nature Preserve (City of St. Petersburg) Tampa Bay Drainage Basin - Pinellas County	Pinellas & Hillsborough Counties Hardwood Forest – 9.0 ac. Shrub – 2.4 ac. Total – 11.4 acres	Hardwood Wetland Enhancement – 69.6 ac. Upland Habitat Enhancement – 21.4 ac. Pond Enhancement – 1.0 ac. Total – 92.0 acres	The 300-acre park of upland and wetland habitat borders Lk. Maggiore, a rare and unique mosaic island of habitat communities for southern Pinellas County. The remaining portion of the property is also being enhanced with exotics eradication.
SW 74 - Serenova Preserve- 2,3,4,8 (WMD-LAND) Upper Coastal Basin – Pasco County	Pasco County Mixed Forest – 1.6 ac. Total – 1.6 acres	Forested Wetland Enhancement – 26 ac. Total – 26 acres	Hydrologic enhancement of the Pithlac. River and Five Mile Creek within the Serenova Preserve (7,000 acres)
SW 75 - Cockroach Bay – Saltwater (Hills. Parks / WMD – SWIM) Tampa Bay Drainage Basin – Hillsborough County	Hillsborough County Marsh (Salt) – 5.4 ac. Mangrove – 0.1 ac. Total – 5.5 acres	Marsh (salt) creation – 15.1 acres Total – 15.1 acres	Entire site covers 651 acres of various fresh & saltwater wetland creation & restoration, along with upland habitat restoration.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 76 - Lake Lowery Tract (Polk Co. Nat. Res. / WMD – LAND) Ocklawaha Basin – Polk County	Polk County Cypress – 0.6 ac. Marsh (Fresh) – 3.8 ac. Mixed Forest – 2.2 ac. Shrub & Ditch – 0.1 ac. Total – 6.7 acres	Marsh & Forested Wetland Preservation – 198 acres Total – 198 acres	Entire site includes joint-acquisition and preservation of 397 acres, predominantly forested wetland marsh habitat. Adjacent to 5700-acres of FFWCC property (Hilochee Wildlife Mgmt. Area).
SW 77 - Conner Preserve (WMD – LAND) Upper Coastal & Hillsborough Basins – Pasco County	Pasco, Hernando, Pinellas Mixed Forest – 46.7 ac. Marsh (Fresh) – 37.8 ac. Cypress – 30.9 ac. Shrub – 3.4 ac. Ditch & Pond – 1.5 ac. Total – 120.4 acres	Forested Wetland Enhancement – 918 acres Non-Forested Wet. Enhance. – 712 acres Upland Habitat Enhancement – 1046 acres Upland Habitat Restoration – 304 acres Total – 2,980 acres	Habitat improvements within a tract located in the core of several other public lands in central Pasco County.
SW 78 - Bahia Beach Tract (Hillsborough Co. Parks, HCEPC, WMD – SWIM) Tampa Bay Basin – Hillsborough Co.	Hillsborough County Exotic Shrub – 2.9 ac. Forested Wet. – 12.1 ac. Marsh (Fresh) – 8.4 ac. Total – 23.4 acres	Forested Wet. & Marsh Creation - 54 ac. Temperate Hardwood Enhance. - 9 ac. Coastal Hydric Hammock Enhance. – 32 ac. Pine Flatwood Restoration – 4 ac. Mangrove & Salt-marsh Enhance. – 49 ac. Total – 148 acres	The Bahia Beach Tract is adjacent to several thousand acres of other Hills. County property that has been acquired, enhanced and restored with assistance through the WMD.
SW 79 - Fox Creek Regional Mitigation Project (Sarasota County Natural Resources) Lower Coastal Basin – Sarasota Co.	Sarasota County Stream Swamp – 1.4 ac. Marsh (Fresh) – 14.1 ac. Total – 15.1 acres	Freshwater Marsh Creation Total – purchased 9.2 credits	The entire tract includes 140 acres of upland and wetland acres of wetland and upland habitat creation, restoration, and enhancement.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 80 - Hidden Harbour (Manatee County, WMD-RPM) Manatee Basin – Manatee Co.	Manatee County Hardwood Forest – 5.1 ac. Marsh (Fresh & Salt) – 1.5 ac. Shrub – 0.1 ac. Total – 6.7 acres	Forested Wetland Enhancement – 53.6 ac. Freshwater Marsh Enhancement – 1.1 ac. Upland Habitat Restoration – 42.1 ac. Marsh Creation – 3.3 ac. Total – 101 acres	The entire tract includes 229 acres buffering the Manatee River and Gamble Creek.
SW 81 - Balm Boyette – Stallion Hammock Restoration (Hillsborough Co. Parks, HCEPC, WMD-SWIM) Alafia Basin – Hillsborough Co.	Hillsborough & Polk County Stream Swamp – 9.3 ac. Mixed Forested – 1.9 ac. Marsh – 0.6 ac. Shrub – 0.5 ac. Total – 12.3 acres	Forested & Marsh Wetland Restoration & Creation - 20 acres Forested & Shrub Wetland Enhancement - 11 acres Total – 31 acres	The entire tract includes 4,933 acres. The long-range plan includes approximately 275-acres of wetland restoration, forested wetland enhancement, and upland habitat enhancement.
SW 82 - Ekker Tract (Hillsborough Parks, WMD-SWIM) Tampa Bay Basin – Hillsborough Co.	Hillsborough County Pond – 1.2 ac. Hardwood Forest – 1.6 ac. Shrub – 9.2 ac. Marsh (Fresh) – 3.1 ac. Total – 15.11 acres	Forested Wet. & Marsh Creation – 14 ac. Upland Habitat Restoration – 9 ac. Oak Hammock Enhancement – 29 ac. Pine Flatwood Enhancement – 32 ac. Total – 84 acres	This tract and the proposed construction includes converting over 150 low quality abandoned tropical fish ponds into appropriate wetland habitat and buffer with enhanced and restored upland habitat.
SW 83 - Little Manatee River – Lower Tract (Hillsborough County Parks) Little Manatee Basin – Hillsborough County	Hillsborough County Hardwood Forest – 0.6 ac. Shrub – 0.3 ac. Total – 0.9 acre	Upland Habitat Enhancement -137 ac. Marsh Enhancement - 5 ac. Total – 142 acres	Entire tract covers 1,902 acres. Designated project area includes only major area of disturbed habitat, enhancement activities will improve habitat and wildlife corridor along the Little Manatee River.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 84 - Colt Creek State Park (FDEP – Parks, WMD-LAND) Hillsborough & Withlacoochee Basin - Polk County	Hillsborough County Mixed Forested – 95.3 ac. Cypress – 8.5 ac. Shrub – 24.4 ac. Marsh – 37.4 ac. Hydric Flatwoods – 7.4 ac. Totals – 173.1 acres	Forested Wet. & Marsh Preservation, Restoration & Enhancement – 1,200 ac. Upland Habitat Enhancement & Restoration - 433 ac. Total – 1,633 acres	Entire tract covers 5,118 acres located within the core of over 260,000 acres of adjacent public lands in the Green Swamp.
SW 85 - Peace River Mitigation Bank (Private Mitigation Bank) Peace Basin – Hardee County	DeSoto County Hardwood Forest – 2.2 acres Total – 2.2 acres	Freshwater forested wetland & upland preservation & enhancement Total – purchased 1.5 credits	Bank includes primarily preservation and minor enhancement of 118 acres of forested upland & 397 acres of forested wetland habitat (total 487 acres) along the Peace River floodplain.
SW 86 - Mobbly Bayou Wilderness Preserve (Pinellas County) Tampa Bay Basin – Pinellas County	Hillsborough & Pinellas Counties Mangrove – 9.1 ac. Shrub – 10.9 ac. Ditches – 4.2 ac. Canal & Pond – 1.9 ac. Marsh (Fresh) – 1.1 ac. Marsh (Salt) – 1.6 ac. Mixed Forested – 1.0 ac. Total – 29.6 acres	Mangrove Enhancement – 21 ac. Salt Marsh Restoration & Enhancement – 63 ac. Freshwater & Oligohaline Pond Enhancement – 3 ac. Oligohaline Creek & Marsh Creation – 6 ac. Upland Habitat Enhancement – 39 ac. Total – 133 acres	Preserve covers 383 acres of freshwater to saltwater wetland habitats, and buffered by upland habitat.
SW 87- Alligator Lake Management Area (Pinellas County) Tampa Bay Basin – Pinellas County	Hillsborough & Pinellas Counties Open Water & Ditches – 0.6 ac. Cypress – 0.3 ac. Forested Wetland – 0.3 ac. Marsh (Fresh) – 0.9 ac. Total – 1.5 acres	Forested Wetland Creation – 2.4 ac. Marsh Restoration & Creation - 6.5 ac. Forested Wetland Enhancement – 4.0 ac. Temperate Hardwood Restoration – 4.3 ac. Upland Habitat Enhancement - 14.8 ac. Total – 32 acres	Management Area covers 53 acres of forested upland habitat buffering low quality exotic upland & borrow pit habitat converted to created marsh and forested wetland habitat buffering the 70-acre Alligator Lake.

Table 2 - FDOT Mitigation Projects - Compensation Summaries, January, 2011

Mitigation Project Agency Representative Watershed Basin, County	DOT Impacts Wetland Locations, Type & Acreage	Proposed Mitigation Type & Acreage	Remarks
SW 88 - Curry Creek Regional Mitigation Project (Sarasota County Natural Resources) Lower Coastal Basin – Sarasota Co.	Sarasota County Mangrove – 0.32 ac. Seagrass – 0.27 ac. Tidal Creek – 0.77 ac. Total –1.36 acre	Creation and enhancement of saltwater marsh, tidal creek, and mangrove habitat Total – purchased 0.76 credit of tidal creek habitat, and 0.32 credit of mangrove habitat (total 1.08 credits)	The ROMA covers 19 acres within the 95-acre Curry Creek Preserve.
SW 89 - Myakka Mitigation Bank (Private Mitigation Bank) Myakka Basin – Sarasota County	No proposed impacts at this time.	Freshwater wetland & upland restoration & enhancement. No mitigation need at this time.	Bank includes 156 acres of wetland and 224 acres of upland habitat preservation, restoration and enhancement (total 380 acres). Bank adjacent to 3,800 acres of habitat protected under a conservation easement.
SW 90 – Brooker Creek Buffer Preserve (Hillsborough County, WMD-RPM) Tampa Bay Basin – Hillsborough County	Hillsborough County Cypress – 3.5 ac. Mixed Wetland Forest– 14.9 ac. Marsh – 0.1 ac. Total – 18.5 acres	Forested Wetland Preservation & Enhancement – 28 ac. Forested Wetland Enhancement – 99 ac. Non-Forested Wetland Enhance. – 36 ac. Forested Upland Buffer Preserve – 30 ac. Total – 193 acres	Preserve covers 489 acres of existing habitat and proposed restoration areas that buffers the 7,500-acre Brooker Creek Preserve.
SW 91 – Upper Coastal Mitigation Bank (Private Mitigation Bank) Upper Coastal Basin – Citrus Co.	No proposed impacts at this time.	Freshwater wetland & upland preservation enhancement. No mitigation need at this time.	Bank includes 149 acres of wetland & upland habitat providing critical habitat corridor between public lands associated with Chassahowitzka NWR and Withlacoochee SF.
SW 92 – Halpata Tasthanaki Preserve (WMD – LAND) Withlacoochee - Marion Co.	Citrus County Mixed Hardwood Forest – 0.5 ac. Willow & Elderberry – 0.2 ac. Marsh – 3.1 ac. Total – 3.8 acres	Forested Wetland Enhancement – 103 acres Total – 103 acres	The Preserve is an 8,090-acre tract located within the vicinity of thousands of acres of other public lands comprised of native habitat.

Table 3 - Mitigation Projects - Habitat Types & Acreages															Page 1 of 3	January, 2011							
Mitigation Projects	FDOT Wetland Impact Acreage	Forest Wetland Enhance (Fresh)	Forest Wetland Restore & Create (Fresh)	Forest Wetland Preserve & Enhance (Fresh)	Non-Forest Wetland Enhance (Fresh)	Non-Forest Wetland Restore & Create (Fresh)	Non-Forest Wetland Preserve & Enhance (Fresh)	Mangrove Wetland Enhance (Salt)	Mangrove Wetland Restore & Create (Salt)	Non-Forest Wetland Restore & Create (Salt)	Forest Upland Buffer Preserve & Enhance	Forest Upland Buffer Enhance	Forest Upland Buffer Preserve & Restore	Forest Upland Buffer Restore	PROJ.'s MITIG. ACREAGE	MITIG. BANK & ROMA CREDITS							
1-SW 31-Cattle Dock	8.8				0.1			1.2	8.0	6.0		1.5			16.8								
2-SW 34-Lk. Thonotasassa	14.2				14.0		83.0								97.0								
3-SW 45-Gateway	26.6							42.5		53.5		10.3			106.3								
4-SW 47-Tenoroc	8.2		21.4				3.7								25.1								
5-SW 49-Reedy Ck. Mitig. Bank	2.7														0.0	2.74							
6-SW 50-Terra Ceia	0.6							12.0				8.0			20.0								
7-SW 51-Myakka River S.P.	7.4	194.0			1274.0		6.0								1474.0								
8-SW 52-LPI Mitig. Bank	6.1														0.0	6.1							
9-SW 53-Boran Mitig. Bank	23.9														0.0	23.4							
10-SW 54-Anclote Parcel	13.6			139.0			6.0				40.0				185.0								
11-SW 55-Upper Hills. 4&5	13.6	113.0	12.0		9.0										134.0								
12-SW 56-Cockroach Bay-Fresh	8.0						26.0					7.0			33.0								
13-SW 57-Lk. Panasoffkee	5.9				75.0										75.0								
14-SW 58 - Ledwith Prairie	4.8			10.0				60.0							70.0								
15-SW 59-Hampton Tract	64.0	1558.0			48.0										1606.0								
16-SW 61-Jennings Tract	24.9			146.0							132.0		20.0		298.0								
17-SW 62-Tappan Tract	5.1						0.6	0.8		5.9				1.2	8.4								
18-SW 63-Hills. Corridor	1.1			10.0											10.0								
19-SW 64-Baird Tract	22.2	2268.0			158.0										2426.0								

Table 3 - Mitigation Projects - Habitat Types & Acreages																Page 2 of 3	January, 2011
	DOT	Forest	Forest	Forest	Non-Forest	Non-Forest	Non-Forest	Mangrove	Mangrove	Non-Forest	Forest	Forest	Forest	Forest	PROJ.	MITIG.	
Mitigation	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Upland	Upland	Upland	Upland	MITIG.	BANK &	
Projects	Impact	Enhance	Restore	Preserve &	Enhance	Restore &	Preserve &	Enhance	Restore &	Restore &	Buffer	Buffer	Buffer	Buffer	ACREAGE	ROMA	
	Acreage	(Fresh)	& Create (Fresh)	Enhance (Fresh)	(Fresh)	Create (Fresh)	Enhance (Fresh)	(Salt)	Create (Salt)	Create (Salt)	Preserve & Enhance	Enhance	Preserve & Restore	Restore		CREDITS	
20-SW 65-Rutland Ranch	7.9				73.0	5.0						10.0		25.0	113.0		
21-SW 66-Circle B Bar Reserve	29.8	91.0	64.0			449.0								19.0	623.0		
22-SW 67-Apollo Beach	5.3											13.8			13.8		
23-SW 69-Peace River Bridge	3.3							2.06	2.51						4.57		
24-SW 70-Ft. DeSoto	1.5											16.0			16.0		
25-SW 71-Boyd Hill Preserve	11.4	69.6				1.0						21.4			92.0		
26-SW 74-Serenova, 2,3,4,8	1.6	25.0	1.0												26.0		
27-SW 75-Cockroach Bay-Salt	5.5											15.0			15.0		
28-SW 76 - Lake Lowery	6.70			37.0			161.0								198.0		
29-SW 77 - Conner Preserve	120.4	918.0			712.0							1046.0		304.0	2,980.0		
30-SW 78 - Bahia Beach	23.4	32.0	5.0			53.0		35.0		14.0		9.0			148.0		
31-SW 79 - Fox Creek ROMA	15.1														0.0	9.2	
32-SW 80 - Hidden Harbour	6.7			53.6	1.5	3.3								42.1	100.5		
33-SW 81 - Balm Boyette	12.3			30.0											30.0		
34-SW 82 - Ekker Tract	15.1		4.0			10.0						61.0		9.0	84.0		
35-SW 83 - Little Manatee	0.9				5.0									137.0	142.0		
36-SW 84 - Colt Creek	173.1	930.0	41.0	207.0			22.0				433.0				1633.0		
37-SW 85 - Peace Mitig. Bank	2.2														0.0	1.5	
38-SW 86 - Mobbly Bayou	29.6					9.0		21.0		63.0		39.0			132.0		

Table 3 - Mitigation Projects - Habitat Types & Acreages							Page 3 of 3	January, 2011										
	DOT	Forest	Forest	Forest	Non-Forest	Non-Forest	Non-Forest	Mangrove	Mangrove	Non-Forest	Forest	Forest	Forest	Forest	PROJ.	MITIG.		
Mitigation	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Wetland	Upland	Upland	Upland	Upland	MITIG.	BANK &		
Projects	Impact	Enhance	Restore	Preserve &	Enhance	Restore &	Preserve &	Enhance	Restore &	Restore &	Buffer	Buffer	Buffer	Buffer	ACREAGE	ROMA		
	Acreage	(Fresh)	& Create	Enhance	(Fresh)	Create	Enhance	(Salt)	Create	Create	Preserve &	Enhance	Preserve &	Restore		CREDITS		
			(Fresh)	(Fresh)		(Fresh)	(Fresh)		(Salt)	(Salt)	Enhance		Restore					
39-SW 87 - Alligator Lake	1.5		2.4	4.0		6.5						14.8	4.3		32.0			
40-SW 88 - Curry Ck. ROMA	1.4														0.0	1.08		
41-SW 89 - Myakka Mit. Bank	0.0														0.0			
42-SW 90 - Brooker Ck. B.P.	18.5	99.0		27.9	36.0						30.1				193.0			
43-SW 91 - U.C. Mit. Bank	0.0														0.0	0.0		
44-SW 92 - Halpata Tastanaki	3.8	103.0													103.0			
TOTALS	758.6	6400.6	150.8	664.5	2405.6	662.1	243.0	114.5	10.5	187.2	635.1	1228.0	43.3	518.3	13263.5	34.8		
	Cumulative														Mitig.	Mitig.		
	Impact		Cumulative Mitigation Ratio:				18-to-1								Acreage	Bank &		
	Acreage														ROMA			
															Credits			

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Cattle Dock Point, Phase II Project Number: SW 31
Project Sponsors: SWFWMD-SWIM Section, FDEP Charlotte Harbor Preserve
County: Charlotte Location: Section 3, T41S, R21E

IMPACT INFORMATION

FM: 1937941, SR 776 - CR 771 to Willow Bend Road* ERP #: 4316676.00 COE: 199601986
Drainage Basin: Myakka River Water Body: Myakka River/Charlotte Harbor SWIM water body? Y

Impact Acres/ Habitat Types (FLUCFCS): FM 1937941 2.20 ac. 530 (borrow pit)
3.10 ac. 612
1.38 ac. 619
2.14 ac. 641x

TOTAL: 8.82 Acres

*Note: This project has an additional 2.08 acres of open water impact mitigated through the purchase of 2.08 credits from the Little Pine Island Mitigation Bank (SW 52).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Mitigation Area: **16.8 Acres**
SWIM project? Aquatic Plant Control project? Exotic Plant Control Project?
Mitigation Bank? Drainage Basin: Myakka River Water Body: Myakka River & Charlotte Harbor
SWIM water body? Y

Project Description

- A. Overall project goals:** The primary goal of the project was to create intertidal and salt-marsh wetland habitat within heavily disturbed property co-owned by the SWFWMD and FDEP. Prior to construction, this tract was predominately a dredged boat basin that connected to the Myakka River (refer to Figures A & B). Constructed in 2004-2005 (Figure C), Phase II removed extensive exotic vegetation (predominantly Brazilian pepper) that dominated the site, followed by grading the historically filled area to create a habitat mosaic of upland and wetland habitat (Figures C & D, site photos). The Phase I project (total 18 acres) was constructed in 2001 to provide appropriate mitigation for wetland impacts associated with an adjacent segment of SR 776 (Willow Bend Rd. to Collingswood Blvd.). The Phase I habitat improvements were selected to provide SR 776 mitigation a year prior to commencement of the FDOT Mitigation Program in 1996.
- B. Brief description of pre-construction habitat conditions:** Historically, the filled upland areas (six acres within Phase I, eight acres within Phase II) were formed as a result of disposal and spreading of material dredged as a result of constructing the boat basin during the early 1900's (Figure B). The basin was used to load cattle on barges for transport on the Myakka River and downstream to Charlotte Harbor. The uplands were almost totally covered with dense coverage of nuisance/exotic vegetation, particularly Brazilian pepper within Phase II and Australian pine for the peninsula associated with Phase I. A narrow littoral zone of 40-50 ft. (total 1.2 acres) of mangrove habitat was present along the border between the dredged basin and the filled upland (Figures B-D). Overall, except for the minor mangrove fringe habitat, the project area for Phases I and II areas provided extremely limited and poor habitat conditions to support wildlife activities.

- C. Brief description of construct activities and current habitat conditions:** The Phase II project included initial eradication of nuisance & exotic vegetation, followed by grading and removing the filled upland to create appropriate intertidal marsh elevations (total 6 acres) and three upland habitat islands (total 1.5 acres) in the marsh. The dredged material was deposited to fill a portion of the boat basin to create salt-marsh "platforms" (total - 8 acres). The intertidal marsh is hydrologically connected to the basin via culverts, and a meandering channel was constructed in the marsh to provide tidal flushing and fish access (refer to photos). After the appropriate grades were established in 2005, the intertidal marsh and salt-marsh were planted and currently have extensive coverage of herb species such as saltmarsh cordgrass (*Spartina alterniflora*) and black rush (*Juncus roemerianus*) in the low marsh grade elevations; bordered with sand cordgrass (*Spartina bakeri*) and seashore paspalum (*Paspalum vaginatum*) in the high marsh grade elevations. Mangrove species have naturally recruited and generated within the salt-marsh areas, particularly in the marsh platforms. Small portions of the marsh platforms also have appropriate elevations that formed rare and unique saltern habitat (photos). The upland islands were also planted and have dense ground cover vegetation, and the existing mangrove littoral zone (1.2 acres) was enhanced with the eradication of *B. pepper* that had encroached upon the perimeter. The total habitat creation, restoration, and enhancement is 16.8 acres; which doesn't include the extensive secondary ecological benefits in association with Phase I and open water components of the dredged basin. The basin was not totally filled to allow access and foraging opportunities for aquatic wildlife species, including manatees and American crocodile that have been documented at the site. The listing of planted and naturally recruited vegetation and observed wildlife is provided after the text.
- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** The wetland impacts associated with SR 776 included 2.2 acres (borrow pit), 2.1 acres (open water), 3.1 acres (mangrove), 1.4 acres (exotic shrub habitat), and 2.1 acres of ditches; for a total of 8.8 acres of impacts that represented a dominance of low quality habitat. The only high quality habitat impact was the mangrove. The mitigation project includes a mosaic of saltwater wetland habitat creation (14 acres) and upland habitat restoration (1.5 acres). The mangrove impacts are appropriately compensated with the enhancement of the existing mangrove habitat, as well as the mangrove habitat naturally generating within Phase I and the salt-marsh habitat (site photos). The open water impacts were appropriately mitigated with purchasing non-forested wetland credits from the Little Pine Island Mitigation Bank (refer to SW 52). The permitted wetland impacts associated with this SR 776 segment are the only impacts that were designated and permitted for mitigation at Cattle Dock Point, Phase II.
- E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** Cattle Dock, Phase II provides appropriate wetland mitigation for the predominantly low-quality SR 776 wetland impacts, as well as for the high quality impacts associated with the mangrove habitat. The mitigation includes creation of similar habitat within close proximity to the wetland impacts; on publicly-owned land that was in dire need of major restoration, and adjacent to other constructed mitigation compensating for wetland impacts associated with the adjacent SR 776 segment (Phase I). Due to the low quality habitat associated with the open water impacts, the associated mitigation was compensated with purchasing non-forested mitigation bank credits at the adjacent Little Pine Island Mitigation Bank. The mitigation bank could not be nominated to provide mitigation for the mangrove wetland impacts since the bank is located in the adjacent Charlotte Harbor Drainage Basin and the wetland impacts occurred in the Myakka River basin.

- F. **Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body:** Cattle Dock, Phases I and II were SWIM sponsored projects constructed on property co-owned and managed by the SWFWMD and FDEP.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Construction completed in 2005 by private contractor working for the WMD.

Entity responsible for monitoring and maintenance: Private consultants on contract with the SWFWMD conducted semi-annual monitoring through 2009; periodic monitoring conducted by WMD staff and herbicide maintenance conducted by FDEP staff as part of normal land management activities.

Time frame for implementation: Commenced: Planning & Design - July, 1999 Completed: Construction – 2004-2005, maintenance & monitoring – 2005-2009, perpetual maintenance & management by FDEP

Project cost: \$ 710,000 (total)
 \$ 100,000 design, permitting
 \$ 610,000 construction, planting, maintenance and monitoring

Attachments

- x 1. Description and depiction of pre-post construction activities. Refer to previous text, Figure A aerial of project location, Figure B aerial (1999) of pre-construction conditions, Figure C aerial (2005) for on-going construction activities, Figure D aerial (2008) for current vegetative conditions, and site photos for pre-post habitat conditions. Additional site and design details are available through the SWFWMD's SWIM Section and FDOT Mitigation Program Manager.
- x 2. Schedule for work implementation. Construction of Phase I was completed in the summer, 2001 and achieved success criteria by 2004. Phase II construction and planting were completed in the summer, 2005, followed by four years of periodic maintenance & semi-annual monitoring, perpetual management & maintenance to eradicate exotic and nuisance vegetation is conducted by FDEP staff assigned to the Charlotte Harbor State Preserve.
- x 3. Success criteria and associated monitoring plan. The success criteria has been achieved and reflects a minimum 70% coverage of desirable species in the project area, and less than 5% coverage of exotic and nuisance species. Monitoring was conducted four years post-construction to evaluate species survival, percent cover, invasive exotic plants, and maintenance activities conducted to ensure and enhance habitat conditions. Periodic monitoring is conducted to evaluate and determine additional management and maintenance activities necessary to maintain and improve upon successful habitat conditions.
- x 4. Long-term maintenance plan. The maintenance of the project has been minimal since the appropriate saltwater wetland grade elevations provide opportunities for appropriate seed source recruitment and generation, while minimizing conditions for exotic and nuisance species to germinate. Maintenance includes periodic herbicide treatments to eradicate exotic species that have primarily generated within the upland islands and upper sideslopes of the constructed wetlands in Phase I & II.

Cattle Dock Point Phase II Vegetation Observed,

Plant Species		Indicator Status*	Nuisance Species**
Scientific Name	Common Name		
Wetland Vegetation			
<i>Avicennia germinans</i>	black mangrove	OBL	
<i>Batis maritima</i>	salt wort	OBL	
<i>Borrchia frutescens</i>	sea oxeye daisy	OBL	
<i>Conocarpus erectus</i>	buttonwood	FACW	
<i>Cyperus ligularis</i>	sedge	FACW	
<i>Distichlis spicata</i>	saltgrass	OBL	
<i>Iva frutescens</i>	marsh elder	OBL	
<i>Juncus roemerianus</i>	black needle rush	OBL	
<i>Laguncularia racemosa</i>	white mangrove	OBL	
<i>Lycium carolinianum</i>	Christmas berry	OBL	
<i>Paspalum vaginatum</i>	seashore paspalum	OBL	
<i>Rhizophora mangle</i>	red mangrove	OBL	
<i>Solidago stricta</i>	goldenrod	FACW	
<i>Spartina alterniflora</i>	smooth cordgrass	OBL	
<i>Spartina bakeri</i>	sand cordgrass	FACW	
<i>Spartina patens</i>	saltmeadow cordgrass	FACW	
Upland Vegetation			
<i>Andropogon virginicus</i>	bluestem	FAC	
<i>Baccharis halimifolia</i>	saltbush	FAC	
<i>Bidens alba</i>	beggarticks	FAC	
<i>Bursera simaruba</i>	gumbo limbo	UPL	
<i>Chamaecrista fasciculata</i>	partridge pea	UPL	
<i>Coccoloba uvifera</i>	sea grape	FAC	
<i>Dalbergia ecastophyllum</i>	coin vine	FAC	
<i>Casuarina equisetifolia</i>	Australian pine	FAC	EPPC (I)
<i>Forestiera segregata</i>	privet	FAC	
<i>Helianthus debilis</i> subsp. <i>vestitus</i>	west coast dune sunflower	UPL	
<i>Ipomoea alba</i>	moon flower	FAC	
<i>Ipomea pes-caprae</i>	railroad vine	FAC	
<i>Ipomea indica</i>	ocean blue morning glory	FAC	
<i>Juniperus virginiana</i>	red cedar	UPL	
<i>Caesalpinia bonduc</i>	gray nickerbean	UPL	
<i>Canavalia rosea</i>	seaside bean	FAC	
<i>Leucaena leucocephala</i>	lead tree	FAC	EPPC (II)
<i>Melinis repens</i>	rose natal grass	FAC	EPPC (I)
<i>Myrica cerifera</i>	wax myrtle	FAC	
<i>Sabal palmetto</i>	cabbage palm	FAC	
<i>Schinus terebinthifolius</i>	Brazilian pepper	FAC	EPPC (I)
<i>Sesbania herbacea</i>	danglepod	FAC	
<i>Sporobolus indicus</i>	smut grass	UPL	

*62-340.450 Florida Administrative Code - Vegetative Index:

FAC= Facultative, FACW= Facultative Wet, OBL= Obligate, AQU= aquatic, UPL=upland

**Vegetative species considered as a nuisance species if listed in either the Florida Exotic Pest Plant Council's (EPPC) 2007 List of Invasive Species (Category I or II) or in the Appendix E of the Technical Publication REG-001; Wetland Rapid Assessment Procedure, WRAP; September 1997

Wildlife Observed at the Cattle Dock Point Phase II

Scientific Name	Common Name	Activity	FWC Listing	USFWS Listing
BIRDS				
<i>Anas acuta</i>	northern pintail	Observation		
<i>Anhinga anhinga</i>	anhinga	Observation		
<i>Ardea herodias</i>	great blue heron	Observation		
<i>Buteo lineatus</i>	red-shouldered hawk	Observation		
<i>Casmerodius albus</i>	great egret	Observation		
<i>Ceryle alcyon</i>	belted kingfisher	Observation		
<i>Egretta caerulea</i>	little blue heron	Observation	SSC	
<i>Egretta tricolor</i>	tricolor heron	Observation	SSC	
<i>Eudocimus albus</i>	white ibis	Observation	SSC	
<i>Melanerpes carolinus</i>	red-bellied woodpecker	Observation		
<i>Pandion haliaetus</i>	osprey	Observation		
<i>Pelecanus occidentalis</i>	brown pelican	Observation	SSC	
CRUSTACEANS				
<i>Pagurus longicarpus</i>	fiddler crabs	Observation		
FISH				
<i>Sciaenops ocellatus</i>	redfish	Observation		
MAMMALS				
<i>Procyon lotor</i>	raccoon	Tracks		
MOLLUSKS				
<i>Crassostrea virginia</i>	Eastern oyster	Observation		
<i>Busycon</i> sp.	whelk	Observation		
REPTILES				
<i>Crocodylus acutus</i>	American crocodile	Observation	E	

***Legend:**

FWC= Florida Fish and Wildlife Conservation Commission

USFWS = United States Fish and Wildlife Service

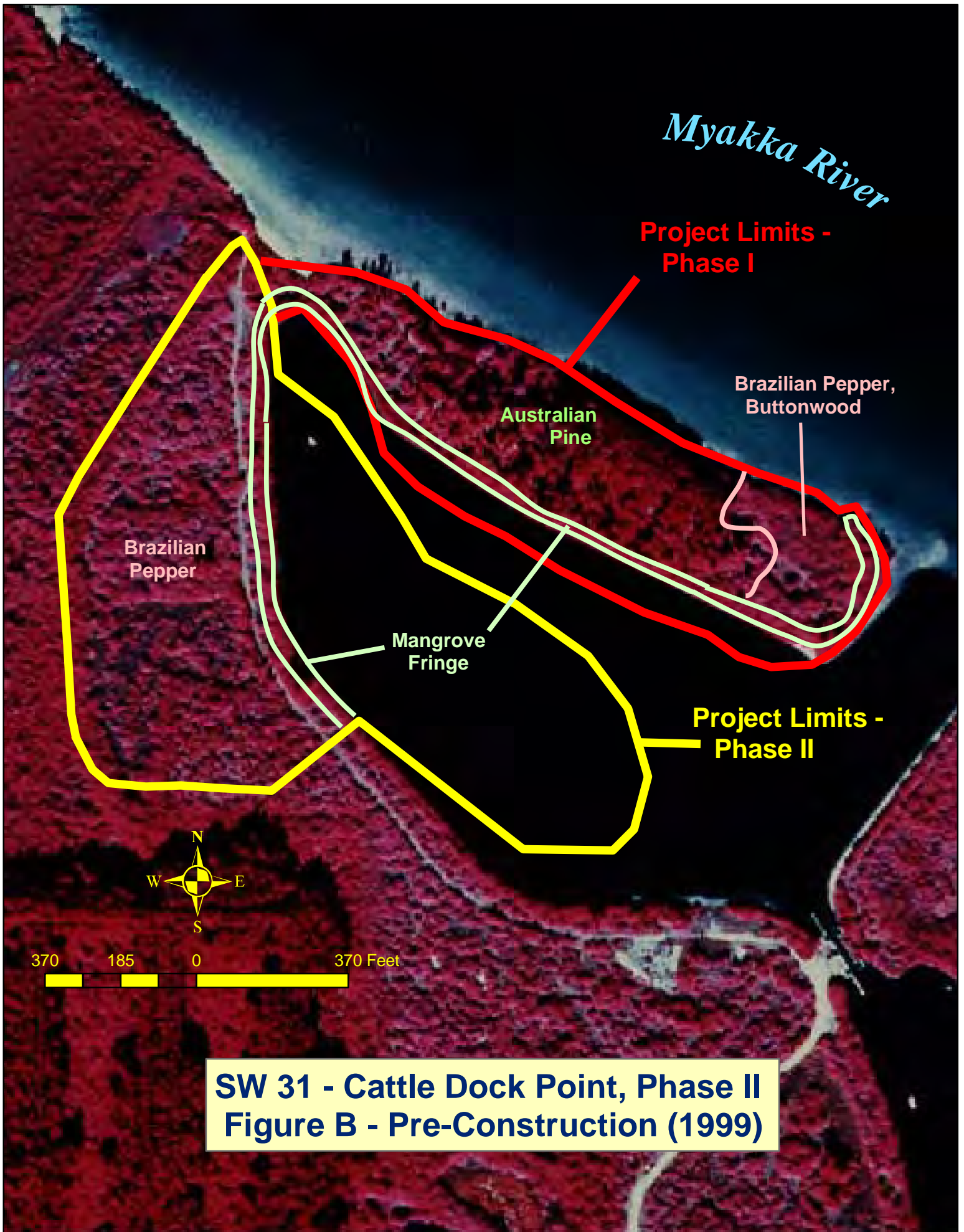
E = Endangered, T = Threatened, SSC = Species of Special Concern

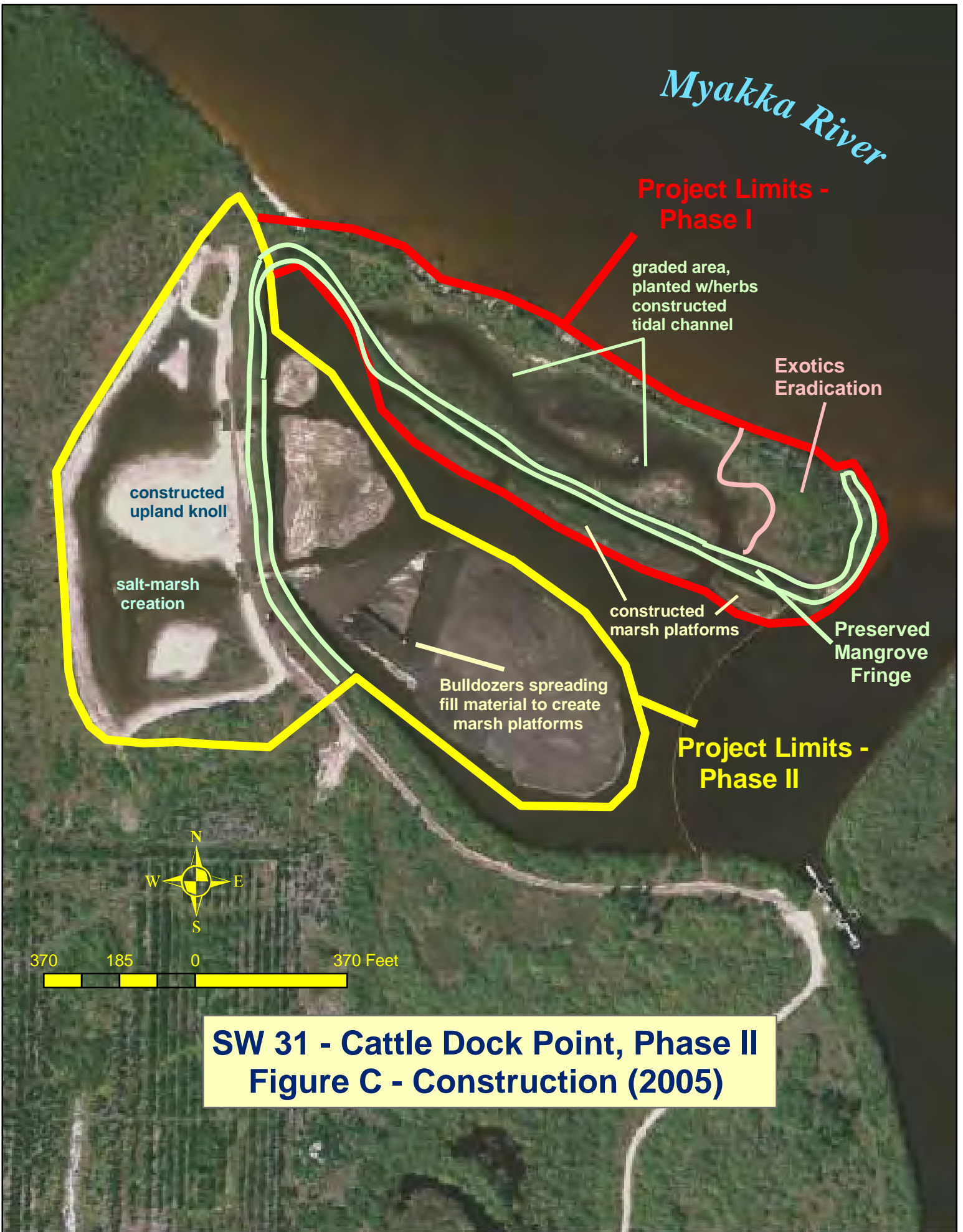
Sources:

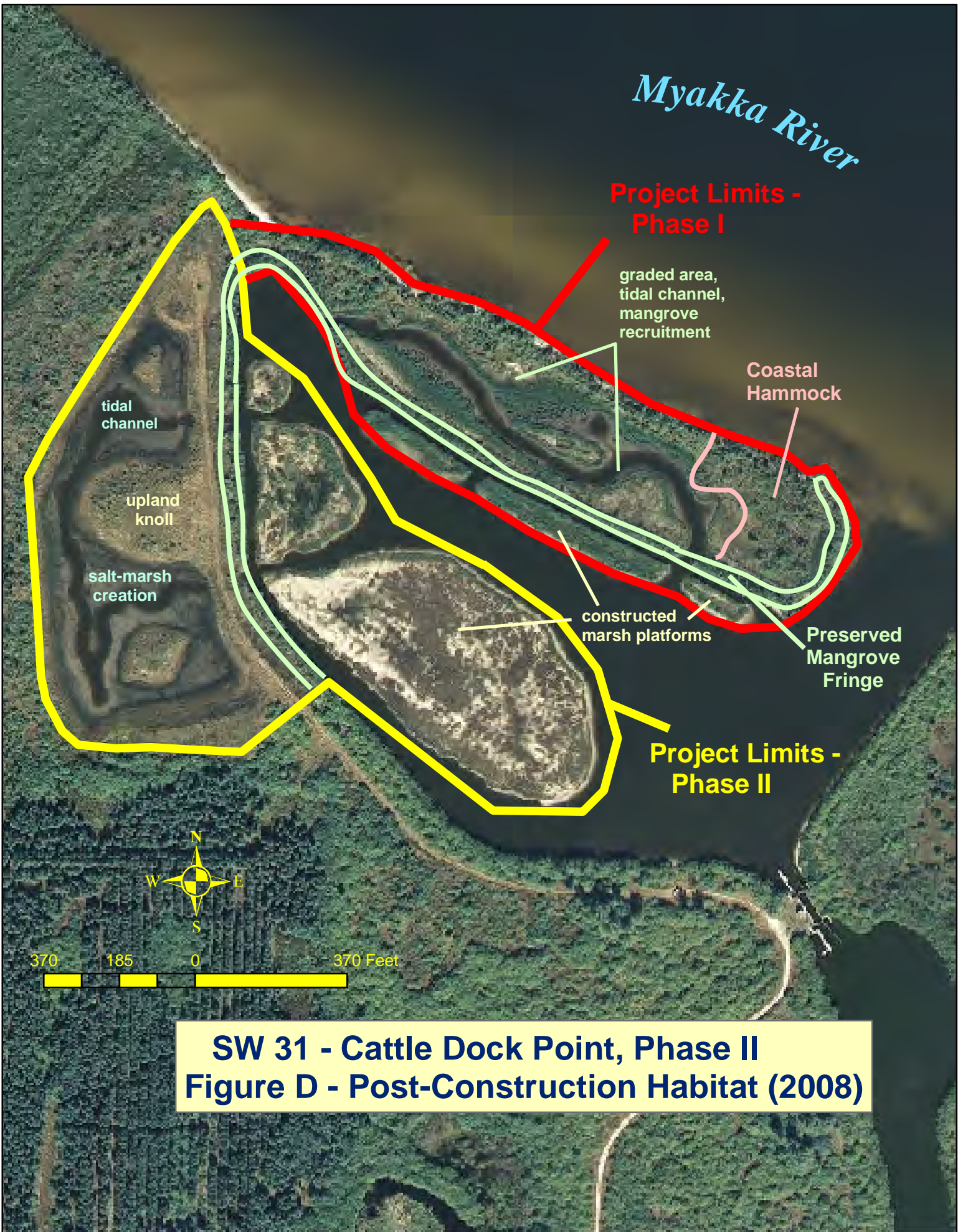
Florida Fish and Wildlife Conservation Commission. July 2009. Florida's Endangered Species, Threatened Species, and Species of Special Concern, Official Lists. 10pp



**SW 31 - Cattle Dock Point, Phase II
Figure A - Location**







**SW 31 - Cattle Dock Point, Phase II
Figure D - Post-Construction Habitat (2008)**



View from the southern shoreline of the Cattle Dock bayou area, looking north at the Brazilian pepper and Australian pine dominating the peninsula of the Phase I area.



View along the access road located along the eastern boundary of the Phase II construction area, access road is one of the few upland areas not dominated by B. pepper.

**FDOT - District 1 Mitigation Site
(Myakka River Basin)**

CATTLE DOCK POINT (SW 31)



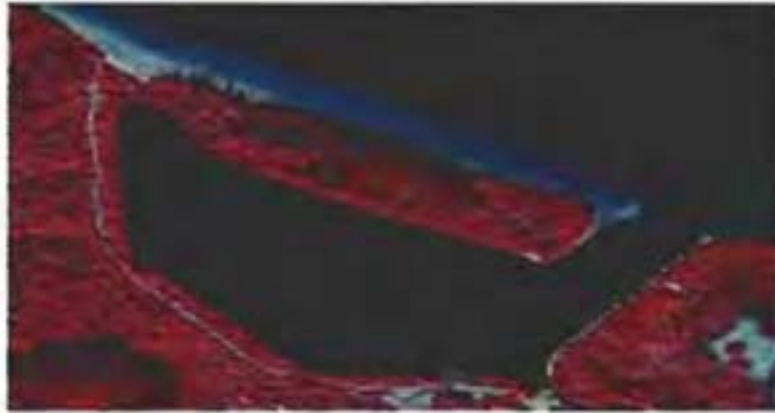
The freshwater marsh has cattails, willows, and a recent invasion of sesbania species.



Additional view along the access road, looking over dense B. pepper coverage and A. pine (background) along the southern Phase II boundary.

**FDOT - District 1 Mitigation Site
(Myakka River Basin)**

CATTLE DOCK POINT (SW 31)



Cattle Dock Point – Phase I

Top & Middle Photos – 1995 infrared aerial (top) and 2000 site aerial (middle). To the north of the boat basin, the filled peninsula includes dominant cover of Australian pine (dark green) with the majority of the remaining portion covered with Brazilian pepper.

Bottom Photo – Phase I construction (2001) commences with eradication of the exotic vegetation while preserving and enhancing the mangrove fringe.



Cattle Dock Point – Phase I

Top & Middle Photos – 2001, view of the peninsula after appropriate grading to construct intertidal channel and adjacent marsh habitat. The cut fill material is placed in the boat basin to create salt-marsh platforms.

Bottom Photo – 2004, the planting of saltmarsh cordgrass, black rush, and seashore paspalum has generated and recruited to provide extensive cover, and the natural recruitment of white mangrove seedlings provide additional habitat diversity to the area.



Cattle Dock - Phase II

Top Photo – (Feb. 2004) – View of the completed and high quality habitat conditions for Phase I. Pre-construction, the Phase II area (lower left) has extensive cover of Brazilian pepper, and is bordered to the west by preserved high salt-marsh and mangrove habitat.

Middle & Bottom Photo - (Summer, 2004) – Brazilian pepper eradicated and grading of the filled upland commences to create intertidal marsh habitat. Graded material is placed in the boat basin to create salt-marsh habitat platforms.



Cattle Dock – Phase II

Top Photo –(January, 2005) – Dredging of the intertidal marsh and associated meandering channel is evident. Three upland islands located within the marsh are taking shape, and fill material for the three marsh platforms is being extended into the boat basin.

Middle Photo – (July, 2005) – The final grades and planting has occurred but the flushing of vegetation is not visible on this photo. The desired hydrologic connections for the intertidal marsh have been opened and stabilized via culvert connections.

Bottom Photo – Reserved for future habitat conditions.

REGIONAL MITIGATION PLAN

BASIC INFORMATION

Project Name: Lake Thonotosassa Shoreline Restoration Project Number: SW 34
Project Sponsor: SWFWMD – SWIM Section
County: Hillsborough Location : Sec. 11, 12, 13, 14, T28S, R20E
DOT: FM 2563431, SR 54 - US 41 to Cypress Ck. ERP #4319567.000 ACOE# 19950145 (IP-ES)
Impact Acres / Types (FLUCFCS):
0.8 ac. 616
4.1 ac. 618
4.6 ac. 621
4.7 ac. 641
Total: 14.20 ac.

ENVIRONMENTAL INFORMATION

Type(s) of Mitigation: X Enhancement X Restoration Mitigation Area: **97 Acres**
SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? N
Mitigation Bank? N Drainage Basin: Hillsborough River Water Body: Lake Thonotosassa, Baker Creek

Project Description

A. Overall project goals: The primary goal was to improve fish and wildlife habitat, and water quality functions and benefits through enhancement and restoration of 98 wetland acres along the southeastern shoreline of Lake Thonotasassa (Figure A).

B. Brief description of pre-construction condition: Historically the southeast shoreline of Lake Thonotasassa included a large wetland that was historically filled with lake bottom sediment and hydrologically separated from the lake by a constructed berm and seawall (Figure B). Historic contributing basin flow from the south through the wetland was diverted straight into the lake by the construction of the Baker Creek Canal. The 78-acre filled area was converted to a bahia pasture with collector ditches that drained surface water west to a lower elevation retention collection area adjacent to the berm. The retention area generated a marginal, low quality, soft rush marsh that when periodically became inundated, water was pumped over the berm to maintain relatively dry conditions to improve pasture conditions. A separated 19-acre portion of the project included a wetland-dredged pond referred to as "Otter Lake" and a collection ditch that had minimal hydrologic connectivity into the lake.

C. Brief description of conducted work and habitat conditions: The project construction (completed late, 1999) removed the fill from the pasture to restore appropriate wetland grade elevations. A large block structure was constructed across the Baker Creek Canal to divert and restore the contributing basin flow through the enhanced and restored wetland (Figure C). The lakeshore berm was breached at two locations to allow hydrologic connectivity into the lake after the water has had the opportunity to receive some water quality improvement as a result of flowing through the restored wetland. The 78-acre restored and enhanced wetland has significant vegetative recruitment and coverage provided by the planted species of pickerelweed, fireflag, spikerush, soft-stem bulrush, spatterdock & scattered groupings of cypress. Due to lower elevation of the pre-existing soft rush marsh, this area has less vegetative coverage due to deeper water conditions. The open water features in that area have provided more

opportunities for alligators, fish, amphibians and waterfowl to access and utilize the wetland. Enhancement activities within the north project area included some grading & planting of disposed material, as well as improving the hydrologic connection of Otter Lake to Lake Thonotosassa by constructing an open water slough system. Current post-construction habitat conditions are depicted in the photographs and the Figure C aerial.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project: The restored and enhanced marsh and planted cypress appropriately compensate for the acreage and function of the marsh, open water, and cypress wetlands impacted by the expansion of the SR 54 segment. No additional roadway wetland impacts are proposed for mitigation at the site.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Construction completed in 1999 by private contractor working for the SWFWMD.

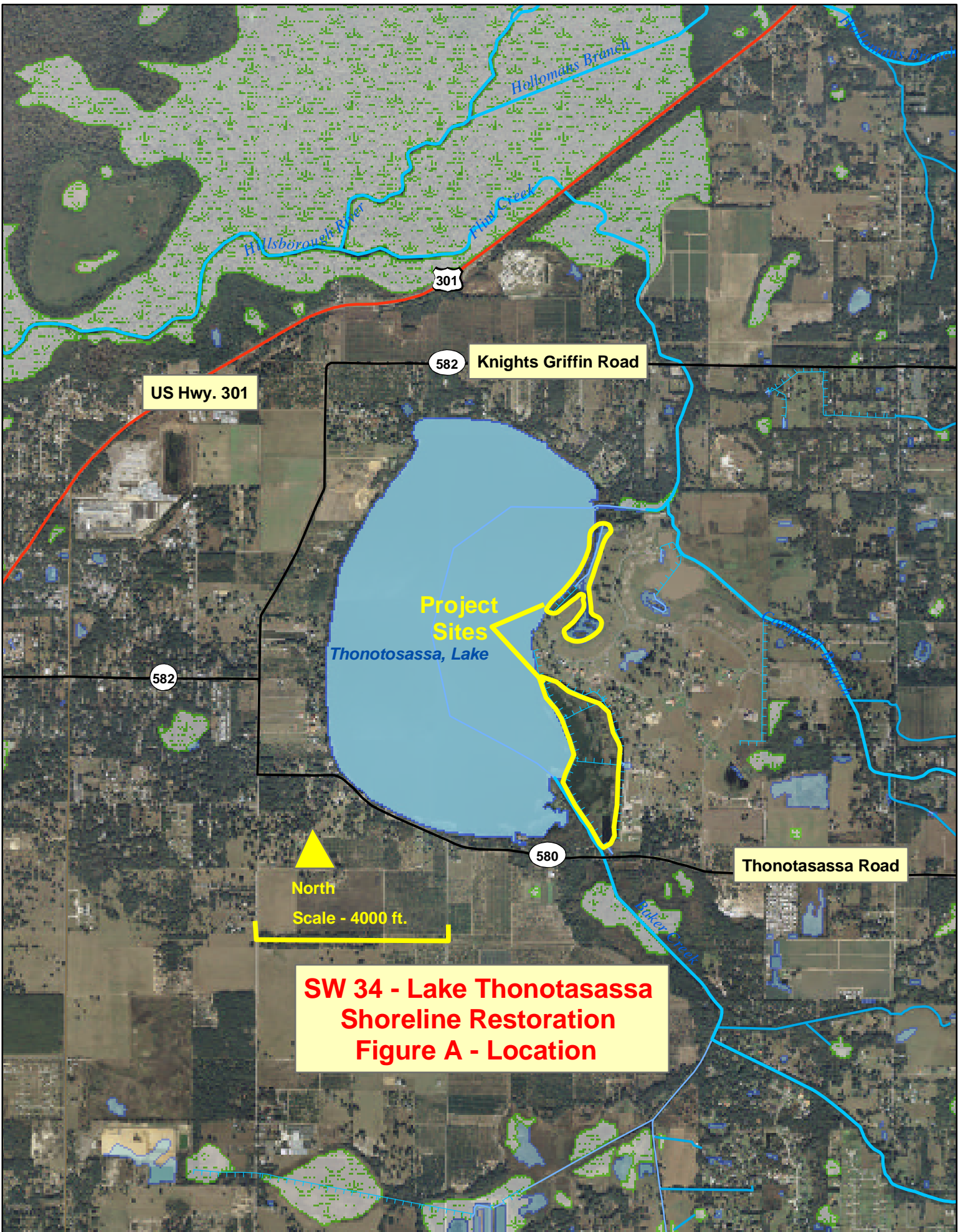
Entity responsible for monitoring and maintenance: Private consultants on contract with the SWFWMD conducted monitoring through 2007; periodic monitoring conducted by WMD staff and herbicide maintenance of exotic & nuisance species conducted by WMD- Operations staff as part of normal land management activities.

Timeframe for implementation: Commence: January, 1998 Complete: Construction completed in late 1999, supplemental planting in the fall, 2003 and 2004 ; perpetual maintenance conducted by the SWFWMD-Operations.

Project cost: \$820,000 (total)

Attachments:

- X 1. Description and depiction of pre-post construction activities. Refer to previous text, Figure A aerial of project location, Figure B aerial (1999) of pre-construction conditions, Figure C aerial (2009) of current vegetative conditions, and site photos of habitat conditions. Additional site and design details are available through the SWFWMD's SWIM Section and FDOT Mitigation Program Manager.
- X 2. Success criteria and associated monitoring plan. Success criteria included a minimum 85% coverage of desirable species in the eastern half of the restored wetland and less than 10% exotic / nuisance species. Supplemental planting occurred in the fall, 2003 and late 2004 to achieve additional coverage. The western portion of the marsh has been allowed to provide more open water to attract associated wildlife species.
- X 3. Long term maintenance plan. Herbicide maintenance was conducted quarterly for six years post-construction, currently herbicide treatments conducted on semi-annual schedule by the WMD-Operations Dept. for perpetual maintenance & management.



US Hwy. 301

301

582

Knights Griffin Road

582

Project Sites

Thonotasassa, Lake

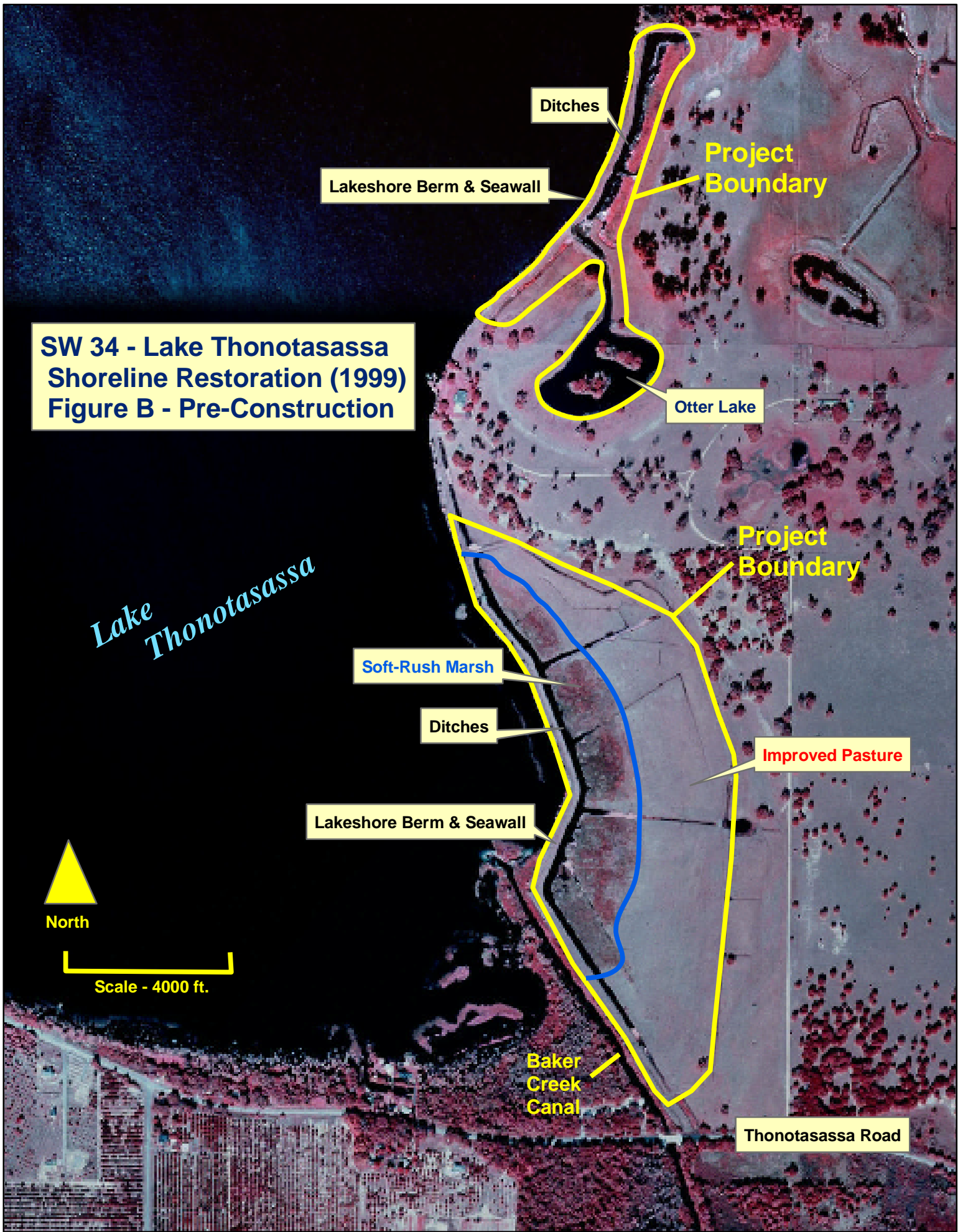
580

Thonotasassa Road

North
Scale - 4000 ft.

**SW 34 - Lake Thonotasassa
Shoreline Restoration
Figure A - Location**

**SW 34 - Lake Thonotasassa
Shoreline Restoration (1999)
Figure B - Pre-Construction**



Ditches

Lakeshore Berm & Seawall

Project Boundary

Otter Lake

Project Boundary

Lake Thonotasassa

Soft-Rush Marsh

Ditches

Improved Pasture

Lakeshore Berm & Seawall



North

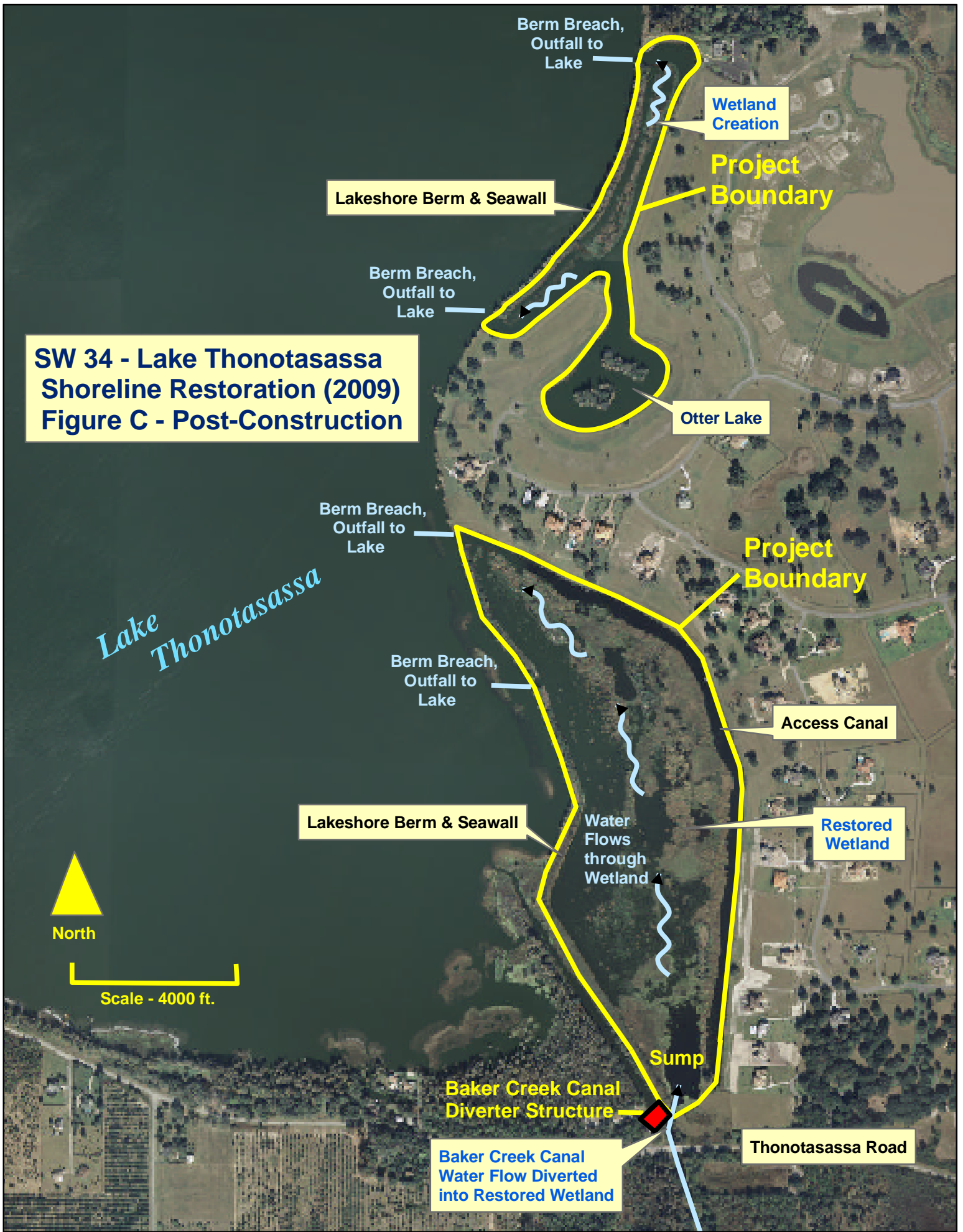


Scale - 4000 ft.

Baker Creek Canal

Thonotasassa Road

**SW 34 - Lake Thonotasassa
Shoreline Restoration (2009)
Figure C - Post-Construction**





Restored eastern marsh area has dense coverage of planted pickerelweed, fireflag, bulrush, spikerush, and pockets of cypress. The marsh provides water quality treatment and attenuation of flow diverted from the contributing Baker Creek Canal.



Restored western portion of the marsh has more open water features, with scattered pockets of fireflag, bulrush, and other obligate species. The combination of shallow and deep water areas in the marsh provide diverse habitats utilized by a variety of wildlife species.

***FDOT – District 7 Mitigation Project
(Hillsborough River Basin)***

***SW 34 -LAKE THONOTASASSA
SHORELINE RESTORATION***

**REGIONAL MITIGATION PLAN
BACKGROUND INFORMATION**

Mitigation Project Name: **Gateway Restoration** Project Number: **SW 45**
 Project Sponsor: SWFWMD – SWIM Section, Pinellas County Environmental Management
 County: Pinellas Location: Sec. 12, T30S, R16E

IMPACT INFORMATION

- | | | |
|--|------------------------------|---------------------------------|
| (1) <u>FM: 2569051, SR 679 (Bayway), Bunces Bridge</u> | DEP #: <u>52-0148752-001</u> | COE #: <u>199100289 (IP-AM)</u> |
| (2) <u>FM: 2588701, I-275-Roosevelt to Big Island Gap</u> | ERP #: <u>43001034.006</u> | COE #: <u>199402523 (IP-ES)</u> |
| (3) <u>FM: 2556301, SR 60, Courtney Campbell to Fish Creek</u> | ERP #: <u>43000920.005</u> | COE #: <u>200105084 (IP-MN)</u> |
| (4) <u>FM: 2570931, SR 60, Clearwater Harbor Bridge Replace.</u> | ERP #: <u>44021540.001</u> | COE #: <u>200024966 (IP-TF)</u> |
| (5) <u>FM: 4062531, SR 686 (Roosevelt) at 49th Street</u> | ERP #: <u>44007482.012</u> | COE #: <u>200206320 (NW 14)</u> |
| (6) <u>FM: 2557341, SR 676-Maritime Blvd. to SR 60</u> | ERP #: <u>4413736.003</u> | COE #: <u>199502501 (IP-ES)</u> |
| (7) <u>FM: 2583981, I-275, Howard Franklin to Himes Ave.</u> | ERP #: <u>43002958.006</u> | COE #: <u>20053876 (IP-JF)</u> |

Drainage Basin: Tampa Bay Drainage Water Body(s): McKay Bay, Bunces Pass, Clearwater Harbor, Boca Ciega Bay, Anclote River, Lake Tarpon, Curlew Creek, Cross Bayou Canal, Fish Creek, Tampa Bay SWIM water body? Y,
 referenced water bodies connect to Tampa Bay

Impact Acres / Habitat Type (FLUCFCS):

(1) FM 2569051	<u>0.1 ac. 540</u>	(4) FM 2570931	<u>1.3 ac. 612</u>
	<u>0.5 ac. 642</u>		<u>0.2 ac. 642</u>
	TOTAL 0.6 acre		TOTAL 1.5 acres
		(5) FM 4062531	TOTAL 0.2 ac. <u>612</u>
(2) FM 2569571	<u>4.9 ac. 612</u>	(6) FM 2557341	<u>1.0 ac. 612</u>
	<u>3.2 ac. 619</u>		<u>0.5 ac. 619</u>
	<u>0.5 ac. 641</u>		TOTAL 1.5 ac.
	<u>0.5 ac. 642</u>		
	TOTAL 9.1 acres	(7) FM 2583981	<u>0.7 ac. 612</u>
			<u>0.8 ac. 641x</u>
(3) FM 2556301	<u>3.7 ac. 540</u>		TOTAL 1.5 ac.
	<u>4.4 ac. 612</u>		
	<u>4.1 ac. 642</u>		
	TOTAL 12.2 acres		
			TOTAL 26.6 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation Mitigation Area: **106.3 ac.**

Project Site: 176 Acres - Preservation of mangroves (42 acres) not included in the mitigation acreage.

Mitigation:	Saltwater Marsh Restoration (#642)	42.93 Acres
	Open Water Inlets & Lagoons (#510, 540)	10.63 Acres
	Mangrove Enhancement (#612)	42.50 Acres
	Upland Enhancement	10.25 Acres
	Mitigation Area	106.31 Acres

SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? Y Mitigation Bank? N
 Drainage Basin(s): Tampa Bay Drainage Basin SWIM water body? Y

Project Description

A. Overall project goal: To restore and enhance estuarine wetland and coastal upland habitats within the Gateway Tract owned and managed by Pinellas County Environmental Management (Figure A).

B. Brief description of pre-construction conditions: The project area includes the western half of the Gateway "North Tract" and the entire "South Tract" (Figures B & C). The majority of the earthwork construction areas within both tracts included uplands that were heavily dominated by Melaleuca and Brazilian pepper. The majority of the uplands within the north tract had fill material placed on historic estuarine wetland habitat. Within the north central area of the north tract, the designated mitigation area includes mangrove habitat with an extensive "checkerboard" mosquito-ditch system. The spoil mounds adjacent to the ditches had extensive and dense coverage of Brazilian pepper.

C. Brief description of construction activities and habitat conditions: Restoration commenced with herbicide eradication and mechanical removal of the exotic vegetation in early 2004 (Figure B). Proper erosion control methods were installed, followed by necessary earthwork activities in the upland areas to create lagoons and salt-marsh habitat. A few of the ditch and adjacent spoil mounds were regraded to create channels necessary to improve tidal connectivity to Tampa Bay. For the first time conducted in Florida, a unique spoil removal method was also applied to the construction effort. Referred to as "hydroblasting," this method was utilized in order to gain access into the mangroves without impacts that would otherwise occur with traditional construction equipment. Hydroblasting uses traditional pumps and high-pressure fire hoses to spray and displace the majority of the soil material; primarily into the adjacent mosquito ditches. By lowering the spoil mounds to below high tide elevations, the B. pepper cannot re-establish. Mangrove seedlings have naturally recruited and generated within the footprint of the removed spoil material (photos). Earthwork conducted in areas to create and restore appropriate wetland grades were followed by planting of high and low salt-marsh habitat, including a few areas of unique and rare saltern habitat. Remnant coastal flatwood and hammock habitats in the south tract received supplemental planting after eradication of the exotic species. The combination of coastal upland & wetland habitat improvements have dramatically improved conditions for more access and use by wildlife species. Additional details are provided in Attachment A and the species listings.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The restored and created salt-marsh and lagoon habitats, enhancing and restoring mangrove habitat compensate with higher quality and quantity of appropriate habitat than the wetland impacts. Approximately 30% of the total wetland impact mitigated at the site was associated with the I-275 (Roosevelt to Big Island Gap segment) expansion adjacent to the mitigation area, essentially providing an on-site mitigation option. This I-275 construction can be observed being conducted concurrently with the mitigation construction in 2004 (Figure B). Other than wetland impacts associated with the seven referenced FDOT projects, no additional roadway projects are proposed for mitigation within this Gateway project.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The Tampa Bay Mitigation Bank (TBMB) is located within the Tampa Bay Drainage basin, but had not received permits during the period of mitigation selection.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: Gateway Restoration is a SWIM-sponsored project conducted on property owned by Pinellas County.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Construction was conducted by a private contractor selected by the SWFWMD.

Entity responsible for monitoring and maintenance: Private contractors selected by the SWFWMD conducted five years of maintenance & monitoring. The project achieved success criteria, and in 2010 was adopted into Pinellas County's normal perpetual land management and herbicide maintenance activities.

Timeframe for implementation: Commence: Design Complete, 2002 Complete: Construction Spring-Summer, 2004; followed by five years of maintenance and monitoring; then perpetual maintenance & management.

Project cost: \$1,498,000 (total);
\$ 92,000 Design, permitting, and construction monitoring
\$1,336,000 Construction & Planting
\$ 70,000 Maintenance & Monitoring

Attachments

- X 1. Description and depiction of construction activities and habitat conditions: Refer to Attachment A, Site & Work Plan, Figure A – Location, Figure B aerial (2004) for pre-construction conditions, Figure C aerial (2009) for post-construction conditions, photographs of pre-post habitat conditions. Additional site and design details are available through the SWFWMD's SWIM Section and FDOT Mitigation Program Manager.
- X 2. Success criteria and associated monitoring plan. Refer to Attachment B - Maintenance & Monitoring Plan, Success Criteria.
- X 3. Long term maintenance plan. Refer to Attachment B - Maintenance & Monitoring Plan, Success Criteria

ATTACHMENT A – Construction & Habitat Conditions

The salt-marsh, open water, and upland habitats were restored with a combination of exotics eradication, appropriate grading, and planting with native species. The dominant wetland plantings included smooth cordgrass, marshhay cordgrass, sand cordgrass, seaside paspalum, and needle rush. These species have recruited and generated extensively in the construction area, particularly the smooth cordgrass in the low marsh and seaside paspalum within the high marsh areas. As part of the mitigation effort, mangrove habitat were enhanced by removing the spoil mounds associated with the mosquito ditches. Historically, enhancing and restoring mangrove habitat with mosquito ditches have been a very problematic process. Unless continuously maintained, cutting Brazilian pepper from the spoil mounds is only a temporal solution since they will regenerate as long as the spoil is still present. To rid a mangrove area of exotics without conducting continuous maintenance, the spoil mounds have to be graded below high tide elevations. However, utilizing construction equipment typically results in mangrove impacts since access to the various mounds require crossing through mangroves. The pepper roots also firmly hold the spoil material, made up of shell, sand, and limerock. This limits the capabilities of using small grader equipment. As a result of these problems, the resource agencies associated with mangrove habitat enhancement had essentially avoided attempting to restore mosquito ditch systems.

Therefore, the "hydroblast" method was first proposed and adopted at Gateway. After herbicide and manual cutting of the B. pepper and other exotics, staked silt screens and floating barriers were strategically installed to control sedimentation prior to commencing earthwork. The 35-acres of mangrove habitat had pressurized water pumped through a fire hose to "washdown" the spoil mounds. This grading method has allowed tides to evenly sheet flow under the mangroves, eliminated the opportunity for B. pepper regeneration, and allowed the opportunity for mangrove seedlings to generate (photos & the "white spots" on the Figure C aerial). Evaluation has indicated this method to be an ecological benefit yet economical construction method for future mangrove enhancement activities. In fact, for mitigation credit associated with another project, additional spoil mound hydroblasting was conducted at Gateway just east the designated FDOT mitigation boundary on the north tract. This area is evident by the "white spots" depicted on the Figure C aerial.

ATTACHMENT B - Maintenance & Monitoring Plan, Success Criteria

This mitigation is associated with an initial and long-term restoration objective for the public lands within the Gateway and adjacent Weedon Island areas owned and managed by Pinellas County. A 5-year period of maintenance & monitoring extended beyond the construction period until the end of 2009. Perpetual maintenance is conducted as necessary by Pinellas County as part of normal land management activities to maintain and improve upon the successful habitat conditions and functions. The maintenance of the project has been minimal since the constructed wetland grades allow for sufficient tidal fluctuation, so the planted and naturally recruited vegetation have had high survival rates, with extensive recruitment and generation. Maintenance has been primarily related to spot herbicide treatments since salt water substantially limits the re-establishment of exotic vegetation.

Qualitative monitoring was conducted semi-annually for five years post-construction, with annual reports documenting habitat conditions and various activities implemented during the previous year. Current habitat conditions are depicted in the attached site photographs. The achieved and maintained success criteria included a minimum 90% survivorship for planted material for one year after planting, total 85% cover of planted and recruited desirable species, and less than 5% exotic and nuisance species. Natural recruitment and generation of mangroves have occurred within the displaced spoil mounds and portions of the planted salt marsh habitat. In addition, a few graded marsh elevations are slightly above high tide elevations, providing for less frequent inundation associated with extreme high tides. This condition allows for the establishment of rare and unique saltern formations within the salt-marsh habitat. Saltern habitats typically provide opportunities for birds and mammals to access and forage for fiddler crabs that often inhabit these areas.

Overall, the Gateway restoration project has been very successful with a diverse assemblage of habitat conditions that attract extensive & diverse wildlife species. Over 80 bird species have been documented within the restored and created habitat areas. Attached is a listing of observed wildlife and vegetative species, and photographs of pre-post construction habitat conditions.

Gateway – Observed Wildlife Species

BIRDS

Common Name	Scientific Name
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Brown Pelican	<i>Pelecanus occidentalis</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Anhinga	<i>Anhinga anhinga</i>
Least Bittern	<i>Ixobrychus exilis</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Snowy Egret	<i>Egretta thula</i>
Little Blue Heron	<i>Egretta caerulea</i>
Tricolored Heron	<i>Egretta tricolor</i>
Reddish Egret	<i>Egretta rufescens</i>
Cattle Egret	<i>Bubulcus ibis</i>
Green Heron	<i>Butorides virescens</i>
Yellow-Crowned Night Heron	<i>Nyctanassa violacea</i>
White Ibis	<i>Eudocimus albus</i>
Roseate Spoonbill	<i>Ajaia ajaja</i>
Wood Stork	<i>Mycteria americana</i>
Black Vulture	<i>Coragyps atratus</i>

Turkey Vulture	<i>Cathartes aura</i>
Wood Duck	<i>Aix sponsa</i>
Mottled Duck	<i>Anas fulvigula</i>
Mallard Duck	<i>Anas platyrhynchos</i>
Northern Pintail	<i>Anas acuta</i>
American Wigeon	<i>Anas americana</i>
Redhead	<i>Aythya americana</i>
Lesser Scaup	<i>Aythya affinis</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Osprey	<i>Pandion haliaetus</i>
Northern Harrier	<i>Circus cyaneus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
American Kestrel	<i>Falco sparverius</i>
Clapper Rail	<i>Rallus longirostris</i>
Black-Bellied Plover	<i>Pluvialis squatarola</i>
Wilson's Plover	<i>Charadrius wilsonia</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
Killdeer	<i>Charadrius vociferus</i>
American Oystercatcher	<i>Haematopus palliatus</i>
Black-necked Stilt	<i>Himantopus mexicanus</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Marbled Godwit	<i>Limosa fedoa</i>
Ruddy Turnstone	<i>Arenaria interpres</i>
Red Knot	<i>Calidris canutus</i>
Sanderling	<i>Calidris alba</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
Dunlin	<i>Calidris alpina</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>
Laughing Gull	<i>Larus atricilla</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Herring Gull	<i>Larus argentatus</i>
Caspian Tern	<i>Sterna caspia</i>
Royal Tern	<i>Sterna maxima</i>
Forster's Tern	<i>Sterna forsteri</i>
Least Tern	<i>Sterna antillarum</i>
Black Skimmer	<i>Rynchops niger</i>
Rock Dove	<i>Columba livia</i>
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>
Mourning Dove	<i>Zenaida macroura</i>
Monk Parakeet	<i>Myiopsitta monachus</i>
Common Nighthawk	<i>Chordeiles minor</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Blue Jay	<i>Cyanocitta cristata</i>

American Crow	<i>Corvus brachyrhynchos</i>
Fish Crow	<i>Corvus ossifragus</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Pine Warbler	<i>Dendroica pinus</i>
Palm Warbler	<i>Dendroica palmarum</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Boat-tailed Grackle	<i>Quiscalus major</i>
Common Grackle	<i>Quiscalus quiscula</i>
Brown-headed Cowbird	<i>Molothrus ater</i>

MAMMALS

Raccoon	<i>Procyon lotor</i>
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FISH

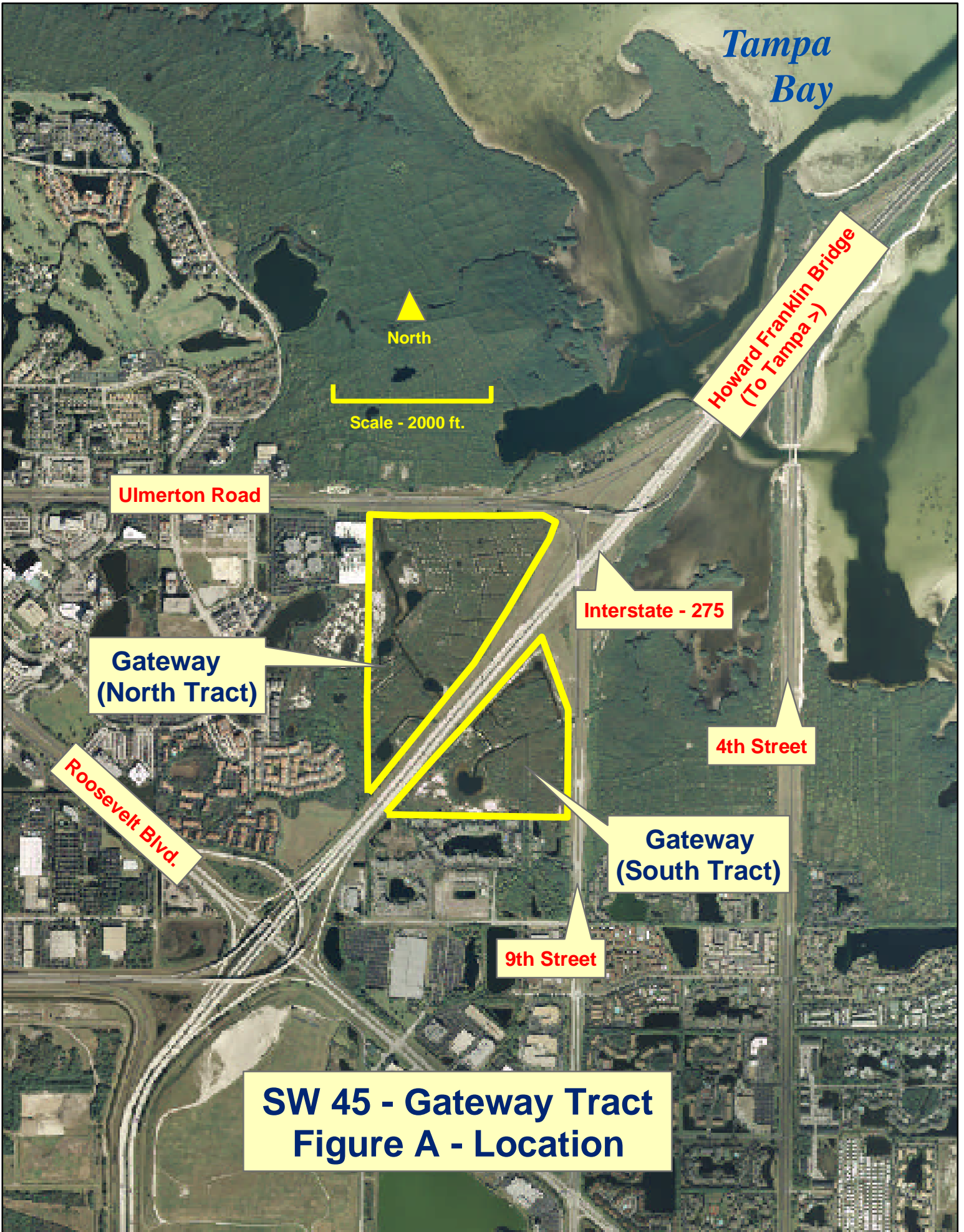
Red Fish	<i>Sciaenops ocellatus</i>
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Table 2
Observed Vegetation

Scientific Name	Common Name	State Indicator Status ¹	Federal Indicator Status ²	Nuisance Species ³	Plant Type
<i>Ambrosia artemisiifolia</i>	Common ragweed	UPL	FACU		Herb
<i>Andropogon virginicus</i>	Broom sedge	FAC	FAC-		Herb
<i>Avicennia germinans</i>	Black mangrove	OBL	OBL		Shrub
<i>Baccharis halimifolia</i>	Saltbush	FAC	FAC		Shrub
<i>Casuarina equisetifolia</i>	Australian pine	FAC	FACU	Yes	Tree
<i>Distichlis spicata</i>	Salt grass	OBL	FACW+		Herb
<i>Juncus roemerianus</i>	Black needlerush	OBL	OBL		Herb
<i>Laguncularia recemosa</i>	White mangrove	OBL	FACW+		Shrub
<i>Melaleuca quinquenervia</i>	Punk tree	FAC	FAC	Yes	Tree
<i>Paspalum vaginatum</i>	Seashore paspalum	OBL	OBL		Herb
<i>Rhizophora mangle</i>	Red mangrove	OBL	OBL		Shrub
<i>Sabal palmetto</i>	Cabbage palm	FAC	FAC		Tree
<i>Salicornia virginica</i>	Glasswort	OBL	OBL		Herb
<i>Schinus terebinthifolius</i>	Brazilian pepper	FAC	FAC	Yes	Tree
<i>Sesuvium</i> spp.	Sea-purslane	FACW	FACW		Herb
<i>Spartina alterniflora</i>	Smooth cordgrass	OBL	OBL		Herb
<i>Spartina bakeri</i>	Sand cordgrass	FACW	FACW+		Herb
<i>Spartina patens</i>	Marsh-hay cordgrass	FACW	FACW		Herb

Legend

- Indicator status selected by the Florida Department of Environmental Protection (DEP) pursuant to Rule 62-340.450 F.A.C.
 - Wetland Status (NWI): Source - National list of vascular plant species that occur in wetlands. US Fish & Wildlife Service Biological Report 88(24). National Wetlands Inventory, US Fish & Wildlife Service. 1988.
 - Vegetative species considered nuisance species if listed in either the Florida Exotic Pest Plant Council's (FLEPPC) 2007 List of Invasive Species OR in the Appendix E of the Technical Publication REG-001: Wetland Rapid Assessment Procedure, WRAP, September 1997.
- FAC = Facultative. Equally likely to occur in wetlands or non-wetlands.
 FACU = Facultative Upland. Usually occurs in non-wetlands, but occasionally found in wetlands.
 FACW = Facultative Wetland. Usually occurs in wetlands, but occasionally found in non-wetlands.
 OBL = Obligate Wetland. Occurs almost always under natural conditions in wetlands.
 A positive (+) or negative (-) sign is used with the Facultative indicator category to more specifically define the regional frequency of occurrence in wetlands. The positive sign indicates a frequency toward the higher end of the category (more frequently found in wetlands), and a negative sign indicates a frequency toward the lower end of the category (less frequently found in wetlands).



Tampa Bay

▲
North

┌──────────┐
Scale - 2000 ft.

**Howard Franklin Bridge
(To Tampa >)**

Ulmerton Road

Interstate - 275

**Gateway
(North Tract)**

4th Street

Roosevelt Blvd.

**Gateway
(South Tract)**

9th Street

**SW 45 - Gateway Tract
Figure A - Location**



North



Scale - 2000 ft.

Ulmerton Road

Gateway - North Tract

Mangrove Habitat with Mosquito Ditches

Filled Upland Area Dense Melaleuca & Brazilian Pepper

Gateway - South Tract

Interstate - 275

Mangrove

Brazilian Pepper Mechanical Eradication

Mangrove Habitat with Mosquito Ditches

Coastal Hammock

Coastal Flatwoods

9th Street

Pepper Eradication & Commencement of Lagoon Earthwork

SW 45 - Gateway Tract (2004)
Figure B - Pre-Construction Habitat

North

Scale - 2000 ft.

Ulmerton Road

Designated
Limits of FDOT
Mitigation Credit
(White Lines)

Gateway -
North Tract

Mangrove
(No FDOT
Mitig. Credit)

Mangrove
Enhancement
(White Spots -
Hydroblasted
Spoil Mounds)

Gateway -
South Tract

Constructed
Salt-Marsh,
Salterns,
Inlets &
Lagoons

Mangrove
(No Mit. Credit)

Interstate - 275

Spoil Mounds
Removed,
Ditches Expanded,
Provide Tidal
Hydrologic
Connections to
Mangroves,
Constructed
Lagoons,
Salt-Marsh

Mangrove
Enhancement

Coastal
Hammock
Enhancement

Coastal Flatwood
Enhancement

9th Street

Constructed Salt-Marsh,
Saltern, Lagoon

**SW 45 - Gateway Tract (2008)
Figure C - Post-Construction Habitat**



North Tract (2003) – pre-construction view looking south over Ulmert Road (foreground). The dark green forested areas adjacent to Franklin Templeton building (lower right) are predominantly dense stands of Melaleuca and Brazilian pepper. Remaining portion to I-275 (middle) is mangrove habitat.



727.530.8181
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Gateway Tract Habitat Restoration

Negative # 40810 042
Date 08.30.04

North Tract (2004) - same view just after completion of earthwork to construct tidal channels, lagoons, and salt-marsh habitat. White spots within the mangroves are locations where B. pepper was eradicated and the mosquito ditch spoil mounds were displaced by using the hydro-blast method.

**FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)**

GATEWAY TRACT (SW 45)



South Tract (2003) – pre-construction view looking north over 9th Street (right) and I-275 (middle). The dark green forested areas adjacent to apartment buildings (lower left) are dense stands of Melaleuca and Brazilian pepper.



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Gateway Tract Habitat Restoration

Negative # 40810 044
Date 08.10.04

South Tract (2004) - same view after completion of earthwork to construct inter-tidal channels, lagoons, salt-marsh habitat, and enhance remnant flatwood habitat (far left).

**FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)**

GATEWAY TRACT (SW 45)



North Tract (2003) – Pre-construction view from Franklin Templeton building, looking east over dense coverage of Melaleuca and B. pepper in the filled upland area.



North Tract (2009) – same eastern view overlooking the graded upland area at the most northern constructed tidal lagoon, predominantly plantings of smooth cordgrass in the low tide zone around the lagoons, other species include salt-grass, seaside paspulum, needle rush and sand cordgrass at higher elevations. Mangrove seedlings (light green) have naturally recruited and generated; particularly within the low marsh zones.

***FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)***

GATEWAY TRACT (SW 45)



North Tract (2009) – improved tidal channel connectivity access from the constructed lagoons to Tampa Bay have resulted in productive havens for fish and invertebrate species in the lagoons; and subsequently the bird and mammal species that nest and forage on the property.



North Tract – a portion of the salt-marsh have grade elevations constructed slightly above high tide elevations, allowing for irregular flushing with salt water that established rare and unique saltern habitat. The salterns are productive ecosystems for birds and mammals to forage on fiddler crabs and other species that inhabit the area.

***FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)***

GATEWAY TRACT (SW 45)



South Tract (2004) – constructed lagoon and planted salt-marsh located within the southeast upland area previously dominated by *B. pepper* & *Melaleuca*. Remnant pine flatwood adjacent to Interstate-275 (background) was protected from construction and the habitat enhanced by eradicating exotic vegetation.



South Tract (2009) – along with the construction of salterns, much of the salt-marsh has transitioned as mangrove species have naturally recruited and generated around the lagoon.

***FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)***

GATEWAY TRACT (SW 45)



Gateway was the first restoration project in the region to utilize high pressure water hoses to “hydroblast” the mosquito ditch spoil mound material held together by B. pepper roots. By displacing the material, B. pepper mortality occurs since the roots are exposed to salt water, and the species cannot regenerate when the mounds are lower than high tide elevations.



Existing mangroves adjacent to the graded spoil mounds provide a seed source for natural recruitment and generation of mangrove seedlings within the first year after construction.

***FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)***

GATEWAY TRACT (SW 45)



The diversity of estuarine habitats at Gateway has resulted in an abundant and diverse assemblage of wildlife use and activity. As depicted in the photograph, seabirds are often observed resting and foraging within the saltern habitats.



Over 80 bird species have been documented to routinely visit Gateway. Along with other wading bird and waterfowl species, unusually high populations of roseate spoonbills have been observed foraging and resting in the northern tract.

***FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)***

GATEWAY TRACT (SW 45)

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Tenoroc – Bridgewater Tract

Project Number: SW47

Project Sponsors: FDEP – Bureau of Mine Reclamation (BMR)
Florida Fish & Wildlife Conservation Commission (FWC)

Phone No: (850) 488-8217

County: Polk

Location: Sections 29,30,31,32 T27S, R24E

IMPACT INFORMATION

(1) FM: 2012092, Int.- 4, US 98 to CR 557 (Seg. 3-5)*

ERP #: 43011896.026

COE #: 200204891 (IP-MGH)

(2) FM: 1974751, SR 540, Thornhill Rd. to Recker Hwy.

ERP #: 4401612.000

COE #: 199401950

(3) FM: 1974711, SR 540, 9th St. to Overlook Dr.

ERP #: 4417859.000

COE #: 199403139

Drainage Basin(s): Peace River Water Body(s): None SWIM water body? N

Impact Acres / Types (FLUCFCS):

(1) FM 2012092 0.10 ac. – 510

(2) FM 1974751

0.59 ac. – 610

1.79 ac. – 611

0.33 ac. – 611

TOTAL 1.89 Acres

2.86 ac. – 615

1.35 ac. – 617

0.74 ac. – 641

(3) FM 1974711 0.06 ac. – 640

TOTAL 5.87 Acres

0.35 ac. – 644

TOTAL 0.41 Acres

TOTAL: 8.17 acres

*Note: The I-4 project also has 18.95 wetland impact acres within the Withlacoochee River Basin, mitigation for those impacts are designated with wetland habitat improvements at the Hampton Tract (SW 59).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation Restoration Enhancement Preservation

Mitigation Area: **25 acres**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N

Drainage Basin: Peace River Water body: Lake Parker SWIM water body? N

Project Description

A. Overall project goal: Creation of wetland habitat within a reclaimed former mine area within the 967-acre Bridgewater Tract (Figure A) within FWC's 7,300-Tenoroc Fish Management Area. Various wetland, water quality and watershed improvements within Tenoroc and adjacent public lands are being pursued and implemented through a joint ecosystem management initiative by FDEP, FWC and SWFWMD for the Upper Peace River Watershed.

B. Brief description of pre-construction conditions: In 2002, the Bridgewater Tract was acquired by the FFWCC as an addition to Tenoroc. As with other areas of Tenoroc, the Bridgewater property was historically mined for phosphate. This mined area was reclaimed to include numerous man-made lakes interspersed with upland ruderal fallow fields dominated by opportunistic and exotic species such as bahia grass, salt-bush, wax myrtle, cogon grass and Brazilian pepper. The designated FDOT mitigation area is within one of those ruderal fields and bordered by three reclaimed lakes (Figure B, pre-construction 2004 aerial). Overall, the pre-construction habitat represented low quality conditions.

C. Brief description of construction activities and current conditions: The designated mitigation is a 25-acre wetland creation area constructed in 2005-2006. The Figure C 2006 aerial depicts the project just after completion of earthwork and prior to planting. An outer facultative zone of forested wetland creation has planted tree species dominated by red maple and bald cypress, with additional coverage provided by popash, sweetgum, laurel oak, water hickory, buttonbush and blackgum. An inner obligate forested zone includes a dominance of planted bald cypress, with additional coverage provided by popash, red maple, buttonbush, and blackgum. The ground coverage of the forested components is dominated soft rush, pickerelweed, and arrowhead. Three obligate marsh pockets are dominated by pickerelweed, arrowhead, bulrush, and fireflag; as well as some open water components. The marsh pockets are connected by creeks to maintain proper hydraulic flow throughout the created wetland. These habitat areas are depicted on Figure D (2009 aerial) and the site photographs. The created wetland habitat and adjacent Bridgewater property is utilized by many wildlife species. Observed avian species include several listed species such as little blue heron, snowy egret, tricolored egret, white ibis, sandhill crane, green heron, little blue heron, wood stork, and osprey. Reptile and mammal species include alligator, cottonmouth, river otter, and bobcat.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): All the FDOT wetland impacts occurred within the upper watershed of the Peace River in Polk County. The majority of the wetland impacts (6.33 acres, approx. 77%) were to forested habitat. Those wetland impacts are mitigated with the creation of forested wetlands (21.4 acres). Mitigation for the non-forested wetland impacts (1.84 acres) include the creation of marsh habitat (3.7 acres). The 25 acres of wetland creation mitigation is located within a larger ecosystem habitat plan that includes additional upland and wetland creation, restoration, and enhancement.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the time of mitigation selection, the only permitted mitigation bank selling credits was located within the lower portion of the Peace basin (SW 53 - Boran Ranch, DeSoto County). To mitigate the hydrologic and habitat characteristics of the FDOT wetland impacts in the upper Peace basin, it was determined the habitat plan associated with Tenoroc more appropriately compensates for those impacts. In addition, the majority of the FDOT impacts were associated with forested wetlands. At the time of mitigation selection, all the forested wetland credits at Boran Ranch had been purchased; predominantly by the SWFWMD to provide appropriate mitigation for the FDOT wetland impacts in Hardee and DeSoto Counties.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: At the time of mitigation selection, there were currently no proposed SWIM sponsored projects in the Peace River Basin that were appropriate to mitigate for the proposed wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Contractor selected by FDEP & FFWCC
Entity responsible for monitoring and maintenance: FDEP/FFWCC

Timeframe for implementation: Commence: 1998 (evaluation & design) Complete: 2005-06 (construction), followed by periodic monitoring and perpetual maintenance activities.

Project cost: \$650,000 (total) Includes design, construction & planting, maintenance & monitoring.

Attachments

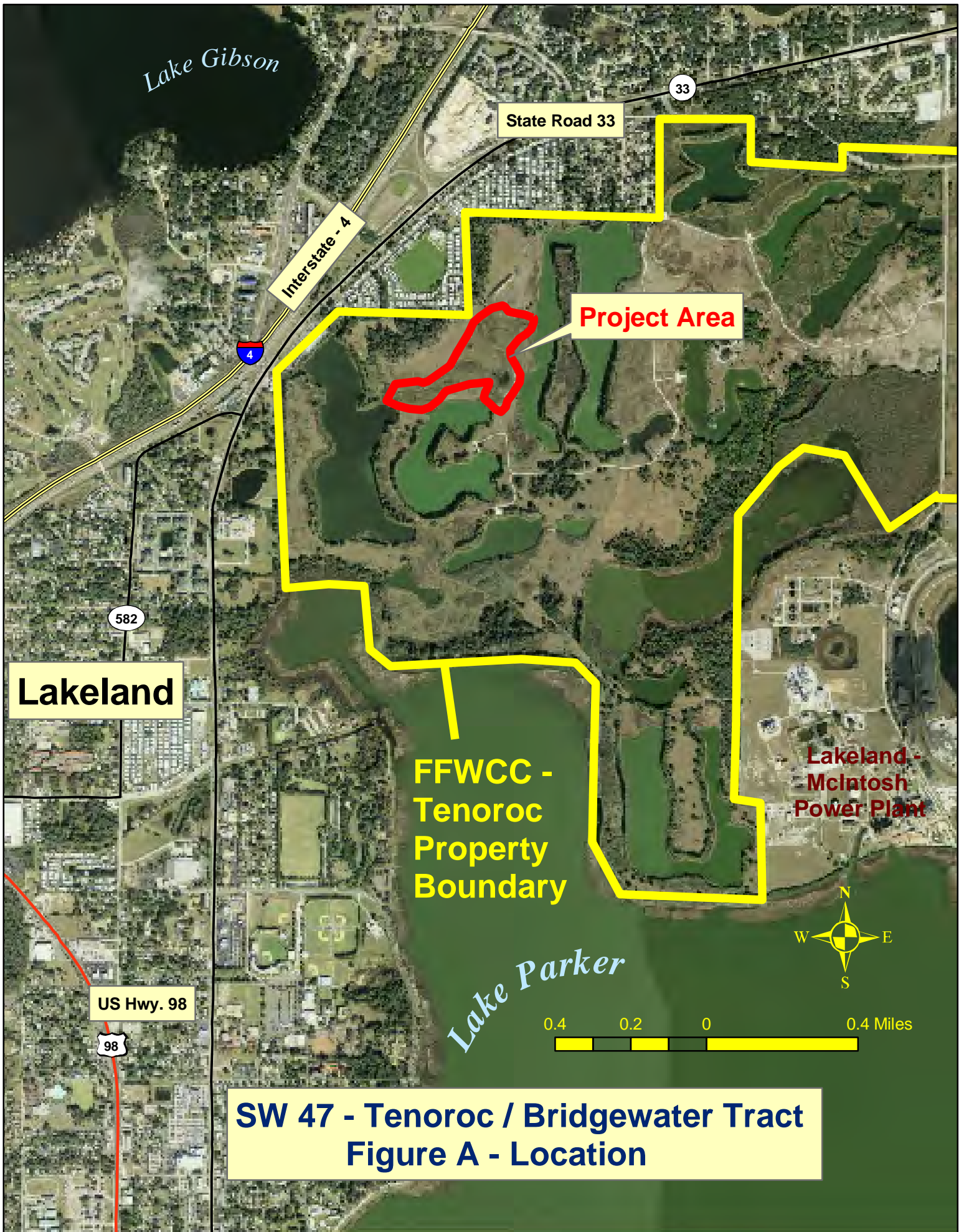
X 1. Description and depiction of pre-post construction activities. Refer to previous description, pre-construction 2004 aerial (Figure B), during construction 2006 aerial (Figure C), and post-construction 2009 aerial (Figure D). Additional site and design details are available through the FDEP, FFWCC, and FDOT Mitigation Program Manager.

X 2. Schedule for work implementation. Design & permitting was finalized in late 2003, construction conducted in 2005-2006, followed by periodic herbicide treatment of exotic & nuisance species by FDEP & FFWCC to maintain successful ecological functions and benefits.

X 3. Success criteria and associated monitoring plan. The periodic monitoring includes qualitative habitat evaluations within the created wetland (monitoring photos). The monitoring evaluations include documentation of habitat, vegetation, wildlife, hydrologic conditions, maintenance activities. The achieved success criteria required a minimum 90% survivorship of planted stock, vegetative coverage of planted and naturally recruited desirable species exceed the 85% within the facultative zone and outer obligate zones, and herbicide treatments are conducted as necessary to eradicate and maintain less than 5% cover of exotic, nuisance, and undesirable species.

X 4. Long term maintenance plan. Maintenance by FDEP & FFWCC includes herbicide treatment and eradication of nuisance, exotic, and undesirable species; conducted as necessary to maintain success criteria.

X 5. Explanation of how this work serves to offset the impacts of the specified DOT project(s). Refer to the previous response under Comment D. Additional wetland habitat activities at Tenoroc and Bridgewater is providing additional mitigation for wetland impacts associated with Turnpike's construction of the Polk Parkway. This additional mitigation is being conducted as part of a 1995 multi-agency agreement (FDOT-Turnpike, USACOE, FDEP, SWFWMD, FFWCC), and separate from the FDOT Mitigation Program (Chapter 373.4137) that commenced in 1996.



Lake Gibson

State Road 33

33

Interstate - 4

Project Area

582

Lakeland

FFWCC - Tenoroc Property Boundary

Lakeland - McIntosh Power Plant

US Hwy. 98

98

Lake Parker



SW 47 - Tenoroc / Bridgewater Tract
Figure A - Location



**FFWCC -
Tenoroc
Property
Boundary**

**Project
Boundary**

**Reclaimed Phospate Mine Area
Upland Ruderal - Fallow Field**

**Reclaimed Mine Lake
(Crago Lake)**

**Reclaimed Mine Lake
(Half Moon Lake)**

**Reclaimed Mine Lake
(Legs Lake)**

370 185 0 370 Feet



**SW 47 - Tenoroc / Bridgewater Tract
Figure B - Pre-Construction (2004)**



**SW 47 - Tenoroc / Bridgewater Tract
Figure B - During Construction (2006)**



**FFWCC -
Tenoroc
Property
Boundary**

**Project
Boundary**

Obligate
Marsh
Pocket

Facultative
Forested
Wetland
Zone

Obligate
Forested
Wetland
Zone

Creek
Channel

Obligate
Marsh
Pocket

Obligate
Marsh
Pocket

Reclaimed Mine Lake
(Crago Lake)

Reclaimed Mine Lake
(Half Moon Lake)

Hydrologic Control Structures

Reclaimed Mine Lake
(Legs Lake)



**SW 47 - Tenoroc / Bridgewater Tract
Figure D - Post - Construction (2009)**



2009 - view from the southern limits of the constructed wetland, looking north over facultative forested wetland creation area. Dominant planted species in the facultative zone include cordgrass, soft rush, sawgrass, St. John's-wort, red maple, sweet bay, slash pine, cabbage palm, and laurel oak.



Along with the open water components, the constructed obligate zone includes plantings of pickerelweed, arrowhead, bulrush, fireflag, wild rice, bald cypress, black gum, pap ash, and red maple. The wetland attracts many wildlife species, particularly a variety of wading bird and waterfowl species.

***FDOT – District 1 Mitigation Project
(Peace River Basin)***

***SW 47 – TENOROC –
BRIDGEWATER TRACT***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Reedy Creek Mitigation Bank
Counties: Polk, Osceola

Project Number: SW 49
Location: Sec. 7,17,20,29,31,32 T26S, R28E

IMPACT INFORMATION

1 - FM 1945101, US 27-Lake Glenada to Hal McRae ERP #: 4412845.06 COE #: 199342314
2 - FM 2012092, I-4, CR 557 to Osceola County (Seg. 6, 7,9) * ERP #: 44011896.033 COE #: 200208260 (IP-MGH)

Drainage Basin: Kissimmee River Water Body(s): None SWIM water body? N

Impacts / Types (FLUCFCS):

1 - FM 1945101 0.34 ac. 640
0.05 ac. 611

2-FM 2012092 1.53 ac. 617
0.82 ac. 640/641

TOTAL: 0.39 ac.

2.35 acres

TOTAL 2.74 Acres

* The majority of the wetland impacts associated with this I-4 segment were within the Ocklawaha basin (4.00 acres mitigated at SW 76-Lake Lowery Tract) and the Withlacoochee basin (3.88 acres mitigated at SW 59 – Hampton Tract).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation Mitigation Area: **2.74 Credits**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N

Mitigation Bank? Y If yes, give DEP/WMD mitigation bank permit #: 970819-11 COE # 199507852 (IP-ME)
Drainage Basin : Kissimmee Ridge Water Body: Reedy Creek SWIM water body? N

Project Description

A. Overall project goal: Hydrologic enhancement of forested floodplain wetlands associated with Reedy Creek, and restore adjacent upland improved pastures into native flatwoods habitat.

B. Brief description of pre-construction conditions: The Reedy Creek Mitigation Bank (RCMB) covers approximately 3500-acres in northeast Polk County and southwest Osceola County (Figure A). Reedy Creek Swamp is a high quality wetland system, however, was historically logged for cypress and some alterations to hydrologic conditions. The upland area along the eastern border of the swamp was historically converted to improved pasture, but restored to pine flatwoods habitat to provide a habitat buffer to Reedy Creek Swamp.

C. Brief description of current post-construction conditions: Hydrologic connections to Reedy Creek Swamp were restored and the upland pasture restored to flatwoods habitat with a combination of bahiagrass eradication and implementing a native species planting and seed dispersal program.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The RCMB adequately and appropriately compensates for the minor wetland impacts with the combination of wetland enhancement and upland restoration.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: Reedy Creek is a cost-effective mitigation bank that appropriately compensates for the proposed wetland impacts. The RCMB has sold all their permitted mitigation credits.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : There were no existing or proposed SWIM projects in this basin during the mitigation selection.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Reedy Creek Mitigation Bank

Entity responsible for monitoring and maintenance: Reedy Creek Mitigation Bank

Proposed timeframe for implementation: currently in maintenance & management, no remaining mitigation credits

FM 1945101 - \$ 13,650 (\$35,000 cost/credit x 0.4 impact acres, Credits purchased Fall, 2001)

FM 2012092 - \$ 77,315 (\$32,900 cost/credit x 2.35 impact acres, Credits purchased Summer, 2004)

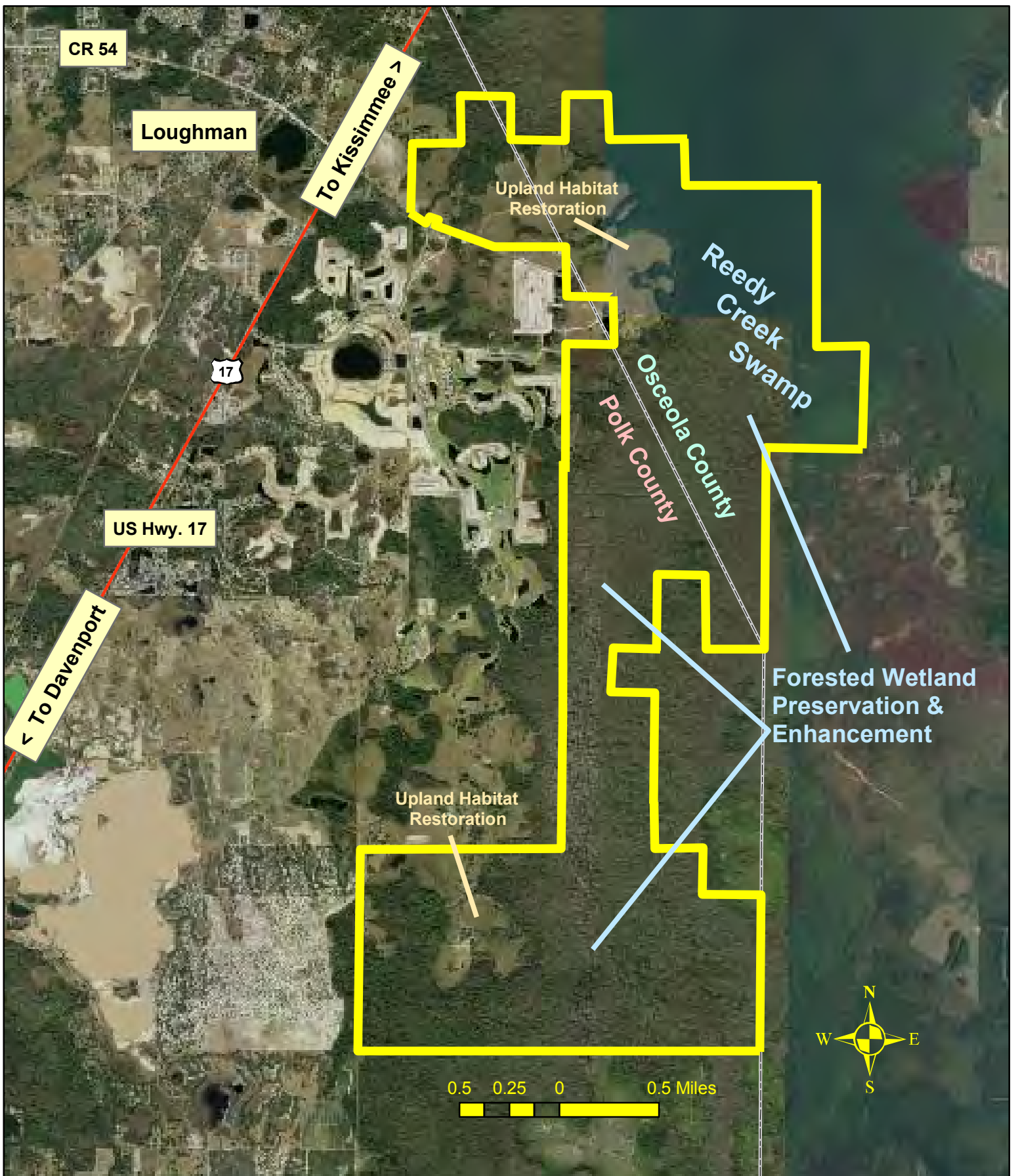
TOTAL **\$ 90,965**

Attachments

 X 1. Detailed description of completed work and aerial. Refer to previous discussion, Figure A of 2009 aerial.

 X 2. Detailed schedule for work implementation. All construction complete, currently maintenance & monitoring activities.

 X 3. Success criteria, maintenance and associated monitoring plan. Reference permit conditions.



**SW 49 - Reedy Creek Mitigation Bank
Figure A - Location & Habitat Conditions (2009)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Terra Ceia Restoration

Project Number: SW 50

Project Sponsors: SWFWMD-SWIM Section, FDEP Terra Ceia Preserve

County: Manatee

Location: Sec. 13, 14, 23, 24, 25,26, T33S, R17E

IMPACT INFORMATION

FM 1960581, US 301 (Ellenton) - 60th Ave to Erie Road

ERP #: 4012295 COE#: 199802683

Drainage Basin: Manatee River Water Body: Manatee River

SWIM water body? Y

Impact Acres / Types (FLUCFCS):

FM 1960581 0.18 ac. 612

0.41 ac. 618

TOTAL - 0.59 Acres

TOTAL 0.59 acre

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Restoration X Enhancement

Mitigation Area: **20 acres**

SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? Y Mitigation Bank? N

Drainage Basin: Manatee River Water Body(s): Manatee River, Tampa Bay, Terra Ceia Bay SWIM water body? Y

Project Description

A. Overall project goals: Restoration and enhancement of various types of saltwater wetland and upland habitats within the 1700-acre FDEP-owned & managed Terra Ceia Isles property bordering the southeastern shore of Tampa Bay (Figure A).

B. Brief description of pre-construction habitat conditions: Large tracts of once-pristine mangrove forest and intertidal wetlands within the project area were adversely impacted by dredge and fill operations. In addition, much of the existing upland and various wetland habitats had extensive coverage of exotic vegetation including Brazilian pepper, Melaleuca, and Australian pines. These areas provided poor habitat value for wildlife utilizing the Preserve and adjacent estuary. The 20-acre area designated to provide FDOT mitigation is within the eastern portion of the Preserve (Figure A). The pre-construction conditions included 12-acres of mangrove habitat buffered by 8-acres of upland habitat that had extensive coverage of Brazilian pepper (Figure B- 1999 aerial).

C. Brief description of post-construction and current habitat conditions: For the designated FDOT mitigation area, the B. pepper was eradicated and herbicide maintained from regenerating within the upland buffers and planted with native species (cabbage palm, longleaf pine, live oak). As depicted on Figure C, a braided tidal marsh was subsequently constructed in 2007 that further buffers the mangrove habitat. This activity was not quantified for FDOT mitigation credit however the created marsh does increase the habitat value and diversity for the Preserve as well as benefit the designated mitigation area.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The restored and enhanced upland and mangrove habitats adequately and appropriately compensate for the minor impact acreage and function of the disturbed US 301 wetlands while increasing habitat diversity at Terra Ceia. No additional wetland impacts associated with other roadway projects are proposed for mitigation within this 20-acre area.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: No mitigation banks were available in the Manatee River watershed during mitigation selection in 1998.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The mitigation activities are in conjunction with a SWIM project located on FDEP property in need of major habitat restoration & enhancement.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private Contractor selected by the WMD & FDEP

Entity responsible for monitoring and maintenance: maintenance by FDEP staff assigned to the Terra Ceia Preserve, monitoring conducted through 2008 by consultant on contract with the WMD; perpetual maintenance & periodic monitoring after 2008.

Time frame for implementation: Commence: Design in 2000-2001 Complete: exotic species eradication & planting, 2002; routine herbicide maintenance periodically conducted as necessary by FDEP staff

Project cost: \$ 46,000

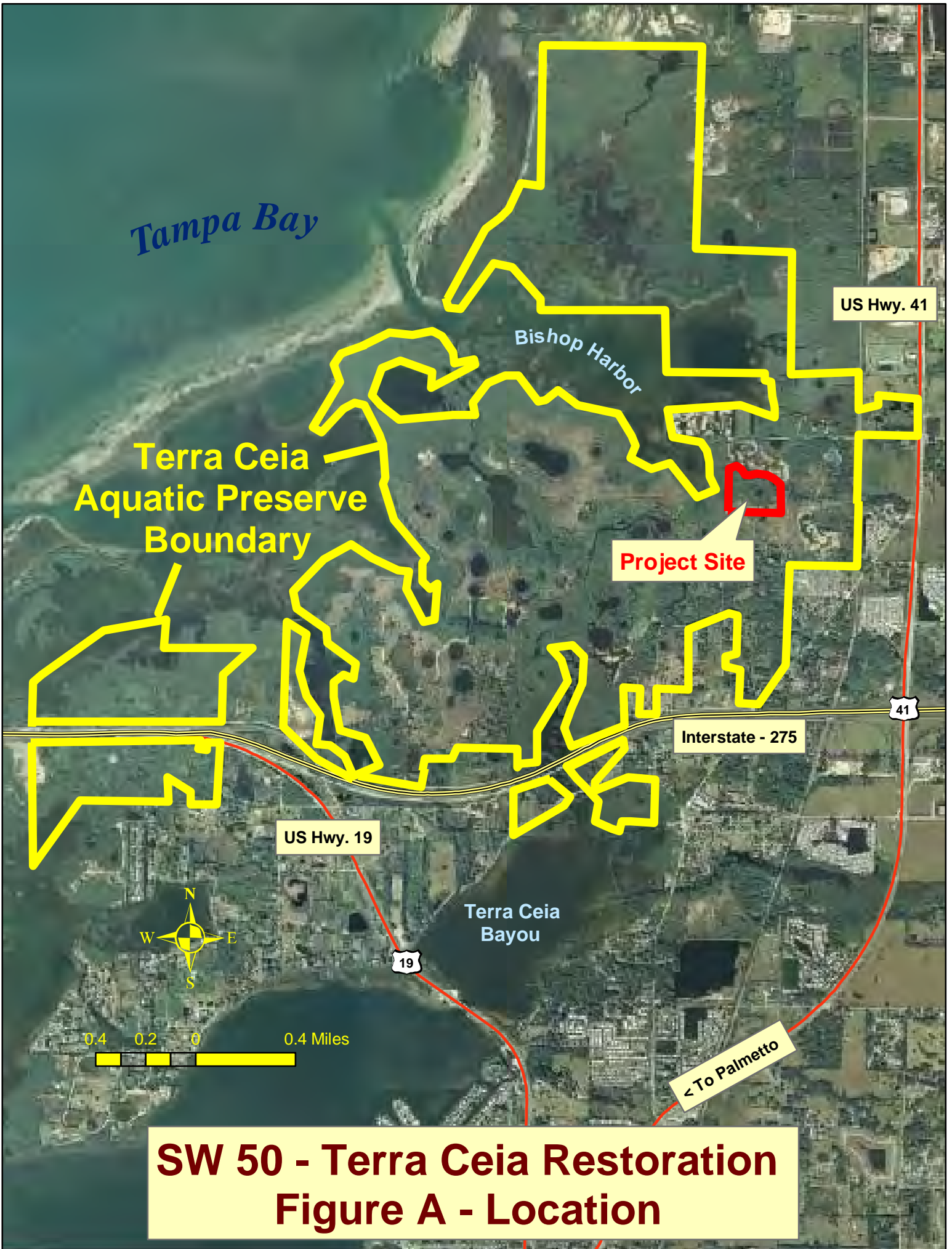
Attachments

1. Description and depiction of pre-post construction activities. Refer to previous text, Figure A aerial of project location, Figure B aerial (1999) of pre-construction conditions, Figure C aerial (2009) of current habitat conditions, and site photos of pre-post habitat conditions. Additional site and design details are available through the SWFWMD's SWIM Section and FDOT Mitigation Program Manager.

2. Detailed schedule for work implementation, including any and all phases. The exotic species were eradicated and the area planted in 2002.

3. Success criteria and associated monitoring plan. The success criteria includes less than 5% cover of exotic species for the 20- acre area providing mitigation for FDOT wetland impacts. Qualitative monitoring occurred through 2008 to ensure success.

4. Long term maintenance plan. The mitigation is associated within larger restoration objectives for the Preserve. The maintenance of the project area is being conducted by FDEP staff, primarily related to herbicide eradication of invasive exotic vegetation and limiting such coverage to less than 5%.



**SW 50 - Terra Ceia Restoration
Figure A - Location**

SW 50 - Terra Ceia Restoration Figure B - Pre-Construction (1999)

Bishop Harbor

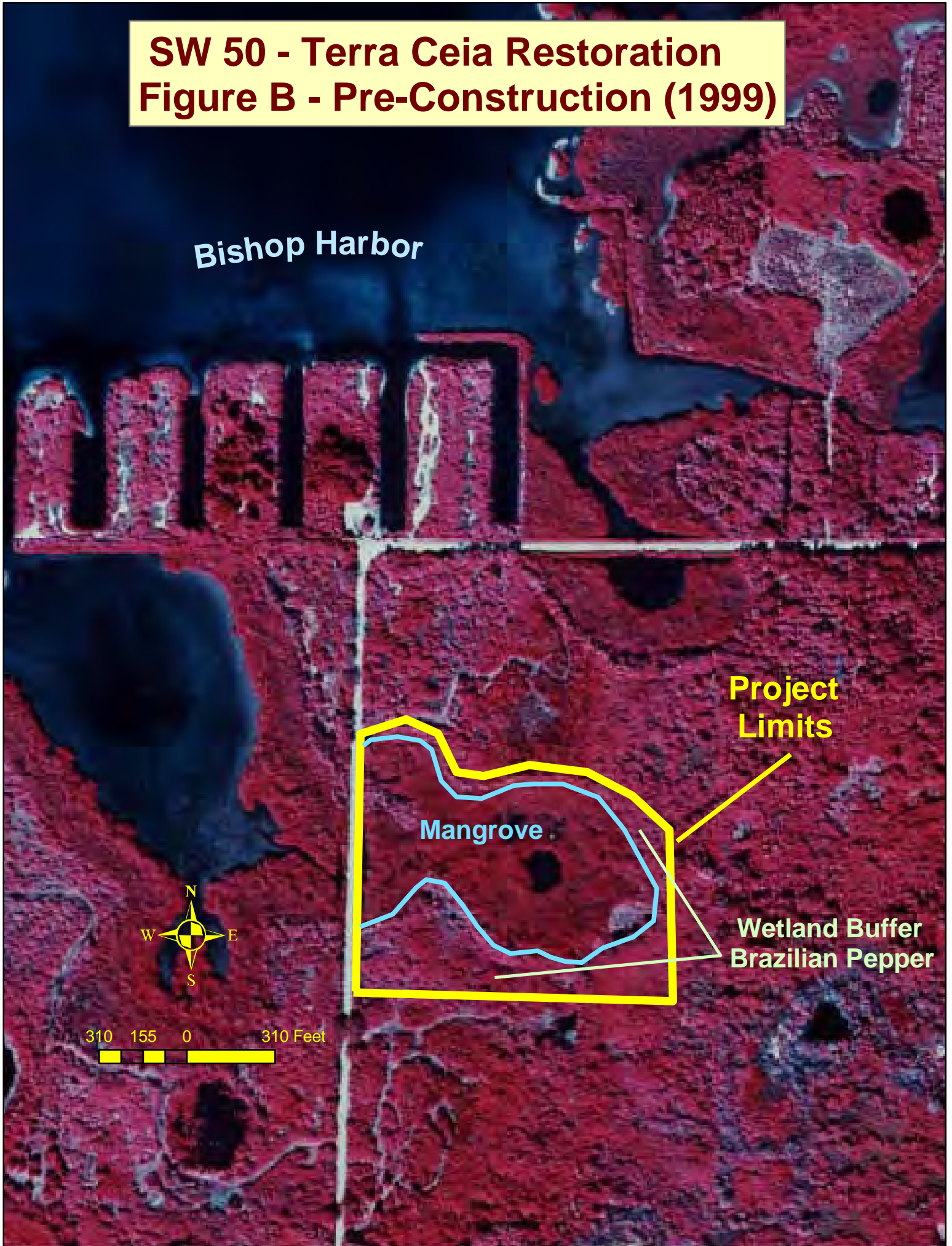
Project Limits

Mangrove

Wetland Buffer
Brazilian Pepper



310 155 0 310 Feet



SW 50 - Terra Ceia Restoration Figure C - Post-Construction (2009)

Bishop Harbor

Constructed
Braided Tidal
Marsh Habitat

Bishop Harbor Road

Constructed
Braided Tidal
Marsh Habitat

Project
Limits

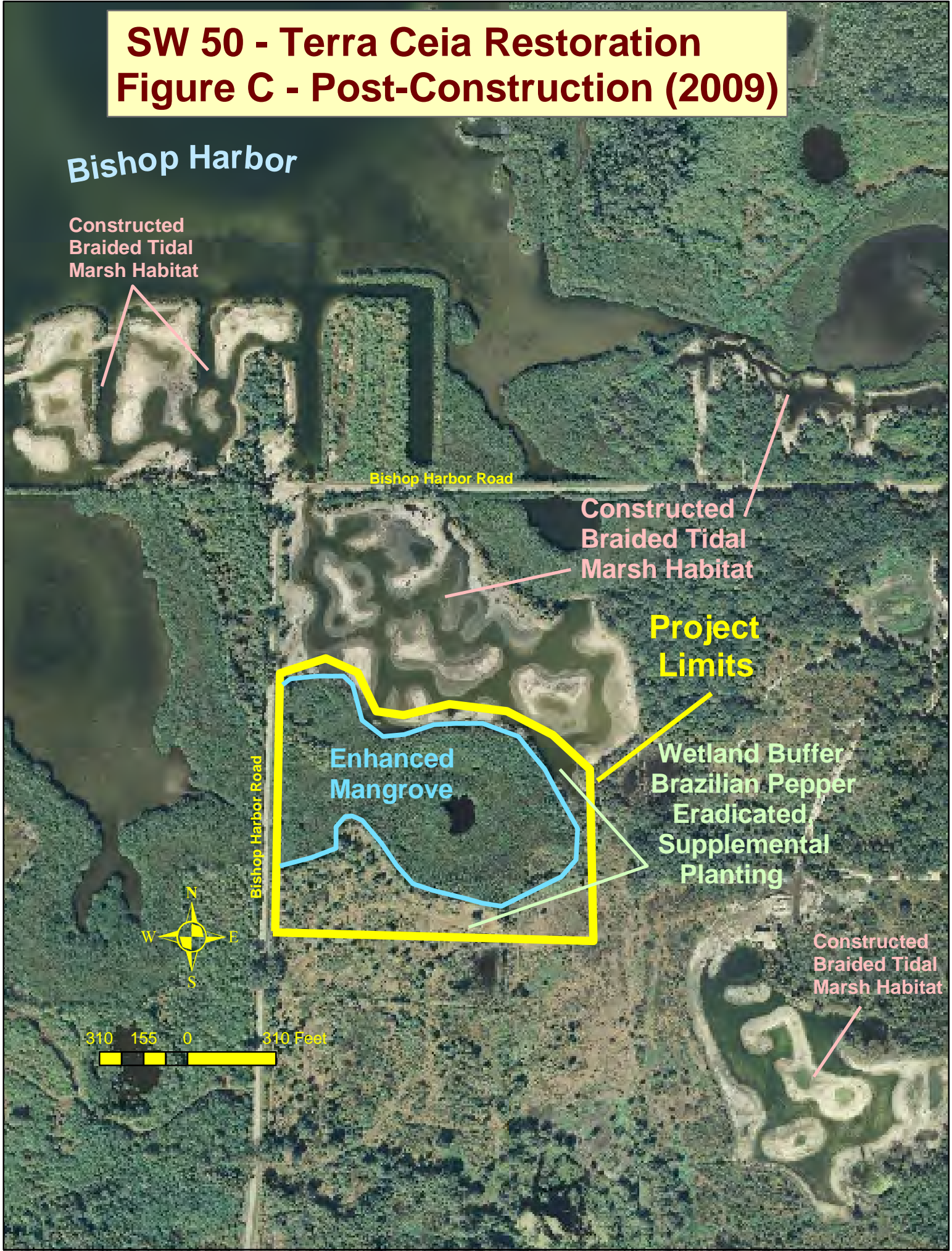
Enhanced
Mangrove

Wetland Buffer
Brazilian Pepper
Eradicated
Supplemental
Planting

Constructed
Braided Tidal
Marsh Habitat



310 155 0 310 Feet





Pre-Construction (1999) - wetlands are buffered by uplands with extensive coverage of exotic & nuisance species such as Australian pine (background), Brazilian pepper, Johnson grass, ragweed and dog fennel.



Pre-Construction (1999) – the mangrove is buffered by dense Brazilian pepper, cogon grass, and scattered cabbage palm

***FDOT – District 1 Mitigation Project
(Manatee River Basin)***

SW 50 – TERRA CEIA RESTORATION



Current Post-Construction Habitat (2009) – exotics have been eradicated, preserved cabbage palms, natural recruitment of salt-bush, wax myrtle, and planting of slash pine. More open understory provides more wildlife access and utilization.



Current Post-Construction Habitat (2009) – the mangrove in the project area (right) is further enhanced and buffered by the braided tidal marsh habitat constructed along the northern side of the mangrove.

***FDOT – District 1 Mitigation Project
(Manatee River Basin)***

SW 50 – TERRA CEIA RESTORATION

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Myakka River State Park
Project Sponsor: FDEP – Division of Parks & Recreation
Counties: Sarasota, Manatee

Project Number: SW51
Phone: (941) 366-6511
Location: Sec. 19,26,28,29,30, T37S, R21E

IMPACT INFORMATION

(1) <u>FM 1979251, SR 72 - Big Slough to DeSoto County Line</u>	ERP#: <u>4318471.00</u>	COE #: <u>199802683</u>
(2) <u>FM 1980131, SR 72 - Deer Prairie to Big Slough</u>	ERP#: <u>4418399.00</u>	COE #: <u>199802683</u>
(3) <u>FM 4138871, SR 72 – Myakka River to Big Slough</u>	ERP#: <u>43018399.01</u>	COE #: <u>20057108 (IP-JP)</u>

Drainage Basin: Myakka River Water Body(s):Big Slough, Deer Prairie Slough, Myakka River SWIM water body? N
Impact Acres / Types (FLUCFCS):

(1) FM 1979251 <u>0.30</u> ac. <u>615</u>	(3) FM 4138871 <u>3.0</u> ac. <u>641x</u>
<u>1.19</u> ac. <u>641</u>	<u>2.0</u> ac. <u>643</u>
TOTAL 1.49 acres	TOTAL 5.0 acres
(2) FM 1119303 <u>0.87</u> ac. <u>641</u>	TOTAL 7.36 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Mitigation Area: **1,476 acres**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin(s): Myakka River Water Body(s):Myakka River, Deer Prairie Slough SWIM water body? N, but the
Myakka River is an Outstanding Florida Water and Florida Wild & Scenic River

Project Description

- A. **Pre-Construction Site Conditions & Project Goal:** Myakka River State Park & Myakka Prairie (“Park”, 37,000 acres, Figure A) is one of the largest state parks in Florida. The Park has a flat topography with a general groundwater and surface water hydrology pattern that flows from north to south. There are two major constructed features where historic flow regime was altered by fill embankment. These include the historic construction of a 9-mile long elevated east-west railroad tram during the early 1900’s within the northern portion of the Park, and the elevated SR 72 segment crossing through the southern portion of the Park (Figures A & B). The tram was constructed without use of culverts, blocking the natural southern sheet water flow hydrology pattern; resulting in extended hydroperiods (depth & duration) within many wetlands to the north and reduced hydroperiods for wetlands south of the tram (Figure B). The fill source for the railroad grade included ditches constructed along each side of the tram. These ditches redirected and funneled contributing flow east and west along the tram to North Deer Prairie Slough. The hydrologic conditions of many wetlands south of the tram have been further altered by interconnected ditches. The majority of the wetlands within the Park are ephemeral systems, so the altered hydrology, vegetative zonation and restoration of appropriate hydrology and hydroperiods of these wetlands has a direct correlation to the wildlife use, groundwater recharge, flood attenuation and water quality improvements.
- B. **Brief description of conducted work & current habitat conditions:** Evaluation by Park staff over many years determined that surface and groundwater hydrology of impacted wetlands in the vicinity of the railroad tram could be achieved by grading the fill material to match historic ground elevations, construction of wet crossings at appropriate locations, and backfilling ditch segments (Figure B). The majority of these activities have been completed and the flow regime successfully restored in the northern areas within the tram vicinity. The third SR 72 project was adopted

to the FDOT program in 2004, however the associated design for SR 72 only required the installation of a few cross-drain culverts. FDOT mitigation funds were allocated to install an additional five culverts during the 2008-2009 roadway construction to restore and provide additional hydraulic and hydrologic improvements to benefit wetlands upstream and downstream of SR 72. The only remaining construction activities for the mitigation credits include installing a few reinforced wet crossings within lower segments of the removed tram and backfilling some internal drainage ditches; scheduled to occur during 2011-2012. These construction activities have resulted in restoring historic drainage patterns, attenuation and groundwater recharge within the wetlands and allowed appropriate hydrophytic species to regenerate and recruit into outer perimeters of the wetlands. Natural recruitment of adjacent desirable hydrophytic species within the filled ditches has occurred without the need for supplemental planting. Only portions of wetlands adjacent to the railroad tram, ditch blocks and the SR 72 culvert locations that receive direct hydrologic enhancement are quantified and accounted to provide mitigation credit. This included a total of 1,276 acres of non-forested wetland enhancement, 194 acres of forested wetland enhancement, and 6 acres of non-forested wetland restoration in the location where wetland-cut ditches adjacent to the tram were filled to historic natural wetland grades. Secondary benefits include restoring surface and groundwater flow regimes to thousands of acres of other wetland and upland habitat in the Park.

- C. **Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** All the wetland impacts are associated with three SR 72 segments located through and adjacent to Myakka River State Park (Figure A). The wetland enhancement and restoration activities appropriately compensate for unavoidable wetland impacts that have similar habitat conditions and located adjacent to the wetland impacts.
- D. **Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** No mitigation banks were permitted in the Myakka River Basin during the period of adopting the SR 72 segments to the program.
- E. **Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body:** The impacts are not within a SWIM water body and there are no freshwater SWIM projects within the Myakka River basin. However, the habitat improvements provide benefits to the Myakka River, an Outstanding Florida Waters and one of the few rivers in Florida that has achieved the designation as a Wild & Scenic River.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: FDEP, Division of Recreation and Parks selection of a private contractor
Contact Name: Jon Robinson, Park Manager, Diana Donaghy, Park Biologist Phone Number: 941-361-6511

Entity responsible for monitoring and maintenance: FDEP – Park staff
Proposed timeframe for implementation: Commence: 1998 - Design First Phase Construction – 2002-2003
Second Phase Construction - 2006-2012 Maintenance & Monitoring - 2003 – 2013 Complete: 2013
Project cost: \$530,000-\$580,000 (total)

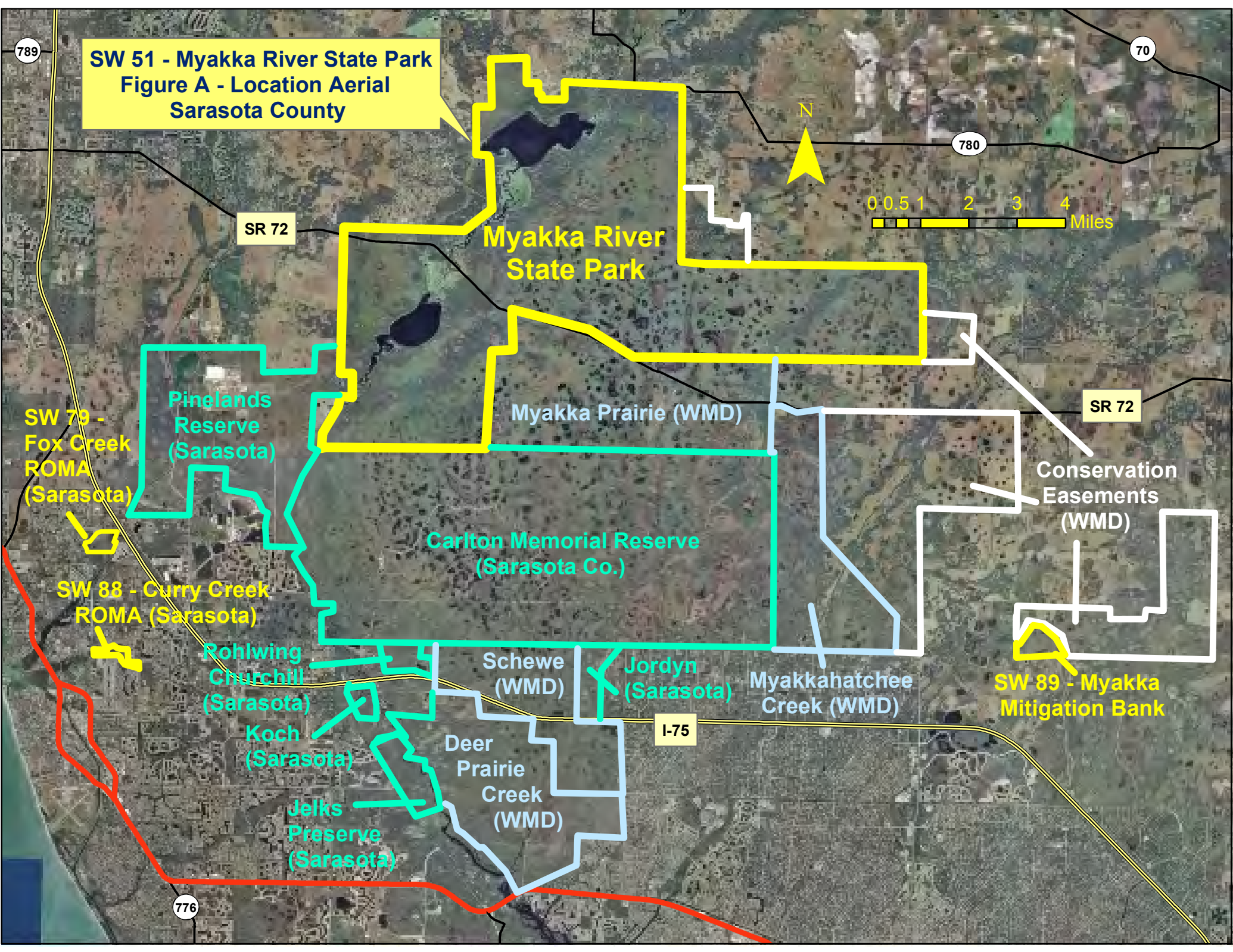
Attachments

- X 1. Description of existing site and proposed work. Refer to previous discussion, Figures A & B.
- X 2. Recent aerial photograph with date and scale. Figures A & B – 2010 Aerial

X 3. Location map and design drawings of existing and proposed conditions. Design drawings available at FDEP.

 X 4. Success criteria and associated monitoring plan. Criteria includes 80% coverage of desirable vegetative coverage and less than 5% coverage of exotic species within filled ditches; installed culverts, graded tram and wet crossings are required to be stable to eliminate any potential of erosion & sedimentation conditions, and demonstration of historic sheet flow restoration of drainage patterns. Annual monitoring for a minimum two years post-construction include qualitative documentation and photographs of tram grading to demonstrate vegetative regeneration and restoration of proper drainage patterns. As of 2010, success criteria have been achieved for all the constructed areas.

 X 5. Long term maintenance plan. Maintenance has been and will continue to be conducted as necessary to ensure proper structure and slope stabilization, and eradicate exotic & nuisance vegetative cover within the filled ditches. Due to minimal lack of associated exotic seed source and gradual slope gradients, neither issue has presented any problems.



SW 51 - Myakka River State Park
Figure A - Location Aerial
Sarasota County

Myakka River State Park

Pinelands Reserve (Sarasota)

Myakka Prairie (WMD)

Carlton Memorial Reserve (Sarasota Co.)

SW 79 - Fox Creek ROMA (Sarasota)

SW 88 - Curry Creek ROMA (Sarasota)

Rohlwing Churchill (Sarasota)

Koch (Sarasota)

Jelks Preserve (Sarasota)

Schewe (WMD)

Jordyn (Sarasota)

Myakkahatchee Creek (WMD)

Deer Prairie Creek (WMD)

SW 89 - Myakka Mitigation Bank

Conservation Easements (WMD)

SR 72

780

70

789

776

I-75

0 0.5 1 2 3 4 Miles



**SW 51 - Myakka River State Park
Figure B - Wetland Hydrologic
Improvement Activities**

780



Lowered railroad tram fill material & constructed wet crossings to restore north-south water sheet flow hydrology through wetlands

Restored north-to-south sheet flow hydrology through wetland sloughs

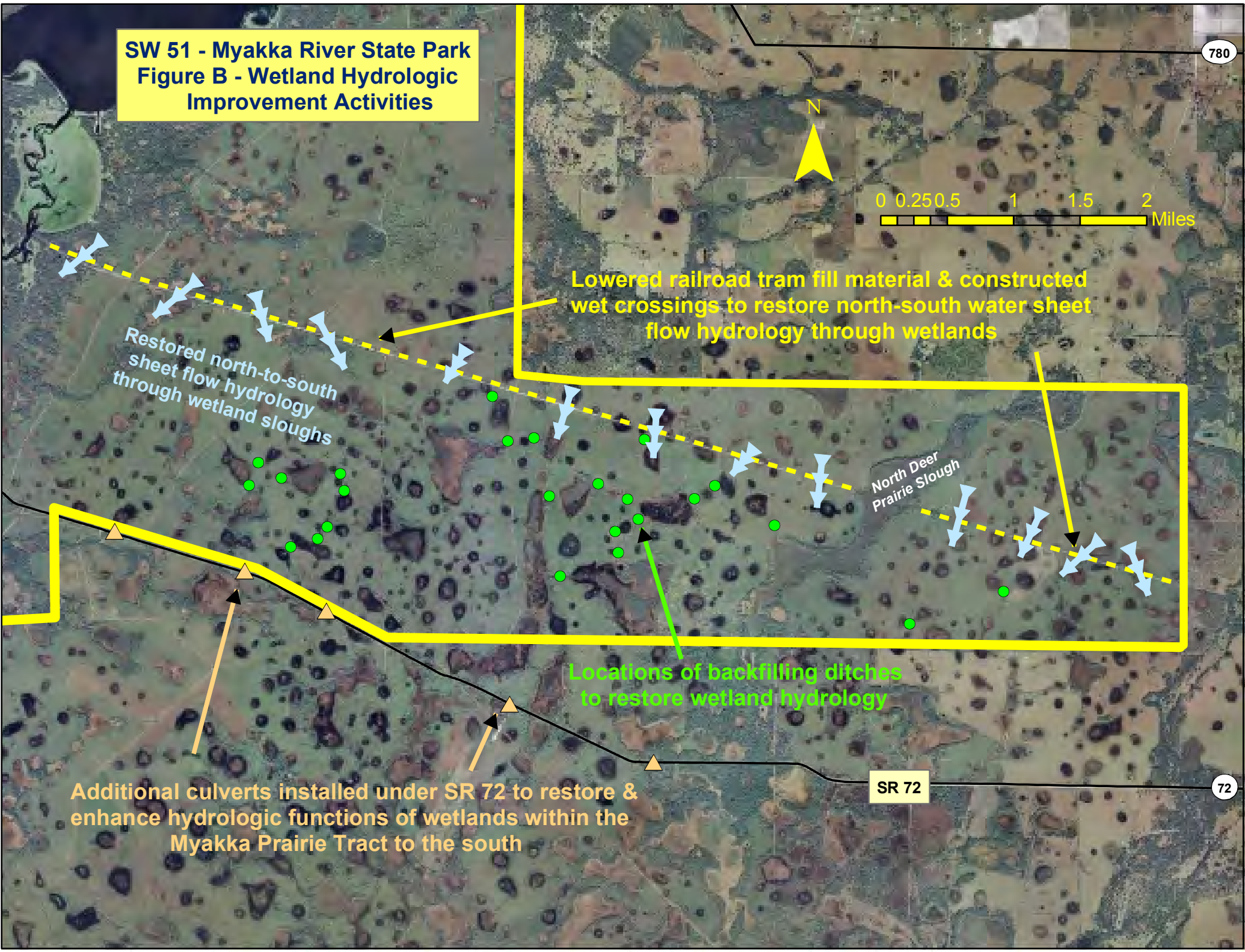
North Deer Prairie Slough

Locations of backfilling ditches to restore wetland hydrology

Additional culverts installed under SR 72 to restore & enhance hydrologic functions of wetlands within the Myakka Prairie Tract to the south

SR 72

72





The majority of the proposed earthwork activities include removing nine miles of the elevated railroad tram grade depicted above. This abandoned tram blocks and diverts surface and ground water flow from north to south (left to right), effectively impounding surface water within habitats upstream and minimizing contributing flow to the habitats directly downstream of the berm.



This photo depicts a portion of the post-construction road shortly after tram removal. The berm material was graded into the adjacent lateral ditches to restore historic grade elevations and contributing hydrology. Native vegetation is naturally recruiting into the filled ditches. The lowered road grade still provides vehicle access necessary for land management activities, including through the surface water at wet crossings.

FDOT - District 1 Mitigation Site
(Myakka River Basin)

MYAKKA RIVER
STATE PARK (SW 51)

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Little Pine Island Mitigation Bank Project Number: SW 52
Project Sponsors: Mariner Properties - Ray Pavelka, Dick Anderson Phone No: (941) 481-2011
County: Lee Location: Sec. 14,15,16,21,22,23,24,25,26,27,34,35,36 T44S, R22E

IMPACT INFORMATION

(1) FM: <u>1937941, SR 776-CR 771 to Willow Bend Rd.*</u>	ERP #: <u>4316676.00</u>	COE#: <u>199601986</u>
(2) FM: <u>1984711, Trabue Harborwalk Bike Path</u>	ERP #: <u>4417560.01</u>	COE#: <u>199705303</u>
(3) FM: <u>4046971, I-75 Widen Bridge over Peace River**</u>	ERP #: <u>43021917.00</u>	COE#: <u>200102749</u>
(4) FM: <u>4130423, I-75 – Tucker's Grade to N. Jones Loop Rd.</u>	ERP #: <u>43035560.000</u>	COE#: <u>Under Review</u>

Drainage Basin(s): Myakka River (1937941), Peace River (1984711, 4046971), Charlotte Harbor (4130423)
Water Body(s): Peace River, Alligator Creek SWIM water body? Y

Impacts / Types (FLUCFCS): (1) FM 1937941 2.08 ac. 540 (3) FM 4046971 2.75 ac. 612
(2) FM 1984711 0.16 ac. 540 (4) FM 4130423 1.10 ac. 641

TOTAL: 6.09 Acres

* Note - This roadway project had an additional 8.92 acres of wetland impacts mitigated through restoration activities at Cattle Dock Point, Phase II (SW 31).

** Note - The bridge project had an additional 0.8 acres of mangrove impacts mitigated through on-site restoration activities, as noted under Peace River Bridge Restoration (SW 69).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: ___ Creation x Restoration x Enhancement ___ Preservation Mitigation Area: **6.09 Credits**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? Y
Mitigation Bank? Y If yes, give DEP/WMD mit bank permit #: 362434779 COE # 199400037 (IP-GS)
Drainage Basin: Charlotte Harbor Water Body: Charlotte Harbor SWIM water body? Y

Project Description

A. Overall project goal: Little Pine Island Mitigation Bank (LPIMB) includes habitat enhancement and restoration within state-owned property (FDEP's Charlotte Harbor Buffer Preserve) that had extensive coverage of exotic vegetation, particularly Melaleuca, Brazilian pepper and Australian pine. The goal of LPIMB is to eradicate exotic vegetation from approximately 1,600-acres of disturbed coastal marsh, salt flats, mangroves, and pine flatwoods. This included constructing temporary haul roads restoring wetland grades and associated hydrology by backfilling approximately seven miles of mosquito ditches.

B. Brief description of pre-construction condition: Mangrove species existed within undisturbed portions, particularly along the perimeter of the 4,700-acre island (aerial photos). However due to historic construction of mosquito ditches, the altered hydrology resulted in the substantial invasion and dominance of exotic species such as Australian pine, Brazilian pepper and predominantly Melaleuca that formed very dense populations over half of the 1,600-acre restoration area.

C. Brief description of construction activities and current conditions: Commencing in 1997, the LPIMB construction activities primarily included exotics eradication and restoring appropriate wetland grades by filling the mosquito ditches with the adjacent spoil piles (Figure B), thus resulting in restoration of appropriate wetland hydrology. The eradication of exotic species included mechanical cutting and mulching the tree material. The mulch quantity (average 30 tons of biomass per acre; over five million *Melaleuca* trees) was too extensive as an on-site soil amendment because the dense coverage would substantially limit the regeneration of native vegetation. Instead, the mulch was hauled and burned as a fuel source by at a sugar processing plant. As eradication and hydrologic restoration were conducted, native herbaceous and shrub species naturally regenerated with minimal need for supplemental planting. In order to access and restore the site without turbidity, impermeable liners were used to enclose the fill roads used to haul cut vegetation to the mulching machine. After all the exotic vegetation was cut and removed from the site, herbicide treatment of the stumps and spraying of any regenerated exotics have continued on a routine schedule. Due to the fact a private entity sponsor (Mariner Properties) has conducted habitat restoration within FDEP-owned public lands, extensive construction requirements have been mandated and adopted by the mitigation bankers. Mariner established a trust fund to provide financial assurance for the perpetual maintenance and monitoring of the restored area by FDEP after all the credits have been sold. In addition, LPIMB credit sales will generate approximately \$1.5 million in user fees that will be provided to FDEP for perpetual maintenance of restored habitat. The restored habitats have resulted in attracting a return of diverse and substantial wildlife populations, particularly a variety of wading birds. Details on the restoration project and wildlife utilization are available through the bank's website address: (www.littlepineisland.com).

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The LPIMB is conducting restoration and enhancement of freshwater and saltwater herbaceous and forested wetland habitats that appropriately and adequately compensate for FDOT wetland impacts with similar habitat functions and benefits in the Charlotte Harbor Basin.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The LPIMB is a private mitigation bank conducted on public lands owned by FDEP.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: At the time of mitigation selection, there was not a SWIM-sponsored project proposed in the Charlotte Harbor watershed that could adequately and appropriately compensate for the proposed wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Mariner Properties, Inc.

Contact Name: Ray Pavelka, Richard Anderson

Phone Number: (941) 481-2011

Entity responsible for monitoring and maintenance: Mariner Properties, Inc.

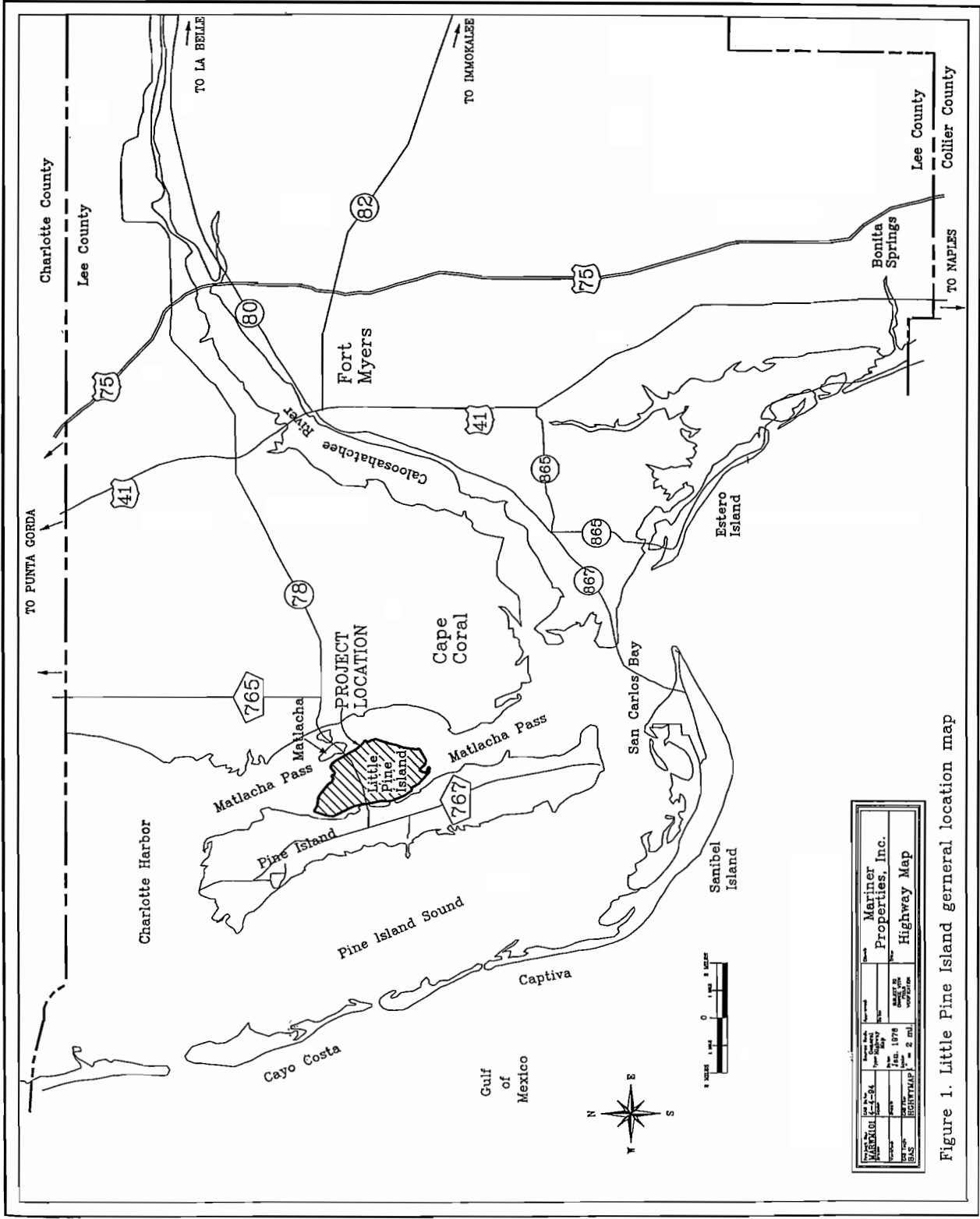
Proposed timeframe: Commence: 1997 Complete: Construction and exotics eradication were completed by 2009, current routine herbicide treatments to maintain mitigation success criteria, perpetual land management and maintenance activities will continue by FDEP.

Project cost: \$294,630 (total to date for the four FM's)

- (1) FM 1937941 2.08 acres – 2.08 credits purchased summer, 2001
- (2) FM 1984711 0.16 acre – 0.16 credits purchased summer, 2001
- (3) FM 4046971 2.75 acres – 2.75 credits purchased summer, 2002
- (4) FM 4130423 1.10 acres - 1.10 credits to be purchased in the fall, 2010

Attachments

- x_1. Description of site conditions and work activities. [Previous discussion & mitigation bank permits.](#)
- x_2. Location map and design drawings of pre-construction and current conditions. [Figure A - Location Map, Figures B & C - cross section drawings of vegetative conditions and ditch blocks, aerial and site photographs.](#)
- x_3. Schedule for work implementation. [Construction activities have been ongoing through seven phases; as of 2009, the construction activities have been completed and the project is currently within the routine maintenance phase.](#)
- x_4. Success criteria and associated monitoring plan. [The monitoring plan includes an extensive quantitative analysis procedure that includes hydrologic, vegetative, and wildlife evaluation as stipulated in the permit. The mitigation bank permit success criteria requirements include appropriate percent cover of desirable vegetation, presence, and richness of various flora and fauna species.](#)
- x_5. Long term maintenance plan. [In order to achieve the success criteria, the mitigation banker has incorporated a routine maintenance schedule to ensure minimal regeneration and coverage of exotic and nuisance species. The maintenance will continue under FDEP's land management program for the Charlotte Harbor Buffer Preserve.](#)



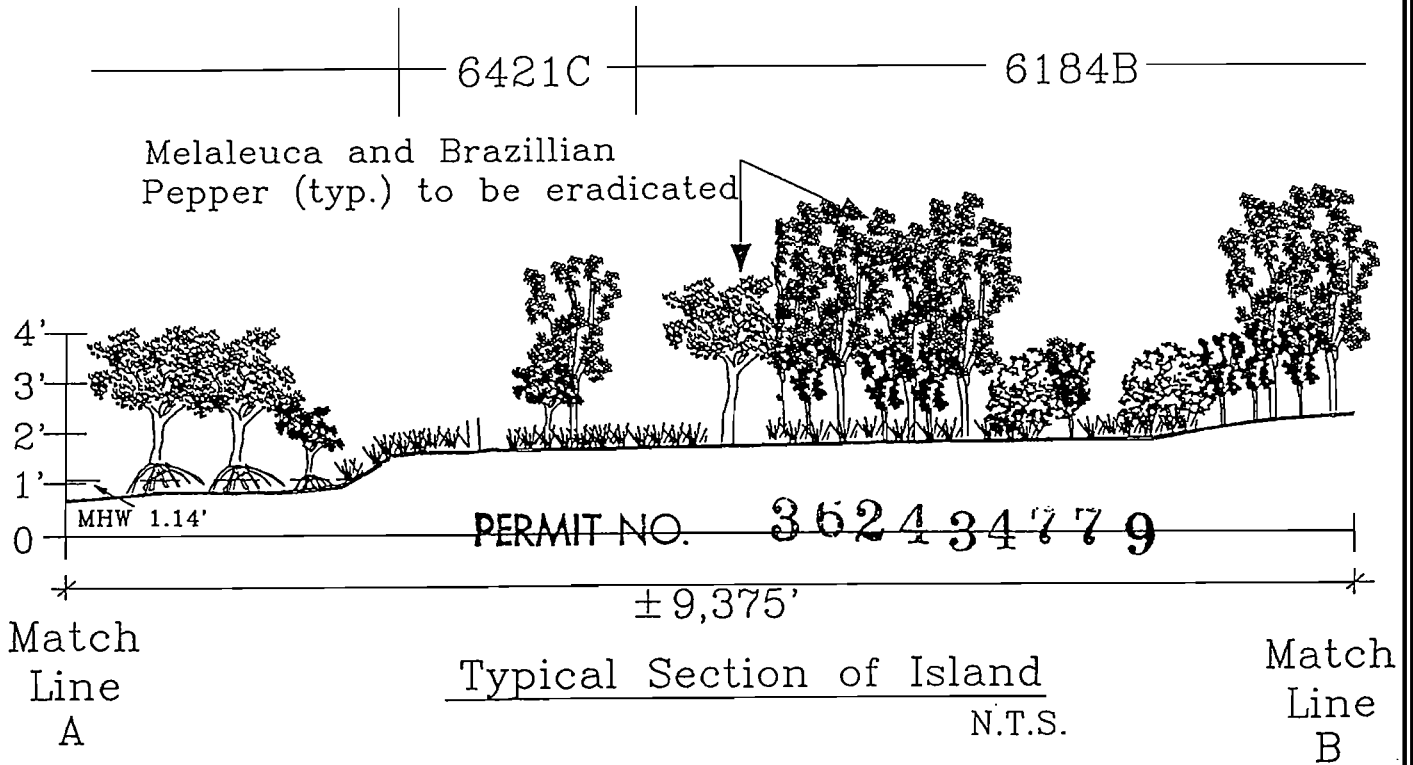
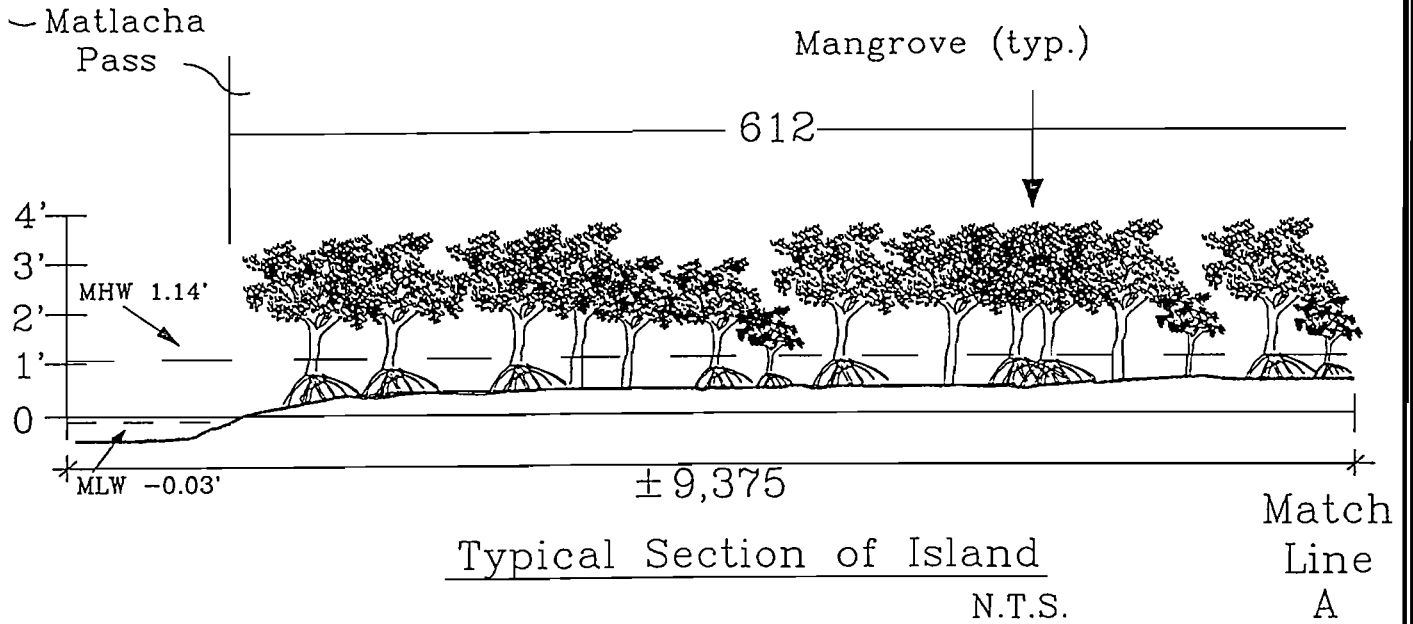
Mariner Properties, Inc.	
Project No.	Highway Map
Project Name	
Project Date	Feb. 1978
Project Scale	AS SHOWN
Project Status	2 MI.
Project No.	
Project Name	
Project Date	
Project Scale	
Project Status	

Figure 1. Little Pine Island general location map

**FDOT – District 1
MITIGATION PROJECT
(Charlotte Harbor)**

**LITTLE PINE ISLAND
MITIGATION BANK
(SW 52)**

**FIGURE A
PROJECT LOCATION**



FDOT - District 1
MITIGATION AREA
(Charlotte Harbor)

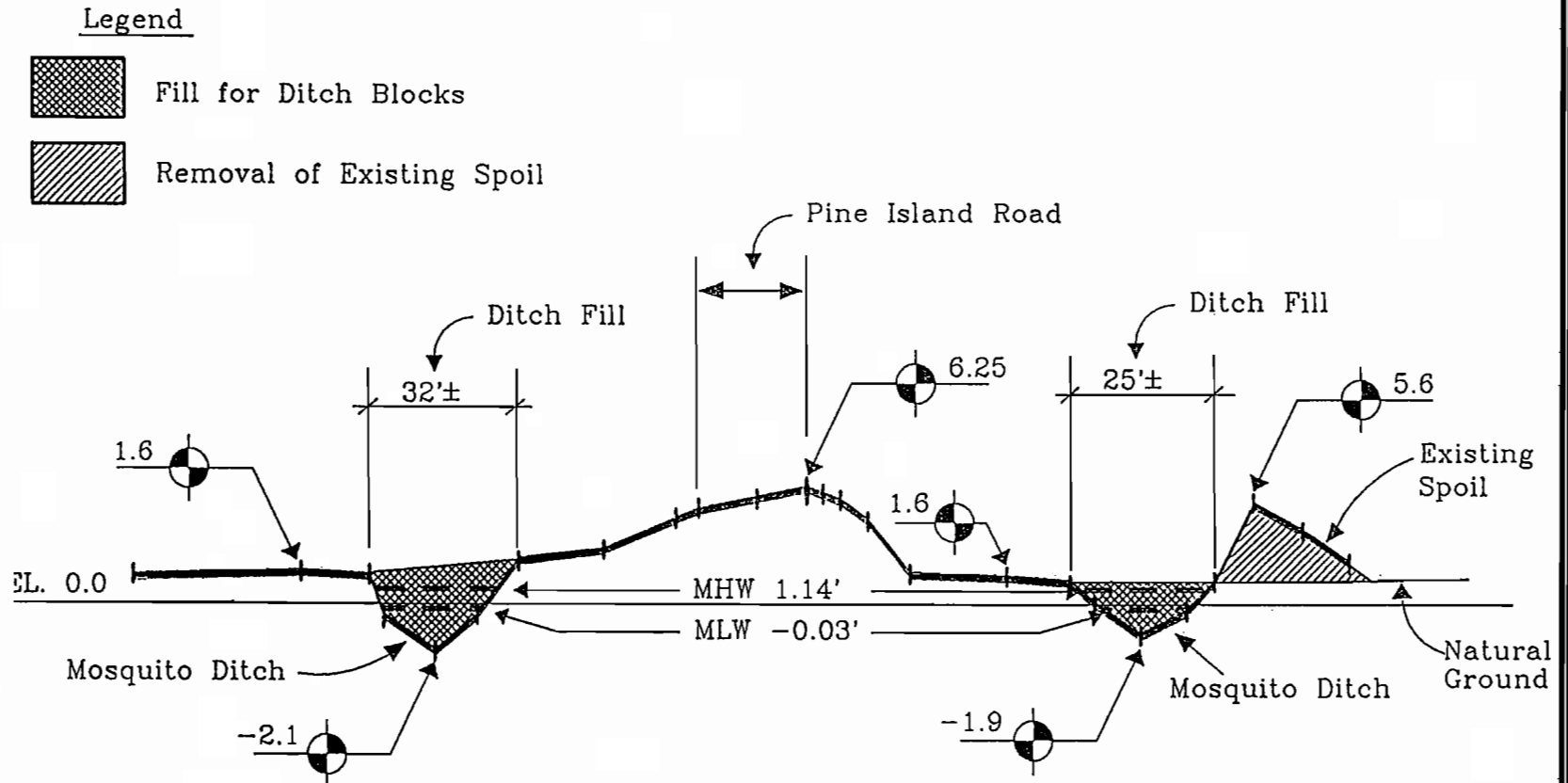
LITTLE PINE ISLAND
MITIGATION BANK
(SW 52)

FIGURE B
TYPICAL VEGETATIVE
CROSS SECTION

FDOT - District 1
MITIGATION AREA
(Charlotte Harbor)

LITTLE PINE ISLAND
MITIGATION BANK
(SW 52)

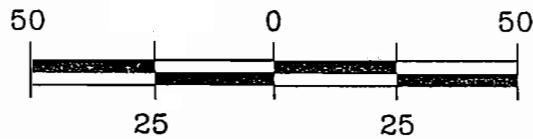
FIGURE C
MOSQUITO DITCH
FILL CROSS SECTION



Typical Ditch Block Section

Horizontal scale is 1" = 40'.
Vertical scale is 1" = 10'.

Notes: 1. Drawings are intended for permit purposes.





SEPTEMBER 1997 - PHASE I EXOTIC VEGETATION REMOVAL COMPLETE AT LITTLE PINE ISLAND - VIEW FROM MATLACHA PASS AQUATIC PRESERVE



**SEPTEMBER 1997 - PHASE I HYDROLOGIC RESTORATION AT LITTLE PINE ISLAND -
DRAINAGE CANALS ARE FILLED TO RESTORE SHEET FLOW**



SEPTEMBER 1997 - COMMENCEMENT OF EXOTIC VEGETATION REMOVAL FROM FORESTED WETLANDS AT LITTLE PINE ISLAND



FEBRUARY 2000 - EXOTIC VEGETATION REMOVAL AND HYDROLOGIC RESTORATION OF LITTLE PINE ISLAND COMPLETED IN PHASES I, II, AND V. TEMPORARY ROADS REMOVED FROM PHASES I AND II.



Dense melaleuca infestation in former herbaceous wetlands has greatly reduced wetland functions including wildlife habitat at Little Pine Island



All exotic vegetation is cut using chain saws and manual labor so as to minimize the impacts to wetland habitat



Temporary roads are underlain by filter cloth so as to reduce impacts to habitat and facilitate road removal



**April 1997 -
commencement of
exotic vegetation
removal from Phase I
herbaceous wetlands
at Little Pine Island**



**August 1997 - initial
regrowth of native
herbaceous wetland
plants at Little Pine
Island Phase I**



**November 1997 -
wetland dependent
wading birds return to
Phase I wetlands at
Little Pine Island**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Boran Ranch Mitigation Bank**

Project Number: **SW 53**

Project Manager: Wade Waltmyer, Senior Biologist, EarthBalance, Corp.

Phone No: (941) 426-7878

County: Desoto

Location: Section 29, T38S, R23E

IMPACT INFORMATION

- | | |
|--|---|
| (1) <u>FM 1986401, Ft.Green/Ona Rd.- (Seg. 1)</u> | ERP #: <u>4317734.000</u> COE #: <u>199801201</u> |
| (2) <u>FM 1938851, SR 72 – Sarasota Co. Line to SR 70</u> | ERP #: <u>4317646.000</u> COE#: <u>199801103</u> |
| (3) <u>FM 1941021, US 17 - SR 64 to Peace Bridge</u> | ERP #: <u>4316955.000</u> COE#: <u>199405245</u> |
| (4) <u>FM 1937911, US 17 - CR 74 to CR 764 North</u> | ERP #: <u>4113562.002</u> COE #: <u>199500627</u> |
| (5) <u>FM 1986371, Ft.Green/Ona Rd.- (Seg. 2)</u> | ERP #: <u>4317734.001</u> COE #: <u>199801201</u> |
| (6) <u>FM 1986371, Ft.Green/Ona Rd.- (Seg. 3)</u> | ERP #: <u>4317734.002</u> COE #: <u>199801201</u> |
| (7) <u>FM 1937981, US 17-CR 764 S. to CR 764 N.</u> | ERP #: <u>4317646.002</u> COE #: <u>199500267</u> |
| (8) <u>FM 4154901, US 17- Charlotte C.L. to SW Collins (2010)*</u> | ERP #: <u>43013044.006</u> COE #: <u>20074765 (IP-JF)</u> |

Drainage Basin(s): Peace River Water(s): Peace River, Horse Ck., Brandy Br., Buzzard's Roost Br. SWIM water? N

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 1986401 – 2.08 acres - 617

(2) FM 1938851 - 1.19 acres – 615

(3) FM 1941021 – 1.84 ac. – 615
0.46 ac. – 641

TOTAL 2.30 acres

(4) FM 1937911 – 0.27 ac. – 630

(5) FM 1986371 – 7.22 ac. – 641

(6) FM 1986371 - 0.68 ac. – 615
0.43 ac. - 617
4.12 ac. - 640

TOTAL 5.23 acres

(7) FM 1937981 – 3.00 ac. – 630
0.58 ac. – 641

TOTAL 3.58 acres

(8) FM 4154901* – 1.98 - 641

TOTAL – 23.85 acres

*Note – This roadway segment also has proposed forested wetland impacts, compensated by purchasing forested wetland credits from the Peace River Mitigation Bank (SW 85) located in Hardee County.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: ___ Creation x Restoration x Enhancement x Preservation Mitigation: **23.4 credits**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N

Mitigation Bank? Y If yes, give DEP/WMD mit bank permit #: 4914074.04 COE # 199601134 (IP-ML)

Drainage Basin: Peace River Basin Water Body: un-named SWIM water body? N

PROJECT DESCRIPTION

- A. Overall project goal:** Restoration, enhancement and preservation of freshwater forested and non-forested wetlands previously impacted by agricultural ditching. Restoration and preservation of upland habitat conditions.
- B. Brief description of pre-construction condition:** The site is comprised of 132 wetland acres and 272 upland acres (total – 404 acres). Wetlands and uplands were historically drained by agricultural ditches and converted to improved pasture for cattle grazing (Figure B, 1994 aerial). Some of the uplands have flatwood habitat that was preserved as part of the mitigation plan. Along with filling ditches, some of the pasture required minor grading to lower elevations in order to restore appropriate marsh elevations and associated hydroperiods.
- C. Brief description of conducted work:** Riser structures were installed in three outfall ditches to enhance & restore proper wetland hydrology. The top six inches of the pasture surface soils were scraped & stockpiled, followed by grading and removing the underlying six inches of soil matrix. The stockpiled topsoil was evenly distributed across the constructed wetland grade, which allowed appropriate hydroperiods for creation and regeneration of marsh and wet prairie habitat. This is evident in the restored wet prairie marsh depicted on Figure C (2010 aerial). The existing native upland habitat was preserved and converted uplands planted with appropriate species. The project is currently in the maintenance, monitoring and land management period, which includes implementation of a prescribed burn plan.
- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** The mitigation enhances, restores and preserves wetland and upland habitat that appropriately and adequately compensate for the proposed wetland impacts. The following information indicates the wetland impact, habitat type (FLUCFCS), and associated mitigation habitats & credits purchased for the FDOT projects permitted for mitigation at the BRMB:

- (1) FM 1986401 – Impact - 2.08 ac. (617) – Mit. 2.08 credits of mesic hammock
- (2) FM 1938851 – Impact - 1.19 ac. (615) – Mit. 1.19 credits of mesic hammock
- (3) FM 1941021 – Impact - 1.84 ac. (615) + 0.46 ac. (641) = 2.30 ac. – Mit. 1.84 credits, mesic hammock, 0.46 credits marsh
- (4) FM 1937911 – Impact - 0.27 ac. (630) – Mit. 0.27 credits of mesic hammock
- (5) FM 1986371 – Impact – 7.22 ac. (641) – Mit. 7.22 credits of marsh
- (6) FM 1986371 – Impact – 1.11 ac. (615, 617) + 4.12 (641) – 5.23 ac. – Mit. 1.11 credits mesic hammock, 4.71 credits marsh
- (7) FM 1937981 – Impact – 3.00 ac. (630) + 0.58 ac. (641) = 3.58 ac. – Mit. 3.47 credits mesic hammock, 0.11 credits marsh
- (8) FM 4154901 – Impact – 1.98 ac. (641) – Mit. 0.93 credits of marsh

- E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** The BRMB is a mitigation bank.
- F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body:** During mitigation selection, there were no SWIM projects available or currently proposed within the Peace drainage basin to offset the anticipated wetland specific impacts associated with the identified road projects.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Boran Ranch Mitigation Bank

Contact Name: Wade Waltmyer, EarthBalance, Corp.

Phone Number: (941) 426-7878

Entity responsible for monitoring and maintenance: EarthBalance

Proposed timeframe for implementation: Commence: 1998 Complete: Construction complete, currently maintenance, monitoring, and land management activities.

Project cost: \$759,360

(1) FM 1986401 – 2.08 credits x \$30,000 = \$62,400 (Purchased Summer, 2001)

(2) FM 1938851 - 1.19 credits x \$30,000 = \$35,700 (Purchased Spring, 2002)

(3) FM 1941021 – 2.30 credits x \$30,000 = \$69,000 (Purchased Spring, 2002)

(4) FM 1937911 - 0.27 credits x \$30,000 = \$8,100 (Purchased Summer, 2001)

(5) FM 1986371– 7.22 credits x \$30,000 = \$216,600 (Purchased Summer, 2001)

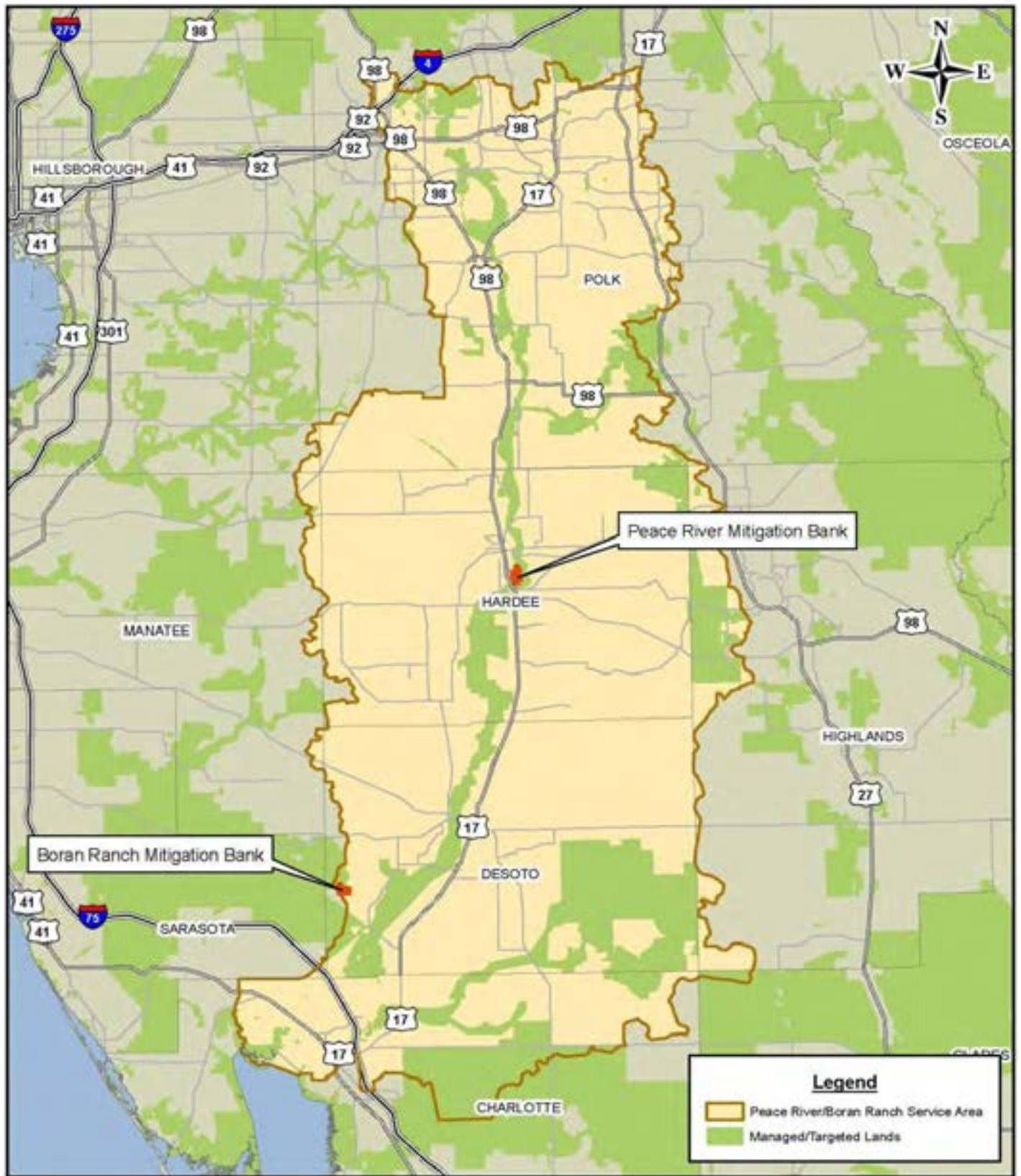
(6) FM 1986371– 5.82 credits x \$30,000 = \$174,600 (Purchased Spring 2002)

(7) FM 1937981 - 3.58 credits x \$30,000 = \$107,400 (Purchased Summer, 2001)

(8) FM 4154901 – 0.93 credit x \$92,000 = \$85,560 (Purchased Summer, 2008)

Attachments

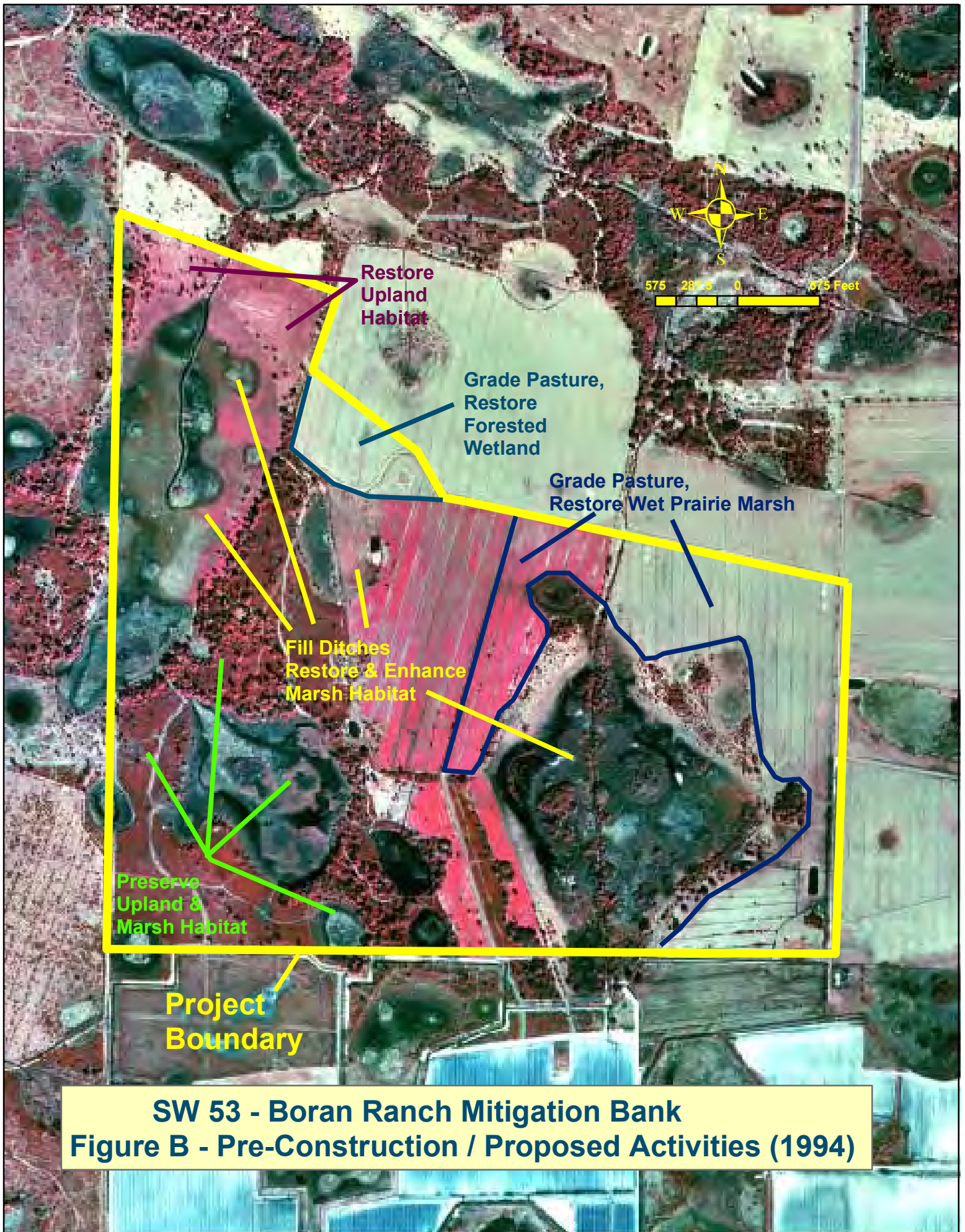
- 1. Detailed description of pre- & post-construction activities & conditions. Reference previous discussion, ACOE & SWFWMD Permits, attached pre-post construction aerials.
- 2. Location map and design drawings of existing and proposed conditions. Figure A – Location Map, Figures B & C, Pre-Construction & Existing Habitat Conditions.
- 3. Schedule for work implementation. Construction activities are complete, current maintenance, monitoring, and land management activities.
- 4. Success criteria, maintenance & monitoring plan. Success criteria, maintenance & monitoring for enhancement & restoration of habitats are specified in the BRMB permits.



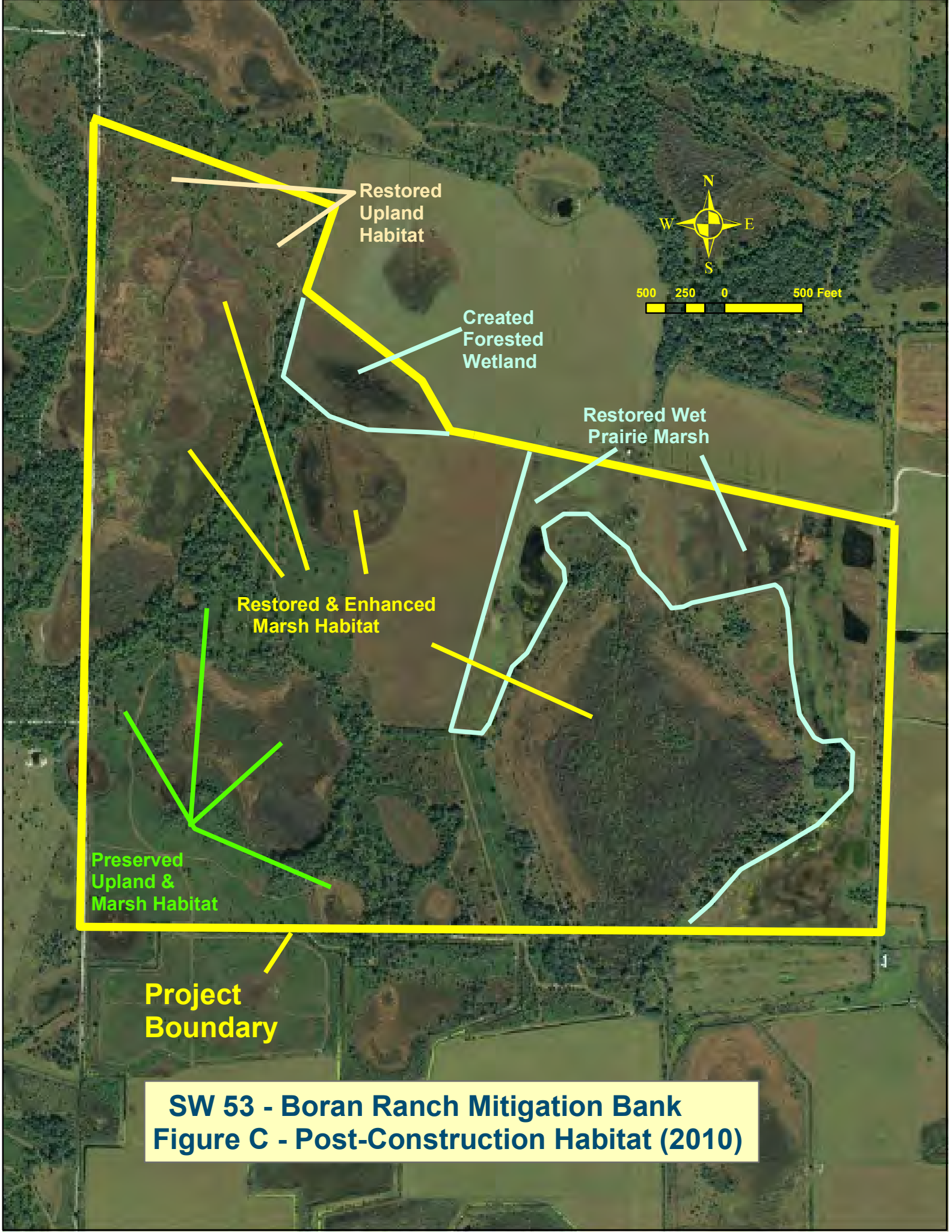
DATE: 09-14-09
 FILE: PR-BRMB Service-MT Lands
 Map 09-14-09
 PROJECT NO: Mitigation Banking
 AERIAL: N/A
 SCALE: N.T.S.

**PEACE RIVER AND BORAN RANCH
 MITIGATION BANKS
 SERVICE AREA AND
 MANAGED/TARGETED LANDS MAP**

 **EarthBalance**[®]
 2579 North Toledo Blade Blvd
 North Fort, FL 34209
 Tel (941) 426-7878
 Fax (941) 426-8778
 www.earthbalance.com



**SW 53 - Boran Ranch Mitigation Bank
Figure B - Pre-Construction / Proposed Activities (1994)**



Restored Upland Habitat

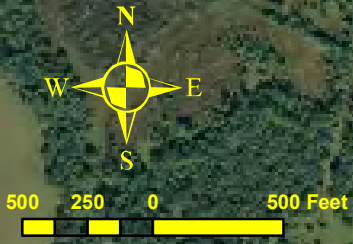
Created Forested Wetland

Restored Wet Prairie Marsh

Restored & Enhanced Marsh Habitat

Preserved Upland & Marsh Habitat

Project Boundary



**SW 53 - Boran Ranch Mitigation Bank
Figure C - Post-Construction Habitat (2010)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Anclote Parcel
Project Sponsor: SWFWMD – Land Resources
County: Pasco

Project Number: SW 54
Location: Sections 7, 18 T26S, R17E

IMPACT INFORMATION

(1) - FM 2563361 - SR 54 Mitchell to Gunn ERP #: 43016251.002 COE #: 199905202 (IP-RGW)
(2) – FM 2563391 - SR 54 Suncoast to US 41 ERP #: 43016251.000 COE #: 199504576 (IP-ES)

Drainage Basin: Upper Coastal Water Body: Anclote River (South Prong) SWIM water body? N

Impact Acres / Type (FLUCFCS):

(1) FM 2563361
1.6 ac. 621
2.8 ac. 630
2.2 ac. 641
TOTAL: 6.6 acres

(2) FM 2563391
1.3 ac. 617
0.8 ac. 619
3.0 ac. 621
0.5 ac. 641
1.4 ac. 641x
TOTAL 7.0 acres

TOTAL: 13.7 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation: Creation Enhancement Preservation Mitigation Area:

TOTAL: 185 Ac.

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin: Upper Coastal Water Body: Anclote River SWIM water body? N

Project Description

A. Overall project goal: Public agency (SWFWMD) acquisition, enhancement, and long-term management of 179 acres of high quality habitat including a portion of the Anclote River and associated mixed hardwood floodplain forest, mixed forested wetland (cypress dominant), and buffers of pine flatwoods, and oak hammocks. Mitigation also includes creation of 6-acres of freshwater marsh (Figure B) in a borrow pit that existed on the property. Perpetual management is being conducted by the WMD-LAND Resource Dept. and primarily includes prescribed burns.

B. Brief description of pre-condition: Prior to public acquisition, the tract's habitats were in relatively high quality condition except for the borrow pit and the lack of prescribed burn management in the uplands. Wetland and upland conditions adjacent to the Anclote River includes high quality habitat characteristics that form wildlife & habitat corridors connecting to adjacent public lands associated with over 18,000 acres of property owned and managed by the SWFWMD (Figure A - J.B. Starkey Wilderness Preserve & Serenova Tract). The mixed forested wetland habitat includes a diversity of tree species such as bald cypress, water oak, latural oak, swamp tupelo and red maple. The wetlands are bordered by pine flatwoods and live oak hammocks.

C. Brief description of current and future work: For preservation mitigation credit, the FDOT mitigation program reimbursed the WMD for the 185-acre acquisition. A borrow pit (total 10 acres) has been filled to provide marsh habitat (6 acres – FDOT mitig.) and surrounded by a perimeter of cypress (4 acres – County mitig. for Starkey Blvd.). Of that total area, constructed 6- acres of freshwater marsh by filling and planting an existing borrow pit (currently under maintenance and monitoring). The adjacent perimeter 4- acres cypress-dominated wetland creation will also be deeded to the WMD upon achieving mitigation success criteria. The uplands have been enhanced by implementing a prescribed burn management plan as an extension of adjacent WMD property, burn cycle 4-5 years.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The mitigation creates and preserves wetlands providing functions similar to those lost due to the expansion of two SR 54 roadway segments located two miles south of the mitigation area (Figure A). The preserved wetlands are buffered by the preservation and enhancement of upland habitat. Other than the two SR 54 segments, there are no additional wetland impacts associated with other roadway projects proposed for mitigation at the Anclote Parcel. The acquisition, preservation, and enhancement of this 185-acre tract appropriately and adequately mitigates for the 13.7 acres of wetland impact at a cumulative ratio of 14- to - 1.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: No mitigation banks were proposed in the Upper Coastal drainage basin during mitigation selection.

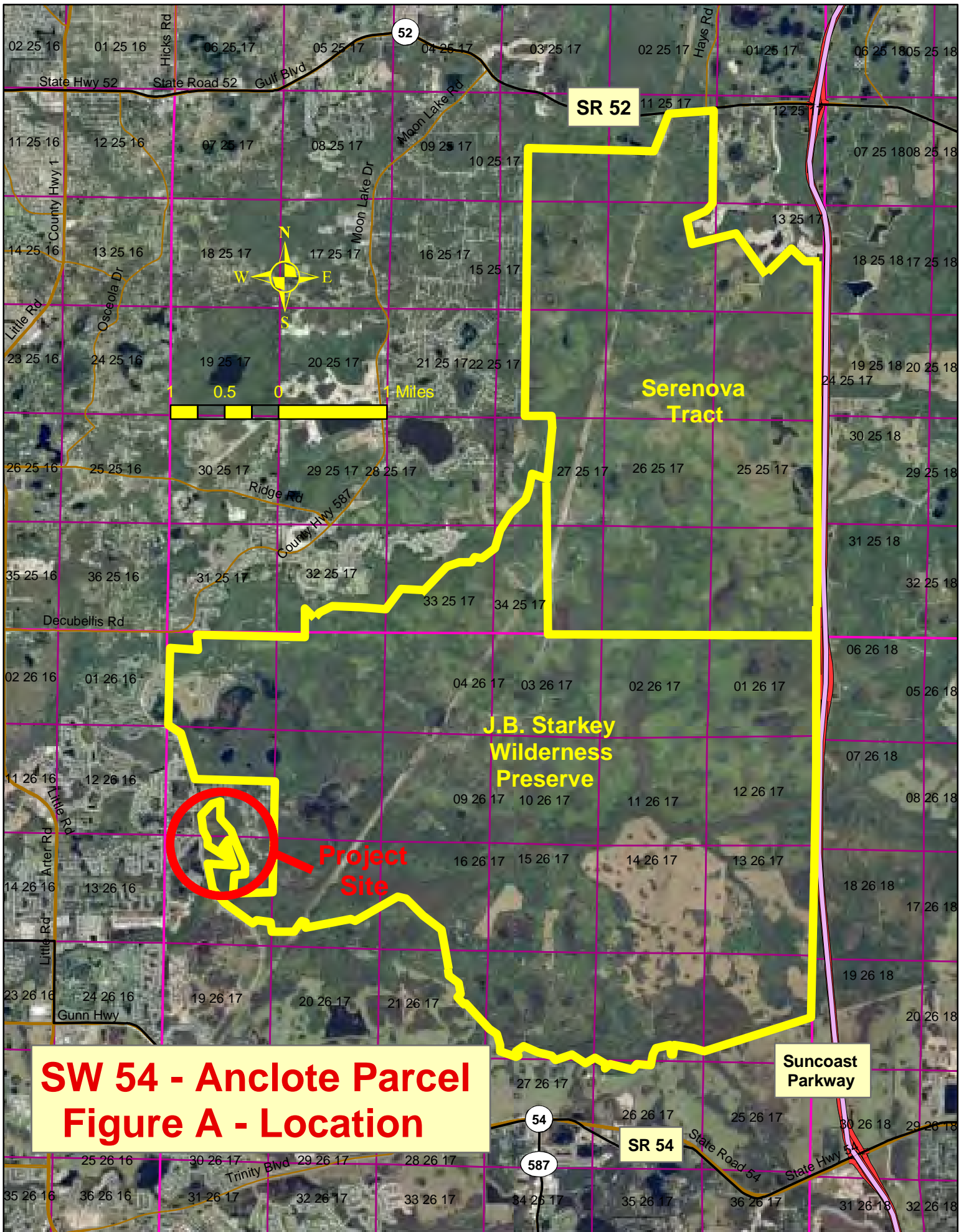
F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : No SWIM projects were proposed in the Upper Coastal basin during the mitigation selection process.

MITIGATION PROJECT IMPLEMENTATION

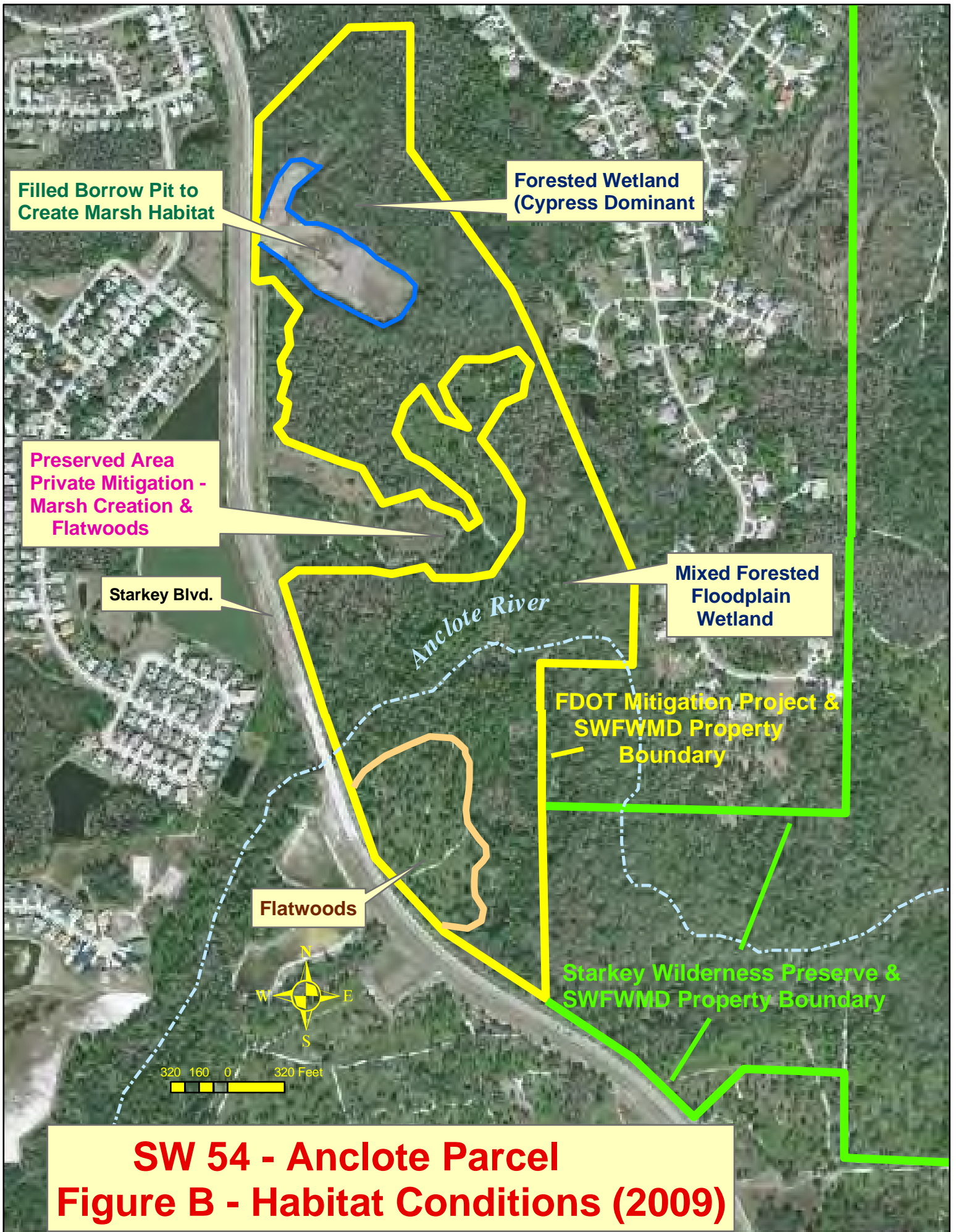
Entity responsible for construction & management: Southwest Florida Water Management District – Land Resource Division.
Timeframe for implementation: Commence: July 1999 Acquired: April, 2000, followed by perpetual management
Project cost: \$ 675,000 (total).

Attachments

- X 1. Description of site, activities, and aerial photography: Refer to previous discussion and vegetative descriptions with the site photos. Additional site details available from SWFWMD Land Resources and FDOT Mitigation Program Manager. Figures A & B (2008 aerial) and photographs depict site location relative to adjacent public lands and habitats.
- X 2. Schedule for work implementation, including any and all phases. Beyond regular management, only construction was associated with the creation of marsh & cypress habitat in the borrow pit.
- X 3. Success criteria and associated monitoring plan. The native habitat is high quality that doesn't require success criteria & monitoring, The creation of marsh & cypress habitat has success criteria & monitoring associated with the permitting of the Starkey Blvd. mitigation plan; currently within the maintenance & monitoring phase.
- X 4. Long term maintenance plan. Prescribed management plans (primarily burn management) are conducted the same as the land management activities associated with adjacent SWFWMD property.



**SW 54 - Anclote Parcel
Figure A - Location**





The mixed forested wetland within the northern portion of the tract is dominated by bald cypress with additional dense canopy coverage provided by red maple, tupelo, dahoon holly, and a perimeter of water & laurel oaks.



The Anclote River meanders through the southern portion. The river has an incised channel predominantly bordered with mixed forested wetlands dominated by laurel oak, red maple, and cabbage palm.

**FDOT - District 7 Mitigation Site
(Upper Coastal Basin)**

ANCLOTE PARCEL (SW 54)



One of the pine flatwood communities at the site. These areas have not received prescribed burns for several years, allowing the overgrowth of palmetto, and generation of wax myrtle and oak species. These areas will be enhanced by scheduled mechanical thinning and roller chopping of the shrubs and palmetto, followed by prescribed fires every 3-4 years. This restores desired flatwood conditions, increases the foraging opportunities for wildlife while decreasing the potential of wildfires.



One of several small oak hammocks located along the perimeter of some wetlands and on sand deposits formed due to periodic overflow of the Anclote River. These hammocks have dominant canopy coverage provided by live oaks, scattered cabbage palm, few remnant pines (slash & loblolly), over saw palmetto. These areas also need prescribed burns to minimize palmetto density.

**FDOT - District 7 Mitigation Site
(Upper Coastal Basin)**

ANCLOTE PARCEL (SW 54)

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Upper Hillsborough 4&5**
Project Sponsor: SWFWMD – Land Resources
County: Pasco

Project Number: **SW55**
Location: S 28 & 38, T 25 S, R 22 E

IMPACT INFORMATION

FM: 2012081 (Interstate-4, County Line Rd. to Memorial, Segment 1) ERP #: 4311869.09 COE #: 199501846
Drainage Basin: Hillsborough River Water Body: none SWIM water body? N

Impact Acres / Types (FLUCFCS): FM 2012081 6.57 ac. - 617
6.98 ac. - 641
Total: 13.55 ac.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Restoration Enhancement Mitigation Area: **134 Acres**

SWIM project? Aquatic Plant Control project? Exotic Plant Control Project? Mitigation Bank?
Drainage Basin(s): Hillsborough River Water Body(s): Hillsborough River SWIM water body?

Project Description

A. Overall project goal: Prior to restoration, the SWFWMD's Upper Hillsborough property had a large drainage ditch (total 1.4 miles) and adjacent elevated tram road constructed through and along the perimeter of wetland habitats. The ditch severely dewatered, drained and diverted the groundwater and surface water of wetlands, discharging the water into the headwater wetland floodplain of the Hillsborough River. The goal was to grade the tram road to backfill the ditch, thus restoring appropriate wetland grade elevations and associated hydrology to enhance the existing wetland habitats, while restoring wetlands within the footprint of the tram road and ditch.

B. Brief description of pre-construction condition: The designated project area (320 acres) included the most northern portion of the WMD's Upper Hillsborough tract, which is also contiguous to thousands of acres of the WMD's Green Swamp Wilderness Preserve (Figure A). The drainage ditch was large (30-40 ft. wide, 5-8 ft. in depth), draining the groundwater associated with the adjacent wetlands. The adjacent tram road (15-20 ft. wide, 3-5 ft. above natural grade) was located along the north side of the ditch. The tram road would stop and divert any minimal surface water away from the historic drainage pattern that contributed to downstream wetlands south of the ditch (Figure B). The majority of the enhanced wetlands (113 acres) are mixed forested systems, and there are two non-forested wetlands (9 acres) that were borrow pits dredged within former upland habitats. The wetlands exhibited various signs of stress from decreased water levels such as tree fall, soil loss, upland species encroachment, and changes in plant species composition. For example, laurel oak and red maple recruited and generated within the cypress/tupelo-dominated forested wetlands, and nuisance upland species such as pokeweed and dog fennel invaded the forested wetlands and the marshes.

C. Brief description of post-construction condition: The ditches were backfilled from the adjacent tram fill material during the spring and summer, 2001. Some of the restored wetland grades were planted with cypress to aid in restoring 12 acres of marsh and forested wetlands within the footprint of the former ditch & tram road. Hardwood and cypress saplings have also naturally recruiting within the restored wetland footprint. Eleven surficial aquifer monitor wells were

installed within the proposed wetland enhancement areas during the construction period in the Spring, 2001, during which time there was no groundwater within six feet of the surface grade elevation at each of the associated wetlands. Since completion of construction, the groundwater and surficial hydrology and hydraulic drainage flow patterns have been restored to historic conditions (Figure C, photos); with appropriate surface water hydroperiods during the rainy seasons. The restored hydrology has resulted in the mortality of nuisance and upland species, allowing for the recruitment and natural regeneration of hardwood species, maidencane, ferns, and other appropriate hydrophytic species within the natural and restored wetland areas. Cypress saplings planted in 2001 have achieved heights of 25-30 feet in 2009. The restored and enhanced wetland habitats have resulted in an increase in wildlife diversity and access, providing more foraging and denning opportunities.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): Being located within a dense industrial area along the first segment of Interstate-4 (western-most segment in Polk County), the 13.5 acres of wetland impacts associated with the roadway improvements were very low quality systems. Restoration construction within the Upper Hillsborough tract has resulted in large-scale, regional improvements to wetland functions and ecological benefits that appropriately and adequately compensate for the low quality wetland impacts. No wetland impacts other than those associated with the construction of the first segment of Interstate-4 in Polk County are designated for mitigation at the Upper Hillsborough 4&5 project.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: No mitigation banks were existing or proposed in the Hillsborough River drainage basin during the selection of mitigation for the I-4 wetland impacts.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The only SWIM project within the basin at the time of mitigation selection was Lk. Thonotasassa (SW 34); which provides mitigation to off-set wetland impacts associated with another FDOT project.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD, Operations Division

Entity responsible for monitoring and maintenance: SWFWMD – Regulation Performance Mgmt. & Land Management

Proposed timeframe for implementation: Commence: January 1999, Planning & Design Complete: September 2001 (Construction); followed by periodic maintenance and perpetual management.

Project cost: \$230,000.00 (total);

Design \$82,000

Construction & Planting \$128,000

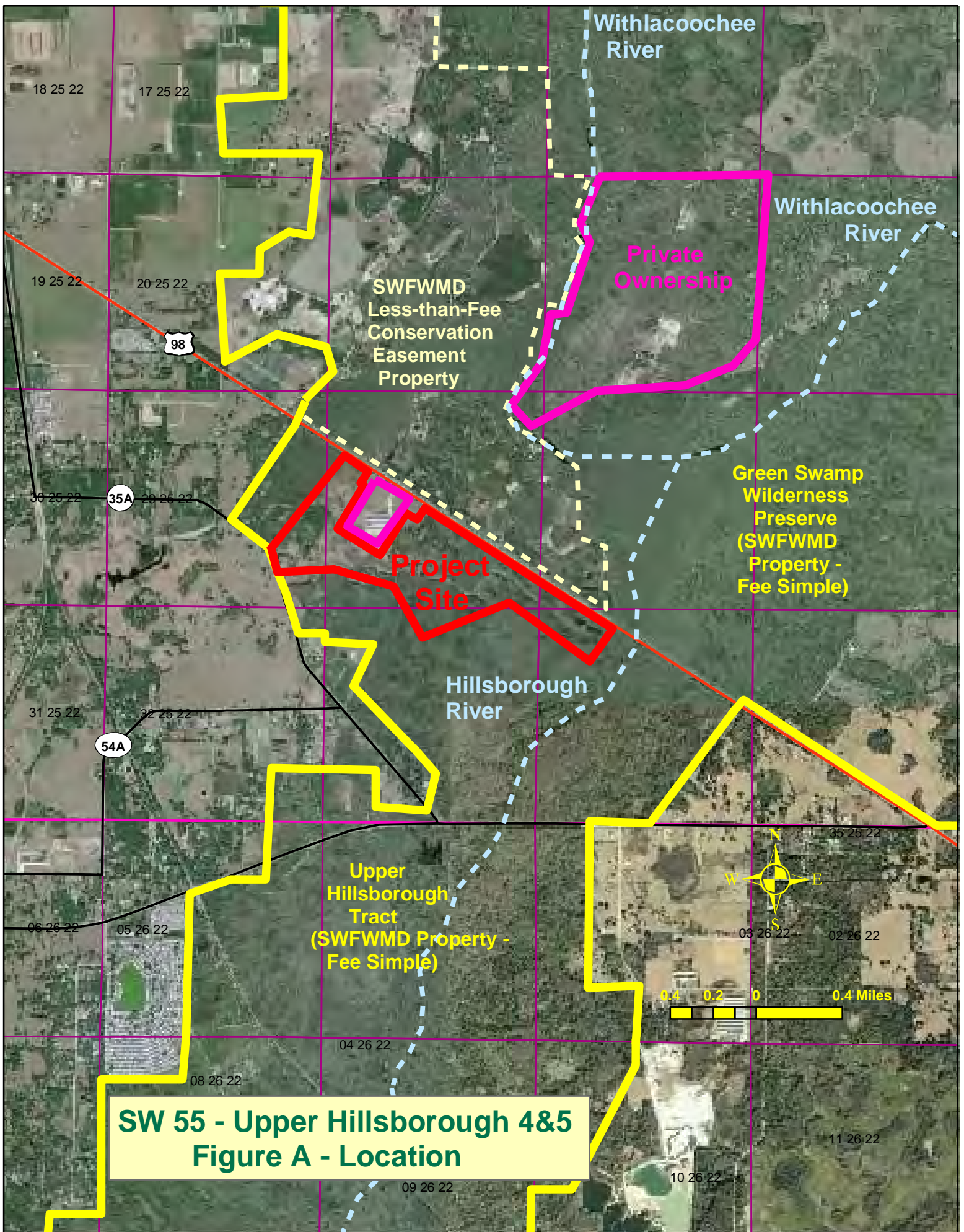
Maintenance & Monitoring \$20,000

Attachments

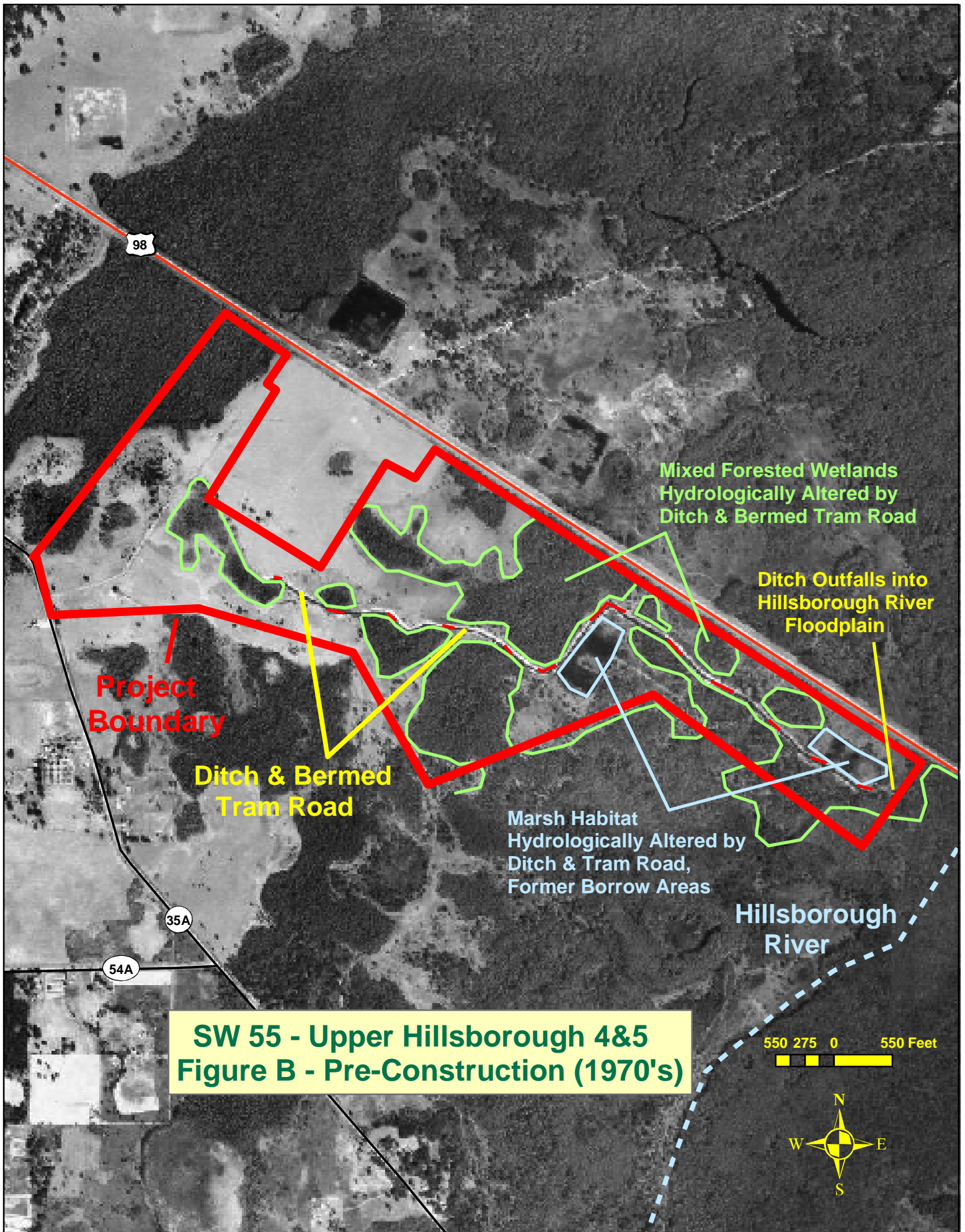
- x_1. Description and depiction of pre-post construction activities. Refer to previous discussion, Figures A-C, and site photographs. Additional site and construction design details are available through the SWFWMD's Land Resource Division and FDOT Mitigation Program Manager..
- x_2. Schedule for work implementation. Planning and design commenced in 1999, construction and planting completion in Sept. 2001. Monitoring & maintenance conducted from 2001-2008. Perpetual land management activities, annual monitoring to document and conduct any necessary maintenance activities.

- x 3. Success criteria and associated monitoring plan. Success criteria includes documentation of hydrologic restoration of the enhanced wetlands and vegetative re-establishment in the filled ditches, and eradicating and maintaining exotic vegetation below 1% coverage within the enhanced and restored wetlands. Annual monitoring conducted through 2009 conduct qualitative evaluation of the enhanced wetlands (habitat, vegetation, hydrology, wildlife). All success criteria has been achieved with semi-annual site evaluations conducted to ensure success is maintained.

- x 4. Long term maintenance plan. Herbicide maintenance to eradicate nuisance & exotic vegetation is conducted as necessary to maintain success criteria; no maintenance activities have been necessary since 2005. Normal land management activities include periodic prescribed burns within the adjacent flatwood habitats.



**SW 55 - Upper Hillsborough 4&5
Figure A - Location**



98

Project Boundary

Ditch & Bermed Tram Road

Mixed Forested Wetlands
Hydrologically Altered by
Ditch & Bermed Tram Road

Ditch Outfalls into
Hillsborough River
Floodplain

Marsh Habitat
Hydrologically Altered by
Ditch & Tram Road,
Former Borrow Areas

35A

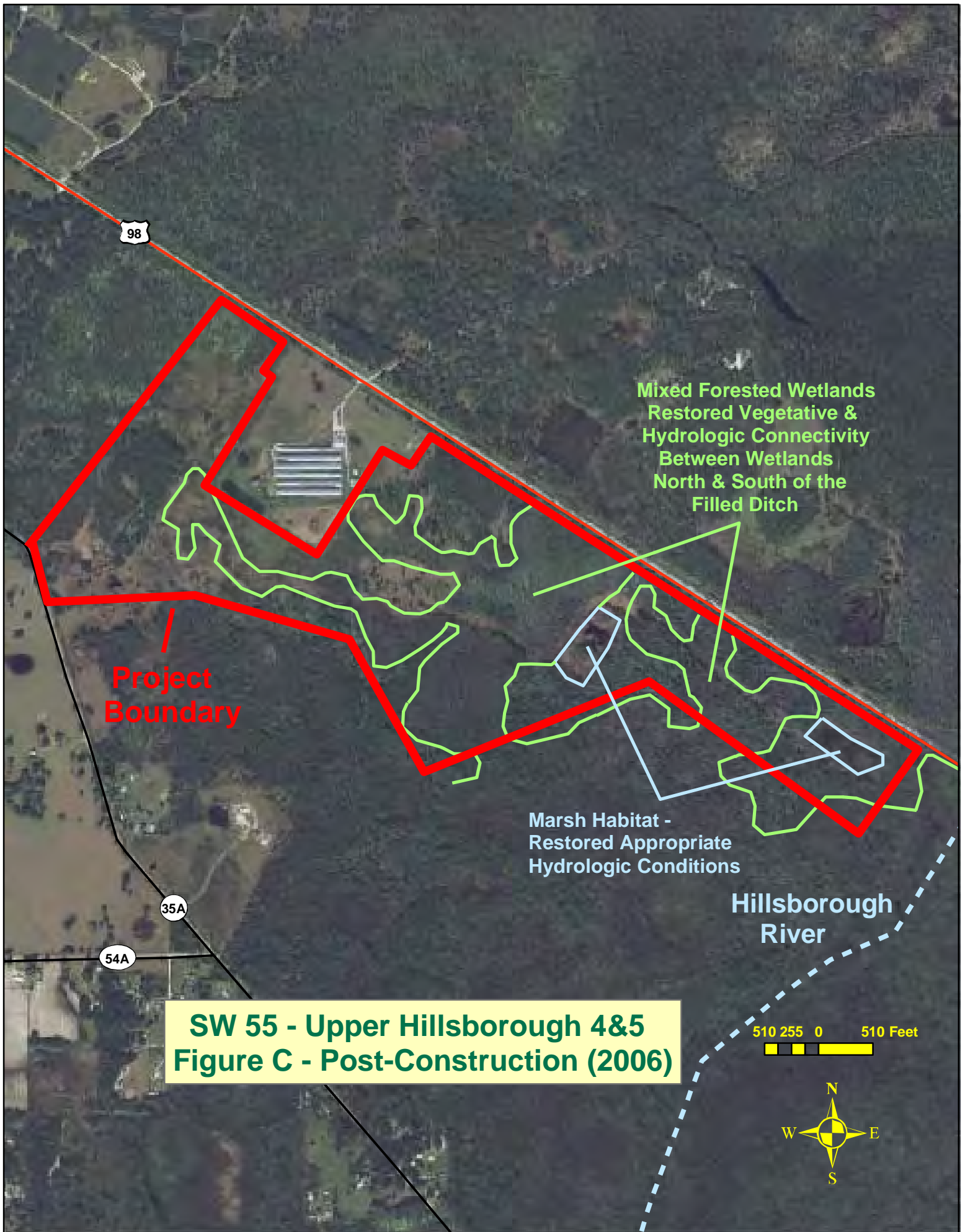
54A

Hillsborough
River

**SW 55 - Upper Hillsborough 4&5
Figure B - Pre-Construction (1970's)**

550 275 0 550 Feet





98

Project Boundary

Mixed Forested Wetlands
Restored Vegetative &
Hydrologic Connectivity
Between Wetlands
North & South of the
Filled Ditch

Marsh Habitat -
Restored Appropriate
Hydrologic Conditions

Hillsborough
River

35A

54A

**SW 55 - Upper Hillsborough 4&5
Figure C - Post-Construction (2006)**

510 255 0 510 Feet





Spring, 2001 – view of the 1.3 mile east-west ditch prior to construction. The associated tram road fill material is located adjacent to the road (right). The substantial ditch dewatered the adjacent wetlands and the tram road diverted historic wetland drainage flow patterns.



Summer, 2001 – same view as above, the ditch has been backfilled with the tram fill material. Ground and surface water sheet flow hydrology and associated hydroperiods have been restored to adjacent wetlands and within the footprint of the ditch & tram road.

***FDOT – District 1 Mitigation Project
(Hillsborough River Basin)***

SW 55 – UPPER HILLSBOROUGH 4&5



Summer, 2009 – same view as the previous photos. The restored wetland grade has naturally generated with herbs such as maidencane and broomsedge. Planted cypress and generated hardwoods & shrubs (e.g. red maple, sweet gum, wax myrtle) are present along the forested wetland edge (left).



Summer, 2009 – majority of cypress planted within filled ditch has grown to heights taller than 20 ft., with hardwood saplings recruiting & generating within herbs.

***FDOT – District 1 Mitigation Project
(Hillsborough River Basin)***

SW 55 – UPPER HILLSBOROUGH 4&5



Summer, 2000 – along with bisecting some wetlands, ditch was also located along the perimeter of some wetlands (right), with associated deposited fill (left) blocking and diverting contributing flow to the wetlands.



Summer, 2001 – same view of ditch segment after backfilling spoil material into the ditch. Some oak trees (left) were preserved from the earthwork activity.

***FDOT – District 1 Mitigation Project
(Hillsborough River Basin)***

SW 55 – UPPER HILLSBOROUGH 4&5



Summer, 2009 – the preserved laurel oak on the slight mound (center) was present along the lower inner edge of the tram road; the removed road (left) and filled ditch (right) has naturally generated ephemeral wetland habitat with slash pine & maple recruited over generated sedges.



Summer, 2009 – this filled ditch and removed road segment has generated dense coverage of maidencane and soft rush that recruited from adjacent cypress dome.

***FDOT – District 1 Mitigation Project
(Hillsborough River Basin)***

SW 55 – UPPER HILLSBOROUGH 4&5



Summer, 2000 – prior to construction, monitor wells installed within wetlands have water levels consistently 4-5 feet below grade. No water stains on the well casings indicate the lack of adequate & appropriate hydroperiods.



Summer, 2009 – as evident by the water stains on the well casing, restored hydrology has resulted in appropriate surface water hydroperiods within the wetlands during the rainy season.

***FDOT – District 1 Mitigation Project
(Hillsborough River Basin)***

SW 55 – UPPER HILLSBOROUGH 4&5

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Cockroach Bay Restoration – Freshwater
County: Hillsborough

Project Number: SW 56
Location : Sec. 21, T32S, R18E

IMPACT INFORMATION

(1) FM: 2569571, US 19 - Drew to Railroad	ERP #: 4411760.000	COE #: 199400606 (NW-PB)
(2) FM: 2557031, SR 60 – Cypress St. to Fish Creek *	ERP #: 43002958.004	COE #: 200205816 (IP-MN)
(3) FM: 2558881, US 301- Sligh to Tampa Canal **	ERP #: 43024246.000	COE #: 200206711 (IP-JPF)
(4) FM: 2568812, US 19 (SR 55) – Seville Dr. to SR 60	ERP #: 44025287.002	COE #: 20062199 (IP-JPF)
(5) FM: 2569941, CR 296 Connector, 40 th St. to 28 th St.	ERP #: 43008898.006	COE #: 20031070 (IP-JPF)
(6) FM: 2569942, CR 296 Connector, NB I-275 (Ramp P) to WB SR 686	ERP #: 43018980.001	COE #: 20049454 (IP-JPF)
(7) FM: 2555991, SR 676 (Causeway)-US 301 to US 41**	ERP #: 43027063.000	COE #: 2004-5583 (IP-MIS)

Drainage Basin: Tampa Bay Drainage Basin Water Body: Old Tampa Bay, Alligator Ck., Delaney Ck., Fish Creek
SWIM water body? Y- Old Tampa Bay

Impact Acres / Habitat Types (FLUCFCS):

(1) <u>0.2 ac. 618</u>	(3) <u>3.0 ac. 641</u>	(6) <u>1.1 ac. 643</u>	(7) <u>0.2 ac. 510</u>
<u>0.3 ac. 641</u>	(4) <u>0.2 ac. 619</u>		<u>0.2 ac. 610</u>
TOTAL: 0.5 Acres	(5) <u>1.0 ac. 631</u>		<u>1.0 ac. 641</u>
			TOTAL: 1.4 acres
(2) <u>0.8 ac. 641</u>		TOTAL: 8.0 acres	

* The total wetland impacts of this SR 60 project include 16.6 acres. The Tappan Tract (SW 62) provides mitigation for the ditch, pond, and mangrove impacts of this roadway project (5.1 acres). The Cockroach Bay – Saltwater (SW 77) and Apollo Beach (SW 67) projects provide mitigation for the associated saltwater marsh impacts (10.9 acres).

** Boyd Hill Nature Park (SW 71) provides mitigation for the forested wetland impacts associated with these two roadway projects.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation Enhancement X Restoration Mitigation Area: 34 acres
SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin: Tampa Bay Drainage Water Body(s): Tampa Bay, Cockroach Bay SWIM water body? Y

PROJECT DESCRIPTION

A. Overall project goals: Cockroach Bay includes a multi-agency (USACOE, SWFWMD, FDEP, Hillsborough County Conservation Section) effort of habitat creation and restoration on property acquired by Hillsborough County (total 651 acres, Figure A). Through the SWIM Section, the SWFWMD primarily assist the County with managing the design, construction and creation of the wetland habitats. Hillsborough County conducts the perpetual maintenance and management of the public lands at Cockroach Bay. This designated mitigation area includes freshwater marsh habitat creation (26 acres) that is buffered by the restoration of coastal hammock habitat buffer (7 acres).

B. Brief description of pre-construction conditions: The project site was historically converted from flatwood habitat to row crops. After public acquisition, agricultural activities discontinued and the area was allowed to go fallow; resulting in a dominance of nuisance and exotic species such as Brazilian pepper, elderberry, ragweed, fennel, and various nuisance grass species (Figure B, site photographs).

C. Brief description of conducted work: The wetland creation activities were constructed on two designated areas, a 20-acre area separated with another 20-acre upland restoration and enhancement area from another 14-acre wetland creation area (Figures A-E). The initial activity included site clearing to remove all the exotics and nuisance species (Figure C – 2004 aerial). Groundwater monitoring conducted at the sites for a couple years prior to construction aided in determining the appropriate construction of wetland grade elevations necessary to achieve variable hydroperiods within the emergent zones and wet prairies of the marshes (Figure D - 2005 aerial). Planting of appropriate species within the marshes was conducted after construction, as well as planting of coastal hammock habitat to help buffer the wetlands. Supplemental plantings within the marsh habitat was conducted in 2006, and routine herbicide maintenance eradicates any recruited and generated exotic and nuisance vegetation; which has been primarily limited to minimal cattail populations. Additional details are provided in Attachment A and depicted in the aerials and photographs.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The majority of the roadway wetland impacts included low quality marsh habitat. The creation of palustrine marsh habitat (26 acres) and restoration of upland habitat buffer (7 acres) appropriately and adequately mitigate in advance for these impacts at a cumulative ratio of 4.3-to-1. Other than the wetland impacts associated with the seven roadway projects, no additional wetland impacts will be proposed for mitigation within this habitat project.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The only mitigation bank in the basin at the time of mitigation selection was the Tampa Bay Mitigation Bank, which is also within the Cockroach Bay area. However, the mitigation bank was not constructed nor had available mitigation credits during the period of mitigation selection for the wetland impacts.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: This habitat project is part of a large County and SWIM effort to create and restore habitat within the Cockroach Bay property. The Cockroach Bay restoration effort is guided by the Cockroach Bay Restoration Alliance, made up of stakeholders including agencies, landowners, and the Tampa Bay Mitigation Bank. Even though there are various restoration phases throughout the Cockroach Bay Habitat Restoration area, they are all inter-related based on site conditions. Ecosystems transition from upland to wetland habitat, followed by salinity gradients of freshwater to estuarine wetlands. A braided tidal wetland creation project was also selected and constructed in 2005 for the FDOT mitigation program (SW 75 - Cockroach Bay Restoration – Saltwater). Another 40-acre wetland creation area was constructed between the SW 56 & SW 76 projects to provide mitigation for wetland impacts associated with the extension of the Selmon Expressway (Figures A-E). Because of the extensive planning and evaluation of the restoration, being co-located with on-going restoration efforts that are managed and maintained by Hillsborough County, the designated mitigation projects have been ecologically beneficial and very successful.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Contractors working for the SWFWMD-SWIM Section

Entity responsible for monitoring and maintenance: SWFWMD, Hillsborough County and contractor

Proposed timeframe for implementation: Commence: Design & Permitting, 2002-03

Complete: Construction & Planting, 2003-05, followed by semi-annual monitoring through 2008 and quarterly maintenance through 2010; followed by perpetual maintenance & management by the Hillsborough County Conservation Section when necessary. A prescribed fire through the habitats was conducted in the spring, 2009 that aided in generating new herb growth.

Project cost: \$ 741,458 (total);
\$150,000 for design
\$591,458 for const., planting, and maintenance & monitoring

Attachments

- x 1. Description of pre-post site conditions and conducted work. Refer to Attachment A.
- x 2. Aerial & site photographs depicting pre-post construction conditions. Figure B – 1999 pre-construction, Figure C – 2004 during construction, Figure D – 2005 post-construction, Figure E – 2009 existing habitats, pre-post construction photographs attached. Additional details can be obtained from the SWFWMD-SWIM Section and FDOT Mitigation Program Manager.
- x 3. Schedule for work implementation. The construction commenced in late 2003 and completed in 2005, followed by quarterly maintenance conducted by private contractors working for the SWFWMD through 2010; and private consultants conducted semi-annual monitoring through 2008 when success criteria was achieved and maintained for over two years. Perpetual maintenance is conducted by Hillsborough County Conservation Section. The County has a full-time maintenance crew based from a facility at Cockroach Bay.
- x 4. Success criteria and associated maintenance and monitoring plan. Refer to Attachment B.

Attachment A – Pre and Post-Construction Conditions

Prior to construction, the exotic and nuisance species had recruited and generated throughout the fallow farm fields. Construction of palustrine marsh habitat provides a valuable component of habitat diversity for wildlife use to inter-relate between the restored upland and existing, restored, and created estuary habitat at Cockroach Bay. Due to the extensive design effort associated with the entire Cockroach Bay restoration, additional groundwater evaluation for the Cockroach Bay area was required to determine the extent of freshwater and various saltwater wetland creation and restoration components.

Pre- and post-construction habitat conditions are depicted on the attached aerial figures and photographs. Dominant vegetation in the emergent marsh zones of both sites include black needle rush (*Juncus roemerianus*) and soft-stem bulrush (*Scirpus validus*). Subdominant species include arrowhead (*Sagittaria lancifolia*), pickerelweed (*Pontederia cordata*), water hyssops (*Bacopa monnieri*), water pennywort (*Hydrocotyle umbellata*), saltmarsh aster (*Aster subsulatus*), and ludwigia (*Ludwigia leptocarpa*). Dominant vegetation in the high marsh/wet prairie includes sand cordgrass (*Spartina bakeri*), marsh-hay cordgrass (*Spartina patens*), salt grass (*Distichlis spicata*), hairawn muhly (*Muhlenbergia capillaries*). Subdominant species include seaside oxeye (*Borriachia frutescens*). The emergent zones and wet prairies are evident on the post construction aerials (Figures D & E). Cabbage palm (*Sabal palmetto*), saw palmetto (*Serenoa repens*) and various sedge species provide the dominant species in the coastal hammock areas that buffer the constructed marshes. Cattails (*Typha* spp.) comprise less than 1% total coverage. Appropriate wetland hydrology and hydroperiods are present within the created marsh habitat, providing ephemeral marsh habitats of variable hydroperiods and concentrated emergent zones during the dry seasons (Figure E – existing habitats aerial, photographs).

The concentration and variation of surface waters in the marshes provides substantial foraging opportunities for wildlife use. As depicted on the figure aerials, the created marshes are buffered by upland restoration areas, including a 20-acre upland parcel located between the two designated mitigation areas. This combination and mosaic of upland and wetland habitats at Cockroach Bay provide more opportunities for wildlife access, foraging and denning. Observed and documented wildlife use of the project sites is extensive, evident by the substantial foraging opportunities available to the extensive bird populations that visit the created marsh habitats. Commonly

observed species include red-winged blackbird (*Agelaius phoeniceus*), anhinga (*Anhinga anhinga*), great blue heron (*Ardea herodias*), cattle egret (*Bubulcus ibis*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), great egret (*Casmerodius albus*), turkey vulture (*Cathartes aura*), belted kingfisher (*Ceryle alcyon*), killdeer (*Charadrius vociferous*), black vulture (*Coragyps atratus*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*), common moorhen (*Gallinula chloropus*), Florida sandhill crane (*Grus canadensis*), woodstork (*Mycteria americana*), white pelican (*Pelecanus erythrorhynchos*), double-crested cormorant (*Phalacrocorax auritus*), rosette spoonbill (*Platalea ajaja*), glossy ibis (*Plegadis falcinellus*), common grackle (*Quiscalus quiscula*), royal tern (*Sterna maxima*), American robin (*Turdus migratorius*), mourning dove (*Zenaidura macroura*), mosquito fish (*Gambusia holbrooki*), and raccoon (*Procyon lotor*).

Attachment B – Maintenance & Monitoring, Success Criteria

The maintenance activities are conducted by a licensed herbicide contractor working for the SWFWMD through 2010, and predominantly associated with herbicide eradication and control of invasive exotic vegetation that primarily included minimal coverage of cattails generated in the emergent zones and Brazilian pepper in the coastal hammock. Maintenance was conducted quarterly for the first five years post-planting and has allowed for establishment of desirable plants and limiting exotic & nuisance vegetation. Periodic maintenance and prescribed fire activities are conducted as necessary by Hillsborough County Conservation staff to consistently achieve and exceed the success criteria. Conservation's maintenance crew is stationed at a building facility at the County's Cockroach Bay property, less than a mile from the designated mitigation area.

Monitoring was conducted semi-annually with annual reports prepared through 2008. Monitoring included qualitative evaluation and photo documentation of the mitigation area, evaluating and documenting species survival, coverage, wildlife use, exotic & nuisance species, and recommended actions necessary to ensure and enhance success. Monitoring reports were discontinued after 2008 since dense coverage of desirable species and minimal nuisance or exotics were present and maintained since 2006; thus limiting the ability for cattails and other exotic species to recruit and generate. The site continues to be monitored at least a couple times a year to make sure the desired habitat conditions are maintained and evaluate wildlife use. The success criteria included a minimum 90% survivorship for planted material for one-year post planting (achieved with supplemental planting), a total 85% cover of planted and recruited desirable species, and less than 5% exotic and nuisance species cover. The site's success conditions consistently exceed the success criteria.

Tampa Bay

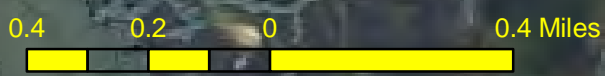
Hillsborough County
ELAPP Conservation Property
Cockroach Bay Habitat
Improvement Area

SW 76 - Cockroach Bay -
Saltwater Project Site

SW 56 - Cockroach Bay -
Freshwater Project Sites

Cockroach Bay Road (to US 41 >)

Cockroach Bay

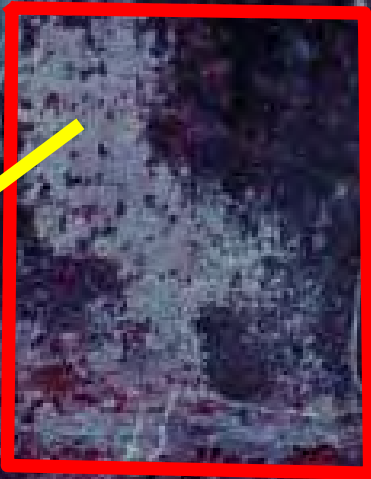
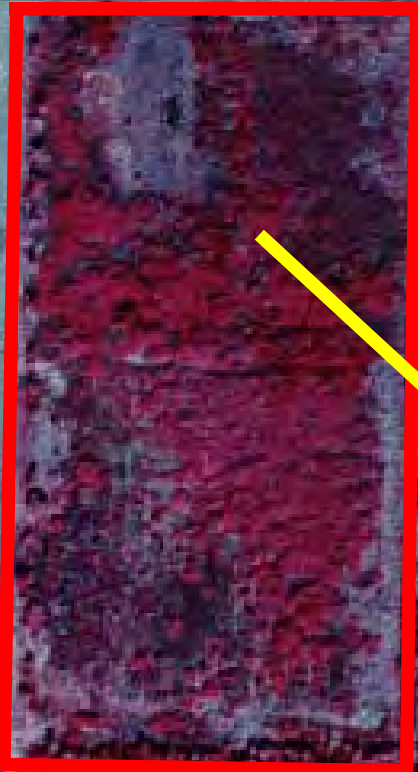


**SW 56 - Cockroach Bay
(Freshwater)
Figure A - Location**

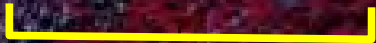
US Hwy. 41



Cockroach Bay Road



Fallow Fields -
Exotic &
Nuisance
Grasses,
Brazilian
Pepper



Scale - 650 ft.



North

**SW 56 - Cockroach Bay (Freshwater)
Figure B - Pre-Construction (1999)**

Cockroach Bay

Wetland Creation &
Selmon Expressway
Mitigation Area
(Not on FDOT Mit Program)

Cockroach Bay Road

Earthwork Grading -
Construction of
Ephemeral Marsh
Creation Areas

Site Clearance -
Pre-Earthwork
Eradication of
Exotic &
Nuisance
Species

Scale - 650 ft.

North

**SW 56 - Cockroach Bay (Freshwater)
Figure C - During Construction (2004)**

Cockroach Bay

Wetland Creation &
Selmon Expressway
Mitigation Area
(Not on FDOT Mit Program)

Cockroach Bay Road



Earthwork
Complete -
Variable Wetland
Grade & Water
Elevations -
Planting &
Establishment
Phase



Scale - 650 ft.



North

**SW 56 - Cockroach Bay (Freshwater)
Figure D - Post-Construction (2005)**

Cockroach Bay

Wetland Creation & Selmon Expressway Mitigation Area (Not on FDOT Mit Program)

Cockroach Bay Road



Dense Coverage of Wetland Vegetation - Routine Maintenance, Minimal Exotic & Nuisance Species



Scale - 650 ft.



North

**SW 56 - Cockroach Bay (Freshwater)
Figure E - Existing Habitats (2009)**

Cockroach Bay



Pre-Construction (2002) – previously a row crop field prior to public acquisition, the site had generated extensive coverage of exotic and nuisance species such as Brazilian pepper, dog fennel, ragweed, ruderal grass species such as Guinea grass, and Australian pine.



Pre-Construction (2002) – view from Cockroach Bay Road looking south over the site. The low quality ruderal habitat would have eventually transformed into a dense thicket of Brazilian pepper. Scattered cabbage palms (right) were preserved within the marsh creation design & coastal hammock buffer restoration activities.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 56 – COCKROACH BAY -
FRESHWATER***



Current Post--Construction (2009) – created emergent marsh zones have dominant coverage provided by bulrush and black-rush, with additional coverage provided by pickerelweed, arrowhead, and water hyssops. The emergent zones have concentrated shallow surface water during the dry season, providing foraging opportunities for many wading bird and waterfowl species.



Current Post-Construction (2009) – created wet prairies have dominant coverage provided by sand cordgrass, salt-grass, broosedge, and hairawn muhly. These ephemeral zones provide foraging, nesting, and denning opportunities for wildlife species that also utilize the emergent zones and adjacent upland habitats. The project's southern limits and adjacent coastal hammock habitat bordering Cockroach Bay are evident in the background.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 56 – COCKROACH BAY -
FRESHWATER***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Lake Panasoffkee Restoration

Project Number: SW 57

Project Sponsors: SWFWMD – Land Resources, SWIM, Environmental

County: Sumter

Location: Sec.18,19,20,28,29,32,33,T19S, R22E
Sec. 4,3 T20S, R22E

IMPACT INFORMATION

FM 4063291 – I-75, Lk. Panasoffkee Bridge ERP #: 4320508.00 COE #: 200000754 (NPR-KF)

Drainage Basin: Withlacoochee River Water Body: Lake Panasoffkee SWIM water body? Y

Acres / Types (FLUCFCS): TOTAL 5.93 ac. 500

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration X Enhancement Preservation Mitigation Area: +/- 75 ac.

SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N

Drainage Basin: Withlacoochee River Basin Water Body: Lake Panasoffkee SWIM water body? Y

Project Description

A. Overall project goal: Restoration of Lake Panasoffkee fisheries habitat was the primary goal of the project, with secondary objectives of eradicating exotic and nuisance vegetation.

B. Brief description of pre-construction condition: Prior to restoration construction, Lake Panasoffkee suffered due to the extensive buildup of inorganic sediments and shallowing of the lake that destroyed extensive fisheries spawning and habitat, as well as substantial generation of nuisance & exotic emergent vegetation in the lake. The restoration plan incorporated several steps to improve the fisheries habitat, restore the shoreline, and facilitate navigation.

C. Brief description of construction activities: The Lake Panasoffkee Restoration Council recommended removal of the inorganic sediments from the lake bottom, with hydraulic dredging the major element of the restoration plan. The dredging followed a six step approach presented in the Lake Panasoffkee Restoration Plan (Attachment A) as reported to the State Legislature. STEP 1 included a Pilot Project of dredging completed in the summer, 2000. The dredging plan included various grade depths associated with the lake. STEP 2 included dredging almost 5 million cubic yards of sediments from approximately 1,010 acres (30% of the lake bottom grade) to hard bottom. Approximately 75 acres of this dredging phase was selected to provide mitigation for the open water wetland impacts associated with the construction of the I-75 bridge crossing over Lake Panasoffkee. This dredging phase was conducted in 2004, and the entire lake dredging project was completed in 2008.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The FDOT project impacts included open water habitat associated with the area between the two I-75 bridge spans that cross along the southeast portion of Lake Panasoffkee (Figure A). The roadway open water wetland impacts and location match the habitat improvements associated with Lake Panasoffkee. This I-75 Bridge project resulted in the only wetland impacts designated for mitigation at the Lake Panasoffkee Restoration project.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection, there wasn't an existing or proposed mitigation bank within the Withlacoochee River Basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : Lake Panasoffkee is a SWIM project and the FDOT mitigation program provided much needed funds to this multi-million dollar project while adequately and appropriately compensating for unavoidable wetland impacts to the lake.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Contractor selected by the SWFWMD – SWIM Section.

Entity responsible for monitoring and maintenance: Contractor selected by the SWFWMD.

Timeframe for mitigation area implementation: Commence: Spring, 2004 Complete: Winter, 2004

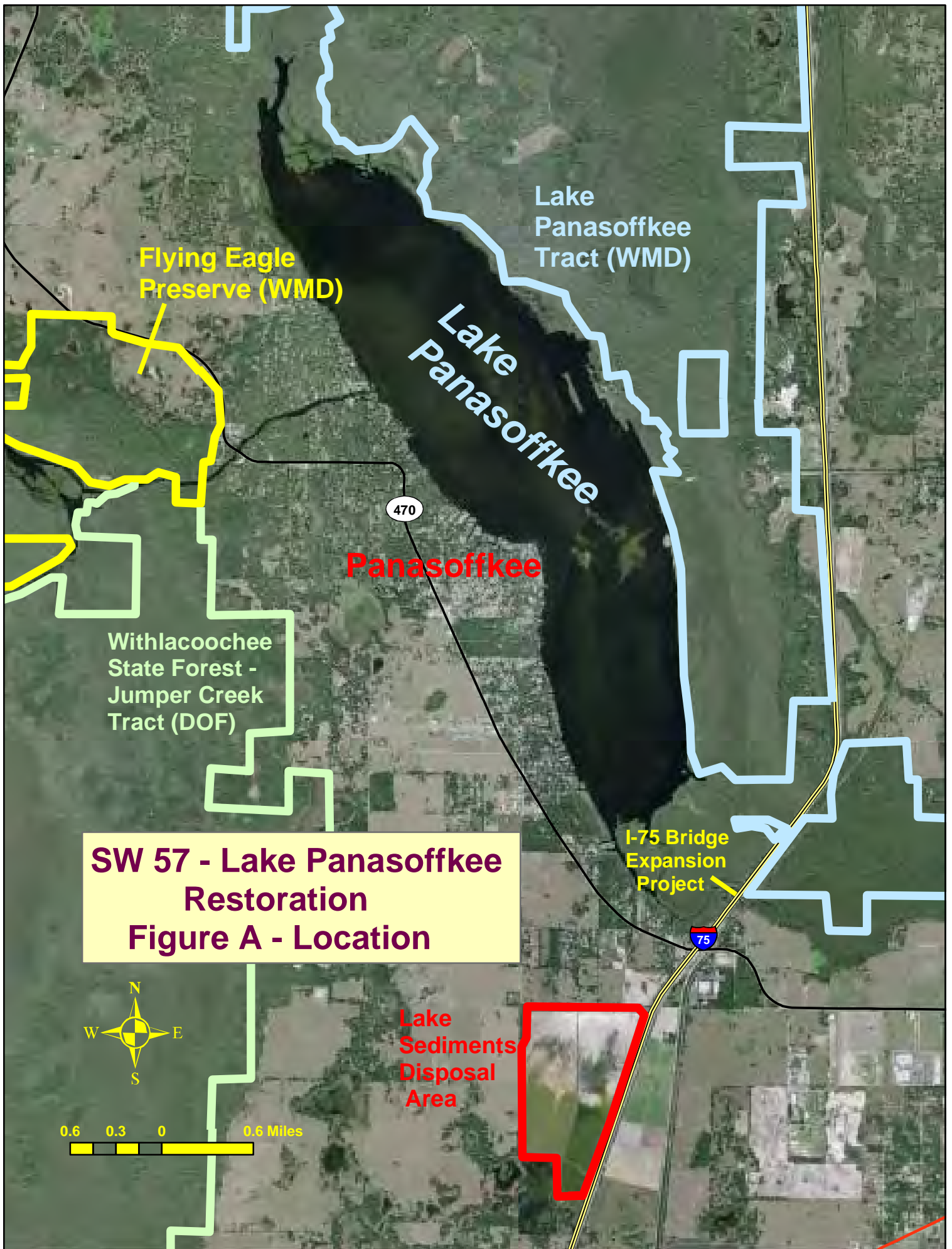
Project cost: \$469,733 - for 75 acres of sediment removed under STEP 2 construction.

Attachments

1. Description of conducted work and location. Refer to previous description, Figure A aerial, and site photos.

2. Success criteria and associated monitoring plan. This project restored critical open water habitat in Lake Panasoffkee, an Outstanding Florida Water. The bottom elevations are deep enough to exclude emergent species, thus ensuring the persistence of open water habitat necessary to restore the desired fish habitat. Therefore, it was determined monitoring and success criteria wasn't necessary.

3. Maintenance plan. The mitigation is associated with the larger Lake Panasoffkee dredging project. Maintenance is primarily related to control of invasive aquatic vegetation, however only the dredging activity is designated for the FDOT mitigation credit.





View of the barge used to hydraulically dredge the inorganic sediments accumulated within the bottom grades of Lake Panasoffkee.



Aerial view of the sediment disposal cells constructed south of the lake (top of photo), the I-75 bridge wetland crossing being mitigated with this project is on the top right side of the photo.

***FDOT – District 5 Mitigation Project
(Withlacoochee River Basin)***

***SW 57 - LAKE PANASOFFKEE
RESTORATION***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: **Barr Hammock - Ledwith Prairie**

Project Number: **SW 58**

Project Manager: Ramesh Buch, Program Supervisor
Alachua County Forever Program

Phone No: (352) 264-6800

County: Alachua

Location: Sections 1, 2, T12S, R19E

IMPACT INFORMATION

(1) FM 238641 - SR 500 (US 27), Levy Co. to SR 326 ERP #: 43014024.002 COE #: NPR (isolated wetland)

(2) FM 238678 - SR 500 (US 27), SR 326 to CR 225A ERP #: 438697.01 COE #: 199702099 (NW)

(3) FM 238719 – SR 40, SR 328 to SW 80th ERP #: 44022268.00 COE #: NPR (isolated wetland)

Drainage Basin: Ocklawaha River Water Body(s): None SWIM water body? N

Acres / Types of Impact (FLUCFCS): (1) FM 238641 - 3.50 ac. 640

(2) FM 238678 - 1.09 ac. 641

(3) FM 238719 – 0.08 ac. 641

TOTAL: 4.67 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation Mitigation Area: **70 acres**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N

Drainage Basin: Ocklawaha (also referred to as Florida Ridge Basin) Water Body: Ledwith Lake SWIM water body? N

Project Description

A. Overall project goal: As part of the Alachua County Forever land acquisition program, the project goal includes the public acquisition, preservation, and enhancement of 2,303 acres of high quality upland and wetland habitat (Figure A). The acquisition includes a 353-acre portion of an approximately 1,800-acre marsh prairie referred to as Ledwith Lake (Figures B & C). The northern boundary of the tract adjoins another large marsh prairie (Levy Lake), a 3,100-acre marsh placed within a conservation easement through the NRCS – Wetland Reserve Program. In turn, the Levy Lake property is contiguous to several thousand acres of regionally significant preserved habitat associated with Paynes Prairie State Preserve (Figure B). The Ocklawaha basin has minimal coverage of wetland habitat, with the majority associated with the Ledwith and Levy Lakes. As a result, acquisition and preservation of the Barr Hammock - Ledwith Prairie property was considered an important and critical pursuit to protect important and rare water and wetland resources in the basin. The nomination and selection of this tract to the FDOT mitigation program was conducted in 2001, with the acquisition finalized by Alachua County in September, 2006.

B. Brief description of current condition: The northern portion of the tract includes a mixture of upland mixed coniferous/hardwood habitat, along with mixed hardwood wetland forests. The forested wetland habitat has diverse canopy coverage provided by sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), loblolly bay (*Gordonia lasianthus*), laurel oak (*Quercus laurifolia*), swamp chestnut oak (*Quercus michauxii*) and other hardwood species. The forested upland component includes pignut hickory (*Carya glabra*), live oak (*Quercus virginiana*) and pine (*Pinus taeda*). The Ledwith Lake marsh prairie has a few pockets of open water and extensive herb coverage provided by pickerelweed (*Pontederia cordata*), smartweed (*Polygonum* spp.), maidencane (*Panicum hemitomon*), spatterdock

(Nuphar lutea), and soft rush (Juncus effuses) (refer to photos). Extensive vegetative diversity and wildlife presence have been documented in the marsh and adjacent upland habitat. Natural resource evaluations were conducted and available from Alachua County and the FDOT Mitigation Program Manager.

C. Brief description of proposed work: This Barr Hammock - Ledwith Prairie acquisition is part of an east-west corridor of proposed public land acquisitions between Ocala National Forest and the Waccasassa River. A hydrologic evaluation of Levy Lake and Ledwith Lake will determine if and when the surface water elevations should be revised with the existing culverts and flashboard risers in order to enhance wetland hydroperiods (photos). Other enhancement activities include the elimination of cattle grazing within the marsh prairie to minimize encroachment of nuisance vegetation, eradication of exotic and nuisance species, and adopting a prescribed fire management plan for the tract.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): With the minimal presence of public lands and few wetlands within this predominantly upland basin, there are very limited wetland enhancement & restoration opportunities in this basin. The Ledwith Lake marsh prairie is one of the few and largest wetlands within the basin, exhibits high quality wetland functions and value that deserve protection through a public land acquisition program. The marsh and adjacent forested wetland and upland habitats provide appropriate mitigation for the wetland impacts. After acquisition was final, the SWFWMD reimbursed Alachua County for the costs associated with acquiring 60-acres of marsh prairie and 10-acres of mixed forested wetland habitat (70 acres x \$4,352 per acre = \$304,640). To date, all the anticipated FDOT wetland impacts in the basin are associated with non-forested habitat. However, reimbursement for a proportion of forested wetland habitat is conducted as a precaution in case there are unforeseen forested wetland habitat impacts associated with future FDOT projects. The reimbursement of the land acquisition costs associated with 70 acres of the tract provides more than adequate and appropriate preservation mitigation credit to compensate for the permitted FDOT wetland impacts. In the future, if FDOT proposes future additional wetland impacts in the basin, remaining available mitigation credits will be evaluated to determine if they are appropriate to provide compensation.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection and reimbursement to Alachua County, there were no existing or proposed mitigation banks within this basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: There are no SWIM projects or SWIM water bodies within this basin.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: No construction necessary, any revisions to Ledwith Lake hydrology will be conducted in coordination between Alachua County, FDEP, and the SJRWMD.

Contact Name: Ramesh Buch, Program Supervisor, Alachua County Forever Phone Number: (352) 264-6800

Entity responsible for monitoring and maintenance: A joint agreement between Alachua County and FDEP staff (Paynes Prairie State Preserve) will coordinate the long-term maintenance & management of the tract. Monitoring is not necessary or proposed for the preservation mitigation credit.

Timeframe for implementation: Commence: Summer, 2001 Complete: Land acquisition completed in September, 2006, followed by SWFWMD reimbursement for \$304,640 for 70 acres of the acquisition.

Attachments

- X_1. Description of existing site and proposed work. The detailed evaluations of site conditions are available from Alachua County and the FDOT Mitigation Program Manager. There are no proposed work activities at this time. If the hydrology evaluation of Ledwith & Levy Lake determine the water levels should be modified to enhance the marsh prairie, such improvements will be conducted by Alachua County.
- X_2. Aerial photography. Figures B & C
- X_3. Location map and design drawings of existing and proposed conditions. Figure A - location map, Figures B & C depict habitat conditions.
- X_4. Success criteria and associated monitoring plan. The tract provides good habitat quality therefore no success criteria or monitoring plan is necessary.
- X_5. Long- term maintenance plan. In collaboration with FDEP, Alachua County will prepare and implement a perpetual management plan that includes appropriate land management activities such as eradication of exotic and nuisance species and prescribed fire management plan. A long-term maintenance plan is not included as part of this mitigation plan since only preservation credit is applied for the FDOT mitigation credit.



Proposed Lands

- State Lands
- County Lands
- Local Government Lands
- Private Lands
- Water
- Wetlands
- Other



SW 58 - Barr Hammock - Ledwith Prairie

FIGURE 8 - Aerial EXISTING / PROPOSED PUBLIC LANDS



SW 58 - Barr Hammock - Ledwith Prairie

FIGURE C - Aerial Levy & Ledwith Lake



Photo 1 - View of Ledwith Lake from the western marsh boundary. The marsh prairie has diverse vegetative cover including a dominance of pickerelweed, floating pennywort, smartweed, spatterdock, soft rush, and maidencane.



Photo 2 - View extending from right of Photo 1, open water areas in Ledwith Lake are few and predominantly located within the perimeter of the marsh prairie. Hardwood wetlands rim portions of the marsh, short transitions to upland hardwood hammocks.

**FDOT - District 5 Mitigation Site
(Ocklawaha Basin)**

**Ledwith Lake
(SW 58)**

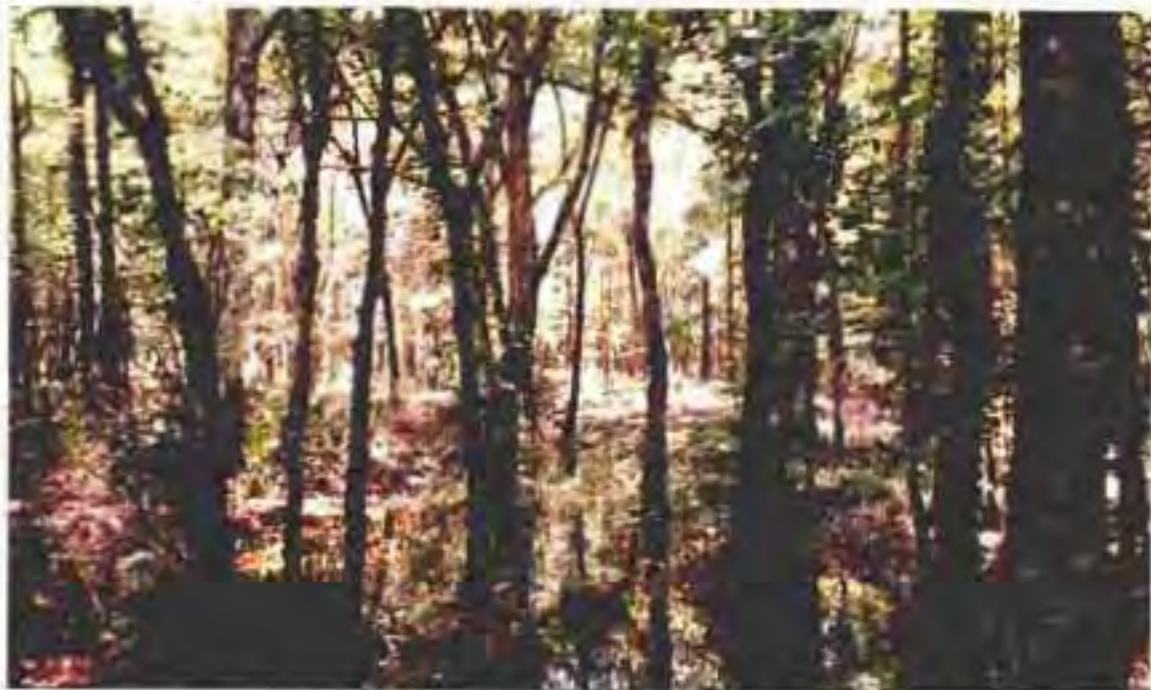


Photo 3 - Some wetland hardwoods rim Ledwith Lake and within the hydrologic connection between Levy Lake and Ledwith Lake (shown above), dominance of laurel oak, red maple, sweetgum, and swamp chestnut oak that transition to upland hardwood hammocks of pignut hickory and live oak.



Photo 4 - The two outfall structures with flashboard risers that control the water elevation and flow from Ledwith Lake north to Levy Lake.

**FDOT - District 5 Mitigation Site
(Ocklawaha Basin)**

**Ledwith Lake
(SW 58)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Hampton Tract

Project Sponsor: SWFWMD – Land Resources & Environmental Sections

Project Number: SW 59

Phone: (352) 796-7211, ext. 4488

County: Polk Location: Sections 22, 23, 25, 26, 27, 34, 35, 36 T25S, R23E ; Sections 30, 31 T25S R24E

IMPACT INFORMATION

(1) <u>FM 2012092, I-4, US 98 to CR 557 (Sec. 3-5)*</u>	ERP #: <u>43011896.026</u>	COE #: <u>200204891 (IP-MGH)</u>
(2) <u>FM 2012041, I-4, CR 557 to Osceola (Sec. 6,7,9)**</u>	ERP #: <u>43011896.032</u>	COE #: <u>SAJ-1994-3591 (IP-MGH)</u>
(3) <u>FM 1902581, I-4, SR 559 & CR 557 Interchanges***</u>	ERP #: _____	COE #: _____
(4) <u>FM 1902581, High Speed Rail (2 projects)****</u>	ERP #: _____	COE #: _____

Drainage Basin: Withlacoochee River Water Body(s): Lake Mattie, Lake Agnes SWIM water body? N

Impact Acres/ Types (FLUCFCS):

(1) FM 2012092 1.19 ac. 510	(3) FM 1902581 23.65 ac. 630
0.02 ac. 611	4.91 ac. 640
0.12 ac. 617	<u>TOTAL 28.56 acres</u>
2.75 ac. 618	
3.90 ac. 621	(4) FM 1902581 11.23 ac. 630
8.63 ac. 630	1.40 ac. 640
0.04 ac. 640	<u>TOTAL 12.63 acres</u>
0.94 ac. 641	
1.36 ac. 643	
<u>TOTAL 18.95 acres</u>	

(2) FM 2012141 0.03 ac. 630
3.18 ac. 640
0.55 ac. 641
0.12 ac. 643
<u>TOTAL 3.88 acres</u>

TOTAL 64.02 acres

* Note – A portion of this I-4 project is located within the Peace River Basin and associated wetland impacts (total – 1.5 acres) are being mitigated at Tenoroc / Saddle Creek (SW 47).

** Note – A portion of this I-4 project (Seg. 7) is located within the Kissimmee Ridge basin and the associated wetland impacts (total – 2.35 acres) are mitigated at Reedy Creek Mitigation Bank (SW 49). Another portion of this I-4 project is located within the Ocklawaha basin and those wetland impacts (4.0 acres) are mitigated at Lake Lowery (SW 76).

*** Note – These interchange improvements are necessary to accommodate the construction of the high speed rail facility. The wetland impacts and associated habitat types are preliminary (11/2011).

**** Note – The wetland impacts and associated habitat types for the high speed rail facility are preliminary (11/2010). They involve two projects, including minor impacts associated with constructing an Interstate-4 lane shift, and the majority of impacts are associated with the rail mainline facility within the I-4 median. Additional wetland impacts are located in the Hillsborough River basin and the associated wetland impacts are mitigated at Colt Creek State Park (SW 84).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: ___ Creation X Restoration X Enhancement ___ Preservation Mitigation Area: **1,606 acres**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin: Withlacoochee River Water Body: Gator Creek, Colt Creek, Sapling Drain, Bee Tree Drain SWIM water? N

Project Description

A. Overall project goal: The Hampton Tract (total – 7,660 acres) was acquired by the SWFWMD in 1999. Located adjacent to over 260,000 acres of public lands (Figure A), the Hampton Tract was an important acquisition for the protection, restoration and enhancement of native habitat within the Green Swamp's Designated Area of Critical State. The tract has a 22-mile ditch network that has extensively dewatered and drained many of the wetland habitats on the property. The goal is to restore hydrologic drainage patterns to restore and enhance the functions and benefits associated with 1,606 acres of impacted wetland habitats, with secondary benefits to other wetland and upland habitats on the property.

B. Brief description of current condition: The tract has various wetland habitats covering over 2,400 acres, dominated by cypress domes & strands, mixed forested wetlands and floodplains, with some coverage of hydric flatwoods and ditched marshes. Three major east-west ditch drainage features (Figure A - Colt Creek Drain, Sapling Drain, Bee Tree Drain) and connecting ditches were constructed in the 1940's through 1960's. These ditches have dewatered and drained many wetland systems, including the conversion of marshes to pastures that are currently fallow fields with cross-ditches; primarily north & south of Sapling Drain (Figure A & 17). These major ditches cut through the Gator Creek floodplain located along the western project boundary; directly connecting to the Gator Creek ditch. Upland habitats (approx. 4,200 acres) are dominated by flatwoods with some upland hardwood hammocks that primarily buffer the perimeter of the forested wetlands. The majority of the remaining upland is dominated by planted pine within previous pastures in the northeast portion of the tract, and fallow fields adjacent to Sapling Drain in the center of the property. Additional information on the current conditions is provided under Attachment A.

C. Brief description of proposed activities: The majority of the over 22 miles of ditches on the property were constructed in the 1940's through the 1960's. A surface water model evaluation was conducted to determine design features necessary to restore and enhance the hydrology and associated hydroperiods for the majority of the wetlands within the Hampton Tract. The result of that study indicated these hydrologic improvements could be conducted by constructing 52 blocks within designated ditch locations that will redirect and restore surface water flow patterns and associated ground water in the wetlands. Figure 17 depicts the proposed block locations and the associated wetland enhancement areas as a result of the hydrologic restoration. The modeling effort was finalized in 2010, with proposed block construction in 2011. Nine monitor wells were installed within drained wetlands in 2008 to document pre-construction ground and surface water elevations and durations. These wells have continuous automatic recorders that document the water levels every 15 minutes, and the data collection will continue to be monitored for a period of at least five years post-construction. Additional information is provided in Attachment B.

D. Brief explanation of how this work serves to offset the impacts of the specified FDOT project(s): The Hampton Tract was selected to provide mitigation for all the anticipated wetland impacts associated with the ultimate build-out of the Interstate-4 transportation improvements through the Withlacoochee basin portion in Polk County, including the possibility of a high-speed rail facility. The majority of the I-4 wetland impacts include forested wetland habitat, and the remnant non-forested wetlands within the R/W were historically forested wetlands that are maintained by FDOT as non-forested systems due to vehicular safety precautions. The Hampton Tract will have primary hydrologic restoration to

1,558-acres of forested wetlands and 48-acres of non-forested wetlands (total 1,606-acres). Even though the hydrologic restoration will also provide ecological benefits to additional wetlands and uplands within the tract, wetlands without direct hydrologic enhancement are not accounted for with mitigation credit. The substantial wetland enhancement on a regionally significant site will adequately and appropriately mitigate for all the existing and future Interstate-4 wetland impacts and potentially other FDOT-related wetland impacts within the Withlacoochee Basin.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the period of mitigation selection, there were no established or proposed mitigation banks within the Withlacoochee River Basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: During the period of mitigation selection, the only SWIM project within the Withlacoochee River Basin included restoration activities within Lake Panasoffkee (SW 57); selected for mitigation of wetland impacts associated with the I-75 bridge expansion within the Lake Panasoffkee floodplain.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: WMD Operations Department
Contact Name: SWFWMD Environmental Scientist / FDOT Mitigation Program Manager
Phone Number: (352) 796-7211 ext. 4488

Entity responsible for monitoring and maintenance: The WMD will be responsible for monitoring and maintenance, refer to Attachment C.

Timeframe for implementation: Commence: site evaluation, engineering & surface water modeling, 2006 -2010, monitor well installation, January, 2009 Complete: construction in 2011, followed by minimum five years of maintenance & additional monitoring.

Project Cost: \$1,800,000
Install Monitor Wells – January, 2009
Site Evaluation & Surface Water Modeling, 2006-2009
Design & Permitting – 2009 - 2010
Construction – 2011
Maintenance & Monitoring – 2009-2016
Perpetual Management – 2011+

Attachments

- X 1. Description of existing site and proposed work. Refer to Attachment A.
- X 2. Aerial photograph. Figures A & 17, 2010 aerials.
- X 3. Location and design. Figure A – location, Figure 17 – wetlands, ditch drainage features, and ditch block locations. Additional design details available from SWFWMD.
- X 4. Schedule for work implementation. Refer to Attachment B.
- X 5. Success criteria and associated maintenance & monitoring plan. Refer to Attachment B.

ATTACHMENT A – Hampton Tract - Existing Site Conditions & Proposed Work

The site is located within the Green Swamp (Designated Area of Critical State Concern), and has over 60% of the adjacent property also under ownership of the SWFWMD (referred to as “Green Swamp Wilderness Preserve”). The tract’s habitat and land-use is dominated by approximately 2,400 wetland acres (predominantly mixed forested and cypress systems), 4,200 acres of pine flatwood & upland hardwood hammocks, and 1,000 acres of previously improved pasture that have been primarily converted to pine silviculture operations since the WMD’s acquisition of the property in 1999.

The site's historic drainage pattern meandered from east to west, receiving contributing flows from property east of the Hampton Tract. During the late 1940’s and early 1950’s, the construction of large drainage ditches (Figure A - Colt Creek Drain, Sapling Drain, Bee Tree Drain) and smaller connecting ditches resulted in a more direct drainage and discharge of surface and ground water to connect with the ditched Gator Creek located along the project’s western boundary. The Gator Creek ditch is a major drainage feature within the western Green Swamp. Gator Creek crosses north through the Hampton Tract, other public lands (Green Swamp-East, Colt Creek State Park, Green Swamp-West), and outfalls into the Withlacoochee River (Figure A). The northern perimeter of the Hampton Tract is adjacent to the forested wetland floodplain associated with the Withlacoochee River. These ditched drainage systems have directly impacted the hydroperiods and vegetative composition of a large percentage of the tract’s wetlands, particularly associated with the transition of obligate to more facultative species within the wetlands, and allowing undesirable upland & nuisance species to encroach within the wetlands. Blackberry and grapevine in particular have become problematic nuisance species. Figure 17 depicts the major ditches, proposed ditch block locations, and hydrologic restoration and associated wetland enhancement based on the surface water model.

A combination of large ditch block construction will be conducted to hydrologically enhance the ditched wetlands, resulting in mortality of upland & nuisance species in the wetlands and the regeneration of more obligate species that have gradually decreased from the wetlands. This construction will also attenuate the surficial and groundwater hydrology for the entire tract. The ditch blocks will be constructed with the adjacent spoil material disposed during the original dredging operations, and the majority of the blocks will be constructed where the upland-cut ditch sections outfall from wetlands. The typical top-of-block length is 30-50 feet with an additional 80-150 feet of total gradual sideslopes (minimum 10:1) that merge into the ditch bottom grades. The ditch blocks will be stabilized with vegetative cover immediately after construction. The top of the blocks will be constructed to elevations slightly above the adjacent natural grade to avoid overflow of the blocks. Instead, the blocks will halt the flow, then divert and restore the contributing flow into and through the historic drainage patterns associated with the wetland strands. This will not only retain more water within the wetlands throughout the rainy season to restore wetland hydroperiods, but restore surficial groundwater associated with the wetlands during the dry season. This is critical since during extended dry periods, not only is surface water often completely absent from the wetlands but the deep ditches keep the surficial aquifer from even maintaining soil saturation in many wetlands. Extended dry season ground and surface water conditions not only stress and degrade vegetative characteristics, but the ditches remove water sources necessary for all wildlife species. Even though the wetlands have natural cycles of below grade water elevations, the opportunity to maintain some surface water within the ditches without resulting in groundwater drawdown will allow the availability of an important water resource for wildlife use during extended dry seasons. These extended ditch blocks will also provide easier access for wildlife into the wetlands during wet season conditions. The following information describes the wetland enhancement aspects associated with each major drainage system.

Colt Creek Drain – this drain includes a combination of historically isolated as well as connected forested wetland tributaries within the northern portion of the property. The highest concentration of former isolated and partially connected wetlands for the entire Hampton Tract is associated with cypress systems within the northeastern silviculture areas. Historically, many of these wetlands were only hydrologically connected via surface water that sheet flowed through minor drainageways and pine flatwoods during the wet season. The high

concentration of perimeter ditches around the wetlands have connected and substantially altered the drainage patterns and the wetlands' hydroperiod; short-circuiting flow away from wetlands and directing water through upland-cut ditches instead of the natural meandering drainage patterns. In order to restore the drainage patterns within each of these wetlands, over half of the 52 total ditch blocks are associated with the Colt Creek Drain. The blocks will be strategically constructed at locations within the perimeter ditches to divert and restore contributing water into the adjacent wetlands.

As previously noted, the WMD has converted the land use of the northeast upland pastures to silviculture. However, pines were planted at a minimum buffer of 50 feet from the wetlands so that with the restored wetland hydrology, will be allowed to naturally generate hydrophytic sedges and rushes to replace the bahia. With the introduction of pines to replace open pasture and the meandering alignment of the wetland strands, additional vegetative cover will increase wildlife movement and corridors to and from upland and wetland habitats. A large ditch and adjacent spoil berm was historically constructed along the northeastern two-mile boundary of the Hampton Tract (Figure 17). This berm acts as a levee, blocking the historic westward drainage pattern of water flow through the property and resulting in surface water impoundment and flooding within private property east of the berm. By constructing two breaches within the spoil berm, historic flow patterns will be restored that will benefit the on-site wetlands while decreasing the periodic flood conditions that occurs on the private property.

Sapling Drain – this drain is a large, straight, east-west ditch that conveys substantial quantities of water from the contributing watershed. Historically the base flow meandered through a cypress strand located less than a few hundred feet north of the ditch drain. Historical aeriels indicate the majority of the existing central fallow field north and south of the remnant cypress strand was historically marsh and wet prairie habitat. The current vegetative cover in the field is bahia, fennel, pine trees; with shallow collector cross-ditches dominated by soft rush. Historically the remnant strand would have surface water sheet-flow and attenuate through the wet prairie during the rainy season. The surface water model for Sapling Drain has determined the hydrologic restoration can also restore a minimum 40 acres of marsh habitat. Even though not accounted for in mitigation credit, secondary benefits as a result of the hydrologic improvements are anticipated to result in the generation of an additional 50-100 acres of ephemeral marsh and wet prairie habitat. The restoration of the Sapling Drain marsh system is particularly vital since the vast majority of non-forested wetland habitats in the western portion of the Green Swamp were historically converted to improved pastures as a result of drainage ditches.

Bee Tree Drain – this drain was dredged across a meandering mixed forested wetland and through the adjacent upland habitat; short-circuiting the meandering wetland flow pattern westward to discharge directly into Gator Creek. Similar to the Colt Creek Drain, restoring the wetland flow patterns will be conducted by constructing blocks at the wetland/upland interface.

Gator Creek Drain - Gator Creek is one of the major ditch drainage features in the Green Swamp; extending many miles from Interstate-4 to the Withlacoochee River. The ditch itself was dredged through uplands and wetlands to connect with a natural creek floodplain located a few miles south of the Hampton Tract. Historically, the creek floodplain within the Hampton Tract itself had minimal definition of an actual creek channel; with more resemblance to water sheet flow similar to other wetland strands on the property. As depicted on Figure A, the portion of the Gator Creek ditch crosses the southwestern portion of the property, and the reduced hydroperiods have transitioned the floodplain wetland to more mesic hammock with facultative species such as laurel oak; even within the lowest elevations of the wetland floodplain.

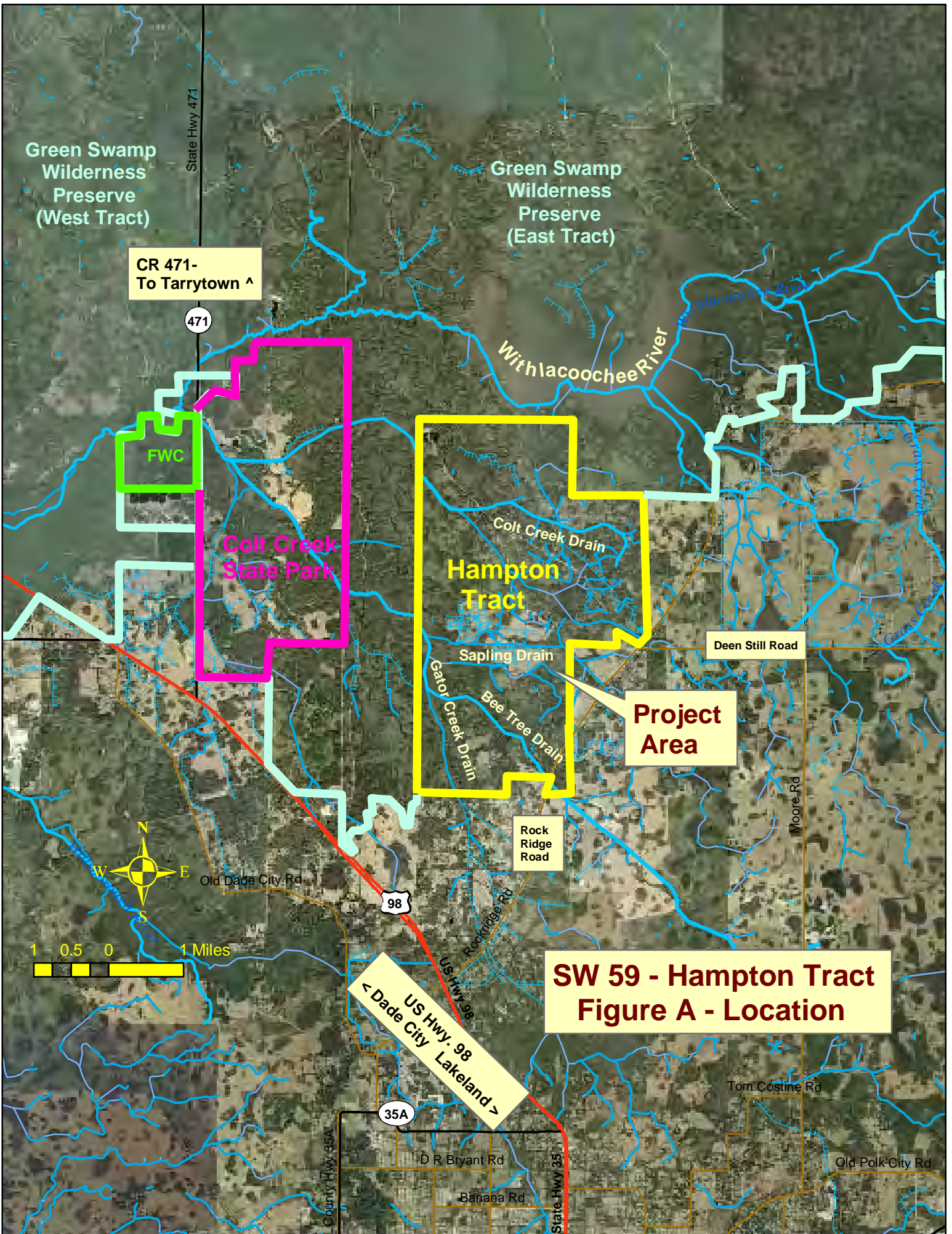
Due to the close proximity of adjacent upstream residential development south of the Hampton Tract, constructing blocks within the Gator Creek ditch section to restore drainage patterns within the wetland is not achievable without altering off-site drainage patterns and increasing the flood potential. However, by constructing two ditch blocks where Bee Tree and Sapling Drains prior to connecting to Gator Creek, this will detain the majority of ditch flow to restore adequate and appropriate wetland hydrology within a portion of the Gator Creek floodplain on the Hampton Tract. By retaining more surface water within the Hampton Tract, this will reduce the contributing flow to the Gator Creek ditch itself and allowing more flow north. In turn, this will reduce flood potential of property to the south.

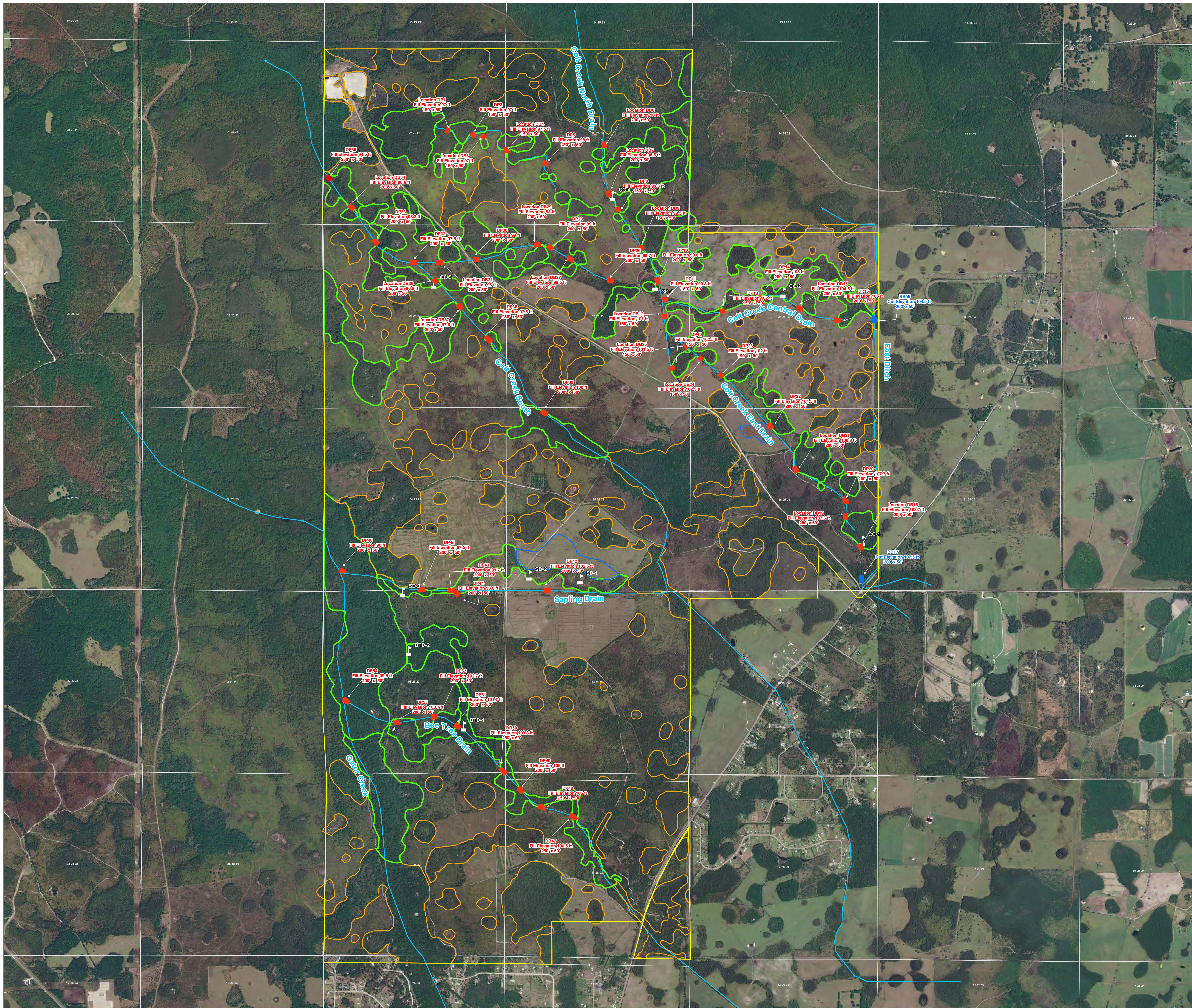
ATTACHMENT B - Maintenance & Monitoring Plan, Success Criteria

Maintenance activities will be predominantly associated with evaluating and ensuring the structural integrity and suitability of the proposed ditch blocks. At any time should any ditch blocks or associated restoration of historic wetland hydrologic flow patterns are not achieved, corrective action will be taken which will include constructing additional block support. Inspections will be conducted on a monthly schedule throughout the first two rainy seasons post-construction, and at least quarterly thereafter for two more years. Additional maintenance will be perpetually conducted as part of a normal best land management practices and activities for the Hampton Tract. One of the primary components of the tract's management plan includes prescribed burns. Such burns can periodically encroach too far into drained forested wetlands, resulting in vegetative impacts and loss of organic topsoil. With the restored hydrology of those drained wetlands on-site, the prescribed burns will only encroach along the transitional perimeters of the forested wetlands. These transitional areas often become too dense with vegetative species such as wax myrtle and vines, thus restricting wildlife movement. The prescribed burns include the upland buffers and wetland transition to allow for more wildlife access and use of all habitat areas.

Commencing in January, 2009, pre-construction hydrologic monitoring currently includes downloads of water table data provided from continuous recorders installed within nine monitoring wells. These well locations are located within wetlands associated with the Colt Creek Drain (3), Sapling Drain (2), Bee Tree Drain (2) and one monitor each where Bee Tree and Sapling intersect with the Gator Creek floodplain. These wells will continue to be monitored for a minimum five years post-construction and after success criteria has been met. This will provide at least two years of pre-construction hydrologic monitoring to compare with minimum five year post-construction monitoring to evaluate the restored surface water hydrology and document any potential problems. The monitoring also includes qualitative habitat evaluations and documentation of general wetlands associated with the Colt Creek, Sapling Drain, Bee Tree Drain, and Gator Creek floodplains. This includes conducting semi-annual monitoring (dry and wet season observations) and concurrently with downloading data associated with the hydrologic monitoring for a minimum five years post-construction. The qualitative evaluation will include descriptive and photographic documentation of vegetative and habitat conditions, with particular notation of transitional shifts of flora & fauna as a result of the restored and enhanced drainage improvements. This information will be compiled into annual monitoring reports for a minimum five years post-construction.

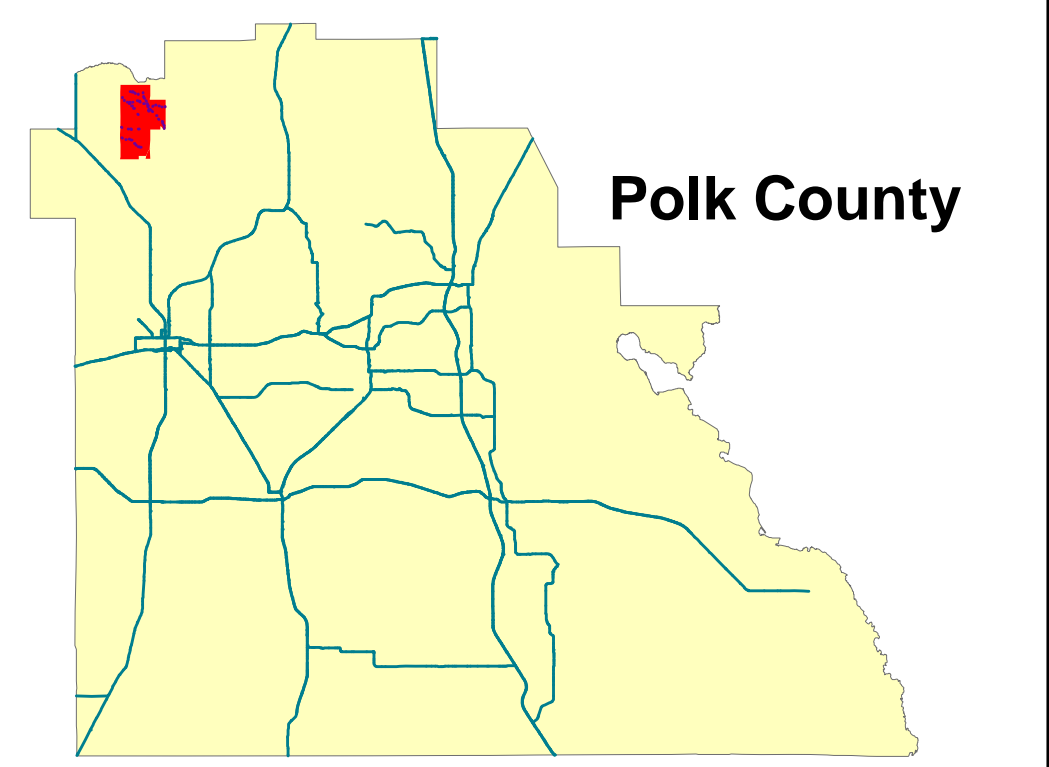
Success criteria includes demonstration that all the structures function as proposed, and that proper stabilization has occurred and will be maintained around the structures. This documentation will need to demonstrate that the ditch blocks retain and divert flow as designed as well as ditch block stabilization. Shifts in vegetative cover and diversity will be noted in the annual monitoring reports.





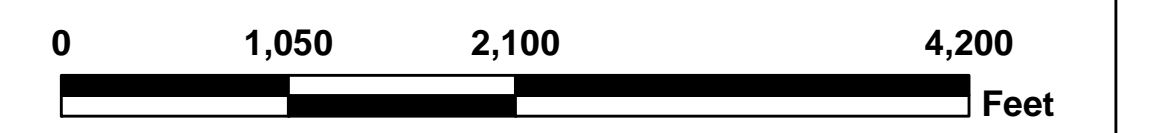
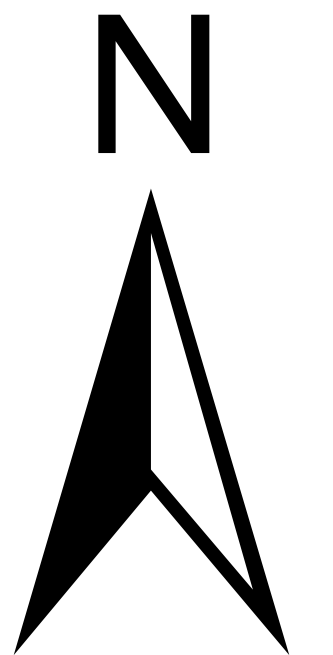
Notes:
 1. This map is intended to be used for planning purposes. It is not a survey.
 2. Map Date: May 2009

Project Location



LEGEND

- Hampton Tract Boundary
- Proposed Modification (Berm Breach)
- Proposed Modifications (Ditch Blocks)
- Monitoring Wells
- Marsh Wetlands - Restoration & Enhancement
- Wetlands-Hydrologic Restoration
- Wetlands-No Activities or Proposed Enhancements
- Existing Drainage Paths
- Section Lines



Hampton Tract Wetland Restoration Hydrologic Model

BCI Project No: 19-13145.1

**Figure 17
 Hampton Tract
 Proposed Modification
 Locations and Details**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: **Cypress Creek Preserve, West – Jennings Tract** Project Number: **SW 61**
 Project Sponsors: Ross Dickerson, Bernie Kaiser, Richard Ross
Hillsborough County - Conservation Services

County: Hillsborough

Location: Sec. 4, 5, T27S, R19E

IMPACT INFORMATION

1 – <u>FM 2578071 – B.B. Downs Bikepath, Hunter's Green</u>	ERP #: <u>4418710.000</u> COE #: <u>199803683</u>
2 – <u>FM 2555361 – SR 39, Blackwater Creek Bridge</u>	ERP #: <u>4320526.000</u> COE #: <u>20000574 (IP-MS)</u>
3 – <u>FM 2587341 – SR 56, SR 54 to B.B. Downs</u>	ERP #: <u>4312944.004</u> COE #: <u>199500079 (IP-MN)</u>
4 – <u>FM 2012171 – I-4, Memorial to US 98 (Segment 2)</u>	ERP #: <u>43011896.028</u> COE #: <u>199502569 (MOD-MGH)</u>
<u>Kathleen Road West Portion</u>	ERP #: <u>430009069.006</u> COE #: <u>SAJ-2003-8981 (IP-MGH)</u>
5 – <u>FM 2578072 – B.B. Downs Bikepath, Amberly Drive</u>	ERP #: <u>4421434.000</u> COE #: <u>200101187 (NW-MS)</u>
6 – <u>FM 2558591 – SR 678 (Bearss Ave.) Florida Avenue</u>	ERP #: <u>4419802.002</u> COE #: <u>200101181 (NW-MS)</u>
7 – <u>FM 2578391 – Alexander Street, US 92 to Interstate - 4</u>	ERP #: <u>43011896.025</u> COE #: <u>200003012 (IP-RGW)</u>
8 – <u>FM 2584491 – Alexander Street, On-Ramp to Westbound I-4</u>	ERP #: <u>43011896.025</u> COE #: <u>200003012 (IP-RGW)</u>
9 – <u>FM 2584131 – SR 93 (I-275), US 41 to Pasco County</u>	ERP #: <u>43024745.000</u> COE #: <u>200302685 (IP-MLS)</u>
10 – <u>FM 4084602 – I-75 to CR 581 (Off-Ramp to B.B. Downs)</u>	ERP #: <u>4421639.000</u> COE #: <u>199803683 (NW-KI)</u>

Drainage Basin: Hillsborough River Water Body(s): Blackwater Creek, Cypress Creek SWIM water body? No

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 2578071	0.4 ac. (618)	(5) FM 2578072	0.2 acre (610)
	<u>0.1 ac. (641)</u>		
TOTAL	0.5 acre	(6) FM 2558591	0.1 acre (618)
(2) FM 2555361	1.4 ac. (615)	(7) FM 2578391	2.6 acres (617)
	<u>0.7 ac. (641)</u>		
TOTAL	2.1 acres	(8) FM 2584491	1.7 acres (617)
(3) FM 2587341	5.2 ac. (630)	(9) FM 2584131	4.6 ac. (610)
	<u>0.1 ac. (641)</u>		0.2 ac. (621)
TOTAL	5.3 acres		0.1 ac. (630)
			<u>2.7 ac. (640/641)</u>
(4) FM 2012171	1.75 ac. (511)		7.6 acres
	0.68 ac. (615)		
	<u>1.74 ac. (617)</u>	(10) FM 4084602	0.5 acre (621) TOTAL 24.86 acres
	4.26 acres		

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: ___ Creation X Restoration X Enhancement X Preservation Mitigation Area: **298 acres**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N

Drainage Basin: Hillsborough River Water Body: Cypress Creek SWIM water body? N

Project Description

A. Overall project goal: The preservation and habitat improvements of a 298-acre tract includes a high quality mosaic of native upland and wetland habitat within the Cypress Creek floodplain. The property was a high priority public land acquisition within the Hillsborough County's Environmental Lands Acquisition and Protection Program (ELAPP). The Jennings Tract is adjacent to several hundred acres of other County-owned property east of the tract, referred to as Cypress Creek Preserve, East (Figure A). After the Jennings Tract acquisition in 2000, the County acquired an adjacent 100-acres of similar high quality habitat north of the tract.

B. Brief description of habitat conditions: The native habitat components of the site represent high quality value and functions relative to wildlife habitat, species richness & diversity, and connectivity to both on- and off-site habitat conditions. There is mixed forested wetlands (153 acres) surrounding mesic hardwood hammocks (95 acres), pine flatwoods (17 acres), and palmetto prairies (14 acres). The only non-native habitat is a bahia pasture (19 acres), along the western edge of the parcel (Figure B). Additional information on the habitat conditions provided in Attachment A.

C. Brief description of activities: The activities included the acquisition of property to preserve and manage the high quality forested wetland and upland hardwood hammock habitat. At the request of Hillsborough County, a conservation easement was recorded for the tract and conveyed to the SWFWMD. In 2005, some enhancement of the palmetto prairie habitat commenced with pine plantings. Herbicide eradication and prescribed burning of the bahia pasture was conducted in 2007 to commence flatwood restoration, and are being restored with bahia eradication, native species seeding, and plantings of wiregrass and longleaf pine. The pine flatwoods were overgrown at the time of acquisition and receive prescribed burn management on a 3-5 year rotation to decrease woody understory and selective herbicide of invasive species. County Conservation staff conduct the majority of these activities, with the assistance of contractors for seed collection, plant nursery stock and herbicide applications.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT projects: The majority (80%) of the 25 acres of wetland impacts designated for mitigation at the Jennings Tract are associated with forested wetlands. The mitigation project not only includes preservation of 248 acres of high quality mixed forested wetlands and hardwood hammocks, but an additional 50 acres of upland habitat enhancement and restoration that buffer the wetlands. No additional wetland impacts associated with other roadway projects will be proposed for mitigation at the Jennings Tract. This mitigation project adequately and appropriately mitigates for the designated wetland impacts with a cumulative mitigation ratio of 12 acres of compensation for every acre of wetland impact.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the selection of the mitigation for the proposed wetland impacts, there were no existing or proposed private mitigation banks in the Hillsborough River basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: During mitigation selection, the only SWIM sponsored project in the Hillsborough River watershed was the Lake Thonotassassa Restoration Project (SW 34). The habitat improvements associated with that project are providing mitigation for wetland impacts associated with another FDOT roadway project.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Minor construction and planting activities conducted by Hillsborough County Conservation Services staff and contractors working for the County.

Entity responsible for monitoring and maintenance: Private consultants on contract with SWFWMD conducted semi-annual monitoring through 2008; periodic monitoring conducted by WMD staff and herbicide maintenance by County Conservation staff as part of normal land management activities and upland restoration within the former pasture area.

Timeframe for implementation: Commence: Acquisition, Summer, 2000 Complete: On-going habitat improvements as part of perpetual land management activities (e.g. herbicide exotics, fence line clearing, prescribed burns), an upland flatwood restoration within the former pasture area.

Project cost: **\$1,114,400**

Acquisition (298 acres) - \$994,400

Bahia Pasture, Flatwood Habitat Restoration (19 acres) - \$100,000

Miscellaneous (maintenance, monitoring, wet crossing) - \$20,000

Attachments

X 1. Description of site conditions and activities, aerial photographs. Refer to previous text and Attachment A, Figures A & B – 2008 Aerials.

X 2. Schedule for work implementation. Acquisition completed in 2000, long-term maintenance and management conducted through the Hillsborough County Conservation Section. Habitat improvements from 2005-2010, then perpetual land management activities.

X 3. Success criteria and associated monitoring plan. Refer to Attachment B.

X 4. Long term maintenance plan. Maintenance and management conducted through the Hillsborough County Conservation Section as part of the normal land management activities associated with the County's other Cypress Creek Preserve, East & West property. A management plan and additional details for this property is available from the Hillsborough County Conservation Section or WMD- FDOT Mitigation Program Manager.

Attachment A – Existing & Proposed Site Conditions

In addition to preservation of high quality mixed forested wetland (153 acres) and hardwood hammock uplands (95 acres), the mitigation activities include enhancement of pine flatwoods (17 acres), palmetto prairie (14 acres), and restoration of improved bahia pasture (19 acres) to pine flatwoods. Due to the scale limitations and dense canopy cover, and the high percentage of hydric soil mapped on the soil survey, the presence of several mesic hardwood hammocks are not easily observed on the aerials. The diverse combination and adjacent proximity of upland and wetland habitat communities provides substantial foraging, denning and access opportunities for many wildlife species.

The hardwood hammocks include a dominance of live oak, Southern magnolia, sweet gum, water oak; a sub-canopy of saw palmetto, cabbage palm, beautyberry, salt-bush, buckthorn; and ground coverage dominated by small panicums (*Dicanthelium spp.*). Due to the range of forested wetland grade elevations, there is diverse canopy and sub-canopy coverage dominated by laurel oak, sweet gum, red maple, bald cypress, American elm, sweet bay, cabbage palm, tupelo and ironwood. Ground cover is dense in the transitional wetland areas, minimal in the obligate zones where rainy season water levels are typically above surface grades. Dominant ground cover species include cabbage palm saplings, various sedges and rushes, wild coffee, Jack-in-the-Pulpit, and shield fern. The palmetto prairie and pine flatwoods have a dominance of slash pine (in the flatwoods) over saw palmetto, rabbit tobacco, paw-paw, and bahiagrass. The density of palmetto is generally moderate to low, but has increased in cover since removal of the cattle. Wildlife diversity is high within the forested areas with evidence of deer, raccoon, opossum, armadillo, rabbit and many avian species. Several gopher tortoise inhabit the pasture.

Hillsborough County's Conservation Section has conducted habitat improvements within the Jennings Tract. Various habitat enhancement and restoration activities are being conducted with three types of upland ecological communities. These include the bahia pasture, palmetto prairie, and overgrown pine flatwoods. Except for the pasture, the upland areas are accessed by pre-existing access roads through forested wetland habitat. Restoration activities within the pasture commenced in 2007 with herbicide application of the bahia and a prescribed burn. Eradication of bahia is being conducted along with direct seeding of upland

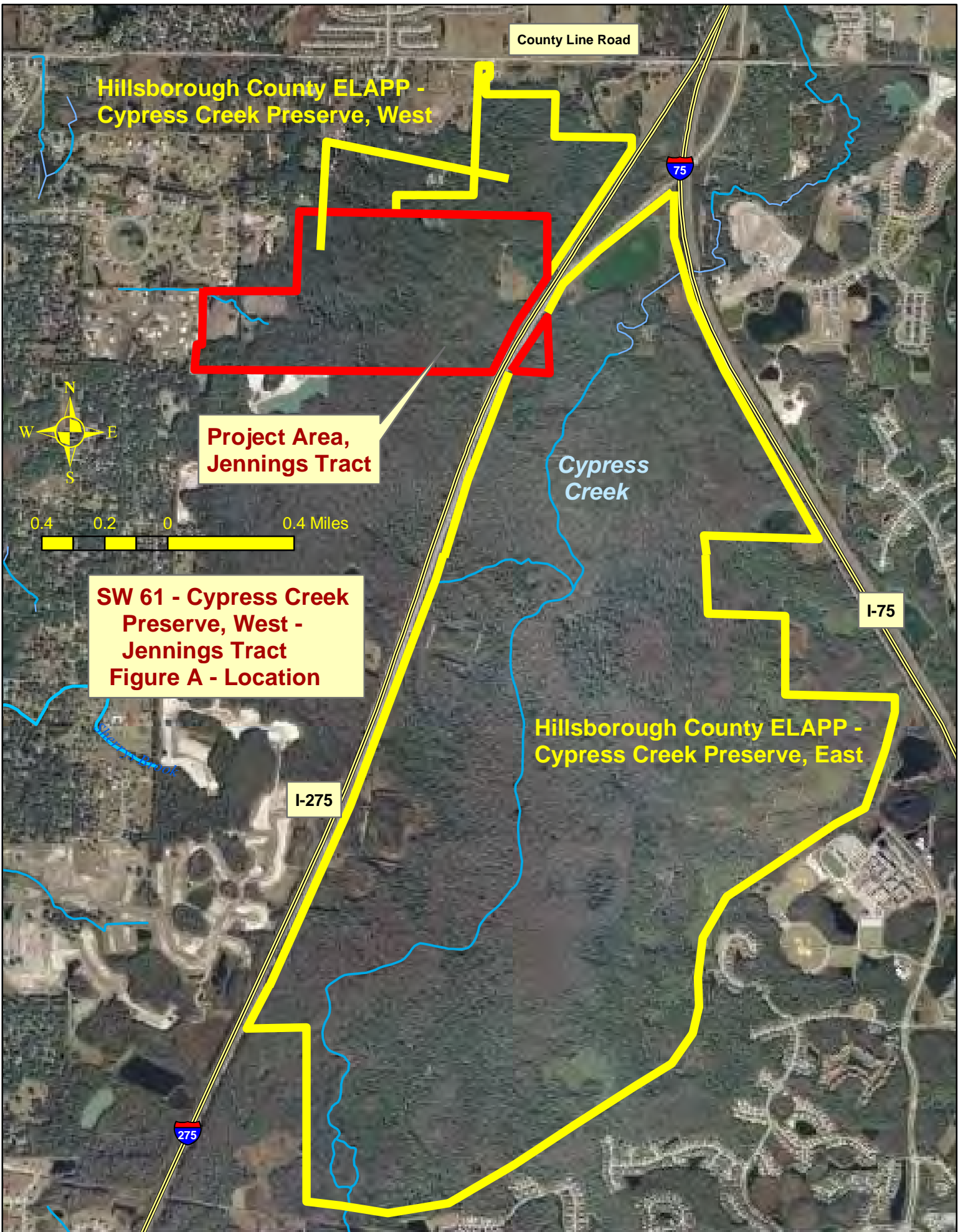
native species and longleaf pine. The palmetto prairie has bahia mixed in with the palmetto and desired native species. Selective herbicide treatments and prescribed burns have minimized the bahia coverage. The overgrown pine flatwoods receive prescribed burns on a 3-5 year rotation to decrease some of the woody understory and selective herbicide of invasive exotic species; which is primarily limited to skunk vine.

ATTACHMENT B – Maintenance & Monitoring, Success Criteria

Maintenance activities are primarily associated with implementing the prescribed burn management plan when necessary to achieve and maintain habitat conditions. Depending on the growth rate of vegetation cover within the enhanced and restored upland habitat, these burns are conducted on a 3-5 year cycle, and 10-15 year cycle for the upland hardwood hammocks. Herbicide eradication of existing and generated exotic and nuisance species are conducted as necessary. Other than the bahia, the other problem species of concern for this particular tract include Chinaberry and skunkvine. Herbicide treatments and prescribed burns to eradicate and control bahia within the 19-acre flatwood restoration is also conducted as necessary (photograph).

Qualitative monitoring was conducted semi-annually by a consulting firm on contract with the SWFWMD through 2008. Monitoring stations were established to adequately evaluate and document habitat and wildlife conditions and functions for the various preserved, enhanced and restored ecosystems. The results of the monitoring events were compiled into annual monitoring reports, along with information of the various maintenance and management activities and success trends. Qualitative reviews and collaboration between County & WMD staff continue to evaluate the progress of the upland restoration area and the habitat conditions & wildlife use of the other ecosystems on the property.

Success criteria requirements include the County applying the appropriate maintenance and management practices within the various habitats on the property; such as herbicide treatments of exotic & nuisance species, implementing prescribed fires, and other activities noted within the County's management plans for the property. Flatwood restoration success criteria includes a minimum 100 longleaf pines present within the 19-acre area, and average survivorship of 400 plants per acre of wiregrass and other native herb & shrub species; whether naturally recruited and/or planted from seed, bare root, or containerized material.



County Line Road

Hillsborough County ELAPP -
Cypress Creek Preserve, West

75



Project Area,
Jennings Tract

Cypress
Creek

0.4 0.2 0 0.4 Miles

SW 61 - Cypress Creek
Preserve, West -
Jennings Tract
Figure A - Location

I-75

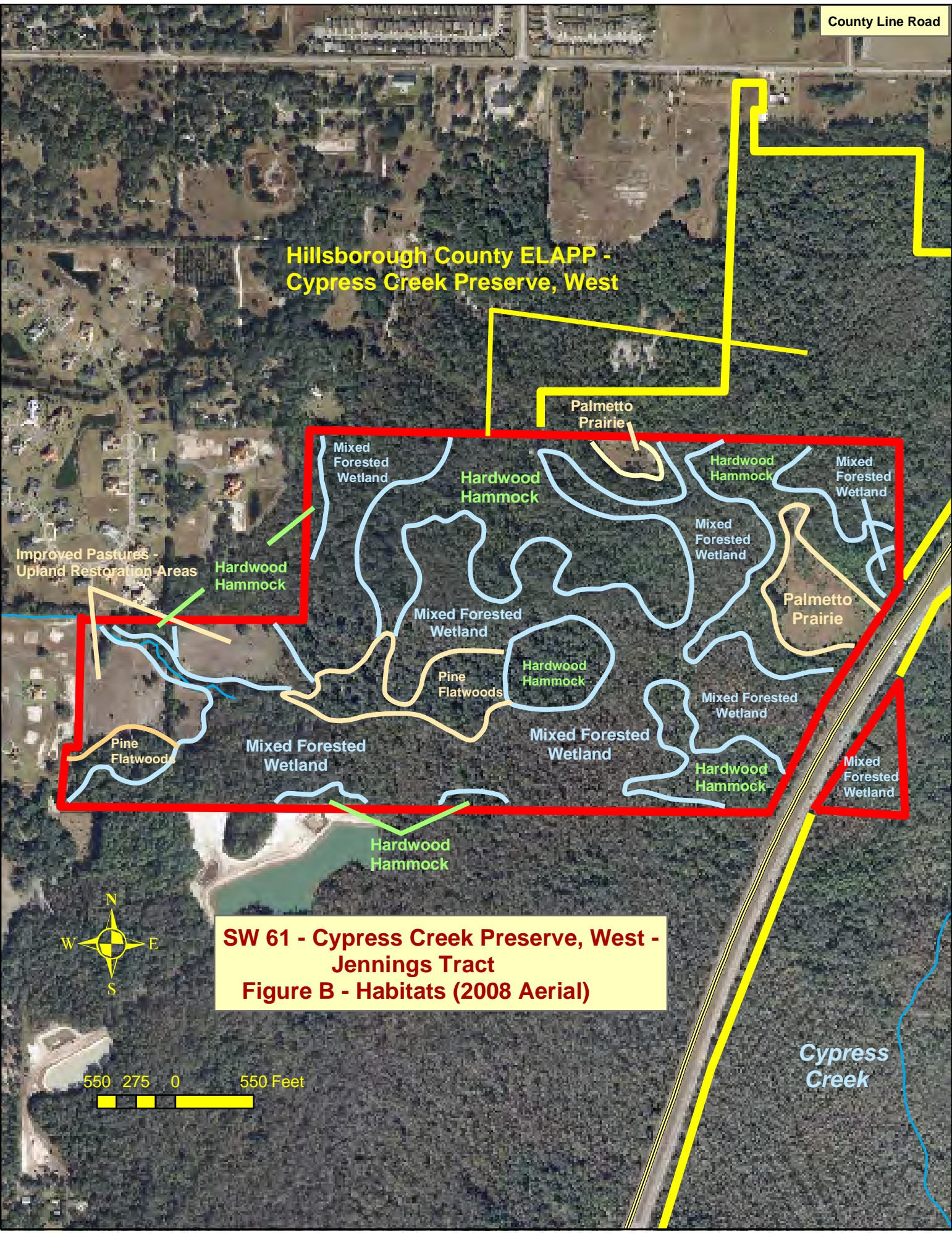
Hillsborough County ELAPP -
Cypress Creek Preserve, East

I-275

275

County Line Road

Hillsborough County ELAPP - Cypress Creek Preserve, West



SW 61 - Cypress Creek Preserve, West - Jennings Tract
Figure B - Habitats (2008 Aerial)

Cypress Creek

550 275 0 550 Feet



Upland Hardwood Hammock - The hardwood hammocks have diverse canopy species, dominated by live oak, water oak, Southern magnolia, sweet gum, over saw palmetto, beautyberry, and buckthorn.



Upland Hardwood Hammock - Transitional area depicting the upland hammock (right) with sweet gum over saw palmetto, dropping in grade elevation to the mixed forested wetland (left) with cabbage palm, laurel oak, maples. Intricate mosaic of upland hammocks and wetland hardwoods results in high quality habitat for wildlife .

**FDOT - District 7 Mitigation Site
(Hillsborough River Basin)**

**CYPRESS CREEK PRESERVE WEST (SW 61)
(Jennings Tract, Hills. Co. ELAPP)**



Mixed Forested Wetland - View of one of the lower grade elevations that becomes inundated with surface waters during the rainy season, tupelos and cypress are more common than the higher elevations.



Mixed Forested Wetlands - The higher grade elevations are more prevalent than the lower elevations. Mixed hardwoods (laurel oak, maple, sweet gum, American elm, ironwood) are the most common species.

**FDOT - District 7 Mitigation Site
(Hillsborough River Basin)**

**CYPRESS CREEK PRESERVE WEST (SW 61)
(Jennings Tract, Hills. Co. ELAPP)**



The palmetto prairies have been enhanced with pine plantings, bahia herbicide treatments, and incorporating a prescribed fire program.



The upland restoration activities within the western side of the tract has incorporated a combination of herbicide treatments, prescribed fire program (photo taken after 2007 burn), native species seeding and plantings.

***FDOT – District 7 Mitigation Project
(Hillsborough River Basin)***

***SW 61 – CYPRESS CREEK PRESERVE,
WEST – JENNINGS TRACT***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Tappan Tract
Project Sponsors: City of Tampa, SWFWMD – SWIM Section
County: Hillsborough

Project Number: SW 62
Location : Sec. 17, T30S, R18E

IMPACT INFORMATION

DOT (FM): 2557031, SR 60 - Cypress St. to Fish Creek* ERP #: 43002958.003 COE #: 200205816 (IP-MN)
Drainage Basin(s): Tampa Bay Coastal Water Body(s): Tampa Bay SWIM water body? Y

Acres/Impact Types (FLUCFCS): FM 2557031 -

	<u>0.6</u> ac.	<u>510</u> - Saltwater canal
	<u>0.1</u> ac.	<u>530</u>
	<u>0.3</u> ac.	<u>612</u>
	<u>0.6</u> ac.	<u>641x</u>
	<u>3.5</u> ac.	<u>642x</u>

TOTAL: 5.1 acres

* Note: The total wetland impacts associated with this roadway project was 16.6 acres. Mitigation is provided at Tappan for only the minor mangrove and substantial ditch and open water impacts associated with this roadway project. Mitigation for the saltwater marsh impacts (10.7 acres) is provided at the Apollo Beach (SW 67) and Cockroach Bay – Saltwater (SW 77) projects. The freshwater marsh impacts for this FDOT project (0.8 acre) are mitigated at the Cockroach Bay – Freshwater project (SW 56).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation X Enhancement Mitigation Area: 8.38 ac.
SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? N
Mitigation Bank? N Drainage Basin(s): Tampa Bay Drainage Water Body(s): Tampa Bay SWIM water body? Y

Project Description

A. Overall project goal: The Tappan Tract is a SWIM-sponsored project constructed on property owned by the City of Tampa along the eastern shoreline of Old Tampa Bay (Figure A). The goal of the project is to provide some unique wetland and upland habitats on public lands adjacent to existing mangrove habitat along Tampa Bay (Figures A-C). The project included the creation of tidal pool (0.41 ac.), salt marsh (1.19 ac.), and freshwater ephemeral marsh (0.55 ac.) habitats (total 2.15 acres of wetland creation). Enhancement was also achieved to saltern habitat (0.53 ac.), tidal pool/creek (1.18 ac.), mangrove habitat (0.77 ac.) and salt marsh (2.55 ac.) (total 5.03 acres of wetland enhancement). Upland areas and spoil mounds were regraded to restore and enhance into coastal hardwood hammock habitat (1.20 ac.).

B. Brief description of pre-construction condition: The Tappan Tract property covers approximately 33-acres, including 9 upland acres and 24 wetland acres. Only the eastern portion of the property includes the habitat construction and restoration activities, and the only area providing FDOT mitigation credit. Prior to the construction in 2003, the upland area within the east central portion of the site was primarily a mowed open field with dominant cover of grasses, sedges, scattered cabbage palm, exotic species (Brazilian pepper, Melaleuca), and a few live oaks along the eastern boundary (Figure B, 1999 aerial, site photos). A ridge of stockpiled spoil material was located along the north and northwestern perimeter of the construction area, approx. 10 ft. above natural grade, covered with a dense stand of exotic and nuisance species such as Brazilian pepper, Melaleuca, pokeweed, caesarweed, and elderberry. A shallow-scraped upland area in the southern portion of the property generated some high salt-marsh characteristics. Overall, the project area represented low quality habitat conditions for wildlife use.

C. Brief description of conducted work: Construction was conducted in 2003 and 2004, commencing with exotic species eradication, followed by earthwork grading to remove the spoil and some upland soil material to create tidal pool & creeks, saltmarsh, and an ephemeral freshwater marsh (Figure C, 2004 aerial). The salt-marsh enhancement was conducted through decreasing some grade material and using the two constructed tidal pool & creek systems to increase hydrologic connections and flow to the marsh habitat (Figure D, 2008 post-construction & current conditions aerial). Some of the removed spoil and open field was restored to upland flatwood habitat, with supplemental planting conducted to enhance the remnant oak hammock along the east side of the project. Native tree, shrub and herb species were planted in the upland and wetland habitats, followed by routine herbicide treatments to aid in maintaining the habitat conditions. Additional details on the construction, planting, and current conditions provided in Attachment A. Aerials and site photographs depict the pre-post habitat conditions.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The majority of the wetland impacts designated for mitigation at the Tappan Tract were associated with low quality ditches, with the remaining wetland impacts mitigated at Cockroach Bay (SW 56- Freshwater and SW 75 - Saltwater sites) and Apollo Beach (SW 67). The mangrove enhancement (0.77 ac.) compensates for the 0.3 acre of mangrove impact. Additional mangrove generation has naturally occurred within the enhanced and constructed salt marsh. For the 3.5 acres of saltwater ditch impacts, the mitigation includes salt salt-marsh creation (1.19 ac.), salt-marsh enhancement (3.06 ac.), tidal pool creation (0.41 ac.), saltern enhancement (0.53 ac.), and tidal pool enhancement (0.72 ac.). For the 0.6 acre of freshwater ditch impacts, the mitigation includes freshwater marsh creation (0.55 ac.) and hardwood hammock enhancement (1.20 acres). Considering 94% of the wetland impacts were associated with ditches, the mitigation is considered appropriate to compensate for these low quality wetland impacts.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The only mitigation bank in the Tampa Bay Drainage Basin is the Tampa Bay Mitigation Bank (TBMB), which was not permitted at the time mitigation selection had to be designated for this FDOT project.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: This is a SWIM –sponsored habitat improvement project conducted on property owned and managed by the City of Tampa.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD Operations Department, planting by private contractor
Entity responsible for monitoring and maintenance: Private consultant on contract to the SWFWMD
Proposed timeframe for implementation: Commence: Design, 2000, Construction, 2003-2004 Complete: Quarterly herbicide treatments and semi-annual monitoring through 2009, followed by perpetual maintenance as necessary by City of Tampa. Additional details provided by SWFWMD-SWIM Section, City of Tampa Parks, FDOT Mitigation Program Manager.

Project cost: \$ 460,000 (total)
Design: \$80,000
Construction and planting: \$340,000
Monitoring & Maintenance: \$40,000

Attachments

X 1. Description of construction activities, current conditions and photographs. Refer to previous text, Attachment A, Figures B-D (pre-during-post construction aerials), site photographs.

X 2. Success criteria, maintenance & monitoring plan. Refer to Attachment B

ATTACHMENT A – Pre & Post Construction Site Conditions

The Tappan Tract site was historically a coastal pine flatwood adjacent to a mangrove fringe along Tampa Bay. The pine flatwoods were cleared and fill material was placed along the wetland boundary. Possible fill source was from the scraped upland along the southeast side of the project site, resulting in the generation of a transitional salt-marsh (refer to Figure B). The clearing and fill material allowed the site to become invaded by Brazilian pepper (*Schinus terebithifolius*) and Melaleuca (*Melaleuca quinquenervia*). As part of the initiative of the SWFWMD-Surface Water Improvement & Management Program (SWIM) and the Tampa Bay National Estuary Program (TBNEP), this site was selected to not only restore upland habitat, but to create and enhance estuarine wetlands that are tidally connected to Tampa Bay. This project was one of the proposed habitat creation and restoration projects under consideration along Tampa Bay, referred to as the South Tampa Greenway, and the site is owned by the City of Tampa.

Construction grading commenced in 2003 to remove the stockpiled soils with dense coverage of B. pepper, as well as decrease grade elevations to create two tidal pool and creek systems that is bordered by salt-marsh and saltern habitat (Figure C – 2004 aerial during construction, site photos). This grading also increased tidal connection and flow regimes to the existing salt-marsh habitat. Species such as smooth cordgrass (*Spartina alterniflora*), marshhay cordgrass (*Spartina patens*), cordgrass (*Spartina bakeri*), seashore dropseed (*Sporobolus virginicus*), and seaside paspalum (*Paspalum vaginatum*) were planted in the salt-marsh creation. With the seed transport provided by the tidal pools & creeks, mangrove species (*Rhizophora mangle*, *Avicenna germinans*, *Laguncularia racemosa*), and salt-grass (*Distichlis spicata*) have naturally recruited and generated within the salt-marsh habitat. Much of the salt-marsh habitat was purposely graded to elevations at and slightly above high tide elevations. This condition results in irregular flushing with salt water that established rare and unique saltern habitat (Figure D, site photos). Salterns typically have minimal vegetative coverage due to the concentrated salt on the surface, but are productive ecosystems for birds and mammals that commonly forage for crabs, invertebrates, and other species that inhabit the area.

The ephemeral freshwater marsh is separated from tidal influence, and planted with maidencane (*Panicum hemitomon*), American bulrush (*Scirpus tabernaemontani*), white bacopa (*Bacopa monnieri*), and creeping primrose (*Ludwigia repens*). These species are present with bulrush being the dominant cover. Some of the upland field and fill material were graded to contribute surface water runoff into the ephemeral marsh, then mulched and planted with coastal hammock and flatwood species such as slash pine (*Pinus elliottii*), Florida privet (*Forestiera segregate*), live oak (*Quercus virginiana*), firebush (*Hamelia patens*), beach sunflower (*Helianthus debilis*), red cedar (*Juniperus virginiana*), muhly grass (*Muhlenbergia capillaries*), Christmas berry (*Lycium carolinianum*), beach sunflower (*Helianthus debilis*), and tropical sage (*Salvia coccinea*).

The wetland and upland habitats at Tappan have appropriate hydrology, substantial coverage of desirable species, minimal exotic vegetation, and substantial wildlife use. Commonly observed species include fiddler crab (*Uca pugilator*), blue crab (*Callinectes sapidus*), killifish (*Fundulus* sp.), and raccoon (*Procyon lotor*), red-shouldered hawk (*Buteo lineatus*), belted kingfisher (*Ceryle alcyon*), killdeer (*Charadrius vociferous*), little blue heron (*Egretta caerulea*), oystercatcher (*Haematopus palliatus*), snowy egret (*Egretta thula*), white ibis (*Eudocimus albus*), wood stork (*Mycteria americana*), and other wading bird species.

ATTACHMENT B - Maintenance & Monitoring Plan, Success Criteria

Maintenance is primarily conducted to control of garbage and debris from the site, and to eradicate exotics generated within the site; which are predominantly saplings of Brazilian pepper and melaleuca in the upland areas. Quarterly herbicide maintenance was conducted by private consultants contracted through the SWFWMD through 2009. Perpetual maintenance is conducted when necessary by the City of Tampa Parks Dept. to

maintain successful habitat conditions on their property. Qualitative monitoring was conducted semi-annually through 2009, with an annual monitoring report each year to document the habitat conditions and maintenance activities for the previous year. Site reviews continue in collaboration between SWFWMD & City of Tampa. The success criteria included 90% survivorship for planted material, a total 85% coverage of desirable species, and less than 5% cover of exotic and nuisance species. The site's habitat conditions exceed the success criteria.



Gandy Bridge

Tampa Bay



0.25 0.125 0 0.25 Miles

Project Site

Westshore Blvd.

Prescott Street

Port Tampa

Mac Dill
Air Force
Base

SW 62 - Tappan Tract
Figure A - Location

Tampa Bay



100 50 0 100 Feet

Mangrove

Brazilian Pepper

Mowed Upland Field

Live Oaks

Sherrill Street

Mangrove

Saltern Salt-Marsh

High Salt-Marsh (Scraped Upland Area)

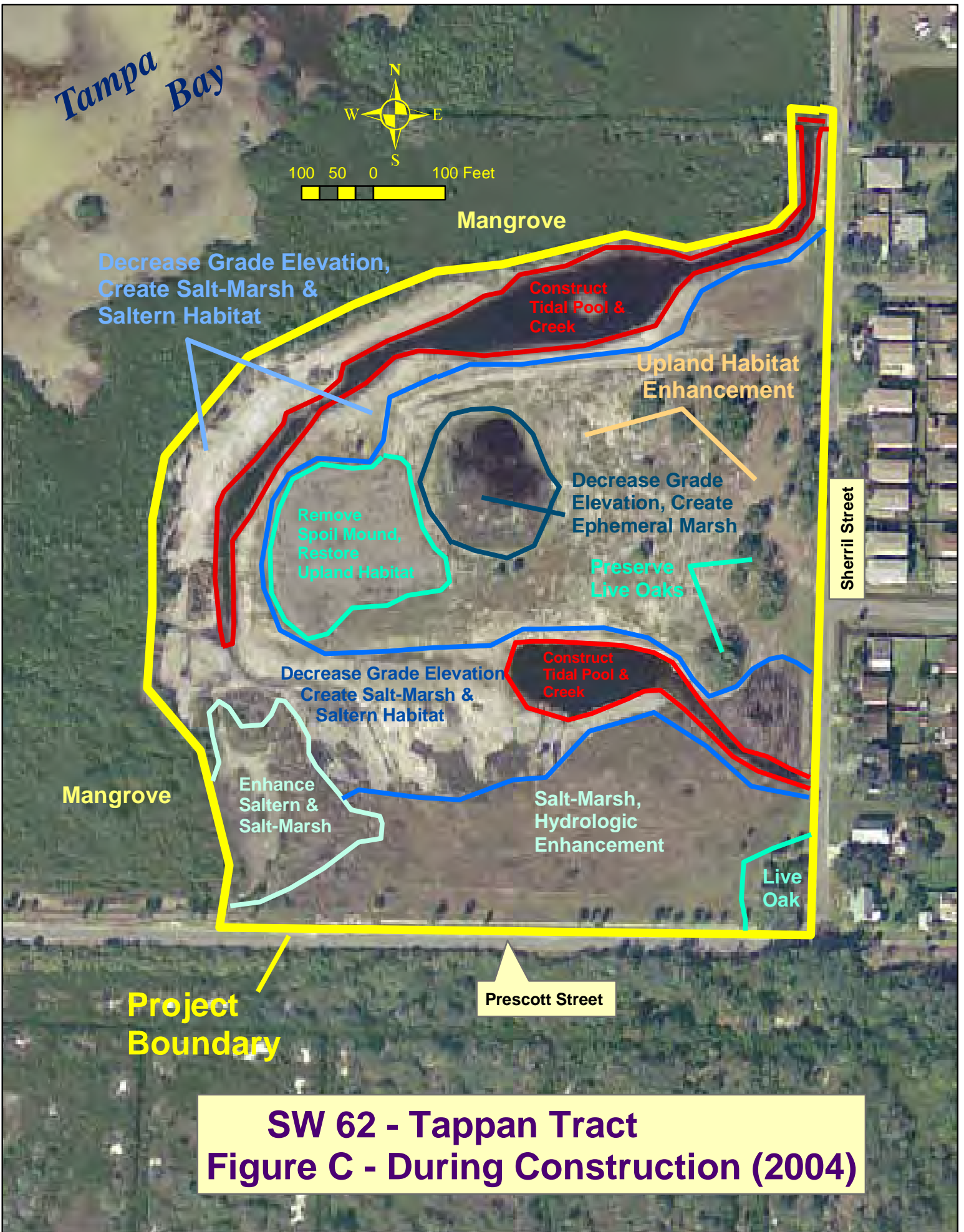
B. Pepper

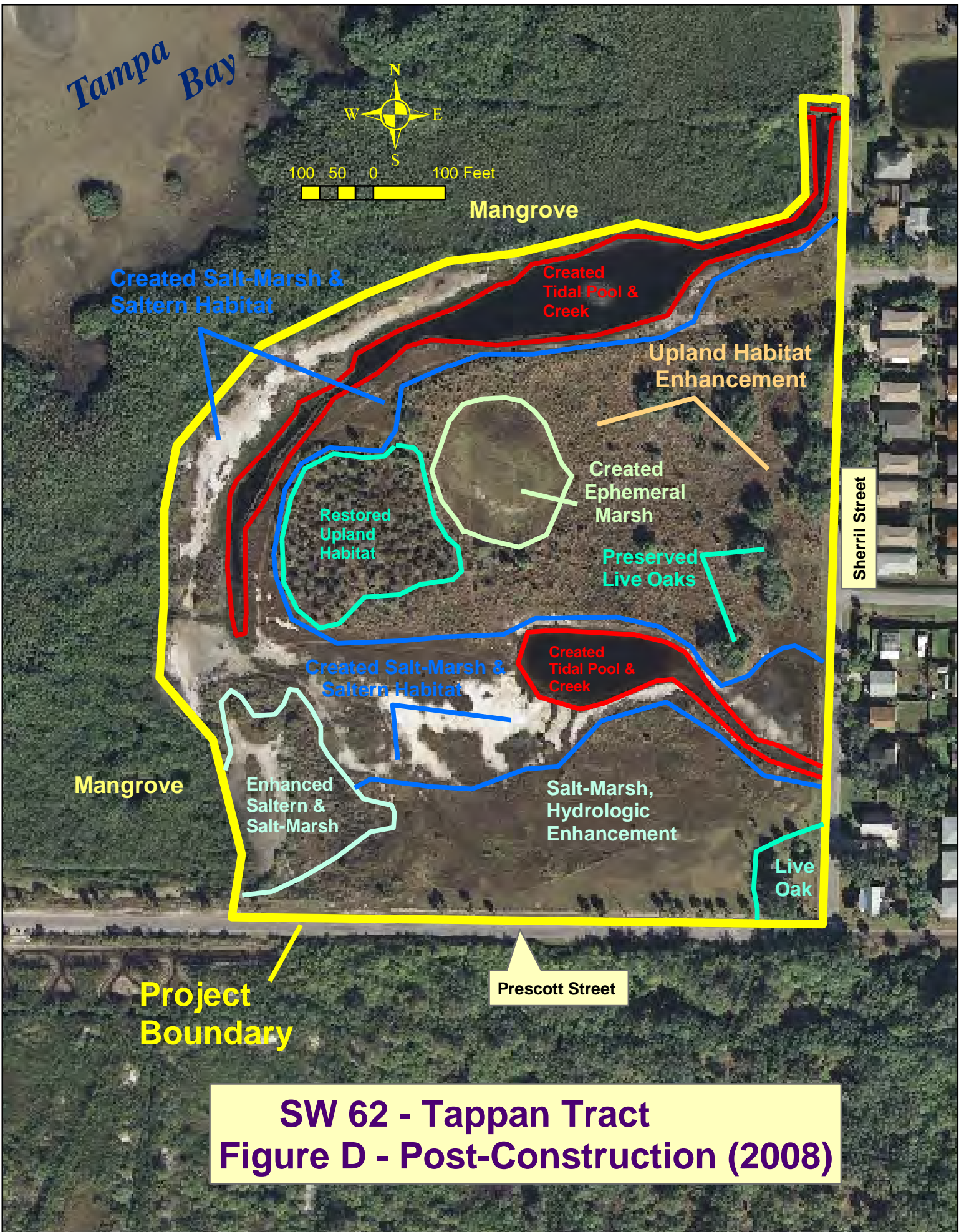
Live Oak

Project Boundary

Prescott Street

SW 62 - Tappan Tract
Figure B - Pre-Construction (1999)







During 2003 construction of the northern tidal pool and creek system, included removal of stockpiled spoil material and lowering grade to allow tidal connection and flow.



Along with the cordgrass plantings bordering the northern tidal creek, mangrove species have naturally recruited and generated.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

SW 62 – TAPPAN TRACT



The constructed salt-marsh habitat has herb coverage intermixed with established rare and unique saltern habitat; productive ecosystems for birds and mammals to forage on crabs and other species that inhabit the area.



Along with preserving large live oaks (right), the upland habitat includes plantings and coverage of other coastal hammock and flatwoods habitat such as muhly grass, red cedar, Florida privet, saw palmetto, beach sunflower, slash pine, broomsedge, and wax myrtle.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

SW 62 – TAPPAN TRACT



Some fill material removal and the 2003 grading of the field was conducted to create a circular ephemeral freshwater marsh.



The ephemeral marsh (dominant coverage of bulrush, bacopa, and maidencane) has minimal depth and short duration hydroperiods, allowing for more wildlife foraging opportunities. The only freshwater marsh in the vicinity, it is buffered by restored and enhanced coastal hammock and flatwood habitat (background).

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

SW 62 – TAPPAN TRACT

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Hillsborough River Corridor
Project Sponsor: SWFWMD – Land Resources
County: Pasco

Project Number: SW 63
Location: Section 30, T26S, R22E

IMPACT INFORMATION

FM: 2563151, US 41, Bell Lake to Tower Road ERP #: 4418030.002 COE #: 199241273 (IP-ES)
Drainage Basin(s): Hillsborough River Water Body(s): None SWIM water body? N

Impact Acres/Types (FLUCFCS): FM: 2563151 - 1.1 acres 621 **TOTAL: 1.1 acres**

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation Mitigation Area: **10 acres**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin: Hillsborough Water Body: Hillsborough River SWIM water body? N

Project Description

- A. Overall project goal:** Acquisition and preservation of a parcel within the Hillsborough River floodplain, a mixed forested wetland (10 acres) that is part of a high quality river floodplain habitat corridor connecting to adjacent property already owned by the SWFWMD (Upper Hillsborough Tract, Figure A).
- B. Brief description of current condition:** The entire tract is a mixed forested wetland floodplain with high quality habitat. A narrow portion (40-60 ft. wide) of the Hillsborough River meanders through the tract. Refer to Attachment A for information on habitat conditions.
- C. Brief description of proposed work:** The site is periodically reviewed for security and to ensure high quality habitat conditions are maintained. Efforts continue to hopefully acquire (fee simple or a conservation easement) of the adjacent 20 acre outparcel of floodplain forest east of the tract. This acquisition would finalize a corridor connection to the main Upper Hillsborough Tract (Figure A).
- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project:** The Hillsborough River floodplain is an important corridor for wildlife habitat, water quality treatment, and flood attenuation. Only one wetland impact area associated with one roadway project is designated for mitigation with this tract, resulting in the preservation mitigation credit of 10 acres to compensate for 1.1 acres of wetland impact.
- E. A brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** At the time of selection, a mitigation bank was not present or proposed within the Hillsborough River basin.
- F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body:** At the time of selection, the only SWIM-sponsored project within this basin was the Lake Thonotasassa Shoreline Restoration Project; a project selected to mitigate for wetland impacts associated with another FDOT project.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: No construction activities are necessary

Entity responsible for monitoring and maintenance: Management, security, and any maintenance activities are conducted by the SWFWMD Land Management and Land Use Depts.

Timeframe for implementation: Commence: Summer, 2000 Complete: April, 2001 (acquisition)

Project cost: \$15,000 (acquisition costs)

Attachments

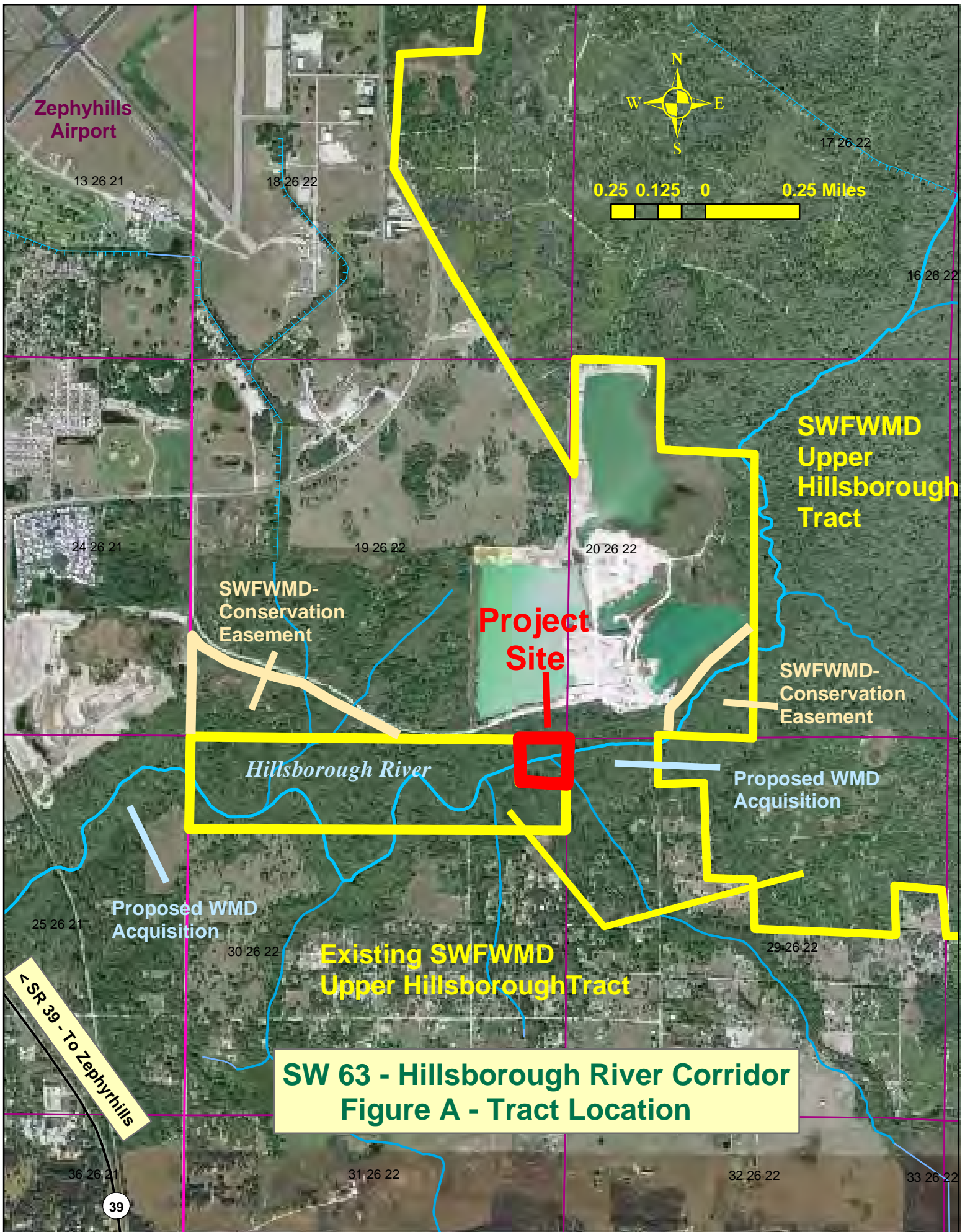
1. Description of site and proposed work. Refer to Attachment A

2. Location aerial & site photographs. Figure A, photos.

3. Success criteria and associated maintenance & monitoring plan. No monitoring, maintenance or success criteria required or proposed due to the high quality habitat conditions. Normal land management activities are conducted to preserve and maintain the habitat conditions.

ATTACHMENT A - Existing Site & Activities

The entire 10 acres is mixed forested wetland floodplain with the Hillsborough River meandering through the southern portion of the site (refer to photos). The overstory (canopy >70%) is dominated by red maple, American elm, and laurel oak. Sub-dominants include sweet gum, hackberry, ironwood, bald cypress, and pop ash. Several small natural channels with cypress exist where the river overflows during flood events. A shrub canopy (50-70% cover) in combination with the overstory provides a dense cumulative canopy but still relatively open understory to provide easy wildlife movement. Shrub layer species include the same canopy species with a dominance of elm and additional cover of cabbage palm, Virginia willow, and wax myrtle. Understory vegetation includes smilax, poison ivy, Virginia creeper, wild coffee, and various, small *Panicum spp.* Observed wildlife species include deer, racoon, squirrels, and substantial bird activity. Periodic review of the site is conducted by the SWFWMD to ensure these high quality habitat conditions are maintained and that no adjacent land use activity encroaches or impacts the habitat.





View depicting the dense canopy & subcanopy coverage, yet still open ground area for wildlife movement. The white lichens on the cypress (left) delineates a flood elevation a few feet above surface grade.



Background depicts an area of very dense subcanopy however small pockets of less canopy (foreground) allow substantial cover of various herbaceous species.

**FDOT - District 7 Mitigation Site
(Hillsborough River Basin)**

HILLSBOROUGH RIVER CORRIDOR (SW 63)



View of the Hillsborough River that substantially meanders through the property, averaging 40-60 ft. wide, very clear & clean water.



One of the many overflow channels within the floodplain, the cypress tend to be concentrated along the channels, various wetland hardwood species dominate the remaining floodplain.

**FDOT - District 7 Mitigation Site
(Hillsborough River Basin)**

HILLSBOROUGH RIVER CORRIDOR (SW 63)

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Withlacoochee State Forest – Baird Tract

Project Number: SW 64

Project Co-Sponsors: Florida Division of Forest (landowner & property manager),

Florida Department of Environment Protection (project design & construction management)

Project Manager: Judy Ashton, Environmental Specialist (FDEP-Tampa)

Phone: (813) 632-7600, ext. 342

County: Sumter

Location (central lat/long): 28 33' 0", 82 00', 00"

IMPACT INFORMATION

1 - FM 2571641, SR 44-CR 470 to County Line

ERP #: 4310152.004 COE #: 199606491 (IP-KF)

2 - FM 2571631, SR 44-US 41 to CR 470

ERP #: 4310152.003 COE #: 199606491 (IP-LM)

3 - FM 2571841, SR 45 (US 41) – Watson St. to SR 44 East

ERP #: 44024198.000 COE #: 200206293 (NW-KCF)

4 - FM 4092071, CR 470 (Gospel Isle)

ERP #: 44027068.000 COE #: 2004-6915 (NW)

Drainage Basin: Withlacoochee River

Water Body: Lake Henderson, Lake Tsala Apopka SWIM water body? N

Impact Acres / Types (FLUCFCS):

1- FM 2571641

2-FM 2571631

3 - FM 2571841

4-FM 4092071

4.9 ac. 617

3.1 ac. 615

0.1 ac. 641x

0.1 ac. 617

4.1 ac. 630

3.2 ac. 618

0.1 acre

0.2 ac. 641

4.9 ac. 641

1.6 ac. 641

0.3 acre

13.9 acres

7.9 acres

TOTAL – 22.2 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation

Mitigation Area: **2,425 acres**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N

Drainage Basin(s): Withlacoochee River Water Body(s): Giddon Lake, Merritt Pond, Goose Pond, Little Withlacoochee River SWIM water body? N

Project Description

A. Overall project goal: The Baird Tract (11,567 acres) is within a portion of the Richloam Management Area (49,000 acres), one of several tracts that make up the Division of Foresty's Withlacoochee State Forest. Prior to public acquisition in 1995, the Baird Tract had extensive alterations to natural drainage patterns as a result of constructed ditches, berms, swales, fire brakes, silviculture bedding, insufficient culverts, railroad trams, and off-site contributing watershed drainage alterations. The proposed project includes the construction and implementation of 72 drainage improvements to restore natural flow patterns within 14 designated surface water management project areas. The project goal is to primarily restore and enhance drainage conditions to enhance over 2,425 acres of wetland habitats.

B. Brief description of current condition: The Baird Tract is located within the state-designated “Green Swamp Area of Critical Concern,” an important region where the ground and surface water forms the headwaters of four major riverine systems (Withlacoochee, Hillsborough, Peace, Ocklawaha). The Baird Tract adjoins over 200,000 acres of other public lands that were primarily acquired by the state to protect and enhance wetlands and associated water resources (Figure A). The Baird Tract has an extensive mosaic of wetland systems, slash pine plantations and pine flatwoods managed through the Florida Division of Forestry (FDOF). The wetland systems include a dominance of mixed forested wetlands, forested stream swamps and cypress strands (Figure B). However unlike the majority of the wetland habitats in the Green Swamp that are primarily forested ecosystems, there are also large ephemeral and emergent marshes located on the property (Figure 2 - i.e. Gidden Lake, Merritt Pond, Revel Pond, Goose Pond). The network of ditch and elevated roads were previously constructed to primarily drain surface water more rapidly to the south and west into the Little Withlacoochee River. This has resulted in decreasing the depth and duration of surface water hydroperiods associated with many wetlands within the Baird Tract. Subsequently, this alteration has reduced other wetland functions and associated benefits such as the presence of appropriate and diverse flora & fauna, water quality treatment, flood attenuation, and groundwater recharge. Site details are provided in the permit applications, available upon request from the Florida Department of Environmental Protection (FDEP) who is co-sponsoring the proposed hydrologic restoration project.

C. Brief description of proposed work: The pre-construction activities include extensive wetland habitat and drainage evaluation, data collection, and incorporating this information in the surface water hydraulic & hydrologic model (ICPR). This evaluation has determined the possible primary wetland hydrologic improvements that can be conducted, and delineated these improvements into 14 individual surface water management project areas. These specific project locations are depicted on Figure C, with the current hydrologic problems and resolutions described on Table 1. There will be construction of 72 proposed structures to achieve the desired hydrologic restoration associated with the 14 projects. These structures include 45 ditch blocks, with the remaining 27 structures associated with adding and replacing culverts. As a result, the actual footprint of construction-related activities will be minimal, however there will be extensive ecological benefits associated with restored and enhanced wetland hydrology. From a habitat perspective, the restoration will result in a reduction of altered hydrologic conditions that have allowed inappropriate facultative and upland vegetative species recruitment and generation within the wetlands. In turn, the gradual mortality and eradication of these species as a result of the restored hydrology will be displaced by regeneration and recruitment of appropriate hydrophytic species. The restored hydrology and appropriate vegetative conditions will provide wetland habitat functions and benefits that will attract more diversity and utilization by wildlife species. The restored hydrology will also provide more water quality treatment, flood attenuation, as well as groundwater recharge associated with the rare shallow rock & karst topographic features available on the the Baird Tract. Information on the environmental and engineering evaluations is provided in the permit applications and available from the FDEP.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): Of the total 22 acres of wetland impacts designated for mitigation through wetland enhancement at Baird, the habitats include 12 acres of mixed forested wetland habitats, 7 acres of marsh, and 3 acres of shrub wetlands. The proposed wetland hydraulic and hydrologic restoration and enhancement will result in biological (flora & fauna) improvements to various wetland habitats at Baird that are adequate and appropriate to compensate for these wetland impacts within the same Withlacoochee River Basin. Of the total 2,425 acres of primary wetland hydrologic restoration designated to provide mitigation at Baird, 2,268 acres are associated with forested wetlands and 158 acres are non-forested wetlands. There

will be secondary hydrologic benefits to other wetlands as well as uplands within the property however those are not accounted for in FDOT mitigation credits. Due to the large-scale habitat improvements at Baird Tract, the loss of the roadway wetland habitats will be compensated by the significant ecosystem benefits from the proposed activities.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection for the wetland impacts associated with the proposed roadway projects, there were no existing or proposed mitigation banks within the Withlacoochee River Basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : At the time of mitigation selection, the only SWIM-sponsored project within this watershed was the Lake Panasoffkee Restoration project (SW57), which was selected to provide mitigation to compensate for unavoidable wetland impacts associated with widening the existing I-75 bridge crossing of the Lake Panasoffkee wetland floodplain. Additional wetland hydrologic restoration projects within adjacent public lands have been selected for the FDOT mitigation program within 15-miles south of the Baird Tract (Figure A). These include SW 55 – Upper Hillsborough 4&5 (Hillsborough Basin), SW 59 – Hampton Tract (Withlacoochee Basin), and SW 84 – Colt Creek State Park (Hillsborough & Withlacoochee Basins).

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private contractor selected by FDEP & FDOF

Contact Name: Judy Ashton, Environmental Specialist (FDEP-Tampa) Phone Number: 813-632-7600, ext. 342

Entity responsible for monitoring and maintenance: FDEP and FDOF

Proposed timeframe for implementation: Commence: January, 2001-2009 – site evaluations, survey, data collection, engineering consultant selection, surface water modeling, installation of staff gauges with continuous recorders, environmental permitting, contractor selection for construction.

Complete: 2010 – 2011 construction, followed by minimum five years of monitoring.

Estimated Project Cost: \$840,000 (total)

Design & Permitting - \$350,000

Construction - \$450,000

Maintenance & Monitoring - \$40,000

Attachments

1. Description of existing site and proposed work. Refer to previous discussion, additional information available from FDEP and SWFWMD's FDOT Mitigation Program Manager.

2. Recent aerial photograph with date and scale. Refer to Figures A & B (2008 aerials).

3. Location map and design. Refer to Figure A (location), design details of the ditch blocks and culverts associated with the 14 individual surface water management (SWM) projects are available from FDEP.

4. Schedule for work implementation. Refer to previous schedule description. There are 14 projects associated with the overall design. The proposed objective is for most if not all of these projects to be constructed during the dry seasons within two years after permit approvals.

x 5. Monitoring plan and success criteria. The monitoring plan includes habitat evaluations, as well as surface water documentation of pre- and post-construction conditions via ten staff gauges with continuous water level recorders installed in 2008 within the tract's wetlands. The water table data will be presented as hydrographs within annual monitoring reports prepared for a minimum of five years post-construction. The initial monitoring report will document pre-construction hydrologic and habitat conditions and the structure construction. Qualitative vegetative and habitat evaluation of the representative wetland enhancement areas will be conducted semi-annually (dry & wet season observations) and concurrently with downloading water level data associated with the hydrologic monitoring. The qualitative wetland evaluation will include descriptive and photographic documentation of vegetative and habitat conditions, with particular notation of transitional shifts of vegetative diversity and wildlife utilization as a result of the restored and enhanced drainage improvements. Success criteria includes the demonstration that the proposed structures (e.g. ditch blocks, culverts, etc.) function as proposed, and that proper stabilization has occurred and will be maintained around the structures. This documentation will need to demonstrate that the proposed ditch blocks detain and/or divert flow as designed, and the new and replaced culverts are conveying flow to designated wetland systems. There is currently less than 5% coverage of exotic and nuisance species within the wetlands proposed for hydrologic restoration, and that percent coverage will not be exceeded post-construction.

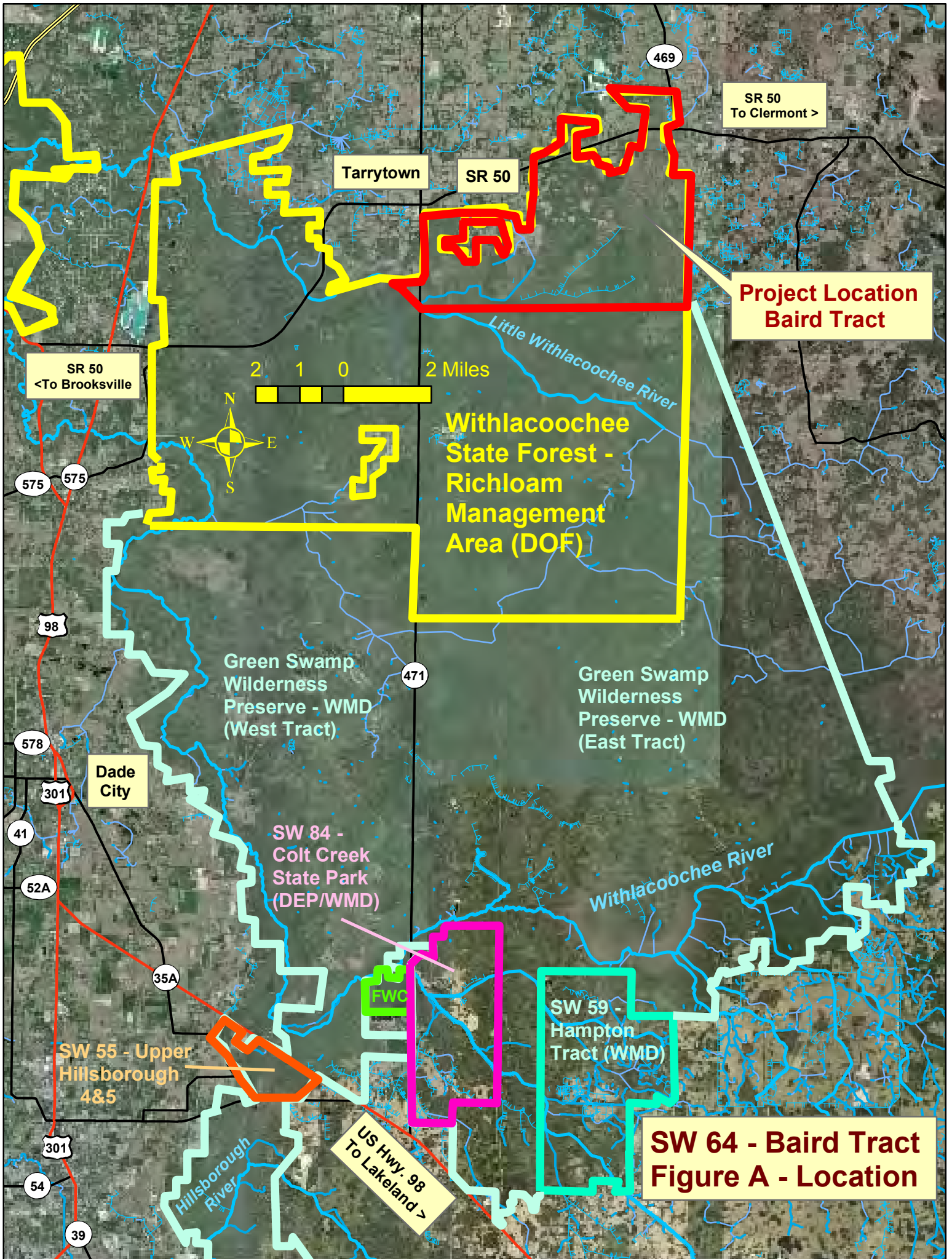
 x 6. Long term maintenance plan. Long-term maintenance will be associated with periodic monitoring, maintenance and managing the proposed construction areas (i.e. ditch blocks, culverts, etc.) to ensure that they are properly functioning as proposed, and that there are no existing or anticipated problems with structure erosion or stabilization.

Table 1 Potential Surface Water Management Projects for Restoring Wetlands

No.	Project Name	Location	Problem	Resolution
1	Sally Slough Restoration: (1) Proposed Mid-Ditch Plug on the Sally Slough Bypass Ditch, (2) Proposed Ditch Block on Baird Grade east of Sally Slough, (3) Proposed Frog Pond on Baird Grade west of Sally Slough, (4) Proposed 30 in RCP and Ditch Block on Baird Grade west of Sally Slough.	(1) Sally Slough is a braided cypress strand which originates at the southwest corner of Giddon Lake (at Wade Grade) and extends 5,700 feet to the southwest where it flows beneath Baird Grade through two 18" x 3' concrete box culverts. South of Baird Grade, Sally Slough merges with the braided cypress strands associated with the Little Whitecypress River. The Sally Slough Bypass Ditch also originates from the southwest corner of Giddon Lake approximately 400 feet east of Sally Slough and terminates approximately 2,800 feet to the southwest after passing through a pipe ridge.	Water levels in Giddon Lake and adjacent marshes and cypress strands are impaired by the Sally Slough ditch which drains the Lake and diverts surface water runoff away from a natural cypress strand located adjacent to the ditch. Excessive drainage is harmful to wetland functions and has created conditions contributing to hardwood encroachment and pond cypress dieback/loss.	Install a ditch block in the Sally Slough Bypass ditch approximately 1,900 feet south of Giddon Lake to improve flow through the eastern and western cypress strands. Both Seasonal High Water and Normal Pool elevations drop 1.5 feet from Wade Grade south to Baird Grade. Deep crossings, topography, observed flow patterns, measured water levels following high flow events, cross lines, rut lines and fisher lines all indicate the spreading of surface waters in the middle of Sally Slough already occurs and will be simply be enhanced by the proposed ditch block. The proposed bypass ditch block would be placed 1,900 feet southwest of Wade Grade within the pipe ridge to restore flow through the adjacent cypress strands.
		(2) The Proposed Roadside Ditch Block on Baird Grade is located approximately 375 feet east of the Sally Slough Box Culvert, SS#1.	Roadside ditches/swales is excessively draining an adjacent bypass strand.	Install a ditch block north of Baird Grade (375 feet eastward of the Sally Slough Box culvert, SS#1) to divert roadside drainage through an adjoining cypress strand. The existing 24-inch CMP would be relocated 45 feet eastward on the forest road and aligned with an existing swale where water crosses the road.
		(3) The proposed Frog Pond is located west of Sally Slough and immediately north of Baird Grade.	There is a need for a surface water pool for amphibians, wading birds, and other wildlife.	Construct a 14 to 2 acre wildlife pond in a disturbed area located north of Baird Grade and immediately west of Sally Slough. DEP had previously constructed and monitored a small test pit in the same location and were pleased with the project.
		(4) The proposed 30 inch RCP would be placed 955 feet west of SS#1, and the proposed Ditch Block is located 420 feet northeast of BGR#4 (42 inch RCP).	Baird Grade has restricted natural flow patterns and the roadside ditch reduces seeping and sheet flow patterns.	Install a ditch block south of Baird Grade to enhance water levels in a drained cypress dome south of Baird Grade and install a 30 inch culvert with an invert elevation of approximately 89.00 feet. This will protect a normal pool levels north of the road while allowing a seasonal high water of 82.82 feet to flow south into the dome.
2	Giddon Canal Cypress Dome Restoration	The Wade/Giddon Canal extends from Baird Grade northward to Giddon Lake and is located east of Wade Grade.	The Canal excessively drains isolated wetlands and impedes the movement of gopher tortoises.	Install 2 ditch blocks to restore cypress dome hydroperiods east of Wade Grade. These ditch blocks will also facilitate movement of gopher tortoise across the existing ditch. These proposed ditch blocks will not affect Giddon Lake since this outfall ditch was back-filled at the south end many years ago and three other outfalls remain in place on the Lake.
3	Bayroot Slough Restoration	The project location includes a segment of North Grade between Game Commission Road and Carter Island Road.	The flow from Bayroot Slough and adjacent wetlands is entrained within the roadside ditches and swales in a westerly flow, which excessively drains the wetlands.	Install ditch and swale blocks along right-of-ways to restore natural flow and wetland functions of the cypress strands. North Grade may require additional culverts and may need to be elevated.
4	Flag Pond Restoration	The Flag Pond is located north of Baird Grade and east of Big Cypress and Canal Grade.	Flag Pond is excessively drained by an East/West canal, which transpends the southeast portion of the Baird Tract. (The low water level measured in the spring/summer of 2007 and was nearly 10 feet below seasonal high water).	Install 2 ditch blocks northwest of Flag Pond to conserve waters in Flag Pond and disperse drainage through adjoining wetlands and cypress strands. (A temporary ditch block could be installed by placing plywood across the 24 inch CMP to be on the section line for preconstruction monitoring.)
5	South Flag Pond Restoration	The project site is located south of Baird Grade adjacent to the Section Line Road Culvert Crossing.	Roadside swales and ditches are excessively draining adjoining wetland areas.	Place swale block along ridge lines east of Section Line Road and place a ditch block south of the existing culvert crossing located immediately west of Section Line Road.
6	Big Cypress and Canal Grade Surface Water Management	The project site is located north of Clay Pit and on Canal Grade.	Excessive discharge is occurring at structure OGR #4 (42 inch RCP) due to ditching, while adjacent cypress strands are excessively drained.	Install passive sill, located west of existing 42 inch RCP (OGR4). The adjoining ditch will then function as a spreader ditch to increase water levels and flow patterns through adjacent cypress strands. Additional ditch blocks will be required on the east/west canal to restore flow through the adjacent cypress strands.
7	Rookery Strand Restoration	The project site includes the watershed, which crosses northward at the apex of Canal Grade.	The ditching and diversion of the watershed has reduced water levels and wetland functions in 55 acres, which includes a rookery. The two 24 inch CMPs on Canal Grade at the apex are in poor condition.	Blocking of the Rookery outfall ditch and implementing a passive sill on Big Cypress is required to restore the contributing watershed. The 24 inch culverts located on Canal Grade will need to be replaced.
8	Giddon Lake Tributary Restoration	The project site is located east of Wade Grade and north of Baird Grade.	A ditch block was removed, which has lowered water levels and diverted flow from Giddon Lake to the Little Whitecypress. A second ditch block located on Canal Grade has been damaged and is diverting runoff to the Little Whitecypress.	Replace the ditch block, which is located 200 feet north of Baird Grade and 1000 feet east of Wade Grade. Repair the ditch block, which is located on Canal Grade about 400 feet east of Baird Grade.
9	Fender Swamp Surface Water Management	The project area is located south of Mabel and west of the Van Fleet Trail.	Structure FSW #1 (6x2 culvert) has small piles extended eastward, which need to be replaced with a stabilizing sill. Buzzard Roost Road partitions Fender Swamp from adjoining wetlands to the south. This restricts flow patterns and surface water storage during periods of high water. Three culverts also need to be replaced to maintain connections with adjoining wetlands on Canal Grade.	Installing a sill upstream from structure FSW#1 will prevent excessive erosion and subsequent drainage. Install 3 to 4 - 24 inch culverts on Buzzard Roost Road between Canal Grade and East Railroad Grade. Replace three structures crossing Canal Grade immediately south of Fender Swamp to maintain connections with adjoining wetlands.
10	Sawgrass Slough Encroachment Adjacent to Goose Pond Ditch	The project site is located east of Revels Road immediately south of the Goose Pond Ditch.	Goose Pond Ditch has a series of spoil banks along the south bank with occasional gaps, which allow surface waters from the Sawgrass Slough to discharge into Goose Pond Ditch. The gaps cause excessive drainage and impair wetland functions.	Consolidation of the spoil material will raise the normal pool approximately two tenths of a foot and reduce hardwood invasion in the pond cypress strand.
11	Southeast Revels Pasture Reconnection	The project site is located on Revels Road approximately one-quarter mile north of Baird Grade.	There is no culvert to provide a connection for a natural cypress strand. Water levels are approximately 1.0 foot higher east of the road and water is diverted northward to an area where water occasionally crosses over the road.	Install a 24 inch RCP to restore cypress strand flow and functions west of Revels Road. A ditch block will also be required on the west side of the road immediately north of the proposed structure to restore a ridge and prevent discharge onto private lands.
12	North River Road Culvert Additions	The project sites are located at structures NRR #4 and NRR#E.	DEP did not have sufficient funds to install a 18" box culvert at each of these two sites to match the number of culverts placed upstream.	Placement of a 36 inch RCP at each of these sites should be sufficient to prevent roadway over flow and erosion. A site inspection indicates the 36 inch culvert should be placed east of NRR #4 and west of NRR#E.
13	Game Commission Road Cypress Strand Enhancement	The project location extends from North Grade north to the south boundary of the Baird Tract.	Roadside ditches have entrained surface water flow and diverted water away from established cypress strands.	Install ditch blocks along ridge lines. A 24 inch culvert should be installed south of the Baird Tract gate to sustain a westerly flow across the graded road.
14	Wetland Enhancements on the East/West Ditch and Van Fleet Trail	The project is located on and adjacent East Railroad Grade on the ERG-2 Ditch.	The East/West Ditch is excessively draining cypress strands and altering natural flow patterns. East Railroad Grade has roadside swales which are intercepting and draining wet prairies.	Two ditch blocks are proposed on the East/West Canal. The first ditch block will be installed 630 feet west of East Railroad Grade to stop excessive drainage of an adjoining cypress dome and restore sheet flow. The second ditch block would be placed at 1,500 feet west of East Railroad Grade to prevent drainage of an adjacent cypress dome.

Table 1A Proposed Baird Tract Surface Water Management (SWM) Projects Wetland Summary

SWM Projects	Proposed SWM Improvements	Location in Decimal Degrees		Impacts to Waters of the United States (Acres)	Wetland Area to be Restored (Acres)	NWI Wetland Types and Acreages																		
		Latitude	Longitude			PF01C	PF01F	PF02F	PF04C	PF06C	PF06F	PF06/SS3C	PF01/4C	PF04/2C	PF04/1C	PEM1A	PEM1C	PEM1F	PEM1G	PAB3H	PSS1F	Total Forested	Total Non-Forested	
Sally Sough Restoration (SWMP-1)	3 Ditch Blocks, 1 Pipe Install, Crush 1 Existing Pipe, 1 Pipe Replacement, 1 Borrow Pit Excavation	-82.025	28.537	1.384	153.5	---	---	71.9	---	74.1	---	---	---	---	---	2.7	---	4.8	---	---	---	146.0	7.5	
Giddon Canal Cypress Dome Restoration (SWMP-2)	6 Ditch Blocks & 2 Pipe Replacements	-82.017	28.53	0.148	16.0	---	---	13.3	---	---	---	---	---	---	---	---	---	---	---	---	---	2.7	13.3	2.7
Bayroot Slough Restoration (SWMP-3)	6 Ditch Blocks, 3 New Culverts, & 2 Pipe Replacements	-81.981	28.512	0.267	644.0	---	---	614.7	21.5	---	4.0	---	---	0.5	0.5	---	1.0	1.5	---	---	0.3	641.2	2.8	
Flag Pond Restoration (SWMP-4)	2 Ditch Blocks	-81.983	28.527	0.062	104.0	10.0	---	77.0	2.0	2.0	8.0	---	---	---	---	---	1.0	4.0	---	---	---	99.0	5.0	
South Flag Pond Restoration (SWMP-5)	3 Ditch Blocks and 2 Pipe Replacements	-81.988	28.524	0.054	33.0	---	---	33.0	---	---	---	---	---	---	---	---	---	---	---	---	---	33.0	0.0	
Big Cypress and Canal Grade Surface Water Management (SWMP-6)	4 Ditch Blocks & 3 Pipe Replacements	-81.996	28.53	0.260	137.0	---	---	136.0	1.0	---	---	---	---	---	---	---	---	---	---	---	---	137.0	0.0	
Rookery Strand Restoration (SWMP-7)	1 Ditch Block	-82.004	28.529	0.032	51.2	---	---	49.6	---	---	---	---	---	---	---	---	---	---	---	---	1.6	49.6	1.6	
Giddon Lake Tributary Restoration (SWMP-8)	5 Ditch Blocks	-82.01	28.532	0.144	151.4	0.9	---	108.9	---	19.6	---	---	3.5	---	---	11.5	5.0	2.0	---	---	---	132.9	18.5	
Fender Swamp and Cedar Hammock Karst Area Surface Water Management (SWMP-9)	3 New Culverts, 3 Pipes Replaced, 1 Ditch Block	-81.975	28.552	0.069	657.8	---	53.0	50.0	---	---	395.2	42.8	---	---	---	---	---	20.8	96.0	---	---	541.0	116.8	
Sawgrass Slough Enhancement adjacent to Goose Pond Ditch (SWMP-10)	Consolidate Spoil Mound	-82.042	28.536	0.000	23.0	---	---	23.0	---	---	---	---	---	---	---	---	---	---	---	---	---	23.0	0.0	
Cypress Strand Reconnection on Revel Road (SWMP-11)	Ditch Block and New Culvert	-82.046	28.527	0.023	8.5	---	---	3.6	---	---	4.9	---	---	---	---	---	---	---	---	---	---	8.5	0.0	
North River Road Culvert Additions (SWMP-12)	2 New Culverts	-82.043	28.522	0.079	NA	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0	0.0	
Game Commission Road Cypress Strand Enhancement (SWMP-13)	4 Ditch Blocks & 4 Pipe Replacements	-82.001	28.521	0.262	346.0	---	---	127.0	---	9.5	209.5	---	---	---	---	---	---	---	---	---	---	346.0	0.0	
Wetland Enhancements on the East-West Ditch and Van Fleet Trail (SWMP-14)	6 Ditch Blocks	-81.96	28.529	0.125	99.8	---	---	97.0	---	---	---	---	---	---	---	---	---	2.8	---	---	---	97.0	2.8	
Totals	72 SWM Improvements	---	---	2.909	2425.2	10.9	---	1405.0	24.5	105.2	621.6	---	3.5	0.5	0.5	14.2	7.0	35.9	---	1.6	3.0	2267.5	157.7	



SR 50
To Clermont >

Tarrytown

SR 50

**Project Location
Baird Tract**

SR 50
<To Brooksville

2 1 0 2 Miles

**Withlacoochee
State Forest -
Richloam
Management
Area (DOF)**

Green Swamp
Wilderness
Preserve - WMD
(West Tract)

Green Swamp
Wilderness
Preserve - WMD
(East Tract)

Dade
City

SW 84 -
Colt Creek
State Park
(DEP/WMD)

FWC

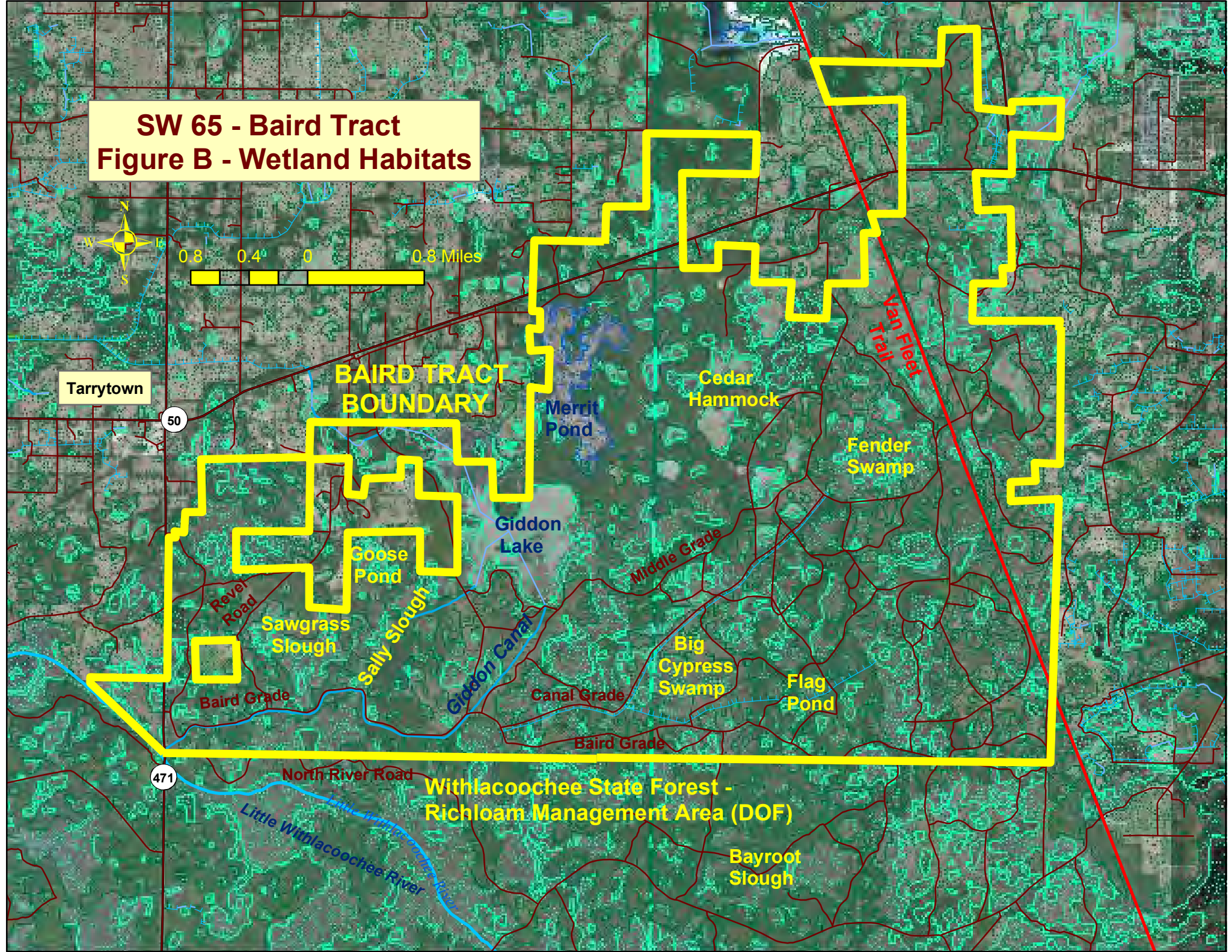
SW 59 -
Hampton
Tract (WMD)

SW 55 - Upper
Hillsborough
4&5

US Hwy. 98
To Lakeland >

**SW 64 - Baird Tract
Figure A - Location**

SW 65 - Baird Tract
Figure B - Wetland Habitats



Tarrytown

**BAIRD TRACT
BOUNDARY**

Cedar
Hammock

Fender
Swamp

Giddon
Lake

Goose
Pond

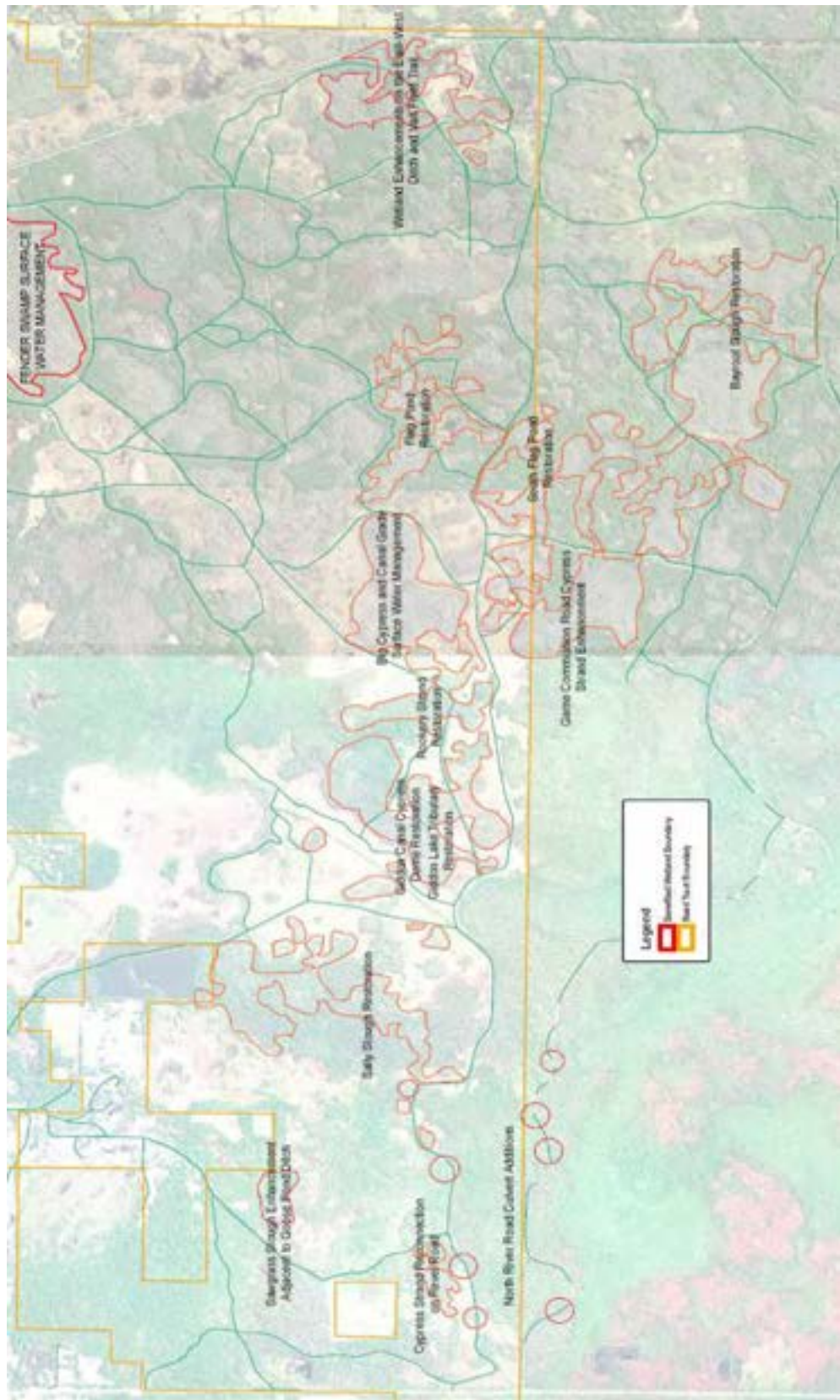
Sawgrass
Slough

Big
Cypress
Swamp

Flag
Pond

**Withlacoochee State Forest -
Richloam Management Area (DOF)**

Bayroot
Slough



**FDOT
MITIGATION SITE
(Withlacoochee Basin)**

**BAIRD TRACT
(SW 64)**

**FIGURE C
Surface Water Management Projects,
Wetland Hydrologic Improvements**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Rutland Ranch – South Tract**
Sponsor: SWFWMD – Land Resources
County: Manatee

Project Number: **SW 65**
Location: Sec. 26, 27, T26S, R27E

IMPACT INFORMATION

1 - FM: <u>1960222, SR 64, I-75 to Lena Rd. (Seg. 1)</u>	ERP #: <u>4302058.009</u>	COE #: <u>199901379 (IP-KI)</u>
2 - FM: <u>1960223, SR 64, Lena to Lakewood (Seg. 2)</u>	ERP #: <u>44016872.018</u>	COE #: <u>NPR – Isolated Wet.</u>
3 - FM: <u>1961211, SR 70, I-75 to Lakewood Ranch (Seg. 1)</u>	ERP #: <u>44025920.001</u>	COE #: <u>SAJ-2003-11659 (IP-MLS)</u>
4 - FM: <u>4043232, SR 70, Lakewood to Lorraine Rd. (Seg. 2)</u>	ERP #: <u>43025920.002</u>	COE #: <u>SAJ-2004-32(IP-JPF)</u>

Drainage Basin: Manatee River Water Body: Gates Creek, Manatee River SWIM water body? N

Impact Acres / Habitat Types (FLUCFCS):

1 – FM 1960222 <u>0.68</u> ac. <u>617</u>	3 – FM 1961211 <u>0.9</u> ac. <u>641</u>
<u>1.29</u> ac. <u>640</u>	
<u>0.45</u> ac. <u>641</u>	
TOTAL 2.42 acres	

2 – FM 1960223 <u>0.3</u> ac. <u>630</u>	4 – FM 4043232 <u>2.1</u> ac. <u>615</u>
<u>0.5</u> ac. <u>641</u>	<u>1.7</u> ac. <u>640</u>
TOTAL 0.8 acre	TOTAL 3.8 acres

TOTAL 7.92 Acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Enhancement Restoration Mitigation : **113 acres**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N
Mitigation Bank? N Drainage Basin(s): Manatee River Water Body: None SWIM water body? N

Project Description

- A. **Overall project goal:** The Rutland Ranch property (also referred to as “Chance Reserve”) is owned and managed by the SWFWMD. The property includes two parcels separated by private lands along Gilley Creek, with this mitigation project conducted on the southern tract (Figure A). Over half of the 900-acre south tract was historically used for row crop farming (Figure B). The site has 15 wetland areas, all but one were historically isolated marshes. The majority of these marshes were interconnected with large ditches that substantially altered the wetland hydrology and vegetative composition. The objectives included completely filling some of those ditches and constructing blocks in other ditches to restore ground and surface water hydrology, and subsequently enhance and restore appropriate wetland habitat. Upland buffers around the wetlands and filled ditches were also planted with pines to enhance habitat conditions and create wildlife corridors between the marshes.
- B. **Brief description of pre-construction condition:** The upland interior of the South Tract was historically flatwoods and palmetto prairie that was historically converted to row crop farming. Prior to restoration construction in 2002, the hydrology of the marshes were substantially altered by deep drainage ditches, allowing broomsedge and other opportunistic facultative and upland herb species to heavily invade the marshes. The western one-third portion of the tract is managed as a palmetto prairie with scattered shallow ephemeral marshes that were also been impacted by ditches. Refer to Attachment A for additional details.

C. Brief description of conducted work: Initial effort included herbicide treatment of exotics and nuisance species within the ditches (predominantly cattails), followed by construction activity to backfill the majority of the ditches as well as ditch blocks to restore ground and surficial hydrology and appropriate hydroperiods for the majority of on-site wetlands (Figures B & C – 2008 current-post construction conditions, site photos). Earthwork construction and planting activities were conducted in the spring and summer, 2002. Herb planting was conducted in the exposed earthwork areas of those wetlands where the spoil was cut to backfill the ditches and the intricate ditches throughout the largest wetland (Wetland 12, refer to Figures B & C, site photos). The upland buffers around Wetlands 1-4 and 12 had longleaf pine planted to increase buffer habitat. Supplemental herb planting, cypress and maple were planted within Wetland 12 in 2004. Quarterly herbicide maintenance events and semi-annual monitoring continued through 2009, followed by maintenance events when necessary (minimum twice a year) and annual monitoring. Refer to Attachment A for additional information.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT projects: The mitigation activities resulted in 73 acres of wetland enhancement associated from the hydrologic restoration and substantial planting of 22 acres within Wetland 12, as well as 5 acres of wetland restoration within the footprint of where ditches & adjacent spoil material were graded to match historic wetland grade elevations and planted with herbs. The activities also include 10 acres of upland habitat restoration from grading ditches in the palmetto prairie, and 25 acres of upland habitat enhancement and restoration that buffer Wetlands 1-4 and 12. This results in a total mitigation acreage of 113 acres that adequately and appropriate mitigate for the 7.92 acres of roadway wetland impacts. No additional roadway projects are proposed for mitigation at Rutland Ranch.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection, there were no existing or proposed mitigation banks within the Manatee River Basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : At the time of selection, the only SWIM sponsored project in this basin was Terra Ceia (SW50). The Terra Ceia project includes restoration and enhancement of salt-water and estuarine habitat, and is providing appropriate FDOT mitigation for salt-water wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD – Operations Department in 2002.

Entity responsible for monitoring and maintenance: Private contractors working for the SWFWMD

Timeframe for implementation: Commence: Hydrologic Monitoring, Spring – 2001 Complete: Construction & Initial Planting - 2002, Supplemental Wetland 12 Planting - 2004, quarterly maintenance & semi-annual monitoring through 2009; followed by minimal semi-annual herbicide maintenance, annual monitoring reviews, & normal land management activities. Additional information available from FDOT Mitigation Program Manager.

Project cost:	<u>\$ 190,000</u> (total);
	\$120,000 Construction (Backfill Ditches)
	\$40,000 Planting (Wetland Herbs, Pine Tree Planting)
	\$30,000 Maintenance (Herbicide) & Monitoring

Attachments

X 1. Description of existing site and proposed work. [Refer to Attachment A](#)

X 2. Recent aerial photograph, location map and design plans. [Refer to Figure A – Location, Figure B – Pre-Construction Aerial depicting design plans, Figure C – Post-Construction Aerial, and site photographs depicting pre-construction and current conditions.](#)

X 3. Schedule for work implementation, including any and all phases. [Attachment B – Work Schedule](#)

X 4. Success criteria, maintenance and monitoring plan. [Attachment C – Maintenance & Monitoring Plan](#)

Attachment A – Pre-Existing & Constructed Conditions

The SWFWMD purchased the Rutland Ranch property in 1998 for a few major reasons. The tract is located within the Southern Water Use Caution Area (SWUCA), a designated area where groundwater resources are at critical levels that require limitations of water well withdrawals. The property provides contributing surface and ground water to the Manatee River and Lake Manatee. Located less than a mile south of the tract, the river and reservoir provide potable water to Manatee County. Land use changes from row crops to less intensive agricultural operations such as cattle grazing not only place less strain on consumptive use (water quantity) but results in less nutrients (water quality) that contribute to the watershed and the Manatee River. The SWFWMD and Manatee County are striving toward additional land acquisition and habitat restoration opportunities in the Lake Manatee watershed.

The SWFWMD is currently committed to minimal long-term cattle grazing on the existing pasture within the Rutland Ranch-South Tract. However, the activities associated with this mitigation plan will substantially lessen associated impacts from cattle, enhance wetland habitat, improve water quality, retain surface water for groundwater recharge, and increase the habitat opportunities for wildlife. The following information provides additional information on the pre-construction site characteristics and improvements conducted for the project. Refer to Figures B & C for aerial depiction and site photographs that depict representative pre- & post-construction site conditions.

Palmetto Prairie - the palmetto prairie dominates the western one-third and southeast corner of the tract (Figure C). The vegetation of these prairies include a dominance by saw palmetto, broomsedge, and wiregrass. Ditches excessively drained surface and ground water conditions from the uplands and the majority of wetland marshes (particularly Wetlands 5 & 6 but also 7-11, and 13) located within the prairies. These marshes are shallow ephemeral wet prairie wetland systems, with dominant cover of maidencane and moderate coverage of St. John's-wort.

The original construction plan proposed utilizing a dominance of ditch blocks within the ditches in the prairie, however upon evaluation during major flood events, it was determined that ditch blocks alone could not detain the substantial volume of groundwater drawdown caused by the deep ditches located adjacent to Wetlands 7-9, so total backfill of those ditch segments were conducted during July, 2002. In addition, total filling was conducted for the ditch segment crossing through Wetland 5 and a portion of Wetland 6. However, ditch blocks were constructed in order to protect existing trees and shrubs generated on the spoil while restoring hydrology in Wetland 6. The ditch block option also provides an open water source in the remaining ditch segments for wildlife use during the dry season. After ditch backfill, herb generation and seed recruitment from adjacent native habitat occurred and provides over 90% ground cover of desirable vegetation, resulting in 10 acres of upland habitat restoration in the footprint of the ditches and adjacent spoil material.

Improved Pasture – A new cattle lease commenced in late 2002, and the fallow fields were re-established with bahiagrass. In order to minimize cattle use of the marshes for a water source, three large cattle ponds were dredged in the pastures (Fig. C). The pre-existing upland habitat buffer of palmetto around Wetlands 1-4 and 12 were protected as part of the cattle lease. Supplemental plantings (1 gallon – 1000 longleaf

pinces) were planted within these palmetto buffers. An average 50 ft. wide upland corridor of native habitat has been enhanced between Wetlands 3, 4, and 12. Existing palmetto, pines, and myrtles located on spoil material within this corridor were preserved from the construction activity necessary to fill the adjacent ditches. Supplemental trees and native grass seed has replaced the deep ditches with desirable upland vegetation, resulting in two acres of pine flatwood restoration to replace the upland-cut ditches. Pine planting provides 23 acres of upland buffer enhancement around Wetlands 1-4, and 12. There is evidence that the removal of the large upland ditches have provided substantial wildlife movement and corridor connection between the buffer cover along the Gilley Creek tributary north of the site (Wetland 15) to the forested ditch south of the property (Fig. C). The corridors and low cattle stocking rates have allowed wildlife to roam and forage throughout the tract.

Marshes – The majority of the marshes were previously bisected by drainage ditches. The smaller wetland cross ditches in Wetlands 2,14, and perimeter of Wetland 12 averaged 10-15 ft. wide, 2-3 ft. deep, and connected to moderate size drainage ditches that were 20-25 ft. wide, 5-8 ft. deep from natural grade elevations. The large drainage ditches such as through the center of Wetland 12 and east-west connecting ditch to Wetland 4 were 25-30 ft. wide, 6-8 ft. deep from top-of-bank. With the gradual size increase as the ditches progressed downstream (south) and positive hydraulic gradient, the ditches conveyed a large volume of water off-site. These ditches not only drained surface water after rain events, but substantially dewatered the shallow groundwater table. Prior to construction, the marshes had very minimal duration and depth of surface water (hydroperiods) due to the ditches. This resulted in substantial alterations in the vegetative components of these wetlands. The marshes transitioned from maidencane-dominated systems to upland and facultative vegetative species such as broomsedge (*Andropogon virginicus* dominant, some *Andropogon glomeratus*). The most extensively ditched marsh was Wetland 12, which had few relic indicators of wetland functions and characteristics. Remnant pockets of maidencane within the cross-ditches were present due to intermittent periods of surface water drainage to the large interior collector ditch. Along with the broomsedge, other upland species that recruited into the marsh include gallberry, wax myrtle, and scattered pine (photos).

The following acreages correspond to the wetland depicted on Figures B&C. For the five wetlands listed as “NA,” minimal to no habitat improvements were proposed or observed as a result of the hydrologic improvements, therefore not accounted for in wetland mitigation credits.

Wet. 1 - marsh – 1.5 acres	Wet. 9 – marsh – 2.1 acres
Wet. 2 - marsh – 7.6 acres	Wet. 10 – marsh – 1.1 acres (NA)
Wet. 3 - marsh – 0.9 acres	Wet. 11 – marsh – 2.6 acres
Wet. 4 – marsh – 15.3 acres	Wet. 12 – marsh – 22.1 acres
Wet. 5 – marsh – 3.3 acres	Wet. 13 – marsh – 11.4 acres (NA)
Wet. 6 – marsh – 16.8 acres	Wet. 14 – marsh – 0.5 acres (NA)
Wet. 7 – marsh – 0.9 acres	Wet. 15 – mix forest – 19.5 acres (NA)
Wet. 8 – marsh – 1.5 acres (NA)	

TOTALS – Wetland Enhancement - 73 acres (total 107 wetland acres)

There are five wetlands that had upland spoil ridges present as a result of constructing ditches. These spoil areas were covered with bahiagrass and saltbush. Once these spoil areas were graded to fill the adjacent ditches, herb plantings were conducted within these earthwork areas. After the ditches were backfilled in 2002, an initial planting of herbs was conducted in the footprint of the ditches & spoil. These plantings (total 37,400 plants) included predominantly soft rush for exposed soil in the more ephemeral Wetlands 2, 4, 5, and 6; and arrowhead, pickerelweed, and bulrush in the predominantly emergent Wetland 12. Because of the substantially altered functions and conditions of Wetland 12, the remnant native seed source of hydrophytic herbs were not as prevalent as the ephemeral marshes, so there was not as much natural recruitment of adequate and appropriate vegetative coverage. The planted filled ditches in the wetland were progressing well but there was not as much desired herb generation within the remaining portion of the wetland (photo). So a second planting of herb (19,500 plants) and trees (1,500) were installed in Wetland 12 during 2004; including bulrush, alligator flag, pickerelweed, arrowhead, spikerush, sawgrass, spatterdock, cypress, and red maple. An older spoil ridge through the middle of Wetland 12 was covered with oak trees

that were not removed during construction to result in mortality from the restored hydrology and create snags for wildlife use; particularly bird roosting and nesting. The graded spoil ridges accounted for wetland restoration are as follows:

Wet. 2 – 0.6 acre, Wet. 4 – 0.1 acre, Wetland 5 – 0.4 acre, Wetland 6 – 0.4 acre, Wetland 12 – 3.6 acres
TOTALS – Wetland Restoration - 5 acres

Hydrologic restoration and enhancement of the marshes have resulted in the enhancement of other wetland functions and attributes. Vegetative shifts transitioned to more desirable and appropriate wetland species and provide foraging opportunities for wildlife. Prior to construction, the marshes within the proximity of the pastures had such limited hydroperiods that they transitioned to vegetative characteristics more indicative of abandoned fallow fields (particularly Wetland 12), with minimal wildlife food resources. Opportunities for foraging wading birds were primarily limited to the few, small isolated marshes within the western palmetto prairie. Water and aquatic food resources within the pasture area were primarily limited to high nutrient ditch water. Restoring the isolated systems has increased the water quality treatment opportunities compared to the pre-existing drainage ditches that directly discharged into a nearby potable water source (Lake Manatee Reservoir). Retaining surface water on-site has also resulted in soil infiltration that improve water quality and groundwater recharge.

With restoring marsh hydrology, plantings, and the gradual regeneration and recruitment of desirable hydrophytic vegetation has improved the ecological functions of the wetlands as well as the relationship with the adjacent upland habitats. With the segregated habitat between Wetlands 3, 4, and 12, there wasn't a contiguous corridor of native habitat through the improved pasture. The re-established corridor for wildlife has not conflicted or restricted mobility of the limited cattle grazing. Reintroduction of appropriate cattle management into the pastures has kept the ruderal species (i.e. salt-bush, fennel) from re-establishment. The combination of the marsh restoration, existing native habitat, and the upland corridor has attracted and increased the wildlife opportunities and activities across the property and to adjacent public lands. Wading birds, amphibians, fish, and reptiles are routinely observed on the property. A listing of the observed flora and fauna species is included after the text.

Attachment B – Work Schedule

Pre-construction evaluation of habitat conditions and proposed improvements were conducted in 2001. Prior to construction, herbicide treatment of exotic and nuisance species was conducted within the ditches during early, 2002. Construction commenced during the dry spring conditions in 2002 and since there was no standing water in the deep ditches, there was no need to utilize pumps for temporary dewatering. A portion of the spoil within the core of Wetland 4 was not removed since it provides an excellent upland island for wildlife use, particularly wading birds utilizing the island for secure resting and nesting. The remnant water hole adjacent to the spoil has a substantial frog population.

Construction sequence commenced north to south through the headwater ditches of the pasture wetlands, followed by the ditches within the palmetto prairie. As depicted in the photos, the combination of filling the ditches and receiving normal rainy season rainfall resulted in the groundwater tables rising from 70 inches below grade to the desired hydrologic range of 6-24 inches of surface water in the various marshes during the first rainy season in 2002. As the surface water levels increased, there was a natural regeneration of maidencane along with supplemental plantings. In addition, 1,000 longleaf pine saplings were planted within the upland buffers of Wetlands 1-4 & 12.

Three upland-cut cow ponds (average size, 0.25 acre each) were dredged within the center of the three main pastures to provide a water source for cattle. A wildlife seed mix and millet seed was placed in the graded upland areas to provide temporary vegetative cover. Subsequently, native herb seed recruitment and generation from the adjacent upland habitat occurred within a few months and there is over 90% cover of desirable vegetative cover within the graded areas.

Attachment C – Maintenance & Monitoring Plan, Success Criteria

Pre-construction monitoring was conducted to document pre-existing marsh conditions (hydrology, vegetative coverage & diversity, wildlife use) exhibited in the summer, 2001 and winter, 2002 periods. This information was used as baseline conditions to evaluate the hydrologic and vegetative restoration as a result of the earthwork activities. Semi-annual qualitative monitoring and photographic documentation of vegetative, hydrologic, and wildlife conditions for the various marsh enhancement areas was conducted through 2009. The maintenance activity included quarterly herbicide eradication of all exotic and nuisance vegetation in the wetlands through 2009. After 2009, the herbicide maintenance events are conducted as necessary with a minimum treatment of twice a year. Monitoring events are conducted at least each summer to evaluate the habitats, wetland functions, wildlife use, and maintenance needs for the tract.

Success criteria includes demonstration of appropriate hydroperiods for the enhanced wetlands, particularly for the more extensive dewatered wetlands (Wetlands 2, 4, 5, 6, 11, and the most altered, Wetland 12). Success criteria required and has achieved 90% survivorship of planted stock, less than 5% coverage of exotic and nuisance species, and a minimum 85% coverage of desirable species (including existing, regenerated, recruited, and any planted material) within the enhanced and restored marshes and designated upland buffers. The following information provides documentation of observed plant and wildlife species within the project area:

Table 4 Rutland Ranch Wildlife Observed*

Scientific Name	Common Name	Activity	FWC Listing	USFWS Listing
AMPHIBIANS				
<i>Acris gryllus dorsalis</i>	southern cricket frog	Call		
<i>Hyla cinerea</i>	green tree frog	Observation		
<i>Rana grylio</i>	pig frog	Observation		
<i>Rana utricularia</i>	leopard frog	Observation		
BIRDS				
<i>Agelaius phoeniceus</i>	red-winged blackbird	Observation		
<i>Anhinga anhinga</i>	anhinga	Observation		
<i>Ardea herodias</i>	great blue heron	Observation		
<i>Bubulcus ibis</i>	cattle egret	Observation		
<i>Buteo lineatus</i>	red-shouldered hawk	Observation		
<i>Casmerodius albus</i>	great egret	Observation		
<i>Cathartes aura</i>	turkey vulture	Observation		
<i>Ceryle alcyon</i>	belted kingfisher	Observation		
<i>Circus cyaneus</i>	northern harrier	Observation		
<i>Coragyps atratus</i>	black vulture	Observation		
<i>Dendroica palmarum</i>	palm warbler	Observation		
<i>Egretta caerulea</i>	little blue heron	Observation	SSC	
<i>Egretta thula</i>	snowy egret	Observation	SSC	
<i>Eudocimus albus</i>	white ibis	Observation	SSC	
<i>Gallinago gallinago</i>	common snipe	Observation		
<i>Grus canadensis</i>	Florida sandhill crane	Observation	T	
<i>Mycteria americana</i>	wood stork	Observation	E	E
<i>Tachycineta bicolor</i>	tree swallow	Observation		
<i>Tyrannus forficatus</i>	scissor-tailed flycatcher	Observation		
CRUSTACEANS				
<i>Procambarus fallax</i>	crayfish	Observation		
FISH				
<i>Gambusia holbrooki</i>	mosquitofish	Observation		
MAMMALS				
<i>Lutra canadensis</i>	river otter	Observation		
<i>Odocoileus virginianus</i>	white tailed deer	Observation		
<i>Procyon lotor</i>	raccoon	Tracks		
<i>Sciurus niger shermani</i>	Sherman fox squirrel	Observation	T	
REPTILES				
<i>Alligator mississippiensis</i>	American alligator	Observation		
<i>Gopherus polyphemus</i>	gopher tortoise	Observation	T	
<i>Coluber constrictor</i>	black racer	Observation		

*Legend:

FWC= Florida Fish and Wildlife Conservation Commission

USFWS = United States Fish and Wildlife Service

E = Endangered, T = Threatened, SSC = Species of Special Concern

Florida Fish and Wildlife Conservation Commission. May 2008. Florida's Endangered Species, Threatened Species, and Species of Special Concern. Official Lists. 10pp

Plant Species		Indicator Status*	Nuisance Species**
Scientific Name	Common Name		
Desirable Wetland Species			
<i>Alternanthera philoxeroides</i>	alligatorweed	OBL	EPPC (II)
<i>Andropogon glomeratus</i>	bushy bluestem	FACW	
<i>Bacopa caroliniana</i>	water hyssop	OBL	
<i>Centella asiatica</i>	coinwort	FACW	
<i>Commeilina diffusa</i>	dayflower	FACW	
<i>Cyperus</i> spp.	sedge	FACW	
<i>Dioclea virginiana</i>	Virginia buttonweed	FACW	
<i>Eleocharis baldwinii</i>	road grass	OBL	
<i>Eleocharis interstincta</i>	spikerush	OBL	
<i>Hydrocotyle umbellata</i>	marsh pennywort	FACW	
<i>Hymenachne amplexicaulis</i>	West Indian marsh grass	OBL	EPPC (I)
<i>Hypericum fasciculatum</i>	St. Johns wort	OBL	
<i>Juncus effusus</i>	soft rush	OBL	
<i>Juncus marginatus</i>	shore rush	FAC	
<i>Lachnocaulon anceps</i>	bog button	FACW	
<i>Lemna minor</i>	duck weed	AQU	
<i>Limnolobum spongia</i>	frog's bit	OBL	
<i>Ludwigia octovalvis</i>	seedbox	OBL	Yes
<i>Ludwigia palustris</i>	marsh seedbox	OBL	
<i>Ludwigia peruviana</i>	primrose willow	OBL	EPPC (I)
<i>Ludwigia repens</i>	creeping primrose	OBL	
<i>Magnolia virginiana</i>	sweet bay	OBL	
<i>Nuphar advena</i>	spatterdock	OBL	
<i>Nymphaea odorata</i>	fragrant water lily	OBL	
<i>Nymphoides aquatica</i>	floating hearts	OBL	
<i>Oxyptis filiformis</i>	water cowbane	OBL	
<i>Panicum hemitomon</i>	maidencane	OBL	
<i>Panicum repens</i>	torpedo grass	FACW	EPPC (I)
<i>Persea palustris</i>	swamp bay	OBL	
<i>Pluchea odorata</i>	sweetscent	FACW	
<i>Polygonum hydropiperoides</i>	dotted smartweed	OBL	
<i>Pontederia cordata</i>	pickerelweed	OBL	
<i>Proserpinaca palustris</i>	mermaid weed	OBL	
<i>Ptilimnium capillaceum</i>	mock bishop weed	FACW	
<i>Rhexia mariana</i>	meadowbeauty	FACW	
<i>Rhynchospora fascicularis</i>	beakrush	FACW	
<i>Sabatia</i> sp.	rosegentian	FACW	
<i>Sagittaria graminea</i>	grassy arrowhead	OBL	
<i>Sagittaria lancifolia</i>	arrowhead	OBL	
<i>Sagittaria latifolia</i>	duck potato	OBL	
<i>Salvinia minima</i>	water spangles	AQU	
<i>Scirpus tabernaemontani</i>	bulrush	OBL	
<i>Scleria</i> sp.	nutseidge	FACW	
<i>Spartina bakeri</i>	sand cordgrass	OBL	
<i>Symphotrichum bahamense</i>	bahamen aster	OBL	
<i>Symphotrichum carolinianum</i>	climbing aster	OBL	
<i>Taxodium distichum</i>	bald cypress	OBL	
<i>Thalia geniculata</i>	alligator flag	OBL	
<i>Typha latifolia</i>	cattail	OBL	EPPC (I)
<i>Utricularia</i> sp.	bladderwort	OBL	
<i>Xyris ellottii</i>	yellow eyed grass	OBL	
Facultative and Upland Species			
<i>Andropogon virginicus</i>	bluestem	FAC	
<i>Aletris lutea</i>	yellow colic root	FAC	
<i>Baccharis halimifolia</i>	saltbush	FAC	
<i>Carphephorus paniculatus</i>	hairy chaffhead	FAC	
<i>Chamaecrista fasciculata</i>	partridge pea	UPL	
<i>Eupatorium capillifolium</i>	dog fennel	FAC	
<i>Euthamia minor</i>	golden top	FAC	
<i>Hypericum tetrapetalum</i>	four petal St. Johns wort	FAC	
<i>Juniperus virginiana</i>	red cedar	UPL	
<i>Myrica cerifera</i>	wax myrtle	FAC	
<i>Paspalum notatum</i>	bahia grass	UPL	Yes
<i>Pinus ellottii</i>	slash pine	FAC	
<i>Sabal palmetto</i>	cabbage palm	FAC	
<i>Scoparia dulcis</i>	sweetbroom	FAC	
<i>Serenoa repens</i>	saw palmetto	UPL	
<i>Sesbania herbacea</i>	danglepod	FAC	Yes
<i>Solidago</i> sp.	golden rod	FAC	
<i>Sporobolus indicus</i>	smut grass	UPL	
<i>Urena lobata</i>	Caesar weed	UPL	EPPC (I)

*Legend: FAC= Facultative, FACW= Facultative Wet, OBL= Obligate, AQU= aquatic, UPL= upland, EPPC (I)= Florida Exotic Pest Plant Council - Category I or II Invasive Plants

**Vegetative species considered as a nuisance species if listed in either the Florida Exotic Pest Plant Council's (FLEPPC) 2007 List of Invasive Species or in the Appendix E of the Technical Publication REG-001; Wetland Rapid Assessment Procedure, WRAP; September 1997



**SWFWMD Property - Rutland Ranch
(Also Referred to as "Chance Reserve")**



0.75 0.375 0 0.75 Miles

< To Parrish

**CR 675
(Rutland Road)**

Project Site

SR 64

To Zolfo Springs >

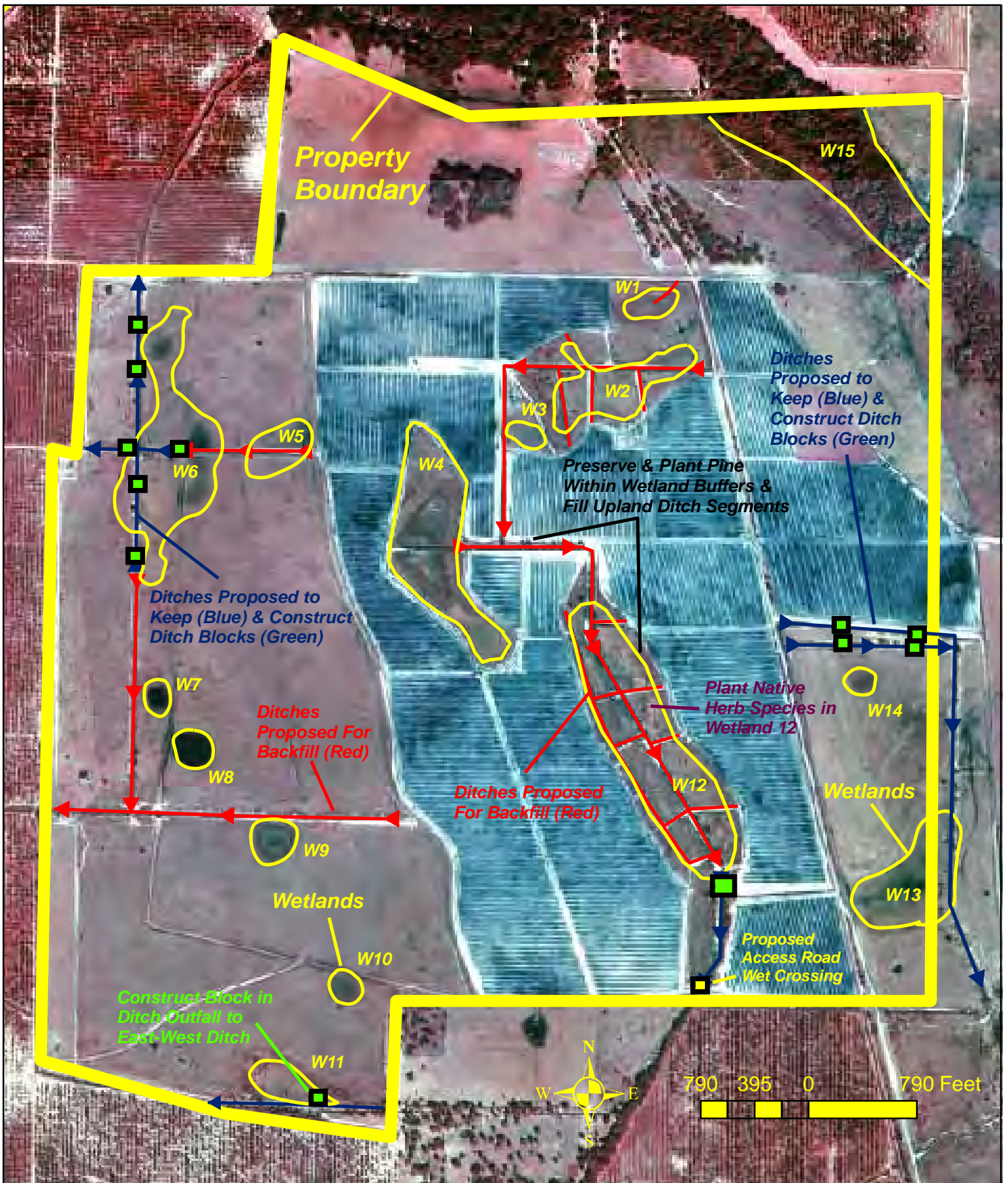
< To Bradenton

**SW 65 - Rutland Ranch
Figure A - Location Map**

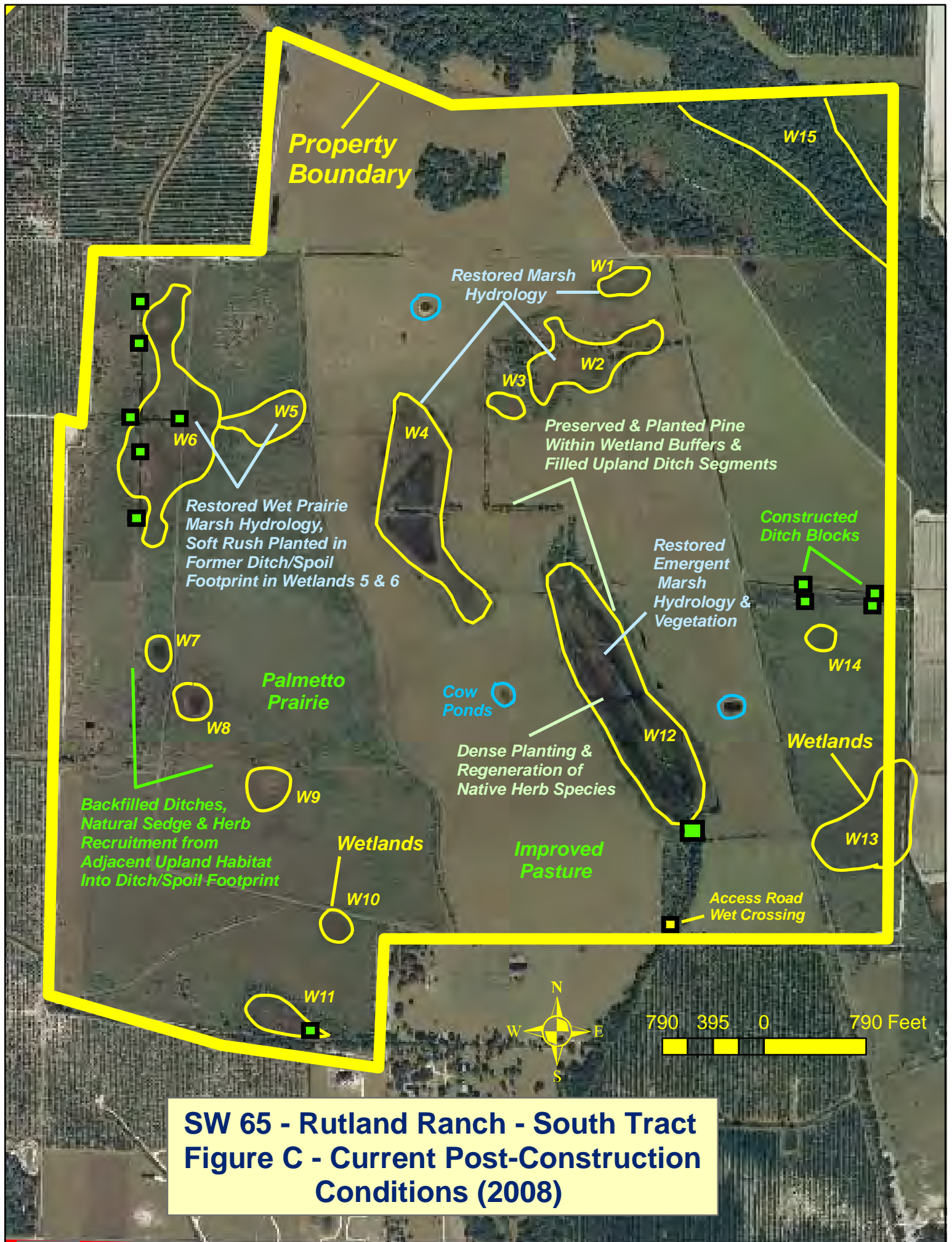
*Lake Manatee
Reservoir*

Manatee River

Gilley Creek



**SW 65 - Rutland Ranch - South Tract
 Figure B - Pre-Construction Conditions,
 Proposed Hydrologic Improvements (1994)**



**SW 65 - Rutland Ranch - South Tract
Figure C - Current Post-Construction
Conditions (2008)**



Wetland 12 (2001) – Pre-construction view of habitat conditions, due to the substantial water table drawdown associated with the ditch network, the marsh is dominated by upland and facultative species such as broomsedge, gallberry, dog fennel, wax myrtle, and scattered slash pine.



Wetland 12 (Spring, 2002) – view from the southern terminus of the marsh, looking north over the western half of the 22-acre marsh and filled central ditch, trees on right are located on remnant spoil material not used for backfill.

***FDOT – District 1 Mitigation Project
(Manatee River Basin)***

***SW 65 – RUTLAND RANCH –
SOUTH TRACT***



Wetland 12 (Summer, 2002) – summer rains have restored appropriate emergent marsh hydrology, resulting in mortality of upland vegetation and natural generation of hydrophytic herbs.



Wetland 12 (Summer, 2009) – with herb plantings in the filled ditches in 2002, supplemental plantings throughout the marsh in 2004, regenerated and recruited herbs, the marsh has gradually filled in with dense coverage of species dominated by pickerelweed, arrowhead, and fireflag. Some live trees and snags are still present on the remnant spoil mounds.

***FDOT – District 1 Mitigation Project
(Manatee River Basin)***

***SW 65 – RUTLAND RANCH –
SOUTH TRACT***



Wetland 6 (2001) – Pre-construction view of habitat conditions from the eastern portion of the marsh looking west. Under natural conditions, the ephemeral, wet prairie marshes have shallow and short duration hydroperiods, so even small ditches (center) adequately drawdown the water table and substantially reduce the hydroperiod, resulting in the establishment of facultative species such as broomsedge, gallberry, dog fennel, and wax myrtle.



Wetland 6 (Spring, 2002) – same western view over the earthwork area of the graded spoil material and backfilled ditch.

***FDOT – District 1 Mitigation Project
(Manatee River Basin)***

***SW 65 – RUTLAND RANCH –
SOUTH TRACT***



Wetland 6 (Summer, 2002) – summer rains have restored appropriate wetland hydrology; the graded area has been planted with soft rush.



Wetland 6 (Summer, 2009) – the restored ephemeral hydrology has provided longer hydroperiods of shallow surface water, resulting in more desirable and diverse vegetative and habitat conditions utilized by more wildlife. Of particular note is the regeneration and proliferation provided by St. John's-wort.

***FDOT – District 1 Mitigation Project
(Manatee River Basin)***

***SW 65 – RUTLAND RANCH –
SOUTH TRACT***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Circle B Bar Reserve

Project Number: SW 66

Sponsor: SWFWMD – Land Resources, Polk County - Natural Resources

County: Polk

Location: Sect. 1, 2, T29S, R24E, Sec. 6, T29S, R25E

IMPACT INFORMATION

1 – <u>FM 1975331, US 27 – Towerview Rd. to SR 540</u>	ERP #: <u>43023834.002</u>	COE #: <u>200205668 (IP-JF)</u>
2 - <u>FM 1976791, US 27 – SR 544 to Blue Heron Bay*</u>	ERP #: <u>43023431.000</u>	COE #: <u>200202574 (IP-JF)</u>
3 - <u>FM 1940931, US 17 (SR 35) – Peace River to Tropicana</u>	ERP #: <u>43016955.001</u>	COE #: <u>200102990 (IP-JF)</u>
4 - <u>FM 1938991, US 17 – Livingston to Hardee County</u>	ERP #: <u>43022736.000</u>	COE #: <u>200105669 (IP-MN)</u>
5 - <u>FM 1971681, SR 60A (Van Fleet Dr.)-CR 555 to Broadway</u>	ERP #: <u>44023032.000</u>	COE #: <u>2002000069 (NW-MS)</u>
6- <u>FM 4110391, US 27- CR 546 to SR 544</u>	ERP #: <u>43033368.000</u>	COE #: <u>2008-01942 (IP-JPF)</u>
7- <u>FM 1977061, US 27 – SR 540 to SR 542</u>	ERP #: <u>43023431.007</u>	COE #: <u>2008-2283</u>
8- <u>FM 1977071, US 27 – SR 542 to CR 546</u>	ERP #: <u>44021373.000</u>	COE #: <u>2006-538</u>
9 - <u>FM 1976381, US 98 – Carpenter’s Way to Daugherty Rd.</u>	ERP #: <u>44013552.003</u>	COE #: <u>200206904 (NW-14)</u>
10 - <u>FM 1977051, US 27 – SR 60 to Towerview Rd.</u>	ERP #: <u>44023431.003</u>	COE #: <u>200402920 (NW-CAS)</u>
11- <u>FM 4082685, US 98 – Manor Drive to CR 540A (2018)</u>	ERP #: <u>44029183.004</u>	COE #: <u>2009-04276</u>
12- <u>FM 1977014, SR 559 – SR 655 (Recker) to Derby Ave.</u>	ERP #: <u>44035330.000</u>	COE #: <u>2009-04277</u>
13- <u>FM 4251371, SR 17 @ Mountain Lake Cutoff Intersection</u>	ERP #: <u>44023020.001</u>	COE #: <u>NPR – Isolated Wet.</u>

Drainage Basin: Peace Water Body(s): Tower Lake, Thompson Branch, McBride Br., Mare Branch, Sand Gully Br., Peace Creek Canal, SWIM water body? N

* Additional impacts for this project are within the Ocklawaha Basin and associated mitigation conducted at Lake Lowery (SW 76).

Impact Acres / Habitat Types (FLUCFCS):

1- FM 1975331	3.90 ac. 640
2- FM 1976791*	0.60 ac. 631
	0.90 ac. 641
	<u>TOTAL 1.50 acres</u>
3- FM 1940931	3.00 ac. 630
	0.49 ac. 640
	0.93 ac. 641
	<u>TOTAL 4.42 acres</u>
4- FM 1938991	0.48 ac. 618
	6.18 ac. 630
	0.74 ac. 631
	0.59 ac. 640
	0.20 ac. 641
	3.40 ac. 641x
	<u>TOTAL 11.59 acres</u>
5- FM 1971681	0.46 ac. 630
6- FM 4110391	1.13 ac. 510
	0.83 ac. 643
	<u>TOTAL 1.96 acres</u>
7- FM 1977061	0.29 ac. 610
	0.74 ac. 631
	2.90 ac. 641
	0.01 ac. 510
	<u>TOTAL 3.94 acres</u>

8- FM 1977051 0.55 ac. 641
 9- FM 1976381 0.1 ac. 615
 10- FM 1977051 0.01 ac. 510
 0.18 ac. 641x
 TOTAL 0.19 acre
 11- FM 4082682 0.63 ac. 641
 12 – FM 1977014 0.18 ac. 610
 0.21 ac. 641
 TOTAL 0.39 acre
 13 – FM 4251371 0.16 ac. 641

TOTAL – 29.79 Acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation X Restoration X Enhancement ___ Preservation Mitigation Area: **623 acres**
 SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
 Drainage Basin(s): Peace Water Body(s): Banana Creek Canal, Lake Hancock SWIM water body? Y

Project Description

A. Overall project goal: In late 2000, Polk County & SWFWMD co-purchased approximately 1,256 acres (formerly Circle B Bar Ranch) to convert into a wildlife and passive recreational preserve with a long-term objective to restore and enhance upland and wetland habitat throughout the property. The core of the tract had the historic hydrology substantially altered by the construction of the Banana Creek Canal and contributing ditches, converting the majority of historic wetland to improved pasture (Figure B). Desired restoration and enhancement of wetlands were selected to the FDOT mitigation program in 2001. Following site evaluation, design and permitting from 2001-2004, earthwork construction was conducted in 2005-2006 to remove levees along the western property boundary that blocked and diverted contributing flow from Banana Lake, backfill the majority of the Banana Creek Canal and conveyance ditches to restore sheet flow hydrology, reinforce and elevate two access roads and install culverts to aid in restoring sheet flow hydrology (Figure C), eradicate pasture grasses, conduct extensive planting, and perpetual herbicide maintenance activities.

B. Brief description of pre-construction condition: Historically, surface water from Banana Lake maintained a sheet flow hydrology connectivity east through forested and marsh wetland habitat and flowing into Lake Hancock. During the 1940's, the construction of the Banana Creek Canal between the two lakes, along with connecting tributary ditches, substantially drained the wetlands to convert into improved pasture. In addition, a large levee was constructed along the western property boundary (Figure C). This impounded water in the forested wetland west of the project area, diverted the ground and surface water away from the wetlands in the Reserve, and forced water to flow directly into the canal. Spoil material rimmed each side of the canal, so water in contributing conveyance ditches were also pumped over the berms into the canal to flow directly into Lake Hancock. The several decades of extensive drainage and dewatering converted the majority of the historic wetland acreage to improved pastures for intensive cattle grazing (refer to site photos). This resulted in inadequate hydrology to support appropriate wetland habitat benefits and functions to benefit wildlife. Prior to

restoration construction in 2005-2006, the majority of the remnant wetlands were associated with a few forested wetlands bordering the pastures and scattered small ephemeral marsh pockets within the improved pastures. Historically there were additional forested wetlands that were lost as a result of the altered drainage and subsequent muck oxidation resulting in tree fall. In a complete reversal of the impounded surface waters in wetlands west of boundary levee, the remnant forested wetlands in the Reserve no longer had surface water. As a result, the forested areas were used for shade by cattle, with additional trees routinely falling due to the soil subsidence. Additional information is provided in the attachments.

C. Brief description of conducted work: After the cattle lease was discontinued in 2001, the dewatering pump system was removed and with the rains from El Nino conditions in 2003 and Hurricanes Charley and Frances that crossed near the property in 2004, all drainage was not allowed to be conveyed into the canal in order to commence partial hydrologic restoration necessary to achieve the desired bahiagrass mortality and regeneration of hydrophytic vegetation. Construction activities commenced in the fall, 2005. Two pre-existing north-south berms (Figures B, C –Eastern and Central Roads) were substantially regraded to provide necessary structural stability and culverts installed at appropriate locations and elevations to convey and restore the natural sheet-flow wetland hydrology & appropriate hydroperiods. The length of the Central Road is approximately 3000 ft. and 2300 ft. for the Eastern Road. Fill material for the road berm reconstruction was obtained from widening the existing borrow pit within the north side of the property and creating the 2-acre “Gator Pond” marsh within an adjacent upland area. The western access road is a wet crossing constructed with crushed concrete to match adjacent surface grade elevations. After the two access road berms and culverts were constructed, the spoil rim material was used to backfill the Banana Creek Canal segment west of the Center Road and the western boundary levee was removed to restore hydrologic sheet flow patterns throughout the wetland floodplain. Approximately half of the historic western forested wetland areas were further restored with the planting of trees (total 54,350) and shrubs (total 12,920). The associated earthwork and much of the open water areas throughout the restored wetlands were also planted with herbs (total 454,390) on 3-ft. spacings (species listed in Attachment A). Along with the wetland restoration, pines and myrtles were planted within an adjacent upland buffer where there were no existing forested habitats buffering the south-central boundary of the marsh habitat. Perpetual semi-annual monitoring and bi-monthly herbicide maintenance have been conducted by a private contractor working for the SWFWMD since 2006, Land management activities for the remaining non-mitigation portion of the property is conducted by the Polk County Natural Resources Department. Overall, the constructed activities have resulted in restoring substantial wetland habitats not only within the Reserve, but enhancing over 40 acres of forested wetland habitat west of the property boundary that received impounded surface water as a result of the western boundary levee. The levee substantially restricted the historic Banana Creek flow from entering the tract and the previous landowner blocked contributing flow altogether during flood events. This additional enhancement of forested wetlands within property owned by the City of Lakeland and USF-PCC Campus is not accounted for with mitigation credit. The Reserve is now considered by Audubon as one of the premier waterfowl and wading bird destinations in the region, and there is substantial use by a diverse assemblage of wildlife species. Additional information is provided in the attachments. The enhancement & restoration for the designated mitigation area includes the following:

Marsh Restoration & Enhancement	362 acres*
Obligate Marsh & Open Water Restoration	83 acres
Forested Wetland Enhancement	91 acres
Forested Wetland Restoration	64 acres
Upland Buffer Habitat Restoration	19 acres
Marsh Creation	4 acres
TOTAL	623 acres

*Note – the marsh components include 64 acres that was historically forested wetland habitat. If desired, there may be a future decision that appropriate tree species (e.g. cypress, red maple) may be planted to restore additional forested wetlands.

- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** The majority of the wetland impacts are associated with disturbed marsh and mixed forested wetland fringes along FDOT R/W within the Peace River watershed; particularly along US Hwy. 27 and US Hwy. 17. The roadway wetland impacts have been appropriately and adequately compensated with the restoration and enhancement of large-scale, diverse and regionally-significant wetland ecosystems that benefit the Peace River watershed.
- E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** The permitted mitigation banks currently selling credits in the Peace River watershed basin include the Boran Ranch Mitigation Bank in DeSoto County and Peace River Mitigation Bank in Hardee County (SW 53 & SW 85 in the FDOT plan). These banks have been selected to provide appropriate mitigation for wetland impacts associated with many roadway projects within the basin. Prior to the establishment of the Peace River Mitigation Bank and after all the available forested wetland mitigation credits were purchased from the Boran Ranch Mitigation Bank, it was necessary to add an additional mitigation project to the FDOT program that had forested wetland credits. This resulted in accepting Polk County's request to nominate the Circle B Bar Reserve to the program. The substantial habitat improvements completed at the Reserve provide the availability of 226 mitigation credits for the 623 acres of mitigation area, with only 19 credits debited through 2010 since there has been a substantial decrease in the estimated roadway wetland impact. With the conservative budget of \$6.7 million for the completed construction and perpetual maintenance of the habitat improvements (\$30,000 per credit), the Reserve has become more cost-effective than the credit prices requested by the currently available mitigation banks.
- F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body:** Even though enhancement and restoration of the wetland floodplain is not considered a specific SWIM sponsored project, the site is located between two SWIM-sponsored projects, Banana Lake Restoration (conducted in the late 1980's) and the proposed improvements for Lake Hancock. By restoring and enhancing the wetland functions and values at the Reserve, additional water quality treatment and attenuation reduce the nutrients previously allowed to flow directly into Lake Hancock via the Banana Creek Canal. The enhancement of the entire Peace River watershed has required substantial emphasis on the hydrologic improvements to water quality and quantity within the headwater areas in the basin. In turn, these improvements result in improved water quality and quantity flowing into Charlotte Harbor, another designated SWIM water body.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD Operations Department constructed in 2005 and 2006.

Entity responsible for monitoring and maintenance: SWFWMD contract for monitoring & perpetual maintenance

Timeframe for implementation: Commence: January, 2001 Complete: Spring, 2006 (Construction & Planting, followed by semi-annual monitoring and bi-monthly herbicide maintenance.

Project cost: \$6,730,000 (total);

Planning, Design & Permitting - \$280,000

Construction & Planting - \$1,960,000

Perpetual Maintenance & Monitoring - \$4,490,000

Attachments

X 1. Description of site conditions and activities. Refer to previous discussion and Attachment A. Construction plan design can be obtained from the FDOT Mitigation Program Manager.

X 2. Aerial and pre-post construction photographs. Figures B (1999 aerial) & C (2009 aerial) depict pre-construction and current post-construction conditions.

X 3. Location map and design drawings of existing and proposed conditions. Figure A is the location map. Figure C depicts the hydrologic and hydraulic restoration design. Construction plans are available from the FDOT Mitigation Program Manager.

X 4. Schedule for work implementation:

Spring, 2001 – Summer, 2004 – Field work (habitat assessment, vegetative evaluation, soil borings, land surveying) and surface water modeling, evaluate and determine appropriate hydrologic restoration for the project area, evaluate regeneration of native habitat and prepare appropriate planting plan, conduct herbicide maintenance activities.

Summer, 2004 – Fall, 2005 – Finalize design reports, WMD internal review, FDEP & ACOE permitting, pre-construction site evaluation, aerial herbicide maintenance activities.

Fall, 2005 – Spring, 2006 – Earthwork construction by WMD-Operations Dept. during the dry season, followed by planting during the rainy season, herbicide maintenance activities.

Summer, 2006 – Summer, 2016 – Semi-annual monitoring; maintenance includes bi-monthly herbicide treatments.

Beyond Summer, 2016 – Semi-annual monitoring; maintenance conducted as necessary to maintain success criteria, planned and budgeted for minimum bi-monthly herbicide treatments.

X 5. Success criteria and associated monitoring plan. Refer to Attachment B, Maintenance & Monitoring Plan, Success Criteria

X 6. Long term maintenance plan. Refer to Attachment B, Maintenance & Monitoring, Success Criteria.

X 7. Explanation of how this work serves to offset the impacts of the specified DOT project(s). Refer to previous discussion. The wetland impacts adequately and appropriately mitigate for the proposed wetland impacts. The FDOT permit applications include Unified Mitigation Assessment Method (UMAM) assessments of the wetland impacts. This information is used to appropriately debit from the available UMAM credits associated with the mitigation habitats.

Attachment A – Mitigation Plan, Additional Information

Hydrologic Restoration – the foundation of restoring the historic western-to-eastern surface water sheet flow was conducted by backfilling the western half of Banana Creek Canal, collector ditches, and the western levee (2,300 ft. long, avg. 30 ft. wide, 5-6 ft. above grade). The reconstruction of the western road included placement of crushed concrete to match adjacent grade elevations in order to not restrict the restored sheet flow. The reconstruction of the two berms into the Center and Eastern Roads resulted in top-of-road elevations averaging 1-2 feet above the adjacent water elevations. There are 8-culvert sets spaced on 500 ft. intervals within the Center and Eastern roads (Figure E). Each culvert set includes four individual 24-inch culverts installed at slightly different elevations to provide a 12-inch fluctuation range of water elevations. In a stair-step approach, the culvert invert elevations decrease an average of 6 inches between the culverts in the Center, Eastern and Lakeshore berm roads. This restores appropriate sheet flow patterns and attenuation through the enhanced and restored wetland habitats. With the historic muck oxidation altering grade elevations, there are areas of deeper water pockets; particularly the 3-4 ft. depth adjacent to the southern section of the Center Road. These emergent areas provide valuable open-water and obligate marsh habitat for waterfowl, amphibians, fish and reptile species. Other portions of the restored wetlands have more facultative habitat conditions, with variable surface water depths ranging 6-18 inches for hydroperiod durations of 4-8 months. Subsequent to the Circle B Bar Ranch acquisition, additional public land acquisition has occurred around Lake Hancock as part of an effort to partially restore the normal water elevations of the lake by raising the lake's water elevation by 12 inches. With the planned construction of a new lake outfall structure in 2012, the water depth sheet-flow conveyance within the restored wetlands at the Reserve will not be altered; however the wetlands closest to the lake (primarily east of the Eastern Access Road) will have more stable and longer duration hydroperiods. In turn, this will provide a longer and more stable duration for wildlife foraging opportunities. There are also two 48-inch culverts installed in the middle of both the Center and Eastern Roads. These culverts were installed to allow emergency overflow into the remnant eastern portion of the Banana Creek Canal. These culverts have slide gates that can be raised to allow more rapid outfall of surface water directly to the lake in advance of major rainfall or flood events, thus securing and maintaining appropriate water depth in the wetlands to support wildlife.

Vegetative and Habitat Restoration - the primary herb planting was conducted within the earthwork locations where the ditches and spoil were graded to restore historic wetland grades, and some areas where natural regeneration or recruitment of desired vegetation did not occur. The majority of the trees were planted within portions of the historic forested wetland area within the western portion of the property (Figure C). Dominant trees planted include cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica* var. *biflora*), pop ash (*Fraxinus caroliniana*), and red maple (*Acer rubrum*). Additional tree species planted include sweet bay (*Magnolia virginiana*), American holly (*Illex cassine*), sweet gum (*Liquidambar styraciflua*), laurel oak (*Quercus laurifolia*), American elm (*Ulmus americana*). Planted shrubs include buttonbush (*Cephalanthus occidentalis*), with wax myrtle (*Myrica cerifera*) in the higher elevations. Along with the natural regeneration of desirable herbs, there were additional plantings of arrowhead (*Sagittaria lancifolia*), bulrush (*Scirpus validus*), duck potato (*Sagittaria latifolia*), fireflag (*Thalia geniculata*), pickerelweed (*Pontederia cordata*), soft rush, sand cordgrass (*Spartina bakeri*), spikerush (*Eleocharis interstincta*), and spatterdock (*Nuphar luteum*). To provide a habitat buffer, the non-forested upland area adjacent to the south-central perimeter of the restored wetland area near the Gator Pond was planted with dense spacings of longleaf pine (*Pinus palustris*), live oak (*Quercus virginiana*), and wax myrtle.

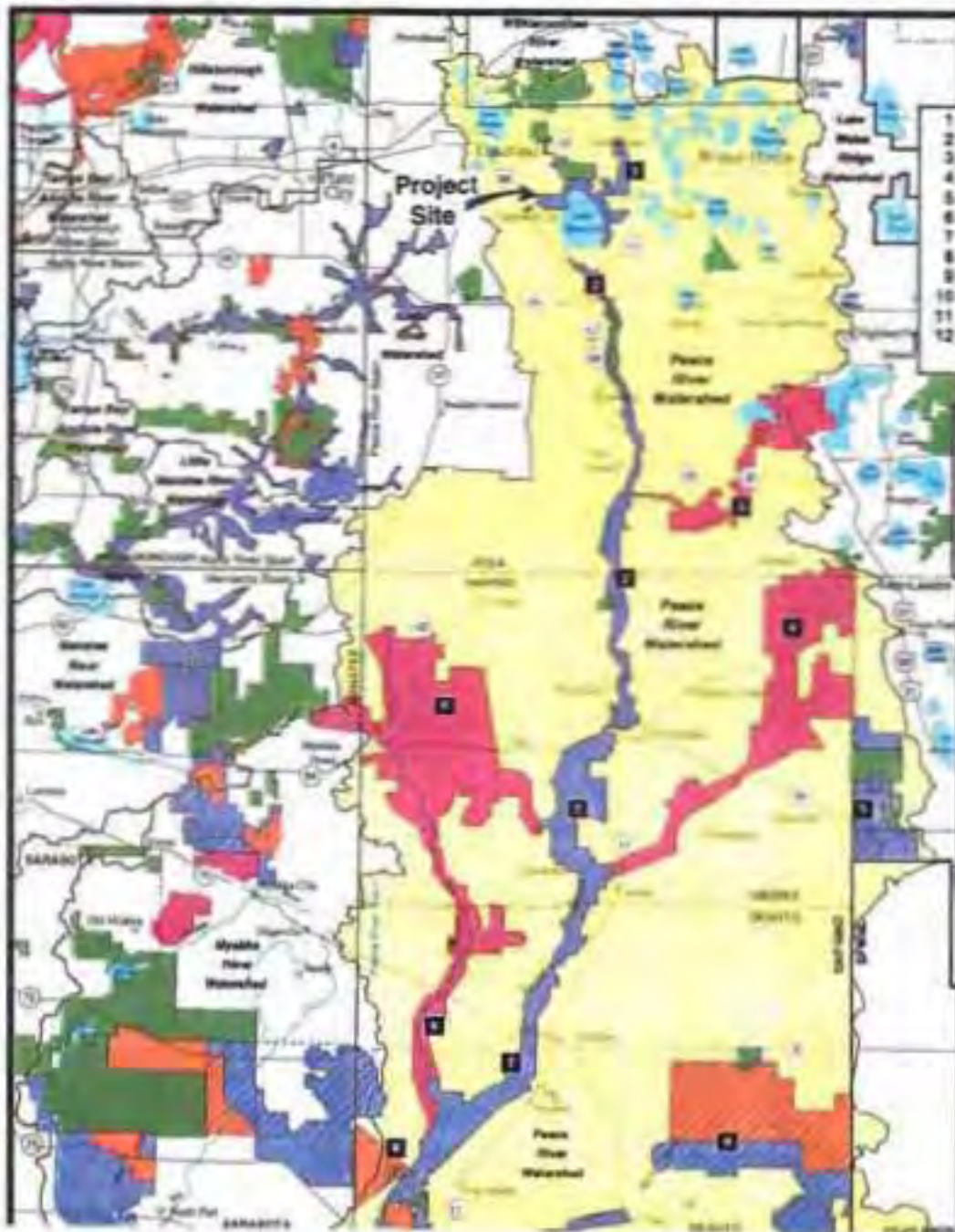
Wildlife use of the restored and enhanced wetlands has exceeded expectations, with more species represented than any of the designated FDOT mitigation projects currently on the program. Audubon Christmas bird counts and eBird data collection have documented 112 bird species, including large flocks of migratory wading birds and unusually high populations of rare species such as the migratory American white pelicans (*Pelecanus erythrorhynchos*) and wood storks (*Mycteria americana*). There is one active bald eagle (*Haliaeetus leucocephalus*) nest, and a multitude of amphibian, fish and reptile species routinely observed on the site. Wildlife reports and the Wood Stork Foraging Analysis of the restored wetland area are available from the SWFWMD's FDOT Mitigation Program Manager.

Attachment B – Maintenance & Monitoring, Success Criteria

Maintenance activities are conducted to eradicate and control exotic and nuisance species, including perpetual herbicide treatment events conducted a minimum of every other month. Herbicide application is conducted by a licensed applicator under contract with the SWFWMD, with each event typically includes a spray crew of several staff working an entire week throughout the designated mitigation site.

Site inspections are conducted quarterly at a minimum and monitoring is conducted semi-annually to evaluate hydrologic, vegetative and wildlife use across the designated project area. Annual monitoring reports are prepared to document the habitat conditions and wildlife activities observed during the previous year and anticipated maintenance and other activities proposed for the following year. At a minimum, monitoring reports will be prepared for a minimum 10 years post-construction (2006-2016). Depending on the habitat conditions, the annual monitoring may be extended longer. Even if the reports are discontinued, the monitoring will continue to evaluate habitat conditions and necessary maintenance & management activities. Commencing just after construction and planting was completed in early 2006, the Reserve was also added to the eBird database. Visitors and bird-watchers visiting the Reserve enter the observed avian species to this database; typically 2-4 monitoring days per month are conducted at the Reserve and recorded, with many daily monitoring events during the winter months when the migratory waterfowl and wading birds are more prevalent.

Success criteria includes 70% coverage of desirable species and less than 10% cover of exotic species in the forested wetland and shallow marsh system, which has primarily included cattails and primrose willow. An 83-acre obligate & open water component of the marsh requires less than 10% vegetative coverage and provides less mitigation credit than the shallow marsh components. The restored forested wetlands require 20% canopy coverage a minimum height of 20 ft. with planted trees before associated mitigation credits can be debited from the ledger. Through 2010, the hydrologic restoration efforts have been successful and within the fluctuation and hydroperiod range necessary and appropriate to continue supporting the substantial wildlife populations that utilize the wetlands. The vegetative components and habitat conditions are also progressing well and except for a portion of the restored forested wetland canopy, exceed the success criteria many years in advance of potential credit release for FDOT's use. The habitat conditions continue to improve as planted and naturally recruited and generated plants mature, eradication of generated exotic and nuisance species, and the decades of agricultural nutrients are processed for uptake and use by the vegetative components.



- 1 Lake Hancock
- 2 Upper Peace River
- 3 Bowlegs Creek
- 4 Charlie Creek Addition
- 5 Charlie Creek
- 6 Horse Creek
- 7 Lower Peace River
- 8 RV Griffin Reserve
- 9 Bright Hour Watershed
- 10 Pratche/Shell Creek
- 11 Charlotte 1
- 12 Charlotte Harbor State Buffer Preserve



**FDOT - District 1
MITIGATION SITE
(Peace River Basin)**

**LAKE HANCOCK /
CIRCLE B BAR RESERVE
(SW 66)**

**FIGURE A
WATERSHED
BASIN MAP**

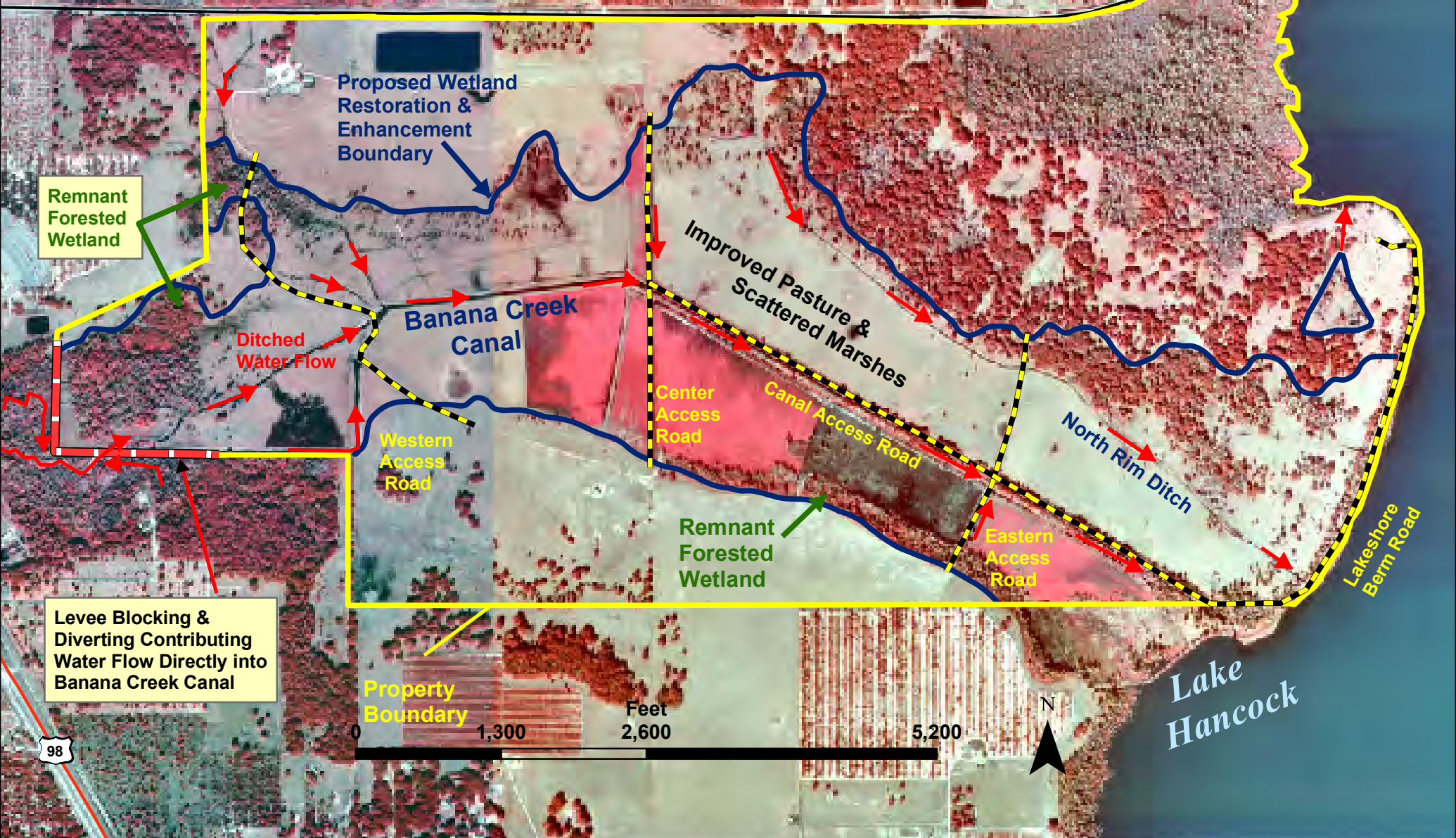


FDOT - District 1
 MITIGATION SITE
 (Peace River Basin)

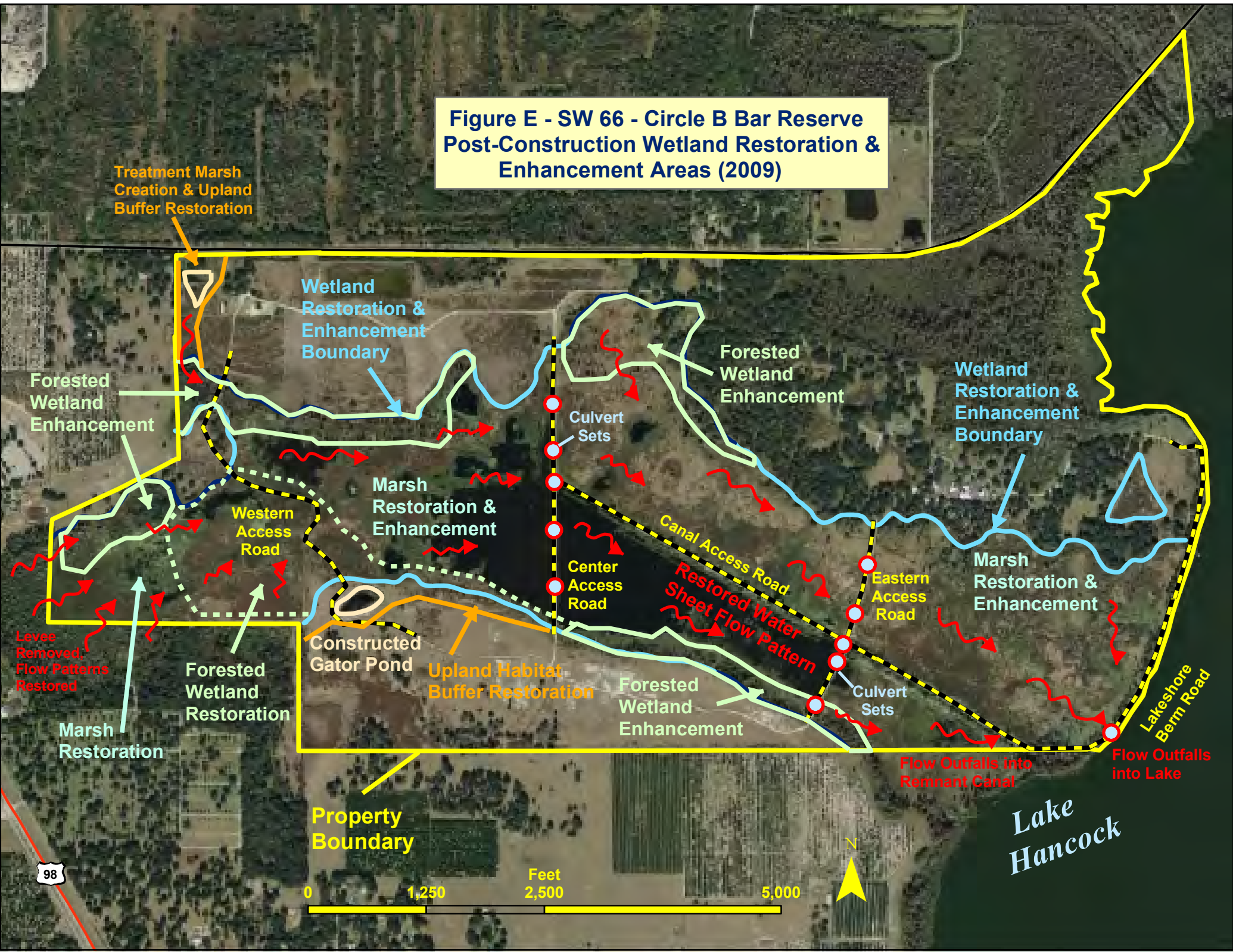
LAKE HANCOCK /
 CIRCLE B BAR RESERVE
 (SW 66)

FIGURE C
 1927 SOIL SURVEY

**Figure D - SW 66 - Circle B Bar Reserve
Pre-Construction Site Conditions
Proposed Wetland Restoration &
Enhancement Areas (1999)**



**Figure E - SW 66 - Circle B Bar Reserve
Post-Construction Wetland Restoration &
Enhancement Areas (2009)**





View of the northeast bahia pasture prior to marsh restoration, looking east from near the lakeshore berm. Banana Creek Canal with oaks on adjacent spoil material (left) and northern upland oak hammock (right).



View from atop the remnant central berm prior to construction. Overlooking the adjacent drainage ditch and northeast bahia pasture.

**FDOT Mitigation Site
(Peace River Basin)**

**Pre – Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



View from the southwest property boundary, looking north at the western pasture that was historically forested wetlands. The remnant forested wetland is in background (left). The lone tree on the far right is the flagged tree in the photo below.



Opposite view from the top photo, where the access road crosses the western pasture proposed for forested wetland restoration. There is sufficient groundwater hydrology to support scattered soft rush, particularly adjacent to the remnant forested wetland (right).

**FDOT Mitigation Site
(Peace River Basin)**

**Pre - Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



View south of the north portion of East Road where it crosses the northeast pasture. The Banana Creek Canal with trees on the adjacent spoil material is in the background. The road will be elevated and culverts installed to restore west-east surface water sheet flow and adjacent marsh habitat.



View south from the north end of the remnant and unstable Center Road and adjacent ditch that diverts and drains water south to the Banana Creek Canal. The ditch will be backfilled and clean fill used to reconstruct and elevate the road to restore west-east sheet flow hydrology and adjacent marsh habitat.

**FDOT Mitigation Site
(Peace River Basin)**

**Pre - Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



***View of the southwest Gator Pond during earthwork activities.
Dredging material used to stabilize the Center and Eastern Access Road berms.***



***View of the finished Gator Pond, backfilled ditch (left), and Western Access Road
during the late stages of construction. Construction equipment moving east
to backfill the Banana Creek Canal (center).***

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



View from Center Road, looking west at the Banana Creek Canal just prior to backfilling with the adjacent spoil material.



Same view of the Banana Creek Canal a week later, just after filling and prior to planting with herbs such as pickerelweed and arrowhead.

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



Standing on the southern end of the Center Road looking north. Fill material was used to elevate the remnant road (3,050 ft. long), and culverts installed to restore west-east sheet flow hydrology through the restored and enhanced wetland habitat.



Final construction of the Center Road and sod being installed to stabilize the slopes. Water starting to pool upstream and attracting white pelicans and wading birds (left).

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



View from the western boundary of the property looking east. The north-south levee (900 ft. long, avg. 5 ft. tall) has just been backfilled into the adjacent ditch to restore western water sheet flow through the remnant forested wetland and proposed forested wetland restoration area. View of a backfilled portion of the Banana Creek Canal is evident along the right side of the photo.



View from the southwest property boundary looking north at the footprint of where the levee was just pushed back into the ditch to restore sheet flow hydrology. The graded area was then planted with hydrophytic plants and trees.

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



Ditch block construction was conducted where the East Road berm crosses the Banana Creek Canal. This portion of the canal was not backfilled to preserve the existing large oaks and maples along the rim spoil material. The rim material has a hiking trail under the canopy used by both the public and wildlife to gain access around the site.



A Menzi unit was utilized in areas where traditional equipment could not access through water, such as this breaching of the rim spoil material to provide hydraulic connectivity to the preserved portion of the Banana Creek Canal.

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



The 3,050 ft. long Center Road berm just after construction as sod is being installed on the slopes. To minimize the potential of sedimentation, the road berms were constructed prior to filling the western segment of the Banana Creek Canal and contributing ditches. An open water component west (left) of the Center Road is heavily used by water fowl, wading birds and alligators.



The 2,000 ft. long East Road just after construction. As with the Center Road, the restored sheet flow is evenly distributed by a series of culverts, as well as "saddle" swales installed at lower road elevations to allow overflow during periodic flood events.

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



The West Road was historically a dry road crossing at natural grade over the pasture. The new road is within the same footprint and still at natural grade, but was reconstructed with crushed concrete. The majority of the road is now below the surface water elevations, maintaining a wet crossing used by vehicles only when necessary. Backfilling of the Banana Creek Canal and contributing ditches are evident (right to left), conducted just prior to removing the western levee to restore flow.



View of the former northeast bahia pasture, with the tree-lined eastern segment of the Banana Creek Canal spoil material evident to the left. This photo was taken after the north rim ditch was backfilled and hydrology restored, but prior to supplemental planting in the open water area. The new outfall to Lake Hancock includes culverts installed within the lakeshore berm (lower right).

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**



The wetland restoration activities at the Reserve have helped attract a substantial increase in wildlife populations. Wading birds, water fowl and bald eagles are commonly observed on the tract.



There are estimates that the adjacent 4000-acre Lake Hancock has an alligator population that exceeds 2000. With the restored wetland hydrology and subsequent attraction of more wildlife, alligators of various sizes frequently visit the Reserve.

**FDOT Mitigation Site
(Peace River Basin)**

**Construction Photos
CIRCLE B BAR RESERVE
(SW 66)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Apollo Beach Nature Preserve**
Project Sponsors: WMD – SWIM Section, Hillsborough Co. Conservation
County: Hillsborough

Project Number: **SW 67**
Location: Sec. 16, T31S, R19E

IMPACT INFORMATION

DOT FM: 2557031 – SR 60, Cypress to Fish Creek ERP #: 43002958.003 COE #: 200205816 (IP-MN)

Drainage Basin: Tampa Bay Water Body(s): Spruce Street Drainage Canal SWIM water body? N

Impact Acres /Types (FLUCFCS): 5.3 acres 642 **Total: 5.3 acres**

This SR 60 project has a total wetland impact of 16.6 acres, 5.3 acres mitigated at Apollo Beach, 5.1 acres mitigated at Tappan Tract (SW 62), 5.4 acres mitigated at Cockroach Bay – Saltwater (SW 75), and 0.8 acres mitigated at Cockroach Bay – Freshwater (SW 56).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation Restoration Enhancement Preservation Mitigation Area: **13.8 ac.**
SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? N
Mitigation Bank? N Drainage Basin: Tampa Bay Water Body(s): Tampa Bay SWIM water body? Y

Project Description

- A. Overall project goal:** The creation of various coastal habitats within an extensive spoil disposal area constructed in 1955 from adjacent dredged material from Tampa Bay. The total project area is 38 acres, on a site purchased through Hillsborough County's Environmental Lands Acquisition and Protection Program (ELAPP). The tract is owned and managed by Hillsborough County Conservation Section, with the habitat creation constructed in collaboration with the WMD-SWIM Section. The constructed habitats and associated acreage include intertidal low marsh and mangroves (13.8 acres), intertidal high marsh (7.2 acres), intertidal open water (10.8 acres), dunes (1.2 acres), and upland enhancement (5.0 acres). The designated area mitigating for the FDOT wetland impacts include the 13.8 acres of created low marsh, with mangrove species naturally recruiting in the low marsh.
- B. Brief description of pre-construction condition:** Prior to construction in 2004, the majority of the site included a relatively level spoil "plateau" essentially covered with a monoculture of cogon grass, and minor cover provided by goldenrod, beggar's-tick, dog fennel, ragweed, and several upland grasses (site photos, Figure B). A narrow strip of white and black mangroves were established along the southern shoreline, couple areas of dense concentrations as well as scattered Brazilian pepper; with scattered cabbage palm, salt-bush, wax myrtle, and Australian pine. The site represented very low quality habitat, dominated by exotic vegetation, and minimal benefits for wildlife use.
- C. Brief description of constructed conditions:** In 2004, the majority of the spoil material was hauled off-site and the project site graded to create low and high marsh habitat. The construction emphasized an interconnected network of open water channels and deeper pools, a myriad of planted marsh platforms at various elevations, saltern habitat, sinuous edge communities, and areas of upland enhancement and restoration (Figure C). The open water component is particularly important in the design to provide feeding and resting habitat for the Florida manatee that frequent the area due to the neighboring warm-water discharge from the Tampa Electric Company's (TECO) Big Bend Power Station (photo). Additional details provided in Attachment A.

- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** The 5.9 acres of the saltwater marsh impacts are mitigated by the creation of 13.8 acres of saltwater low marsh habitat. The FDOT mitigation area is buffered with the creation of other estuarine habitats; increasing the ecological value and wildlife benefits of the designated mitigation. No additional FDOT wetland impacts are proposed for mitigation at the project site.
- E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** During the selection of the mitigation, the Tampa Bay Mitigation Bank (TBMB) was the only proposed mitigation bank within the Tampa Bay Drainage Basin; however the bank was not under construction or had any credits available to sell.
- F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body :** The Apollo Beach restoration project is a SWIM project. Constructed through the WMD-SWIM Dept., the site is owned and managed by the Hillsborough County – Conservation Section.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: A private contractor selected by the SWFWMD – SWIM Dept. in 2004.

Entity responsible for monitoring and maintenance: Consultant working for the District conducted monitoring through 2008, with perpetual maintenance conducted by the Hills. County Conservation Section.

Timeframe for implementation: Design completed and added to the FDOT program in 2002, construction commenced in 2003 and completed in 2004, maintenance & monitoring through 2008, perpetual maintenance conducted when necessary by Hillsborough County.

Project cost: \$ 450,000 (total); the entire project design, construction and planting cost is \$1.5 million. The FDOT mitigation program provided the construction & maintenance funds associated with the designated 13.8 acres of mitigation.

Attachments

1. Description of pre-post construction conditions and conducted work. Refer to Attachment A.
2. Aerial photograph: Refer to Figures B&C for pre-post construction aerials.
3. Location map and design drawings of existing and proposed conditions. Refer to Figure A - Location Map, Figure B – Pre-Construction Conditions (1999 aerial), Figure C – Post-Construction Conditions (2009 aerial), Figure D- Planting Plan. Additional construction design details are available through the SWFWMD-SWIM Section and FDOT Mitigation Program Manager.
4. Schedule for work implementation. Refer to previous text.
5. Success criteria and associated monitoring plan. Refer to Attachment B.
6. Long term maintenance plan. Refer to Attachment B.

Attachment A – Apollo Beach Pre-Post Site Conditions & Plan

The vast majority of pre-construction site was low-quality upland habitat from numerous plant species that colonized the site in the 47 years since construction of the filled Apollo Beach peninsula. With sterile dredged soils and minimal seed source of desirable upland species, the “plateau” (average elev. 9-10 ft.) offered little opportunity for desirable species to colonize. Cogon grass (*Imperata brasiliensis*) was the most dominant ground cover species (refer to site photos). Other herbs included purple sedge (*Cyperus ligularis*), hurricane grass (*Fimbristylis spathacea*), licorice weed (*Scoparia dulcis*), seaside evening primrose (*Oenothera humifusa*), and camphor daisy (*Haploppus phyllocephalus*). Shrub and tree species were present in the form of scattered individuals and small, dense pockets. Dominant species included Brazilian pepper (*Schinus terebinthifolius*), salt-bush (*Baccharis angustifolia*), wax myrtle (*Myrica cerifera*), lantana (*Lantana camara*), cabbage palm (*Sabal palmetto*), and Australian pine (*Casuarina equisetifolia*). A narrow strip of intertidal wetland exists along the outer, waterward edge of the site. Woody vegetation in this zone consists mainly of white mangrove (*Lagularia racemosa*) and black mangrove (*Avicennia germinans*), with scattered Brazilian pepper and coinvine (*Dalbergia castaphyllum*). Herbs include sea purslane (*Sesuvium portulacastrum*), saltmeadow cordgrass (*Spartina patens*), and saltwort (*Batis maritima*).

Several coastal habitats were constructed starting in 2003 and completion in 2004. The open water component (10.8 acres) includes sub-tidal, mudflats, and salterns created between elevations 0.5 feet to deeper than -2.0 feet. The interconnected deepwater channels provide tidal flows into the interior of the peninsula. Deeper pools (greater than -3.0 ft.) were constructed to provide refuge for manatees and juvenile fish. Topographic ridges are constructed in the intertidal zone to trap tidal flows and encourage development of saltern zones.

The intertidal low marsh and mangrove wetland zone (13.8 acres) is designated to mitigate for the FDOT wetland impacts. This zone (elevations 0.5 to +2.0 ft.) was planted with *Spartina alterniflora*, and mangrove species have naturally recruited and generated during the initial growing seasons (photographs). The existing eastern shoreline is dominated by mangroves and was preserved to inhibit erosion and provide a seed source for mangrove seedling recruitment. The intertidal high marsh (7.2 acres) is constructed between elevations +2.0 to +3.0, with plantings of *Iva spp.*, *Spartina patens*, *Batis maritima*, *Borrhchia frutescens*, and *Sesuvium portulacastrum*. Mangrove species have naturally recruited and generated within this zone that add more diversity and supplement the installed plant communities (photos).

A portion of the excavated material was used to construct sand dune habitat along the northern top-of-bank. The dunes and surrounding areas were enhanced by plantings of sea oats (*Uniola paniculata*), railroad vine (*Ipomoea pescaprae*), beach sunflower (*Helianthus debilis*), along with transplanted cabbage palms and prickly pear cactus. Selected upland areas have been enhanced to increase community diversity and offer roosting & nesting areas for a wide variety of bird species that frequent the site.

Attachment B – Maintenance & Monitoring Plan, Success Criteria

For estuary creation and restoration projects, proper construction of appropriate wetland grades that allow for sufficient tidal action, the planted vegetation has survived and recruited throughout the wetland. Salt water limits the re-establishment of exotic vegetation. Maintenance to control exotic and nuisance species are generally associated with the upland habitat, which is a low percentage of the project area, and being maintained through the use of herbicide. Brazilian pepper seedlings and cattails periodically generate and are eradicated by licensed herbicide maintenance staff working for the Hillsborough Conservation Section.

Monitoring was conducted semi-annually through 2008, then decreased to annual reviews since success criteria was met and maintained with minimal need for maintenance. Monitoring includes qualitative evaluation and photo documentation of the low salt-marsh areas designated for mitigation, as well as general habitat conditions of the entire project area. The success criteria included a minimum 90% survivorship for planted material, a total 85% cover of planted and recruited desirable species, and less than 5% coverage of exotic species. The designated mitigation as well as adjacent habitats exceed the success criteria. The habitat conditions attract substantial diversity of wildlife and vegetation species. The following lists of wildlife and vegetation are routinely observed at Apollo Beach:

Table 1
Observed Wildlife

Scientific Name	Common Name	Activity	FFWCC ¹ Designation	USFWS ² Designation
Birds				
<i>Actitis hypoleucos</i>	Common sandpiper	Observed	--	--
<i>Casmerodius albus</i>	Great egret	Observed	--	--
<i>Charadrius spp.</i>	Plover	Observed	--	--
<i>Charadrius vociferus</i>	Killdeer	Observed	--	--
<i>Egretta caerulea</i>	Little blue heron	Observed	SSC	--
<i>Eudocimus albus</i>	White ibis	Observed	SSC	--
<i>Haematopus palliatus</i>	Oystercatcher	Observed	SSC	--
<i>Pandion haliaetus</i>	Osprey	Observed	--	--
<i>Pelecanus occidentalis</i>	Brown pelican	Observed	SSC	--
Invertebrates				
<i>Uca pugnax</i>	Fiddler crab	Observed	--	--

Legend

- Animal species listed by the Florida Fish and Wildlife Conservation Commission pursuant to Rules 39-27.003, 39-27.004, and 39-27.005 F.A.C.
 - As listed by the U.S. Fish and Wildlife Service in 50 CFR 17.
- FFWCC = Florida Fish and Wildlife Conservation Commission
 USFWS = United States Fish and Wildlife Service
 SSC = Species of Special Concern

Table 2
Observed Vegetation

Scientific Name	Common Name	State Indicator Status ¹	Federal Indicator Status ²	Nuisance Species ³	Plant Type
<i>Batis maritima</i>	Saltwort	OBL	OBL		Herb
<i>Borrchia frutescens</i>	Sea oxeye	OBL	OBL		Herb
<i>Coccoloba uvifera</i>	Sea grape	--	FAC		Herb
<i>Dalbergia ecastaphyllum</i>	Coivine	--	FACW+		
<i>Distichlis spicata</i>	Salt grass	OBL	FACW+		Herb
	East coast dune sunflower	--	FAC		Herb
<i>Ipomoea pes-caprae</i>	Railroad vine	--	FAC		Herb
<i>Iva frutescens</i>	Marsh elder	OBL	FACW+		Shrub
<i>Laguncularia racemosa</i>	White mangrove	OBL	FACW+		Shrub
<i>Myrica cerifera</i>	Wax myrtle	FAC	FAC+		Tree
<i>Paspalum vaginatum</i>	Seashore paspalum	OBL	OBL		Herb
<i>Rhizophora mangle</i>	Red mangrove	OBL	OBL		Herb
<i>Salicornia virginica</i>	Glasswort	OBL	OBL		Herb
<i>Spartina alterniflora</i>	Smooth cordgrass	OBL	OBL		Herb
<i>Spartina bakeri</i>	Sand cordgrass	FACW	FACW+		Herb
<i>Spartina patens</i>	Marsh-hay cordgrass	FACW	FACW		Herb
<i>Typha spp.</i>	Cattail	OBL	OBL	Yes	Herb
<i>Uniola paniculata</i>	Sea oats	--	FACU		Herb

Legend

- Indicator status selected by the Florida Department of Environmental Protection (DEP) pursuant to Rule 62-340.450 F.A.C.
 - Wetland Status (NWI): Source - National list of vascular plant species that occur in wetlands. US Fish & Wildlife Service Biological Report 88(24). National Wetlands Inventory, US Fish & Wildlife Service. 1988.
 - Vegetative species considered nuisance species if listed in either the Florida Exotic Pest Plant Council's (FLEPPC) 2007 List of Invasive Species OR in the Appendix E of the Technical Publication REG-001: Wetland Rapid Assessment Procedure, WRAP; September 1997.
- FAC = Facultative. Equally likely to occur in wetlands or non-wetlands.
 FACU = Facultative Upland. Usually occurs in non-wetlands, but occasionally found in wetlands.
 FACW = Facultative Wetland. Usually occurs in wetlands, but occasionally found in non-wetlands.
 OBL = Obligate Wetland. Occurs almost always under natural conditions in wetlands.
 A positive (+) or negative (-) sign is used with the Facultative indicator category to more specifically define the regional frequency of occurrence in wetlands. The positive sign indicates a frequency toward the higher end of the category (more frequently found in wetlands), and a negative sign indicates a frequency toward the lower end of the category (less frequently found in wetlands).



Tampa Bay

TECO Power Plant

672 672

Project Site

Surfside Blvd.

North

Scale - 3000 ft.

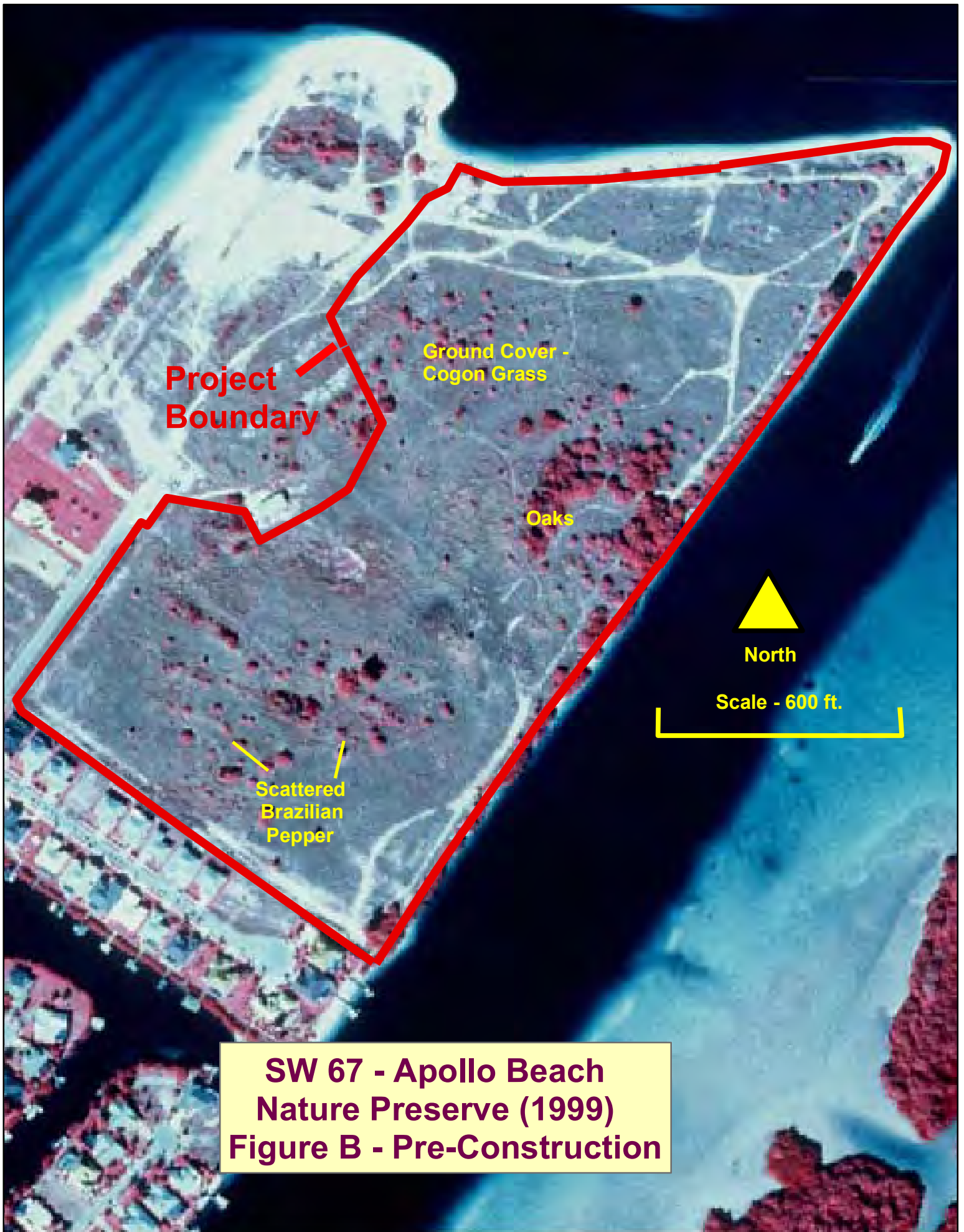
Apollo Beach Blvd.

Apollo Beach

SW 67 - Apollo Beach Nature Preserve
Figure A - Location

US Hwy. 41

41



**Project
Boundary**

Ground Cover -
Cogon Grass

Oaks

Scattered
Brazilian
Pepper



North

Scale - 600 ft.

**SW 67 - Apollo Beach
Nature Preserve (1999)
Figure B - Pre-Construction**



ZONE	STABOL	PLANT SPECIES	SIZE	SPACING O.C.	PLANT QUANTITY
CLAYED		<i>Passiflora ligularis</i>	1 gal	2.5	1.1 to 1.00
		<i>Strobilanthus virginicus</i>	1 gal	2.5	1.00
FLYWAY		<i>Passiflora ligularis</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Chorizanthe viridis</i>	1 gal	10.0	100
		<i>Strobilanthus virginicus</i>	1 gal	2.0	1.00
POND		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00

ZONE	STABOL	PLANT SPECIES	SIZE	SPACING O.C.	PLANT QUANTITY
POND		<i>Strobilanthus virginicus</i>	1 gal	2.5	1.1
		<i>Strobilanthus virginicus</i>	1 gal	2.5	1.00
FLYWAY		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
POND		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00
		<i>Strobilanthus virginicus</i>	1 gal	3.0	1.00



**FDOT - District 7
MITIGATION SITE
(Tampa Bay Drainage Basin)**

**APOLLO BEACH
(SW 67)**

**FIGURE D
Planting Plan
Scale 1 in. = approx. 300 ft.**



Pre-Construction Conditions (2002) - low quality habitat conditions included dense ground coverage of predominantly cogon grass with scattered Brazilian pepper.



Current Constructed Conditions (2009) - view from the western edge of the project looking north over the created salt-marsh & inter-tidal channel habitats (TECO Big Bend Power Plant in background). The low salt-marsh habitat provides the designated FDOT mitigation, with dominate coverage provided by smooth cordgrass with naturally recruited mangroves. The high salt-marsh has dominant coverage of salt-grass, seashore paspalum, marsh-hay cordgrass; as well as areas of rare saltern habitat (upper left).

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 67 – APOLLO BEACH
NATURE PRESERVE***



Current Post-Construction Conditions (2009) – another view of the constructed lagoons and channels adjacent to created marsh and dune habitat (left). Southern boundary of the tract is evident along the adjacent residential community (right).



Current Constructed Conditions (2009) – mangrove species have naturally recruited and generated within some of the salt-marsh habitat. Above are dense white mangrove saplings within a marsh zone constructed adjacent to a channel in the northern portion of the tract.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 67 – APOLLO BEACH
NATURE PRESERVE***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: I-75 Peace River Bridge Restoration

Project Number: SW 69

Mitigation Sponsor: FDOT & SWFWMD

County: Charlotte

IMPACT INFORMATION

WPI: 4046971 – I-75 Bridge Widening over Peace River ERP #: 43021917.00 COE #: NPR (USCG)

Drainage Basin(s): Peace River Water Body(s): Peace River SWIM water body? Y

Impact Acres / Types (FLUCFCS): 0.08 ac. 619 / 612 / 642 – Permanent Impacts from Bridge Embankment Fill
0.72 ac. 612 / 642 - Permanent Impacts from Shading
2.51 ac. 612 / 642 -Temporary Impacts from Construction

TOTAL 3.31 Acres

Note: The total proposed wetland impact associated with the bridge construction is 6.06 acres. In addition to the 3.31 acres of impact listed above, there will be 2.75 acres of mangrove & estuarine permanent impacts from shading that will be mitigated through the purchase of mangrove credits from the Little Pine Island Mitigation Bank (SW 52).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation: 2.51 ac. Restoration (temp. impacts) 2.06 ac. Enhance. (under removed bridge) Mitigation: **4.57 acres**

SWIM project? N Aquatic Plant Control project? Y Exotic Plant Control Project? N Mitigation Bank? N

Drainage Basin(s): Peace River Water Body(s): Peace River SWIM water body? Y

Project Description

A. Overall project goal: FDOT constructed a new northbound I-75 bridge over the Peace River in 2002-2004. The new span is located between the existing southbound bridge and removed northbound bridge (Figures A&B). To remove the northbound bridge span, construction equipment needed access adjacent to the eastern side of the existing span, resulting in 2.51 acres of temporary wetland impact. After the bridge span was removed, the pre-existing non-vegetated, shaded area under the removed span (2.06 ac.) and temporary impact area (2.51 ac.) were planted with white mangrove, saltmarsh bulrush, and black needle rush.

B. Brief description of pre-construction condition: Prior to the new bridge construction, beneath the former northbound bridge span, there was a dominance of non-vegetated, exposed sand conditions due to shade. Trimmed mangroves were dominant within the proposed temporary impact area of Site C. For Site B (Bird Key), the temporary impact area had some small trimmed mangroves, scattered leather-fern, and primarily non-vegetated areas where previously cut limbs were prevalent over the ground (photo). For Site A, the temporary impact area included a mixture of white & red mangrove along with a dominance of black rush (photo).

C. Brief description of conducted work: The bridge contractor constructed the new bridge span before removing the existing northbound span. After the previous northbound span was removed, the contractor conducted additional earthwork to restore pre-construction grade elevations within the temporary impact zones. The enhanced wetlands (under the previous bridge) and restored wetlands (within the temporary impact zone) were planted in July, 2004 with 1100 white mangrove, 4800 black rush, and 1700 saltmarsh bulrush. The planting supplemented the natural regeneration of these same species that had already commenced in these areas after construction. Semi-annual monitoring and quarterly herbicide maintenance was conducted from 2004-2005 when the dense, high quality mangrove coverage excluded generation of exotic and nuisance species. Annual monitoring continues to ensure successful habitat conditions are maintained, current habitat conditions are evident in the 2008 photographs.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): For the on-site mitigation, the permanent loss of 0.7 acre of mangrove/estuarine marsh habitat are adequately and appropriately compensated by the enhancement of 2.06 acres of non- to minimally-vegetated wetlands beneath the previous northbound span. The 2.51 acres of temporary impact to mangrove and saltmarsh habitat was restored in the same location as the impacts. To compensate for the additional 2.75 acres of permanent mangrove and estuarine impact, the impacts are mitigated though purchasing 2.75 credits from the Little Pine Island Mitigation Bank. The high quality habitat conditions of both the on-site mitigation and LPI mitigation banks adequately and appropriately compensate for the associated bridge wetland impacts. No additional roadway wetland impacts will be mitigated with this project.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: Due to habitat conditions and proximity to the wetland impacts, the Little Pine Island Mitigation Bank was selected to compensate for some of the wetland impacts associated with this project. However, the I-75 Bridge is within the Peace River Basin and the mitigation bank is within the adjacent and downstream Charlotte Harbor Basin. Selection of an appropriate mitigation project within the basin was required to partially mitigate for wetland impacts, in order to avoid cumulative loss of wetland habitat functions and value within the Peace basin. Since the on-site wetland restoration and enhancement adequately and appropriately compensates for a portion of the impacts, the mitigation bank provides additional appropriate mitigation for the remaining habitat loss.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : At the time of mitigation selection, there were no existing or proposed saltwater restoration SWIM projects proposed in the Peace River basin.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Contractor for the bridge construction was responsible for the necessary earthwork to restore grade elevations. A nursery contractor was selected and managed by the WMD for planting and maintenance of the restored wetlands.

Entity responsible for monitoring and maintenance: The maintenance was conducted by a private consultant on contract to the SWFWMD; monitoring by the SWFWMD. Additional details are available from the FDOT Mitigation Program Manager.

Timeframe for implementation: Commence: Bridge construction was conducted from 2001- 2004, planting conducted in July, 2004 Complete: semi-annual monitoring and quarterly maintenance was conducted for two years when dense mangrove conditions limited the opportunity for exotics regeneration. Periodic annual monitoring conducted to ensure conditions are maintained.

Project cost: \$26,000 (note: these costs do not include some necessary minor earthwork grading conducted by the bridge contractor to restore appropriate wetland grades at the three sites).

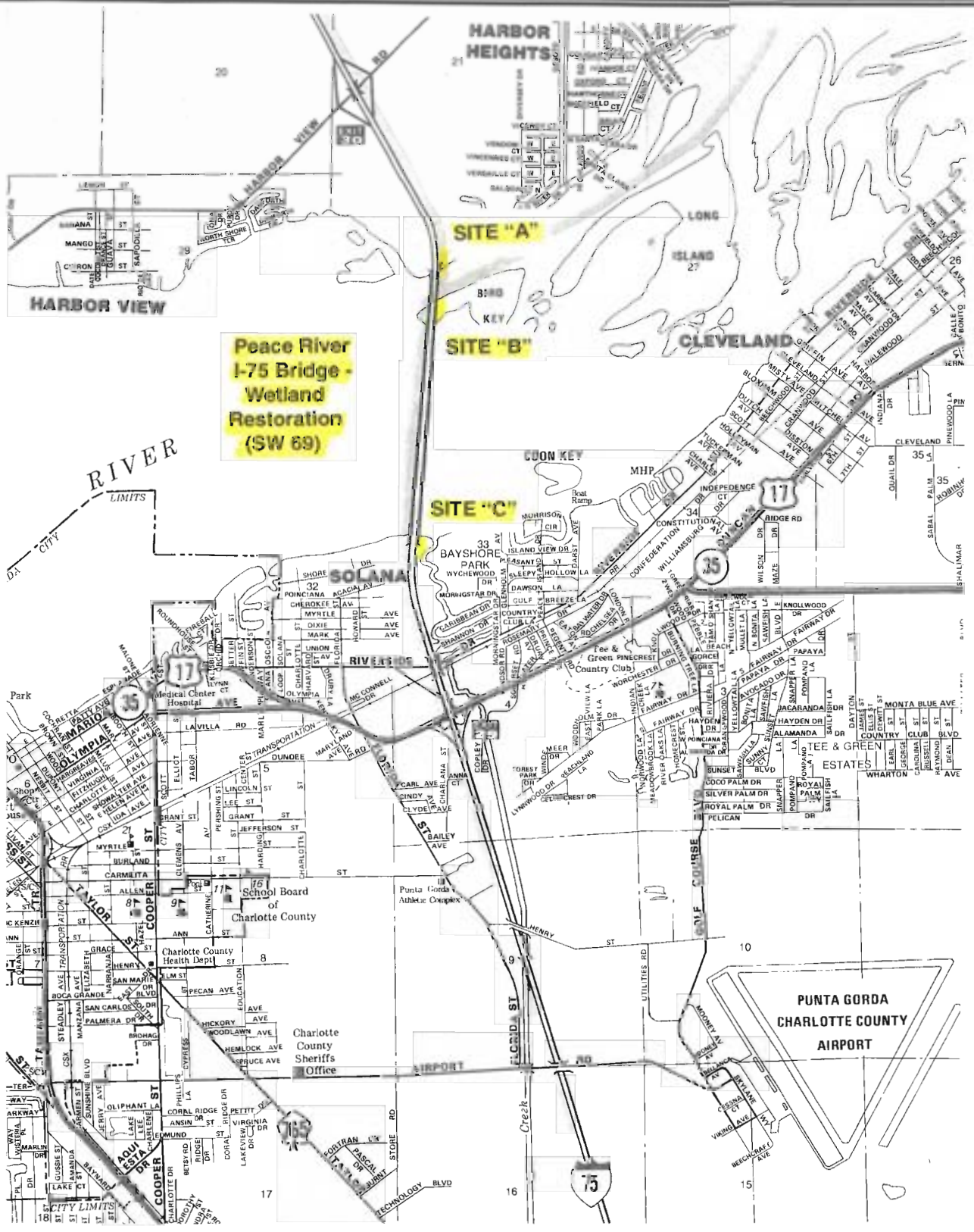
Planning, Design, Site Evaluations, Contract Management - \$5,000

Planting (4.57 acres) - \$9,000

Maintenance & Monitoring (3 years) - \$12,000

Attachments

- X **1. Description of existing site and proposed work.** Refer to previous discussion and site photos.
- X **2. Location map, aerial & site photographs of pre-post site conditions.** Refer to Figures A& B, photos.
- X **3. Success criteria, maintenance and associated monitoring plan.** Success criteria included 90% survivorship of planted stock which included white mangroves (*Laguncularia racemosa*), black rush (*Juncus roemerianus*), and saltmarsh bulrush (*Scirpus robustus*). These same species have naturally recruiting and regenerating at the site, the supplemental plantings were concentrated within the less vegetated areas. Success criteria required a minimum 80% cumulative cover of desirable vegetation, since ground cover within mature mangrove systems are generally sparse. With the proper grading, tidal waters restrict the generation of exotic/nuisance species, which were eradicated during a 2-year monitoring period. The monitoring was conducted on a semi-annual basis through 2006, followed by annual evaluations to ensure the successful habitat conditions are maintained. The pre-post construction habitat conditions at each of the three wetland crossings are observed within the site photographs.



**Peace River
I-75 Bridge -
Wetland
Restoration
(SW 69)**

SITE "A"

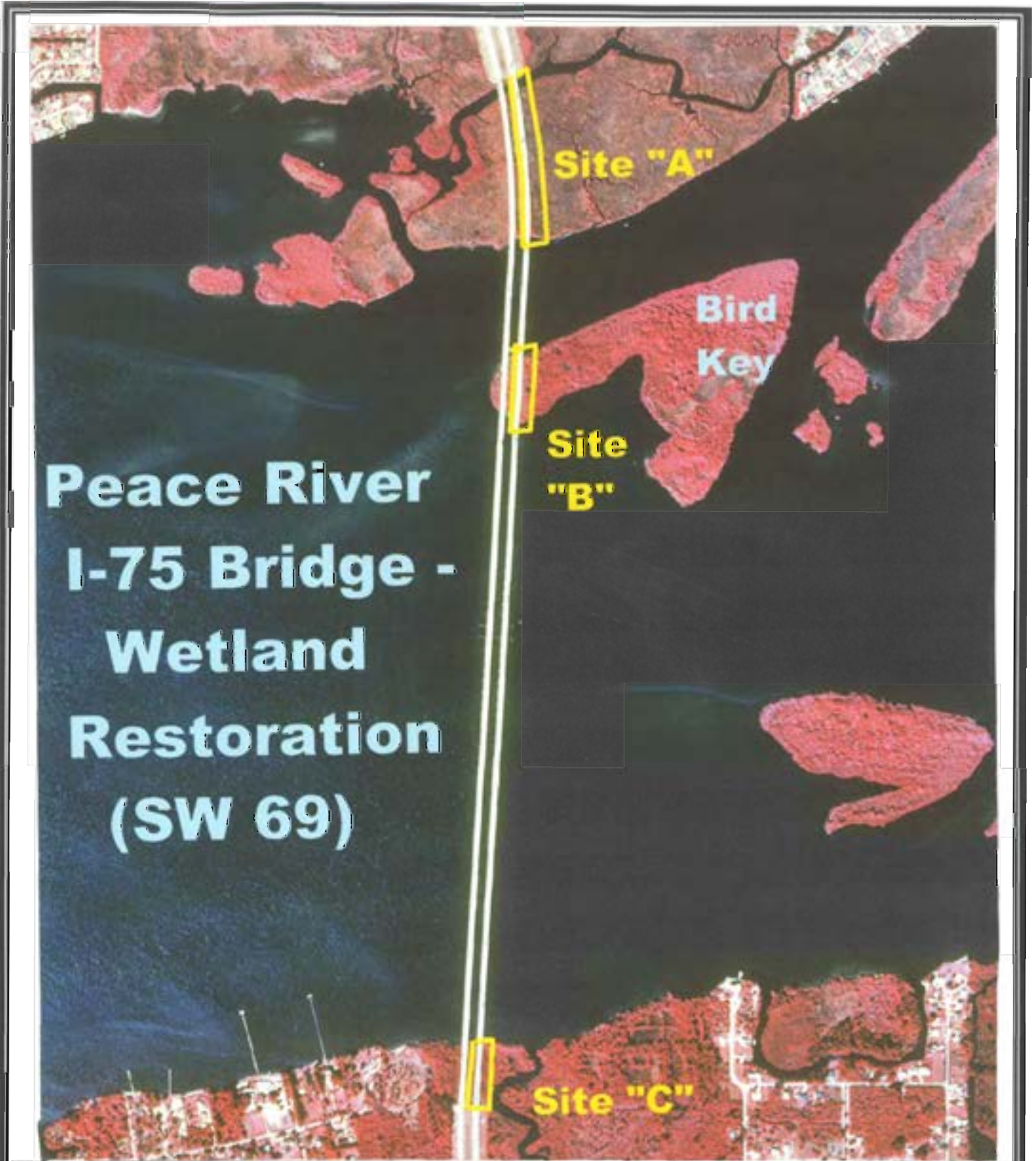
SITE "B"

SITE "C"

**FDOT - District 1
MITIGATION SITE
(Peace River Basin)**

**PEACE RIVER / I-75 BRIDGE
RESTORATION
(SW 69)**

**FIGURE A
LOCATION MAP
North, Scale 1.7 in. = 1 mile**



**Peace River
I-75 Bridge -
Wetland
Restoration
(SW 69)**

Site "A"

**Bird
Key**

**Site
"B"**

Site "C"

**FDOT - District 1
MITIGATION SITE
(Peace River Basin)**

**PEACE RIVER / I-75 BRIDGE
RESTORATION
(SW 69)**

**FIGURE B
1995 INFRARED AERIAL
North, Scale 1in. = 1075 ft.**



Site A – Pre-Construction (2001) – view from the northern bridge embankment area, looking south over the tidal branch. Brazilian pepper along the embankment (foreground) with mangroves and black rush south of the open water and adjacent to the bridge.



Site A – Post-Construction (Sept. 2003) – the new northbound bridge has been constructed and old bridge removed, exposing bare soil that was under the bridge. The exposed area was planted with white mangrove and black rush.

**FDOT – District 1 Mitigation Site
(Peace River Basin)**

**(SW 69)
Peace River / I-75 Bridge
Habitat Restoration**



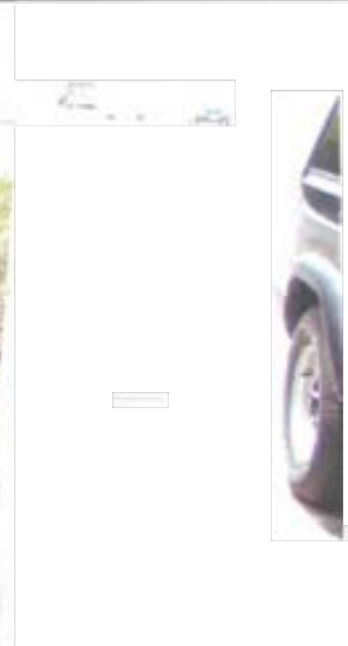
Site A (July, 2004) – planted stock and natural recruitment of desired vegetation provides extensive ground coverage. Herbicide maintenance to eradicate exotics conducted quarterly in 2004 and 2005.



Site A – (February, 2008) – 10-15 ft. tall white and red mangroves dominate and successfully cover the cleared area previously under the old bridge.

**FDOT – District 1 Mitigation Site
(Peace River Basin)**

**(SW 69)
Peace River / I-75 Bridge
Habitat Restoration**



Site B – Pre-Construction (2001) – view from top of the northbound bridge, looking south at the large mangroves on Bird Key. Note the designated temporary impact area has minimal vegetative coverage; primarily limited to scattered leather fern and woody debris.



Site B – Post-Construction (Sept. 2003) – the new northbound bridge has been constructed and old bridge removed, exposing bare soil that was under the bridge. None of the large mangroves were impacted, the exposed soil area was planted with white mangrove, black rush and saltmarsh bulrush.

**FDOT – District 1 Mitigation Site
(Peace River Basin)**

**(SW 69)
Peace River / I-75 Bridge
Habitat Restoration**



Site B (March, 2005) – Herbicide maintenance to eradicate exotics conducted quarterly in 2004 and 2005; primarily cattails with scattered Brazilian pepper.



Site B – (February, 2008) – 10-15 ft. tall white and red mangroves dominate and successfully cover the exposed soil area. Mortality of a few mature mangroves (background) resulted when Hurricane Charley crossed the bridge in 2004.

**FDOT – District 1 Mitigation Site
(Peace River Basin)**

**(SW 69)
Peace River / I-75 Bridge
Habitat Restoration**



Site C – Pre-Construction (2001) – view from the northbound bridge's southern embankment, looking north at the temporary wetland impact area associated with construction equipment access to remove the span. Dominated by trimmed mangroves, and few Brazilian pepper and Australian pine along the embankment.



Site C – Post-Construction (Sept. 2003) – the new northbound bridge has been constructed and old bridge removed, exposing bare soil that was under the bridge. The area was planted with white mangrove, black rush and saltmarsh bulrush.

**FDOT – District 1 Mitigation Site
(Peace River Basin)**

**(SW 69)
Peace River / I-75 Bridge
Habitat Restoration**



Site C (February, 2008) – following herbicide maintenance in 2004-2005 to help establish vegetative coverage, planted and naturally recruited mangroves have achieved density and heights meeting and in most cases, exceeding pre-construction conditions.



Site C – (February, 2008) – view from river, looking south toward the embankment over planted mangrove area. Limits of cleared vegetation during construction seen along the break between the smaller and larger mangroves (background).

**FDOT – District 1 Mitigation Site
(Peace River Basin)**

**(SW 69)
Peace River / I-75 Bridge
Habitat Restoration**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Ft. DeSoto Park – Ecosystem Restoration
Project Sponsor: Pinellas County Environmental Management
County: Pinellas

Project Number: SW 70

Location: Section 8, 9, T33S, R16E

IMPACT INFORMATION (Proposed Construction Date)

1 -FM: 2569031, SR 682 (Bayway Bridge), SR 679 to W. Toll Plaza ERP #: 4423532.000 COE #: NA (USCG)
2-FM: 2570831, SR 699 (Gulf Blvd.)–192nd Ave. to Walsingham/Ulmerton (2011) ERP #: 44025373.000 COE #: 200307110 (NW 14)
3-FM: 4107552, SR 679 (Pinellas Bay Struct. E) @ Inter. Waterway (Undeter.) ERP #: 47023803.000 COE #: 200204286 (NW-PW)

Drainage Basin: Upper Coastal Water Body: Intercoastal Waterway SWIM water body? N

Acres / Impact Types (FLUCFCS):

1 – FM 2569031- <u>0.1 ac. 540</u>	2 – FM 2570831 <u>0.3 ac. 540</u>
<u>0.3 ac. 641</u>	
<u>0.4 ac. 911 (shading)</u>	3 - FM 4107552 <u>0.2 ac. 510</u>
TOTAL: 0.8 acre	<u>0.1 ac. 612</u>
	<u>0.1 ac. 911</u>
	TOTAL 0.4 acre
	TOTAL – 1.5 Acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration X Enhancement Preservation Mitigation Area: **16 acres**
SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N Drainage Basin(s): Upper Coastal Water Body(s): Mullet Key Bayou SWIM water body? Y

Project Description

A. Overall project goal: The Ft. DeSoto Park Aquatic Habitat Management Area includes a couple islands that were physically connected to Mullet Key in the 1960's by the construction of filled causeway roads (Figures A, B, photos). Since no bridges or culverts were installed, these causeways blocked historic tidal circulation patterns throughout the interior bay area (Mullet Key Bayou) along the north side of Mullet Key, resulting in severe stress and mortality of seagrass habitat. With construction of a 40-foot bridge span through the Pinellas Bayway causeway, flow patterns will be restored to the inner bays and enhance the health and survivorship of adjacent seagrass beds. Based on previous studies, the minimal area of seagrass enhancement area associated with the bridge is 230 acres (Figure B), with secondary enhancement of the adjacent mangrove habitat along the causeway and additional seagrass beds further from the structure. Prior to the bridge construction in 2004, due to the substantial ecological benefits, the project was supported by multiple agencies for over 15 years but could not be implemented due to insufficient funds. The ecological value of this project has been recognized with Pinellas County receiving regional, state, and national awards for engineering and environmental excellence.

B. Brief description of pre-construction condition: Prior to construction, tidal flow patterns filled the inner bays, with slow and often stagnant hydrologic circulation. This recirculation problem resulted in elevated water temperatures in the summer, decrease in dissolved oxygen, water quality degradation, and associated seagrass mortality.

C. Brief description of constructed conditions: With assistance from eight agency funding sources, Pinellas County constructed the bridge span in the location of historically open water break between two islands (Figures A, B, site photos). This span restores significant hydrologic circulation, enhancing the Mullet Key Bayou areas with the worst water quality and stagnation problems that in turn has improved the health of the seagrass beds and adjacent mangrove habitats along the causeway.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The wetland impacts are associated with minor encroachments into open water, seagrass and mangrove habitats due to urban roadway and bridge expansions in western Pinellas County. Since Ft. DeSoto was first selected to the mitigation program, very minor wetland impacts associated with over a dozen FDOT projects designated for mitigation at Ft. DeSoto were ultimately permitted without requiring mitigation. Therefore, along with the three permitted roadway & bridge projects, additional minor FDOT wetland impacts within the Pinellas Co. portion of the Upper Coastal Basin will be evaluated to determine if they can be adequately and appropriately mitigated at Ft. DeSoto. The most noteworthy impact included the 0.4- acre of shading impact to seagrass (#911) associated with the widening of the Pinellas Bayway Bridge. All the roadway and bridge projects are within close proximity of Ft. DeSoto Park and the recirculation project was designated to compensate for these impacts due to the very important and large-scale enhancement opportunities to minimize the continuous degradation of seagrass beds within a designated aquatic habitat management area. Secondary benefits include restoring tidal conditions to other habitats including adjacent mangroves that border the bays. To date, since the designated FDOT funds (\$110,000) provide 7% of the \$1.6 million bridge budget, an appropriate percentage (16 acres) of the 230 acres of minimal habitat enhancement has been designated for the mitigation. Based on the quality of the wetland impacts and associated mitigation evaluation, this mitigation acreage is more than adequate and appropriate to compensate for the 1.5 acres of wetland impacts.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection, there were no existing or proposed mitigation banks within the Upper Coastal Basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: This project is also being co-sponsored by the SWIM program.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: A private contractor selected by Pinellas County

Entity responsible for monitoring and maintenance: Pinellas County Department of Environmental Management maintains bridge conditions. Some volunteer seagrass and water quality evaluation is conducted by the County however specific mitigation monitoring was determined to be unnecessary.

Proposed timeframe for implementation: Commence: Design & Permitting, 2000-2003 Complete: Construction - 2004

Project cost: Construction: \$ 1.6 million for constructing the bridge span, FDOT mitigation funding portion to date - \$110,000.

Attachments

1. Description of pre-post construction conditions, aerial, photographs. Refer to previous discussion, Figures A & B of current aerials and site photos.

2. Recent aerial photograph with date and scale. Refer to Figure B, 1995 Infrared aerial.

3. Location map and design drawings. Refer to Figure A - location map, photographs depicting bridge location and conditions. Bridge construction plans available from Pinellas County and FDOT Mitigation Program Manager. It's noted that the bridge span only has a 4 ft. clearance during high tide, limiting the use of the inner bays to small boats and kayaks. Motor boats are restricted from use in the back bay areas in accordance with Pinellas County habitat protection goals. Installation of rubble rip-rap aprons were necessary to minimize channel and bridge scouring.

4. Success criteria, maintenance and associated monitoring plan. No maintenance of the seagrass beds are necessary and specific success criteria are not proposed since restoration of the tidal recirculation occurred as soon as the bridge was constructed, however periodic monitoring is being conducted by Pinellas to evaluate the seagrass health and water quality conditions.



Gulf of Mexico

St. Petersburg

Pinellas Bayway



0.7 0.35 0 0.7 Miles

Mullet Key

Project Site

Skyway Bridge

**SW 70 - Fort DeSoto
Figure A - Location**



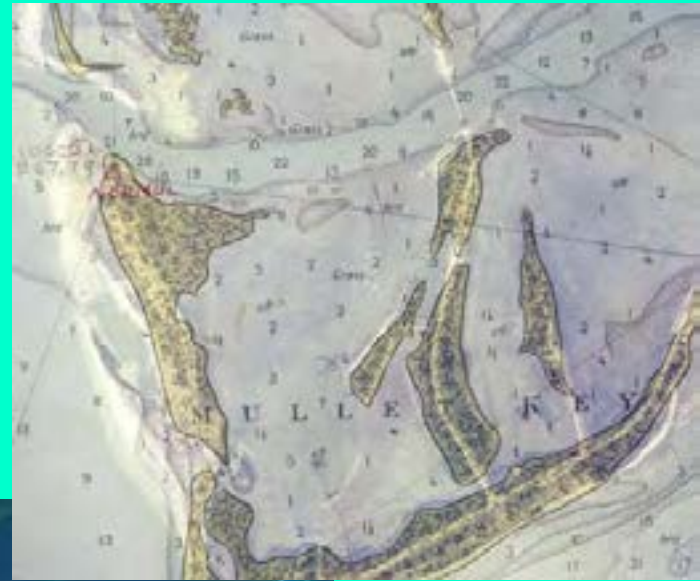
**SW 70 - Fort DeSoto
Figure B - Habitat Enhancement**



Ft. DeSoto Park Ecosystem Restoration Project



Ft. DeSoto Park – Historic Conditions



Bridge Site – Preconstruction



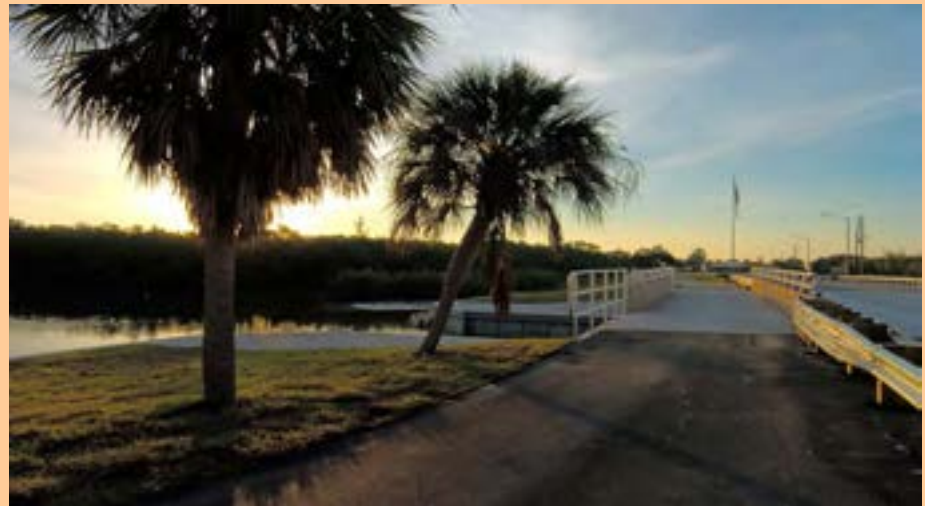
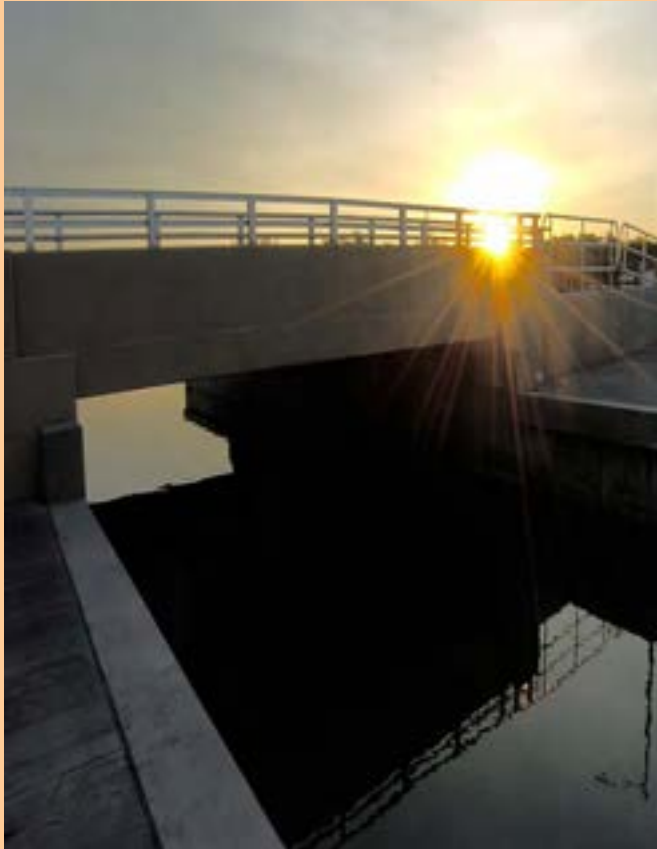
Bridge Construction & Channel Dredging



Bridge Opening – Tidal Recirculation



Ft. DeSoto Park Ecosystem Restoration Coastal America Partnership Award



REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Boyd Hill Nature Preserve**
Project Sponsor: City of St. Petersburg
County: Pinellas

Project Number: **SW 71**

Location: Sec. 16, 35, T31S, R16E

IMPACT INFORMATION (Anticipated Construction Date)

(1) FM: <u>4037701 – US 19, CR 816 to SR 582</u>	ERP #: <u>44022085.001</u>	COE #: <u>NW 14 PCN</u>
(2) FM: <u>2568881 – US 19, Coachman Rd. to Sunset Point</u>	ERP #: <u>4411760.013</u>	COE #: <u>200104383 (LP-PB)</u>
(3) FM: <u>4082011 – Himes Avenue to Hillsborough Avenue</u>	ERP #: <u>44002448.002</u>	COE #: <u>200208419 (NW-MS)</u>
(4) FM: <u>4062561 – East-West Trail, Coopers Bayou - Bayshore</u>	ERP #: <u>44022718.001</u>	COE #: <u>200105298(NW-PB)</u>
(5) FM: <u>2570701 – US 19, 49th St. to 118th Avenue</u>	ERP #: <u>44000188.002</u>	COE #: <u>200206325 (IP-MGH)</u>
(6) FM: <u>2555991 – SR 676 (Causeway Blvd.) US 301 to US 41*</u>	ERP #: <u>43027063.000</u>	COE #: <u>200405583(IP-MIS)</u>
(7) FM: <u>2558881 – US 301 – Sligh Ave. to Tampa Bypass*</u>	ERP #: <u>43024246.000</u>	COE #: <u>200206711 (IP-JF)</u>
(8) FM: <u>4154893 – US 301 – Sun City to Balm Road (2014)**</u>	ERP #: <u>43034464.000</u>	COE #: <u>2008-3613</u>

Drainage Basin: Tampa Bay Water Body: Curlew Creek, Cross Bayou Canal, Cooper's Bayou Canal, Old Tampa Bay
SWIM water body? N, except for Old Tampa Bay

Impact Acres /Types (FLUCFCS) :

(1) FM 4037701 <u>0.1</u> ac. <u>618</u>	(7) FM 2558881 <u>6.4</u> ac. <u>617</u>
(2) FM 2568881 <u>0.3</u> ac. <u>617</u>	<u>1.9</u> ac. <u>618</u>
<u>0.2</u> ac. <u>618</u>	TOTAL 8.3 acres
TOTAL 0.5 acre	
(3) FM 4082011 <u>0.1</u> ac. <u>618</u>	(8) FM 4154893 <u>2.0</u> ac. <u>610</u>
(4) FM 4062561 <u>0.1</u> ac. <u>618</u>	
(5) FM 2570701 <u>0.1</u> ac. <u>617</u>	
(6) FM 2555991 <u>0.2</u> ac. <u>610</u>	

TOTALS –11.4 Acres

* The freshwater marsh and ditch impacts associated with these projects are being mitigated with habitat activities conducted at Cockroach Bay – Freshwater (SW 56).

** Additional wetland impacts are being mitigated on-site by FDOT, the Ekker Tract (SW 82), and the Little Manatee River – Lower Tract (SW 83).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration X Enhancement Preservation Mitigation Area: **92 acres**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? Y
Mitigation Bank? N Drainage Basin: Tampa Bay Water Body(s): Lake Maggiore SWIM water body? Y

Project Description

A. Overall project goal: The enhancement of freshwater forested hardwood wetlands (69.6 acres) and adjacent buffers of upland forested habitat (21.4 acres), and pond (1 acre) by eradication of the extensive cover of exotic and nuisance species; followed by supplemental planting of appropriate tree species. Enhancement activities are part of an overall plan of eradication and maintenance to control undesirable vegetation within the 300-acre Preserve owned and managed by the City of St. Petersburg Parks Dept.

B. Brief description of pre-construction condition: The enhancement areas include two designated portions of the Preserve (Figure B). The northwest area includes hardwood hammock wetlands, dominated by laurel oak with additional coverage provided by Brazilian pepper, water oak, live oak, red maple, cabbage palm, and sparse understory dominated by ferns. The area also includes upland hardwood hammock that buffers the adjacent forested wetlands. These hammocks are dominated by live oak, scattered longleaf pine, Brazilian pepper, extensive

vines, and where the B. pepper was not dense, an understory of scattered saw palmetto. The southeast enhancement area includes approximately half (27 acres) of a forested wetland floodplain associated with Lake Maggiore (Figure B). This wetland has a more extended hydroperiod than the wetlands in the northeast part of the Preserve. Prior to enhancement activities, dominant vegetation within this area included red maple, Brazilian pepper, sweet bay, Carolina willow, primrose willow, elderberry, and grapevine over much of the outer shrub components. Ground cover was sparse due to the heavy shade cover from B. pepper, elderberry and grapevine, but there are various fern species present. Historically, the City could only annually budget and conduct 5-10 acres of habitat enhancement at the Preserve. At that rate, exotics eradication could not be successful due to the continuous seed source recruiting and generating back into previously enhanced areas. Therefore, the combination of mitigation and grant funding allowed the City to hire private contractors to eradicate exotics throughout the Preserve over a shorter duration. Additional information is provided under Attachment A.

- C. Brief description of conducted work:** Commencing in 2004, the City contracted with private environmental consultants and contractors to eradicate the extensive cover of nuisance and exotic vegetation. The dominant species eradicated from all the areas is Brazilian pepper, which had moderate to very dense cover within the wetland as well as upland habitats (refer to site photos). Secondary species eradication included herbicide control and long-term maintenance of primrose willow, elderberry, guinea grass and grapevine. Pepper eradication included a phased approach of herbicide treatment (Garlon) for initial mortality, hand tools and mechanical removal, and transport to the on-site mulching facility. Areas of eradication have exhibited good vegetative coverage of planted and regenerated desirable tree, shrub and herb species. An extensive schedule of herbicide applications continues to minimize recruitment and regeneration of exotic & nuisance species. Additional information is provided under Attachment A.
- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** The FDOT impacts designated for mitigation at the Preserve includes a dominance of freshwater forested and shrub wetlands. The wetland enhancement areas at the Preserve include portions of a couple of the largest forested freshwater wetlands remaining within peninsular Pinellas County. The Preserve is essentially an oasis for wildlife and wetland functions that were substantially invaded by extensive nuisance & exotic species. With the other habitat enhancements conducted at the Preserve, Boyd Hill provides adequate and appropriate mitigation for the wetland impacts with large-scale, regionally significant and extensive habitat improvements. As observed in the Figure A aerial, Boyd Hill is one of the few areas of remnant, large native habitats surrounded by an urban landscape. As a result, the exotics eradication and planting were critical toward attracting and maintaining important wildlife habitat in Pinellas County.
- E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** The Tampa Bay Mitigation Bank (TBMB) is the only mitigation bank within the Tampa Bay basin. However at the time of mitigation selection, bank construction had not commenced and credit sales were not available.
- F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body :** Several SWIM projects have been selected to provide FDOT mitigation for saltwater wetland and freshwater marsh impacts in this basin. However, at the time of mitigation nomination, none of the SWIM projects in the basin had the opportunity to provide appropriate mitigation for forested freshwater wetland impacts. However the adjacent Lake Maggiore sediment

dredging activity was a SWFWMD-SWIM and City of St. Petersburg sponsored habitat improvement project. The Boyd Hill Preserve project was selected due to the opportunity to appropriately mitigate the proposed wetland impacts with ecologically beneficial habitat improvements.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private environmental contractors working for the City of St. Petersburg Parks Dept
Contact Name: Ann Fidanzato, Boyd Hill Preserve Supervisor Phone Number: (727) 893-7234

Entity responsible for monitoring and maintenance: Consultant on contract to the City of St. Petersburg
Proposed timeframe for implementation: Commence: Exotics Eradication 2004-2005 Complete: Minimum five years maintenance & monitoring through 2010, then perpetual maintenance as part of normal land management activities.

Project cost: \$ 490,000 (total);
Exotic & Nuisance Species Eradication - \$246,000
Tree & Shrub Plantings - \$26,000
Minimum Five Years Maintenance & Monitoring - \$177,000

Attachments

- 1. Description of pre-post conditions and activities. Refer to previous discussion and Attachment A.
- 2. Recent aerial photograph of existing conditions. Refer to Figures A, B – 2008 aerials.
- 3. Schedule for work implementation. Refer to Attachment B.
- 4. Success criteria and associated maintenance and monitoring plan. Refer to Attachment B.

Attachment A – Site Conditions and Conducted Activities

Freshwater wetlands are less common than saltwater wetlands within the Tampa Bay Drainage Basin, particularly forested wetlands and freshwater systems within Pinellas County. As a result, locating appropriate freshwater wetland mitigation opportunities within this basin is difficult. The Preserve historically had extensive problems with exotic and nuisance species, particularly Brazilian pepper that heavily invaded all the habitat areas. Prior to public ownership, the Preserve was operated by a private entity that planted exotic species. The Preserve staff was diligent in it's efforts to eradicate exotic and nuisance species, but lack of funding sources limited such pursuits to small areas of 5-10 acres per year. In order to minimize the continuous recruitment and generation of exotic seed sources within the Preserve, the opportunity to eradicate these species within large segments was particularly important.

Northwest Area (65 Acres) – this area was historically a contiguous forested wetland bordered by upland habitat. Prior to restoration commencing in 2004, the density of B. pepper varied with an average sub-canopy cover of 30%. The pepper was much larger and provided more coverage within the wetland portion (Figure B). The B. pepper received herbicide treatment (Garlon) and manual cutting, with most of the material removed to the nearby mulching and incinerator facility. Herbicide treatment of B. pepper regeneration and other existing and generated exotic & nuisance species was conducted bi-monthly through 2007, then quarterly treatments through 2010. Supplemental tree and shrub species were planted in areas with minimal tree cover due to existing dense pepper. Dominant tree plantings included sweetgum, red maple, popash; with pines and live oak in the uplands. The Preserve periodically implements prescribed burns as necessary within the uplands to maintain appropriate vegetative coverage and density. Along with the pepper eradication, grapevine is the most prolific nuisance species controlled by hand and mechanical methods. The prescribed burning activities aid in minimizing regeneration of the exotic and nuisance species.

Southeast Area (27 Acres) - The 57-acre hardwood swamp within the southeast section of the property is partially utilized for FDOT mitigation, with the western half of the swamp's enhancement (30 acres) designated to provide mitigation for six acres of wetland impacts associated with the construction of a Lowe's Department Store in the vicinity. This hardwood swamp in Preserve is one of the largest forested freshwater wetland habitats within peninsular Pinellas County, which requires the system provide more wetland and wildlife benefits and functions than would be expected of a similar system in a less congested urban setting. This wetland receives stormwater flow from the contributing basin which is high density residential. The wetland treats stormwater before flowing into Lake Maggiore. During high water conditions, the lake overflows into this wetland, providing even more opportunity for water quality treatment and flood attenuation.

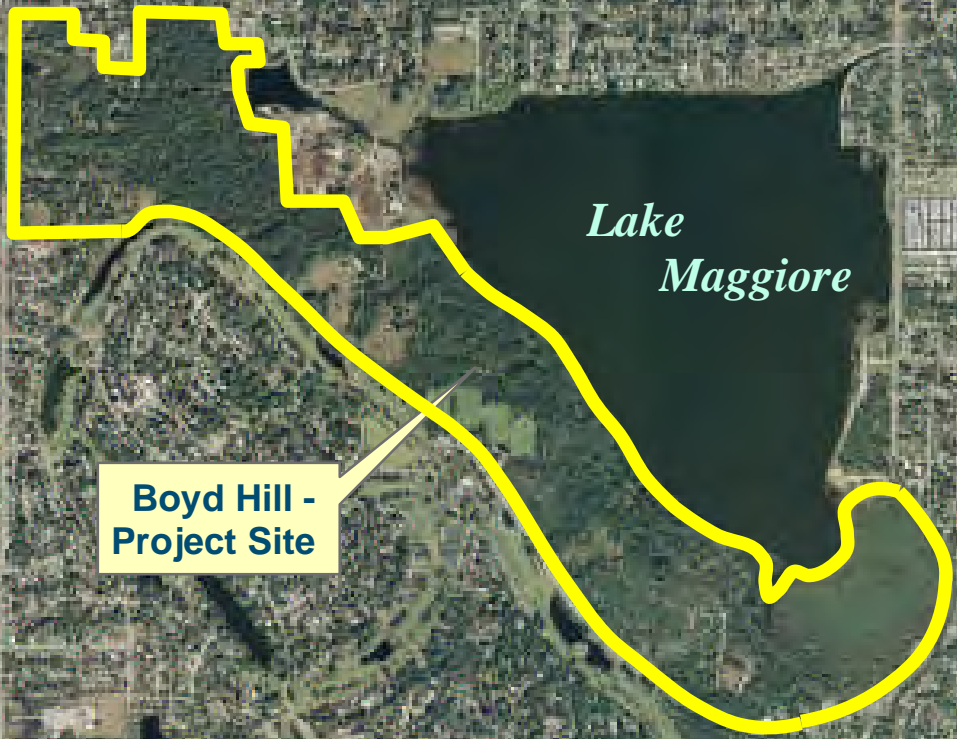
Due to the muck and seasonal high water conditions of this swamp, it was necessary to mechanically eradicate and remove the B. pepper during dry season periods. Hydraulic dredging of lake bottom sediments were also conducted in 2004 and 2005; with \$12 million expended by the WMD and the City of St. Petersburg. The combination of the lake dredging and wetland enhancement provides substantial ecological improvement and interdependent mosaic of wetland and surface water habitats. In addition, the City received grants toward funding exotic and nuisance species removal within the remaining areas (primarily upland habitats) of the Preserve not providing mitigation credit. This total eradication effort further minimizes the exotic and nuisance species seed sources that recruit into the wetlands. Wildlife species depend on many upland and wetland ecosystems for various functions and values within their life cycles. With the lake improvement, wetland and upland enhancement activities conducted in the Preserve, this provides an exponential increase of overall ecological value compared to just enhancing one habitat component.

Attachment B – Schedule, Maintenance & Monitoring, Success Criteria

The City contracted with private consultants to conduct the maintenance activities. The maintenance to eradicate exotic and nuisance species includes manual removal and herbicide treatments that commenced in 2004. Since exotic species regeneration is generally more problematic soon after initial eradication, bi-monthly herbicide treatments continued through 2007, followed by quarterly treatments through 2009 when success criteria had been achieved and maintained. Afterwards, the Preserve staff continues herbicide treatments to maintain and exceed the successful habitat conditions. The City has exhibited substantial efforts toward eradication of exotic and nuisance species from the upland and wetland habitats throughout the Preserve.

Monitoring includes qualitative analysis of the enhanced habitat on an annual basis. The qualitative information is compiled into annual reports, which also documents maintenance activities and efforts toward maintaining success. Monitoring reports were discontinued after 2009 due to the high success however annual evaluations continue to evaluate conditions, management activities, and any additional need for other activities. Success criteria requires less than 10% cover of Brazilian pepper, elderberry, grapevine, and primrose willow, and a minimum 90% survivorship of planted stock within each of the two designated mitigation areas.

St. Petersburg



Lake Maggiore

Big Bayou

**Boyd Hill -
Project Site**

Little Bayou

**SW 71 - Boyd Hill Nature Preserve
Figure A - Location**

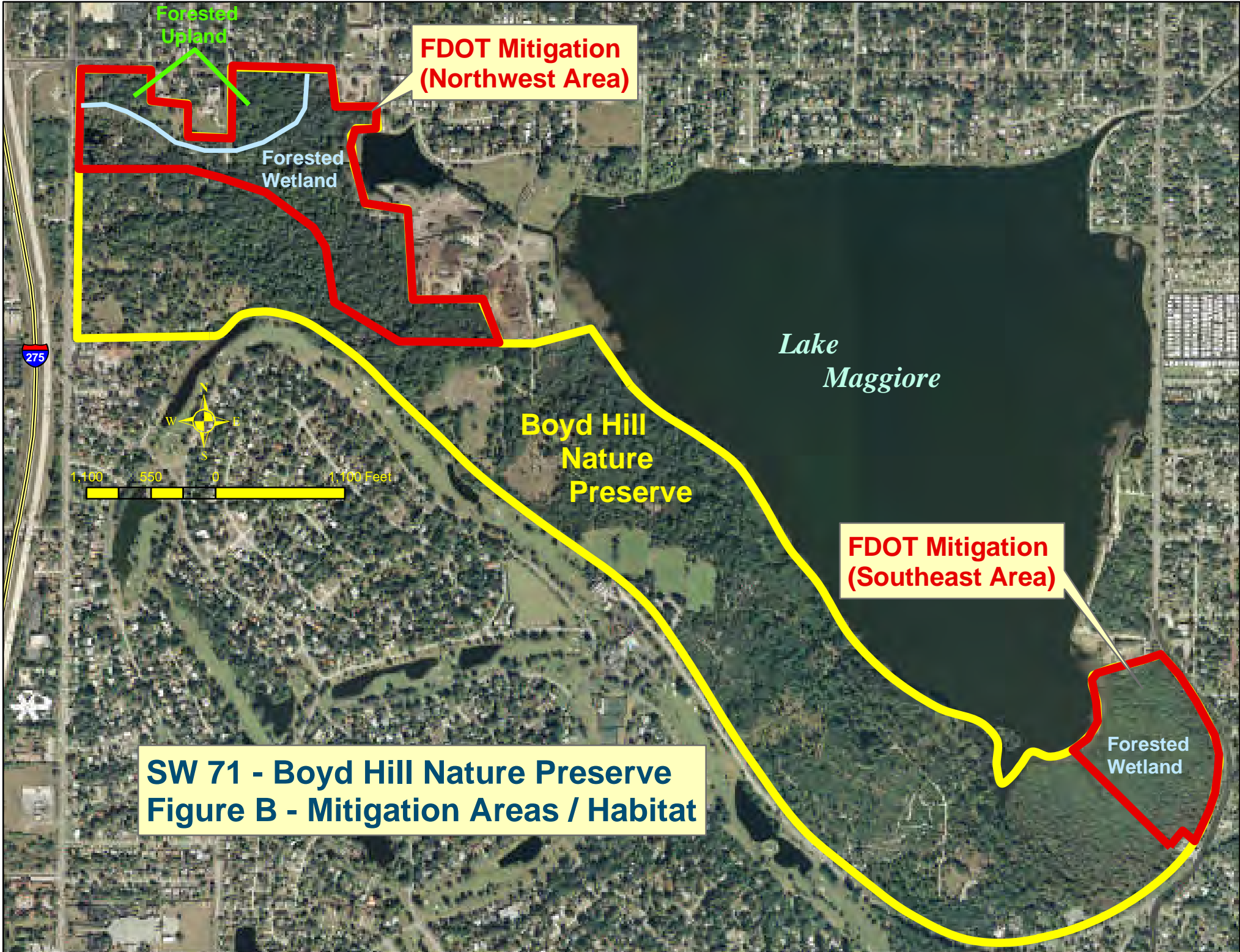
Tampa Bay



19

275

682



Forested Upland

FDOT Mitigation (Northwest Area)

Forested Wetland

Lake Maggiore

Boyd Hill Nature Preserve

FDOT Mitigation (Southeast Area)

Forested Wetland

**SW 71 - Boyd Hill Nature Preserve
Figure B - Mitigation Areas / Habitat**



2003 - portions of both designated wetland habitat enhancement areas had extensive and dense coverage of Brazilian pepper that substantially minimized wildlife access and foraging opportunities.



2003 – majority of the northwest designated mitigation area had less extensive Brazilian pepper coverage mixed within the wetland (right) and adjacent upland habitat buffers (left).

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 71 – BOYD HILL
NATURE PRESERVE***



2006 – portion of northwest mitigation area after eradication of dense Brazilian pepper, preserving the remaining native trees and shrubs, and preparing the site for supplemental planting.



2008 – ephemeral wetland in the northwest area that was previously covered with dense Brazilian pepper, natural regeneration of hydrophytic vegetation and supplemental plantings of trees and shrubs.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 71 – BOYD HILL
NATURE PRESERVE***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Serenova Preserve – Sites 2, 3, 4, 8**

Project Number: **SW 74**

Sponsor: SWFWMD – Land Resources

County: Pasco

Location: Sec. 23, R17E, T26S, Sec. 34, R17E, T25S

IMPACT INFORMATION

DOT FM: 2563161, SR 52 – Hicks to Moon Lake

P #: 4007804.005 COE #: 90IPI-03363

Drainage Basin: Upper Coastal Water Body(s): Buckhorn Creek

SWIM water body? N

Impact Acres /Types (FLUCFCS): 1.6 ac. 617

Total – 1.6 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation Mitigation Area: **27 acres**

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N

Mitigation Bank? N Drainage Basin: Upper Coastal Water Body(s): Pithlachascotee River SWIM water body? N

Project Description

A. Overall project goal: The Serenova Preserve and adjacent Starkey Wilderness Preserve (total over 20,000 acres) is owned and managed by the SWFWMD (Figure A). After extensive evaluation and ranking of wetland restoration and enhancement opportunities within the Serenova Tract, four separate project sites (2,3,4,8) were determined could provide the most important wetland hydrologic improvements within the property. Three projects involve culvert installations and removal of berm material associated with the Pithlachascotee River and Five Mile Creek (Figure B). The Pithlachascotee River has two access road berm crossings (Site 2 - actively used, Site 4 - abandoned) and Five Mile Creek has one crossing (Site 3). Each crossing requires improvements to restore surface water flow conditions through the floodplains and minimize continuous problems with erosion and sedimentation. Site 8 is a large outfall ditch of a cypress system, requiring the construction of ditch blocks in order to restore wetland hydrologic functions.

B. Brief description of pre-construction condition: The Pithlachascotee River and Five Mile Creek are forested wetland floodplains of relatively high-quality with a diverse canopy cover dominated by laurel oak, sweet gum, cypress, red maple, cabbage palm, and tupelo. A sub-canopy has saplings of the same species as well as Virginia willow, buttonbush, and wax myrtle. Ground cover is sparse due to canopy cover and dominated by various fern and sedge species. However, hydraulic characteristics of the floodplains have been altered by berms constructed prior to public acquisition, as well as undersized and insufficient culverts. The abandoned Pithlachascotee River crossing had a 600 ft. long berm that blocked and diverted surface water flow to a dredged river channel segment. The river channel had a partially collapsed bridge tressel that would catch debris and block flow (Figure B, Site 4, site photos). Another 680 ft. long berm crossing of the river is utilized for management access, but had insufficient and undersized culverts (Figure B, Site 2). The upstream contributing flow was diverted through just three culverts in the main river channel. As a result, the wetland floodplain upstream of the berm would have impounded surface and less water contributing to the downstream wetland floodplain. The Five Mile Creek roadway crossing had an appropriate size culvert but insufficient rubble rip-rap to control erosion (Site 3). The cypress system associated with Site 8 had a dense canopy and fern understory, but hydrologic indicators demonstrated minimal hydroperiods due to the shallow and wide outfall ditch.

- C. Brief description of conducted work:** To restore the primary flow patterns of the Pithlachascotee River, a surface water modeling effort was contracted in 2006 to determine the appropriate sizes and locations of culverts required for Sites 2 and 3. The modeling effort resulted in replacing the three culverts in the main channel at Site 2 and the installation of two additional culverts at strategic locations where secondary channels historically provided flow to other areas within the floodplain. Evaluation of those culverts after installation has indicated restoration of flow regimes. The access road berm was also stabilized with rubble rock and capped with limerock base material, thus halting the erosion, undermining and sedimentation that was occurring with the previous road. The Five Mile Creek access road (Site 3) required resetting of the culvert and adding rubble and base material to stabilize the crossing. The abandoned berm crossing (Site 4) had the fill material backfilled to restore the historic floodplain flow patterns (site photo), as well as the removal of the dilapidated bridge. After earthwork, the graded area was stabilized with a seed mix of winter rye and bahia. Subsequently, hydrophytic herbs dominated by soft rush and sedges recruited and generated within the area (photos), followed by tree seedlings dominated by red maple that will mature and eventually restore the canopy gap. The berm removal and adjacent backfilled ditch resulted in a one-acre area of restored wetland floodplain. The wide and shallow outfall ditch from the cypress system (Site 8) had three small ponds dredged within the footprint the ditch, with the resulting material used to create two substantial ditch blocks that water stabilized with biodegradable mesh screens and bahia seeding. The ponds provide a valuable water source for wildlife during the dry season, while discontinuing the dewatering of the forested wetland. Additional information on the tabulation of the wetland mitigation credits is provided in Attachment B.
- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** The SR 52 segment is within a few miles northwest of the Serenova Tract. The 1.6 acres of forested wetland impacts are adequately and appropriately mitigated by the 26 acres of habitat enhancement and restoration at Serenova. This mitigation project is only designated to provide mitigation for the wetland impacts associated the SR 52 project.
- E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** During mitigation selection, there were no existing or proposed mitigation banks within the Upper Coastal Basin.
- F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body :** During mitigation selection, there were no existing or proposed SWIM projects in the Upper Coastal basin that could appropriately provide the mitigation for the proposed impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD Operations Department

Entity responsible for monitoring and maintenance: Qualitative monitoring conducted annually by WMD staff to evaluate stabilization, hydrology, habitat conditions, and wildlife use.

Timeframe for implementation: Commence: Surface Water Modeling – 2006

Complete: Construction – November, 2007 – April, 2008, followed by semi-annual monitoring by WMD staff through 2010, followed by annual monitoring to evaluate and document site conditions

Project cost: \$145,000 (total); Hydraulics Study & Design - \$40,000, Construction - \$100,000, Monitoring - \$5,000

Attachments

X_1. Description of site and conducted work. Refer to previous discussion and Attachment A.

X_2. Aerial and site photographs. Refer to Figures A & B (2008 aerials) and pre-post construction photos.

X_3. Location map and drawings of existing and proposed conditions. Refer to Figure A for location map, design information including the hydrologic modeling, structures, and grading plan are available from the FDOT Mitigation Program Manager.

X_4. Schedule for work implementation, including any and all phases. The modeling was conducted in 2006 and 2007. Construction activities commenced in late, 2007 and finished in the spring, 2008. Semi-annual qualitative assessment of the structures and restored wetland (Site 3) was conducted through 2010, followed by annual monitoring and additional maintenance of facilities or eradication of any exotic or nuisance species.

X_5. Proposed success criteria and associated monitoring plan. Monitoring was conducted semi-annually through 2010 to ensure structures function as proposed, proper erosion control, and there is appropriate and desirable hydrophytic species being established at the restored wetland (Site 4). Success criteria includes ensuring the hydraulic and hydrologic flow patterns were adequately and appropriated restored, erosion control methods are maintained, and there is less than 5% coverage of any exotic and/or nuisance species vegetation within the restored wetland (Site 4). These successful habitat conditions have been achieve and maintained at all four project sites.

X_6. Long term maintenance plan. Periodic inspection of the structures, rip-rap, etc. are conducted to ensure they function as intended, and that exotic and nuisance species do not become a problem at any of the sites; the most probable is the acre wetland restoration at Site 4. Due to the minimal presence of exotic or nuisance species on the Senernova property and within the vicinity of the four project sites, there has not been a need to conduct herbicide maintenance at any of the sites.

Attachment A – Conducted Work & Mitigation Credits

The following information provides additional details of the site conditions and improvements. Based on the modeling effort, a minimal acreage of direct wetland enhancement is proposed for mitigation credit. This minimal enhancement is based on wetland floodplain limits of 350 ft. upstream and downstream of each crossing (Sites 2, 3, 4), and the most northern 300 ft. perimeter of the drained cypress wetland associated with Site 8. The enhancement acreage is presented for each site.

Project Site 2 – This access road berm over the Pithlachascotee River is used for maintenance and management of the Serenova property. The three pre-existing 48-inch culverts had water stain indicators that demonstrate normal flow conditions exceeding 70% of the available flow capacity of the culverts, resulting in pooling of water upstream of the crossing and detaining flow from reaching the downstream wetland floodplain. The floodplain crossing is very wide (700 ft.), so the contributing flow is funneled through the large culverts that substantially minimize the expansion of surface water patterns throughout the downstream floodplain, while impounding and extending the hydroperiods of the upstream floodplain wetlands. The pre-existing culverts were undersized and without rip-rap material, scouring of berm material resulted in downstream sedimentation. Restoration of flow patterns included replacing the three main culverts with cross-drains of similar size and dimension, then adding two culverts within two other areas of the berm to restore historic surface water flow conditions to the downstream wetlands. Rip-rap material was

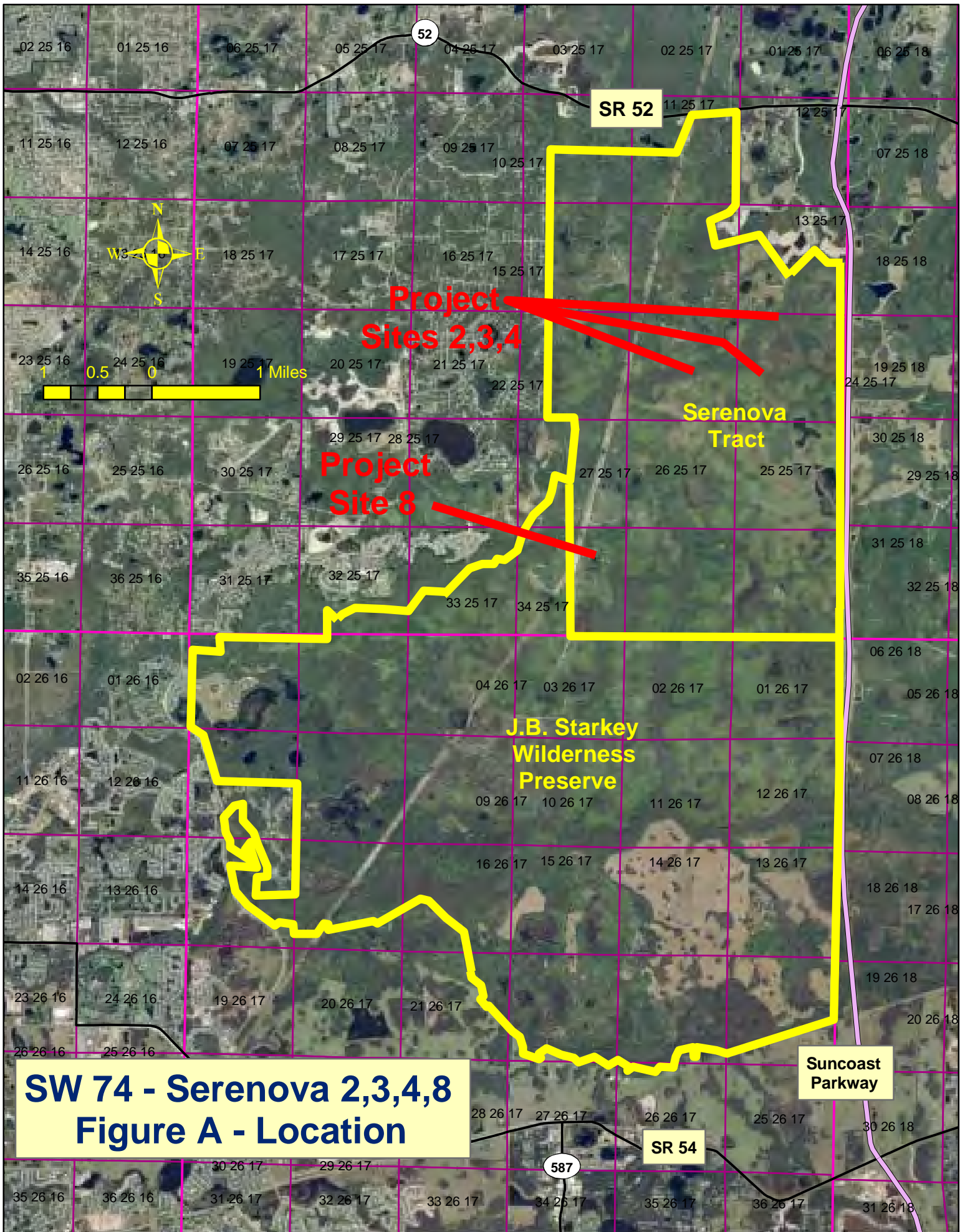
placed along the berm and underneath the culverts to eliminate erosion, undermining and dissipate velocities. The berm was then capped with limerock base material. The direct wetland enhancement was estimated at 11 acres (floodplain upstream & downstream - 700 ft. x floodplain width 700 ft. = 11 acres).

TOTAL – 11 Acres

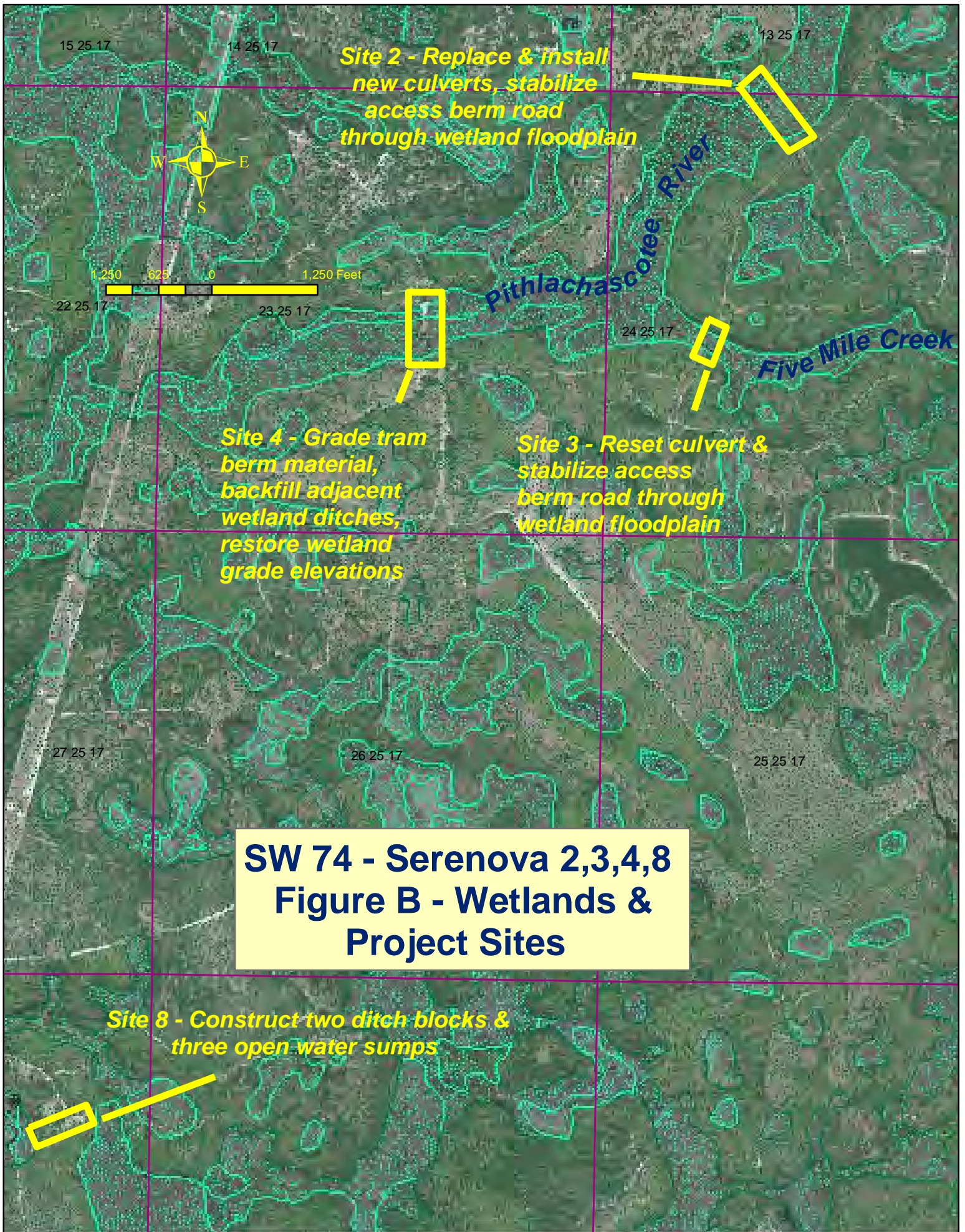
Project Site 3 – The crossing of Five Mile Creek had scouring and loss of berm material from around the culvert. Even though this 150 ft. crossing is shorter than Site 2 and the berm much lower, the berm condition was less stable. The scouring resulted in more downstream sedimentation so the culvert was reset and additional berm stabilization included rock rip-rap. Direct wetland enhancement was estimated at 11 acres (floodplain upstream & downstream - 700 ft. x floodplain width 150 ft. = 2 acres). **TOTAL – 2 Acres**

Project Site 4 – This remnant tram road had a dilapidated bridge and considering there was already accessibility over the Pithlachascotte River at Site 2, neither replacing the bridge nor placing culverts within the access berm were necessary. Similar to the other two floodplain crossings, flow conditions were detained upstream and more concentrated within the main channel, resulting in impounding some water upstream and minimize the spread of water into the downstream floodplain areas. In order to restore normal floodplain flow patterns, the entire berm material was graded in late 2007 and early 2008 to backfill the adjacent ditches. The earthwork area was stabilized by seeding a mix of winter rye and bahia. Natural recruitment and generation of hydrophytic herbs dominated by soft rush and sedge species occurred during subsequent years. Tree saplings (dominated by red maple) have recruited and generated from the adjacent seed source, and gradually the canopy gap will be restored to forested cover. Direct wetland enhancement was estimated at 11 acres (length 700 feet x width 700 feet = 11 acres). Wetland restoration from within the footprint of the berm and adjacent ditches is one acre. **TOTAL – 12 Acres**

Project Site 8 – This is a large outfall ditch, with a bottom width over ranging 15-30 ft, and top-of-bank width varying 30-50 ft. The ditch depth from top-of-bank varies because most of the ditch was dredged through elevated topography to provide positive hydraulic gradient flow, however some portion of the ditch was over five foot deep. But because of the excessively drained, sandy soil conditions, the ditch hydroperiods are intermittent. Even though the cypress wetland is large, the area of direct wetland enhancement was estimated near the northern extent of the system. The construction included three ponds dredged from within the ditch and the resulting fill material was used to construct two large ditch blocks. By constructing the ponds and blocks from within the footprint of the previous ditch, the construction was able to avoid disturbing any of the palmetto habitat bordering the ditch. These blocks have halted the dewatering, and the ponds provide a water source for wildlife during the dry season. Direct wetland enhancement was estimated at 2 acres (length 300 feet x width 350 length = 2 acres). **TOTAL – 2 acres.**



**SW 74 - Serenova 2,3,4,8
Figure A - Location**



Site 2 - Replace & install new culverts, stabilize access berm road through wetland floodplain

Site 4 - Grade tram berm material, backfill adjacent wetland ditches, restore wetland grade elevations

Site 3 - Reset culvert & stabilize access berm road through wetland floodplain

Site 8 - Construct two ditch blocks & three open water sumps

**SW 74 - Serenova 2,3,4,8
Figure B - Wetlands & Project Sites**



Pre-Construction - Site 2 (2005) – these three dilapidated culverts provide the only hydrologic connections from upstream to downstream through the 700 ft. wide Pithlachascotee River wetland floodplain. The sidebanks of the access road berm are unstable from erosion.



Post-Construction - Site 2 (2009) – in addition to the three new culverts installed at the river channel crossing (left), additional culverts were placed at other strategic locations in the berm to restore appropriate hydrologic regimes and connectivity within impounded wetlands upstream and dewatered wetlands downstream. The access road was stabilized with the installation of rock rubble along the sideslopes and limerock base material on the surface. Wildlife routinely utilize the road for access across the floodplain.

***FDOT – District 7 Mitigation Project
(Upper Coastal Basin)***

SW 71 – SERENOVA 2,3,4,8



Pre-Construction - Site 4 (2005) – the northern half of the abandoned tram berm crossing the Pithlachascotte River wetland floodplain, blocking and diverting flow to the river channel instead of downstream wetland floodplain habitat.



Pre-Construction - Site 4 (2005) – side view of the berm crossing the floodplain. Fill material will be graded back into the dredged donor area (left), elevating and restoring the historic wetland floodplain grade.

***FDOT – District 7 Mitigation Project
(Upper Coastal Basin)***

SW 71 – SERENOVA 2,3,4,8



During Construction - Site 4 (February, 2008) – berm material has been graded to fill adjacent ditches, followed by seeding with winter rye and bahia for initial soil stabilization. The base flow through the river channel was maintained, however water sheet flow & seepage has been restored through the floodplain wetland.



Post-Construction - Site 4 (July, 2009) – extensive coverage of naturally recruited and generated herbs such as soft rush and sedges; as well as seedlings of hydrophytic trees that will gradually mature to fill in the canopy gap.

***FDOT – District 7 Mitigation Project
(Upper Coastal Basin)***

SW 71 – SERENOVA 2,3,4,8



Pre-Construction - Site 8 (2005) – the outfall ditch draining the wetland varies in width & depth, however substantial water flow conveyance was observed during rainy seasons.



Post-Construction - Site 8 (July, 2009) – the ditch is several hundred feet long, with three small ponds dredged in the ditch footprint to provide fill material necessary to construct two large ditch blocks between each of the ponds. The ponds provide a water source for wildlife during the dry season and the adjacent ditch blocks have stopped the draining of the wetland.

***FDOT – District 7 Mitigation Project
(Upper Coastal Basin)***

SW 71 – SERENOVA 2,3,4,8

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Cockroach Bay Restoration - Saltwater Project Number: SW 75
Mitigation Sponsors: SWFWMD – SWIM Section, Hillsborough Co. – Conservation Section
County: Hillsborough Location: Sec. 16, T32S, R18E

IMPACT INFORMATION

(1) FM: 2557031, SR 60 – Cypress St. to Fish Creek * ERP #:43002958.003 COE #:200205816 (IP-MN)
(2) FM: 2571391, Ulmerton Road, US 19 to 49th St. ERP #:44026223.000 COE #:SAJ-2003-11664

Drainage Basin: Tampa Bay Drainage Basin Water Body(s): Fish Creek SWIM water body? N

Impact Acres / Types (FLUCFCS): (1) FM 2557031 - 5.4 acres 642
(2) FM 2571391 - 0.1 acre 612
TOTAL **5.5 acres**

*The total impacts associated with this project are 16.6 acres. The ditch, pond, freshwater marsh, and mangrove impacts of this project (5.1 acres) are being mitigated at Tappan Tract (SW 62). Approximately half of the saltwater marsh impacts (5.3 acres) are being mitigated at Apollo Beach (SW 67), with the remaining saltwater marsh impacts (5.4 acres) at Cockroach Bay - Saltwater. The remaining impacts (0.8 acre) are freshwater marsh mitigated at Cockroach Bay- Freshwater (SW 56).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation ___ Enhancement ___ Restoration Mitigation Area: 15 acres
SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin(s): Tampa Bay Drainage Water Body(s): Tampa Bay, Cockroach Bay SWIM water body? Y

PROJECT DESCRIPTION

A. Overall project goals: Cockroach Bay includes a multi-agency (USACOE, SWFWMD, FDEP, Hillsborough County Conservation Section) effort of habitat creation and restoration conducted on property acquired and managed by Hillsborough County (total 651 acres, Figure A). Through the SWIM Section, the SWFWMD primarily assist the County with managing the design, construction and creation of wetland habitats. Hillsborough County conducts the perpetual maintenance and management of the public lands at Cockroach Bay. This designated mitigation project includes braided tidal marsh habitat creation (8 acres) connected in a mosaic of and open water tidal pools and channels (7 acres).

B. Brief description of pre-construction conditions: Prior to the habitat construction, the wetland creation site was an upland mowed fallow field that was historically a row crop area (Figure B, 2005 aerial). The site is bordered to the west by upland oak hammock, previously constructed estuarine marsh habitats, and the mangrove zone along Tampa Bay (Figures A&B). This created estuarine habitat was designed and constructed to achieve a future tidal connection for this additional project. The connection is evident on the pre-post construction aerials within the southwest corner of the project boundary (Figures B&C). There was a freshwater wetland creation area constructed within another former upland fallow field south of this FDOT mitigation project area. Separate to the FDOT mitigation program, this additional wetland creation project is also providing mitigation for wetland impacts associated with the expansion of the Selmon Crosstown Extension (Figures B&C).

C. Brief description of conducted work: The construction activities included dredging the uplands to create saltwater marsh habitat, along with tidal pools and channels that connect to the other created estuarine habitat east of the oak hammock (Figure C). The constructed saltwater marsh habitat includes low marsh with dense coverage of planted smooth cordgrass (*Spartina alterniflora*), and marshhay cordgrass (*Spartina patens*). The high marsh habitat includes dense coverage of planted knotgrass (*Paspalum distichum*) and sand cordgrass (*Spartina bakeri*) (Figures C, D, site photos). The marshes are in a mosaic with the intertidal pools and braided channels. White mangroves (*Laguncularia racemosa*) have naturally recruited and generated within the marsh habitat. The material dredged during construction was placed into an adjacent shell mine cut east of the site to create additional wetland habitat not associated with the FDOT mitigation program. The site attracts several species of wading birds, and fish species migrate from Tampa Bay into the project site.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The wetland impacts include 5.4 acres of saltwater marsh habitat and a minor 0.1-acre of mangrove impact. The creation of saltwater marsh habitat and connecting intertidal pools and braided channels were constructed and achieved dense vegetative coverage years in advance of the wetland impacts, and appropriately mitigate for these FDOT impacts at a cumulative ratio of 2.8:1. No additional roadway wetland impacts will be proposed for migration at the project site.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the time of selecting mitigation for the proposed wetland impacts, the only mitigation bank proposed in the basin is the Tampa Bay Mitigation Bank; which is also within the Cockroach Bay area. However the mitigation bank was not under construction nor had available credits during the time of mitigation selection.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : This project is part of a large County and SWIM effort to create and restore habitat within the Cockroach Bay property. The Cockroach Bay restoration effort has been guided by the Cockroach Bay Restoration Alliance, made up of stakeholders including the agencies, landowners, and the Tampa Bay Mitigation Bank. Even though there are various restoration phases throughout the Cockroach Bay Habitat Restoration area, they are all inter-related based on site conditions. Ecosystems on the property transition from upland to wetland habitat, followed by salinity gradients of freshwater to estuarine wetlands. A freshwater wetland creation and coastal hammock restoration project (total 34 acres) was also selected and constructed in 2004 for the FDOT mitigation program (SW 56 - Cockroach Bay – Freshwater). Another 40-acre wetland creation area was constructed between the SW 56 & SW 76 project areas that provides mitigation for wetland impacts associated with the Selmon Expressway (Figures A-C). Because of the extensive planning and evaluation of the restoration, being co-located with on-going restoration efforts that are managed and maintained by Hillsborough County, the designated mitigation areas have been ecologically beneficial and very successful.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD Operations Department constructed the project in 2005

Entity responsible for monitoring and maintenance: SWFWMD, Hillsborough County and contractor

Timeframe for implementation: Commence: Design, 2002 Complete: Construction in 2005, followed by semi-annual monitoring through 2008 and quarterly maintenance through 2010; followed by perpetual maintenance & management by Hillsborough County Conservation Section when necessary. Due to the successful construction and planting elevations, the saltwater substantially minimizes the potential for establishing of exotic & nuisance vegetation, so there has been very minimal need for maintenance activities. Additional details are available through the SWFWMD-SWIM Section and FDOT Mitigation Program Manager.

Project cost: \$ 450,000 (total);
\$100,000 for design,
\$350,000 for construction, planting, maintenance & monitoring

Attachments

1. Description and depiction of pre-post construction conditions. Refer to previous discussion, Figure B- 2005 pre-construction aerial, Figure C - 2009 post-construction & current conditions aerial, Figure D – design plan, project photos.

2. Schedule for work implementation. The final design for this portion of the Cockroach Bay plan was completed at the end of 2002, construction and planting was conducted in 2005, followed by a semi-annual monitoring period through 2008, quarterly herbicide maintenance under SWFWMD contract through 2010, followed by perpetual periodic maintenance by Hillsborough County Conservation Section. The County has a full-time maintenance crew based at a facility a few hundred feet east of this project site. Due to the minimal generation of exotic or nuisance species within saltwater conditions, there has been minimal need for maintenance.

3. Success criteria and associated maintenance and monitoring plan. Refer to Attachment A.

Attachment A – Maintenance & Monitoring, Success Criteria

Maintenance activities are conducted by a licensed herbicide contractor working for the SWFWMD through 2010, and control of invasive exotic vegetation that has minimally recruited to the site. After 2010, as part of normal maintenance activities conducted throughout the Cockroach Bay property, herbicide maintenance activities will continue to be conducted when necessary by Hillsborough County Conservation herbicide crew that is stationed at the County's Cockroach Bay facilities.

Semi-annual monitoring with annual monitoring reports were prepared by environmental consultants on contract for the SWFWMD through 2008. Monitoring included qualitative evaluation and photos of the mitigation area, to evaluate and document species survival, coverage, wildlife use, exotic & nuisance species coverage, and recommended actions necessary to ensure or enhance success. The project exceeded the required success criteria of 90% survivorship for planted material for one-year post-planting, a total 85% cover of planted and recruited desirable species within the non-open water areas, and less than 2% exotic and nuisance species cover. The site's success conditions consistently exceed and maintain that criteria.

Tampa Bay

Hillsborough County
ELAPP Conservation Property
Cockroach Bay Habitat
Improvement Area

SW 76 - Cockroach Bay -
Saltwater Project Site

SW 56 - Cockroach Bay -
Freshwater Project Sites

Cockroach Bay Road (to US 41 >



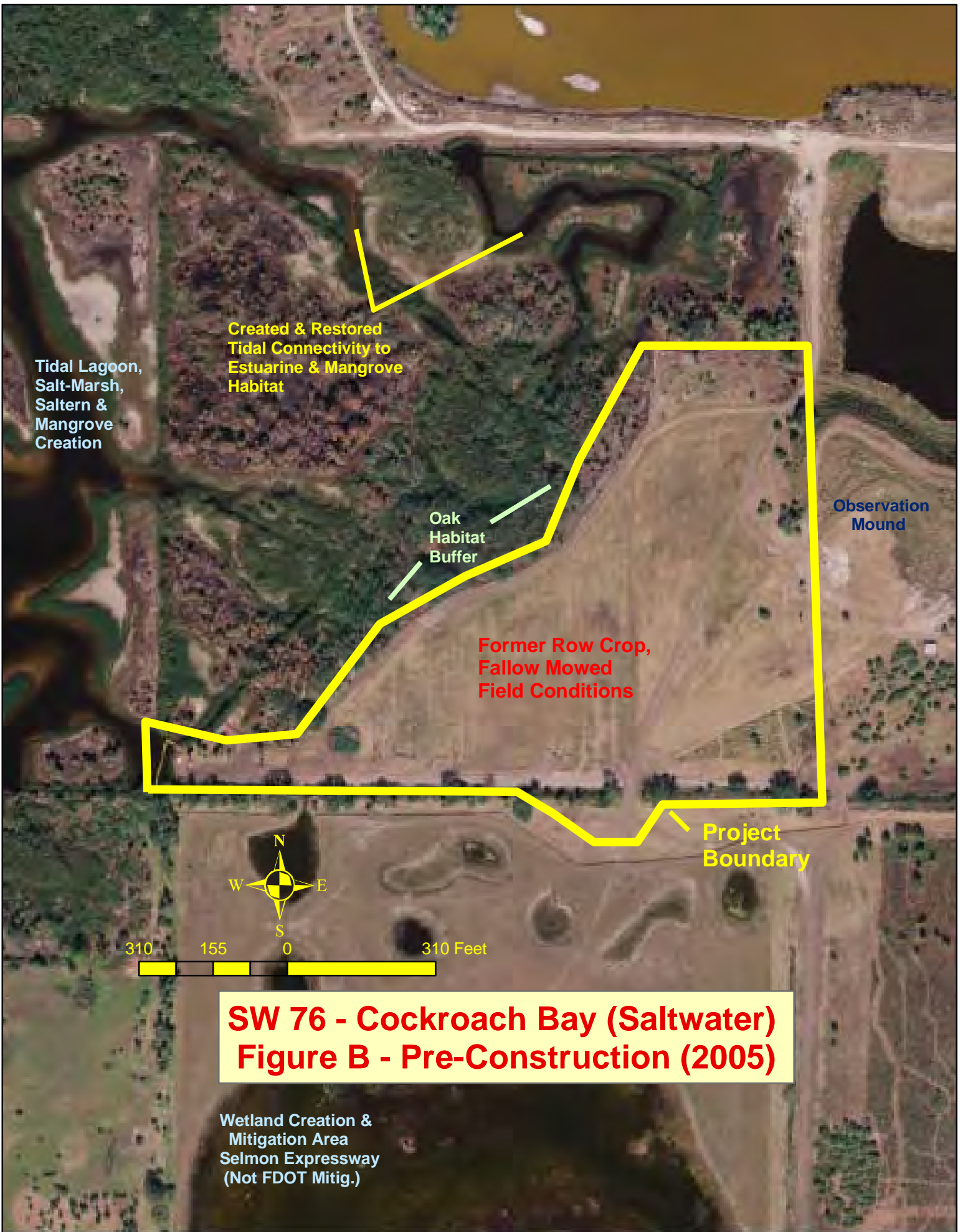
0.4 0.2 0 0.4 Miles

Cockroach Bay

**SW 76 - Cockroach Bay
(Saltwater)
Figure A - Location**

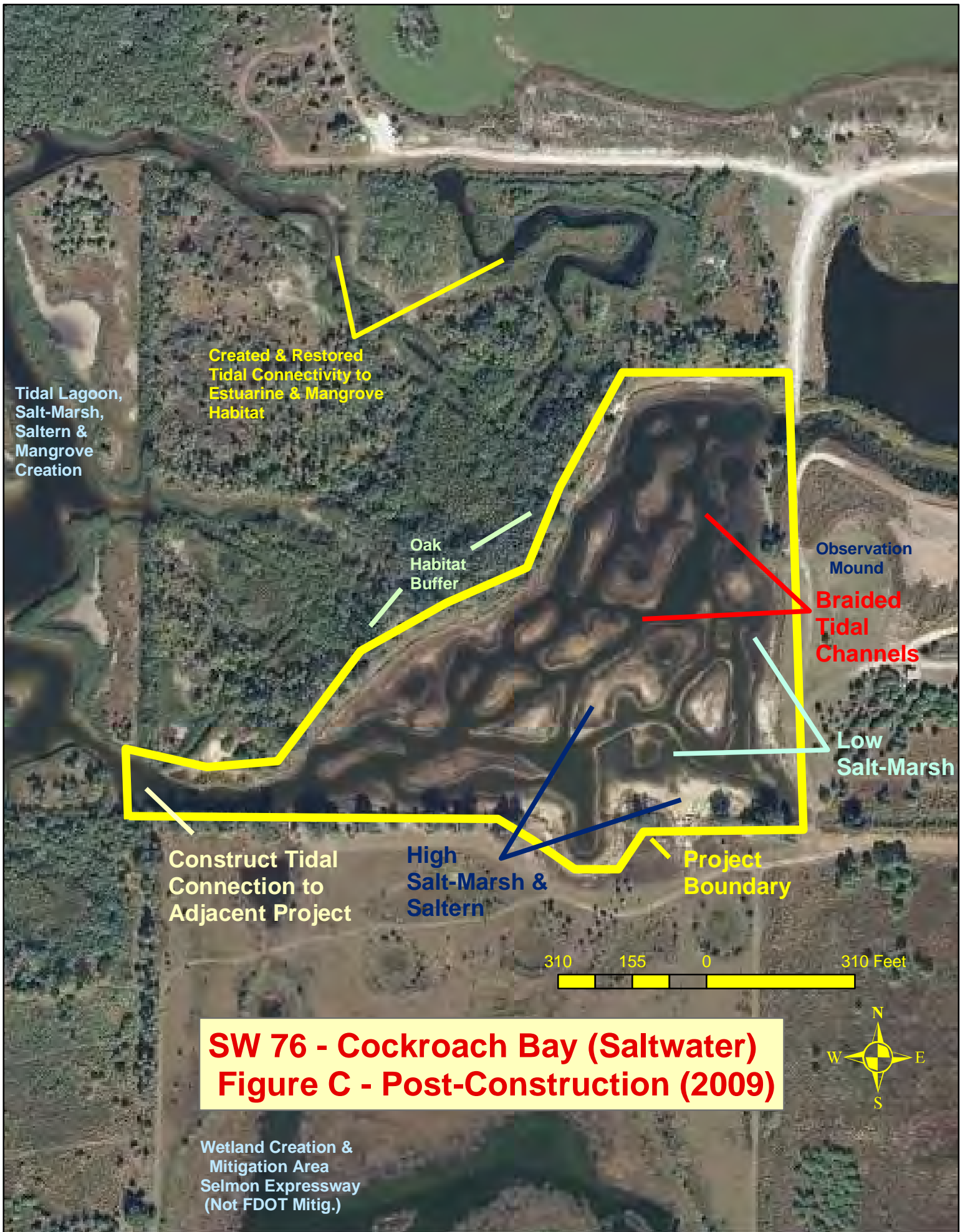
US Hwy. 41

41



**SW 76 - Cockroach Bay (Saltwater)
Figure B - Pre-Construction (2005)**

Wetland Creation & Mitigation Area
Selmon Expressway
(Not FDOT Mitig.)



**SW 76 - Cockroach Bay (Saltwater)
Figure C - Post-Construction (2009)**

Wetland Creation & Mitigation Area
Selmon Expressway
(Not FDOT Mitig.)

LEGEND:

- L.O.C. LIMITS OF CONSTRUCTION / EROSION CONTROL (QUANTITIES ON SHEET 8)
- JURISDICTIONAL LINE
- [Hatched Box] AREAS TO BE PROTECTED

NOTE: DESIGN HIGH WATER = 2.18 NGVD (25 YEAR STORM)

MHHW = 1.46

MHW = 1.20

MLW = -0.4

MLLW = -0.70

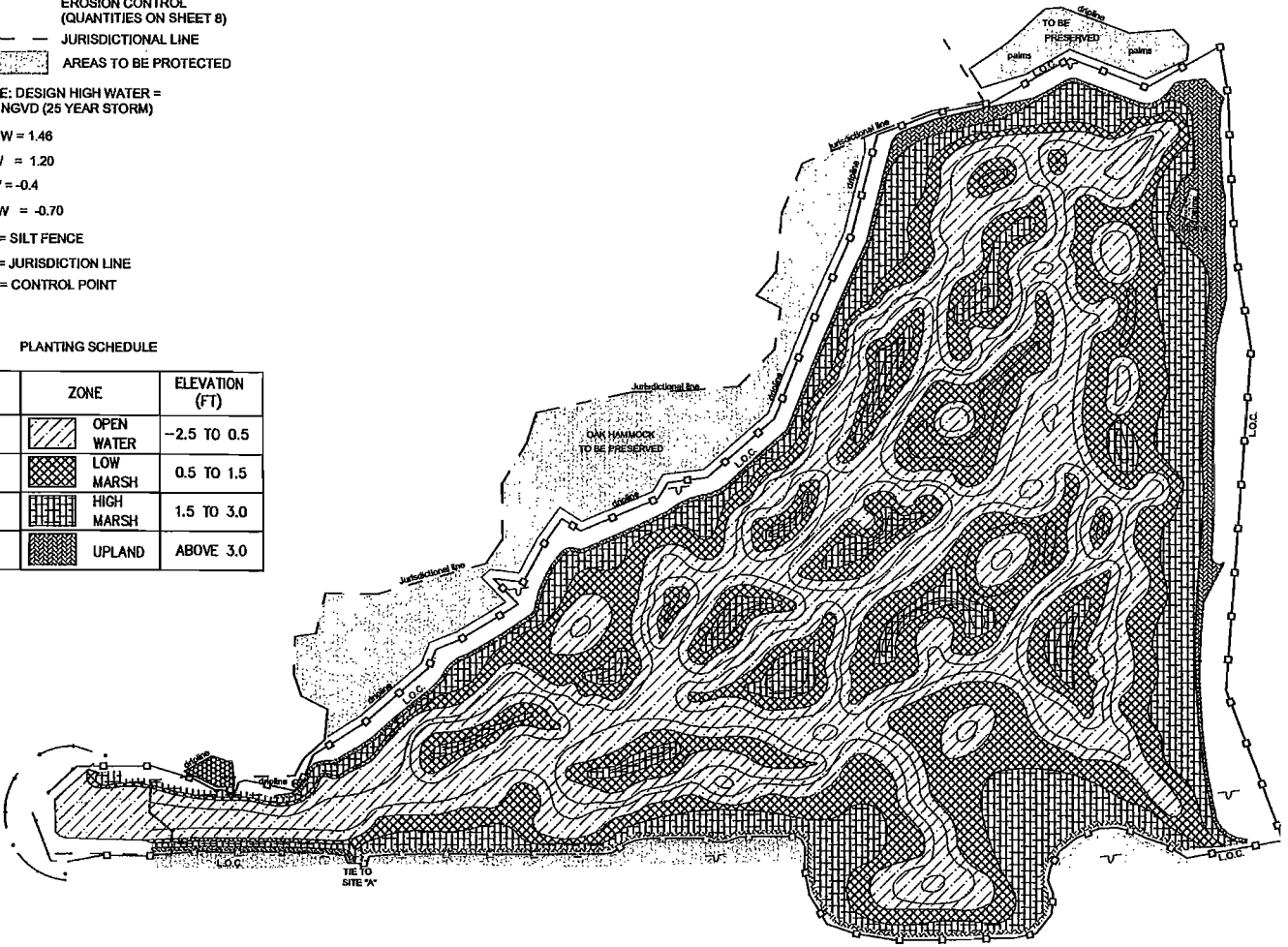
S.F. = SILT FENCE

J.D. = JURISDICTION LINE

C.P. = CONTROL POINT

PLANTING SCHEDULE

AREA	ZONE	ELEVATION (FT)
7.2 AC	[Diagonal Hatching] OPEN WATER	-2.5 TO 0.5
4.6 AC	[Cross Hatching] LOW MARSH	0.5 TO 1.5
3.3 AC	[Vertical Hatching] HIGH MARSH	1.5 TO 3.0
0.8 AC	[Stippled] UPLAND	ABOVE 3.0



PLANTING SCHEDULE

AREA	ZONE	ELEVATION (FT)	SPECIES	SIZE	SPACING	QTY.
7.2 AC	[Diagonal Hatching] OPEN WATER	-2.5 TO 0.5	N/A	N/A	N/A	N/A
4.6 AC	[Cross Hatching] LOW MARSH	0.5 TO 1.5	SMOOTH CORDGRASS <i>Spartina alterniflora</i>	4" potted	3' o.c.	17,250
			MARSHHAY CORDGRASS** <i>Spartina patens</i>	4" potted		5,750
3.3 AC	[Vertical Hatching] HIGH MARSH	1.5 TO 3.0	KNOTGRASS <i>Paspalum distichum</i>	4" potted	3' o.c.	12,500
			SAND CORDGRASS* <i>Spartina bakeri</i>	4" potted		3,500
0.8 AC	[Stippled] UPLAND	ABOVE 3.0	BAHIA GRASS <i>Paspalum notatum</i>	ACRES	HYDROSEED	0.8

**FDOT – District 7
MITIGATION SITE
(Tampa Bay Drainage Basin)**

**COCKROACH BAY-
SALTWATER
(SW 75)**

**FIGURE D – Planting Plan
Scale 1 in = 150 feet, ^North**



During Construction (2005) – view from atop observation mound, looking west over upland field graded to construct braided tidal channels and marsh zones.



Final grades have been achieved but the canal fill block (upper center) has not been breached yet to allow tidal waters to inundate the site. Observation mound is lower left, and freshwater wetland creation is upper left.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 75 – COCKROACH BAY -
SALTWATER***



Marsh grades are final and the backhoe breaches the canal block to open tidal connection and flow into the constructed wetland.



Tide elevations have equalized and herb planting is depicted, planted species include smooth cordgrass, marsh-hay cordgrass, knotgrass, and sand cordgrass along the perimeter.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 75 – COCKROACH BAY -
SALTWATER***



Current Conditions (2009) – view from atop observation mound, dense cordgrass coverage on the marsh zones separated by braided tidal channels.



2009 - view from northwest project boundary, looking east toward observation mound (background), sand cordgrass perimeter and oak hammock is on the right. Mangrove saplings have generated within some of the marsh zones.

***FDOT – District 7 Mitigation Project
(Tampa Bay Drainage Basin)***

***SW 75 – COCKROACH BAY -
SALTWATER***

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Lake Lowery Tract

Project Number: SW 76

Project Sponsors: WMD-LAND Resources & Polk County Natural Resources Division

County: Polk

Location: Sec. 10 T27S, R26E

IMPACT INFORMATION

(1) FM: <u>1976791, US 27 - SR 544 to Blue Heron Bay *</u>	ERP#: <u>43023431.000</u>	COE #: <u>200202574 (IP-JPF)</u>
(2) FM: <u>4038901, US 27 - Blue Heron Bay to CR 547</u>	ERP#: <u>43023431.001</u>	COE #: <u>200205885 (IP-JPF)</u>
(3) FM: <u>2012041, I-4 - CR 557 to Osceola Co. Line (Seg. 6,7,9)**</u>	ERP#: <u>43011896.032</u>	COE #: <u>1994-3591 (IP-MGH)</u>

Drainage Basin: Ocklawaha Water Body(s): Tower Lake SWIM water body? N

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 1976791	<u>0.02</u> ac. <u>510</u>	(3) FM 2012041	<u>0.59</u> ac. <u>621</u>
	<u>0.30</u> ac. <u>630</u>		<u>3.76</u> ac. <u>640</u>
	<u>0.14</u> ac. <u>631</u>	TOTAL	4.35 acres
TOTAL	0.46 acres		

(2) FM 4038901 1.9 ac. 630

TOTAL: 6.71 acres

*Note – portion of this US 27 segment is within the Peace Basin and the associated wetland impacts are being mitigated at the Circle B Bar Reserve (SW 66).

** Note – portion of this I-4 project is within the Withlacoochee Basin and the associated wetland impacts are being mitigated at the Hampton Tract (SW 59). Another portion of this project is within the Kissimmee Ridge Basin and the associated wetland impacts are being mitigated at the Reedy Creek Mitigation Bank (SW 49).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement X Preservation Mitigation Area: **198 acres**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin: Ocklawaha Water Body(s): Lake Lowery SWIM water body? N

Project Description

A. Overall project goal: The primary goal includes acquisition, preservation, and management of high quality wetland habitat within the Lake Lowery floodplain. The 198-acre portion designated for mitigation credit is part of a 397-acre parcel purchased in Feb., 2002 in a joint acquisition between the SJRWMD and Polk County. In 2003, Legislative action resulted in the water management review and responsibility of a portion of Polk County transferred from the SJRWMD to the SWFWMD, which included transferring the associated SJRWMD partial ownership of this tract. In addition to providing mitigation for FDOT wetland impacts, the site fulfills overall objectives of acquiring many parcels within the 100-year flood zone of Lake Lowery. The benefits of this acquisition are further enhanced since the tract is adjacent to 5700-acres of habitat owned and managed by the FFWCC (Figure A, Hilochee Wildlife Management Area, Osprey Unit), as well as located within the Green Swamp Area of Critical State Concern.

- B. Brief description of current condition:** The majority of the entire 397-acre tract is a large palustrine marsh with islands of forested wetlands and shrub wetlands, and a partial perimeter of forested wetlands within the southern portion of the tract (Figure B). Dominant cover of the marsh includes pickerelweed and maidencane. Other common species include smartweed, arrowhead, and sand cordgrass. There are separate pockets of sawgrass and Carolina willow. The forested wetland areas have dominant canopy and sub-canopy species of bays, tupelo, and cypress; with additional cover provided by red maple and dahoon holly. The ground cover within the forested components includes a dominance of lizard's-tail and various fern species. A buffer of pine flatwoods is located along the northeast and southeast portion of the marsh. A fallow field is located along the western and northern boundary of the marsh. The tract is an undivided 50/50 interest ownership between the SWFWMD and Polk County, therefore it was determined that the mitigation credit would be designated within a 198-acre portion of the wetland. The upland buffers provide important functions for the wetland area, but are not designated for mitigation credit (refer to Figure B). The wetland conditions represent high quality conditions with minimal exotic and nuisance species coverage. Wildlife use is substantial, foraging opportunities for wading birds are high, and sandhill crane nesting is routinely documented within the marsh. Amphibian presence is substantial, particularly the frog population.
- C. Brief description of proposed work:** The wetlands are of high quality and no direct enhancement is necessary. Indirect enhancement has been provided by removal of cattle and the threat of potential development activities along the perimeter of the marsh through public acquisition. Without the development threat, there is substantially less potential for invasion of exotic/nuisance vegetation and water quality degradation that is often associated with residential development (i.e. septic tanks, fertilizers, etc.). The potential of silviculture activities of the forested wetland components are also removed through public acquisition, protection, and management.
- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** The FDOT wetland impacts include approximately three acres of forested wetland and four acres of marsh habitat. The preservation of 198-acres high quality marsh, shrub, and mixed forested wetland habitat more than appropriately and adequately compensates for the 6.7 acres of wetland impacts. The designated mitigation proportion includes 37 acres of mixed forested wetland and 161 acres of marsh habitat (Figure B). Even though not anticipated, there may be some minor future FDOT wetland impacts proposed in the Ocklawaha basin that may be evaluated to also possibly mitigate at the Lake Lowery Tract.
- E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost:** At the time of mitigation selection, the SJRWMD considered the use of a mitigation bank to compensate for the anticipated wetland impacts. The only mitigation bank in the basin (Lk. Louisa/Green Swamp Mitigation Bank) has a dominance of xeric habitat restoration and bayhead enhancement. The wetland impacts and mitigation include a dominance of mixed forest and marsh habitat. Therefore, the Lake Lowery option was deemed by the SJRWMD and other regulatory and commenting agencies to be a more appropriate mitigation option for the proposed impacts.
- F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body :** There are no SWIM water bodies within this basin.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: No construction activities necessary or proposed, additional details are available from the SWFWMD Land Resources Division, Polk County Natural Resources, and the FDOT Mitigation Program Manager.

Entity responsible for monitoring and maintenance: No monitoring or maintenance necessary or proposed
Proposed timeframe for implementation: Commence: Evaluation, 2000 Complete: Acquisition, 2002

Project cost: \$255,436 (total); SJRWMD reimbursed by FDOT in 2002
\$126,953 – Acquisition Costs for 198 acres – 50% Ownership
\$69,000 – Administrative Costs
\$59,482 – Long-Term Management Costs

Attachments

- X 1. Description of existing site and proposed work. Refer to previous text and Attachment A.
- X 2. Aerial photograph with date and scale. Refer to Figures A and B (2009 aerials).
- X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A for the location, Figure B for habitats.
- X 4. Schedule for work implementation, including any and all phases. Joint land acquisition was conducted by the SJRWMD and Polk County in 2002. The SJRWMD was reimbursed by FDOT for their portion of the acquisition, administrative costs, and long-term management to designate 198 acres of mitigation for FDOT impacts. Additional information in Attachment B.
- X 5. Success criteria and associated monitoring plan. No success criteria or monitoring proposed or necessary due to the high quality of existing wetland habitat conditions.
- X 6. Long term maintenance plan. No specific maintenance activity proposed or necessary for the wetland area designated for mitigation purposes, additional information provided in Attachment B.

Attachment A – Existing and Proposed Activities

Lake Lowery is a 900-acre lake surrounded by thousands of acres of wetlands and floodplains, including the large wetland associated with this project. The lake and associated wetlands are located in the Green Swamp Area of Critical State Concern and a headwater area for the Palatlahaha, Withlacoochee, and Peace basins. A small portion of the Lake Lowery Tract's northwestern area is within the Withlacoochee basin (Figure B), but the designated mitigation area is within the Palatlahaha basin, a sub-basin of the Ocklawaha River Basin. The topography for the floodplain wetlands in the vicinity is relatively flat, which has resulted in flooding of homes, septic tanks, wells, and roads. In coordination and cooperation with the SJRWMD, Polk County initiated a priority of land acquisition in the area to minimize the threat of future residential development and associated impact and loss of native habitat, additional flooding, and the inherent water quality degradation caused by such land use conversion.

The wetland associated with the Lake Lowery Tract is high quality in terms of ecological functions and values. There is substantial species richness, diversity, and dense coverage. The majority of the marsh component is dominated by pickerelweed (*Pontederia cordata*), maidencane (*Panicum hemitomon*), smartweed (*Polygonum* spp.), and a perimeter of sand cordgrass (*Spartina bakeri*). Other common species include arrowhead (*Sagittaria lancifolia*), spikerush (*Eleocharis baldwinii*), and bacopa (*Bacopa caroliniana*). There are scattered small pockets (various sizes of less than 30 ft. diameter to 1-2 acres) of sawgrass (*Cladium jamaicense*) and separate pockets of small Carolina willow (*Salix caroliniana*).

The forested wetland components have a diverse mix of cypress (*Taxodium distichum*) and hardwoods. The most dominant species in the canopy and sub-canopy include bays (*Persea palustris*, *Magnolia virginiana*), and tupelo (*Nyssa aquatica* var. *biflora*); less coverage is provided by red maple (*Acer rubrum*) and dahoon holly (*Ilex cassine*). Due in part to high water conditions and shading, the understory varies in coverage but generally averages 30-60%. The dominant coverage is provided by ferns (*Woodwardia virginica*, *Thelypteris palustris*), and lizard's-tail (*Saururus cernuus*); duckweed (*Lemna* spp.) is common along the water surface.

The adjacent upland buffers of the tract are not designated for FDOT mitigation credit, however these buffers are important components of the acquisition toward maintaining appropriate functions and ecological benefits of the wetland habitat. The pine flatwoods along the western perimeter of the wetland include a dominance of saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), fetterbush (*Lyonia ferruginea*), wax myrtle (*Myrica cerifera*), and scattered slash pine (*Pinus elliotii*). The upland buffers for the northern and eastern side of the marsh include a dominance of improved pasture with bahiagrass (*Paspalum notatum*) and scattered fennel (*Eupatorium capillifolium*), euthamia (*Euthamia* sp.), and blue maidencane (*Amphicarpum muhlenbergianum*). As the pasture and pine flatwoods transition into the wetland, various sedges (*Cyperus* spp.), broomsedge (*Andropogon glomeratus*, *A. virginicus*), and goldenrod (*Solidago* spp.) are present.

Beyond periodic inspections and prescribed burns conducted in the uplands, there are no additional maintenance or management activities currently proposed or adopted for the site. Polk County continues to negotiate the public acquisition of in-holding upland parcels within the tract. However even if these parcels are not acquired, land use zoning requirements preclude the ability to construct houses or other structures on the parcels.

Attachment B – Mitigation and Ownership Issues

As noted, the Lake Lowery Tract was a joint acquisition pursuit (50/50 split) with the SJRWMD and Polk County. The site was an undivided interest ownership, and the SJRWMD received approval from the regulatory and commenting agencies to designate their 50% interest to also mitigate for FDOT wetland impacts. As of the 2003 Legislative session, the water management and regulatory authority of the portion of the Palatlahaha basin within Polk County was transferred to the SWFWMD.

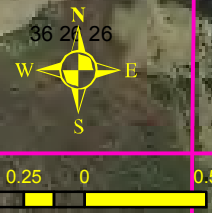
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Osprey Unit**

**Interstate - 4
< To Lakeland
To Orlando >**

CR 557

**SW 76 - Lake Lowery Tract
Figure A - Location**

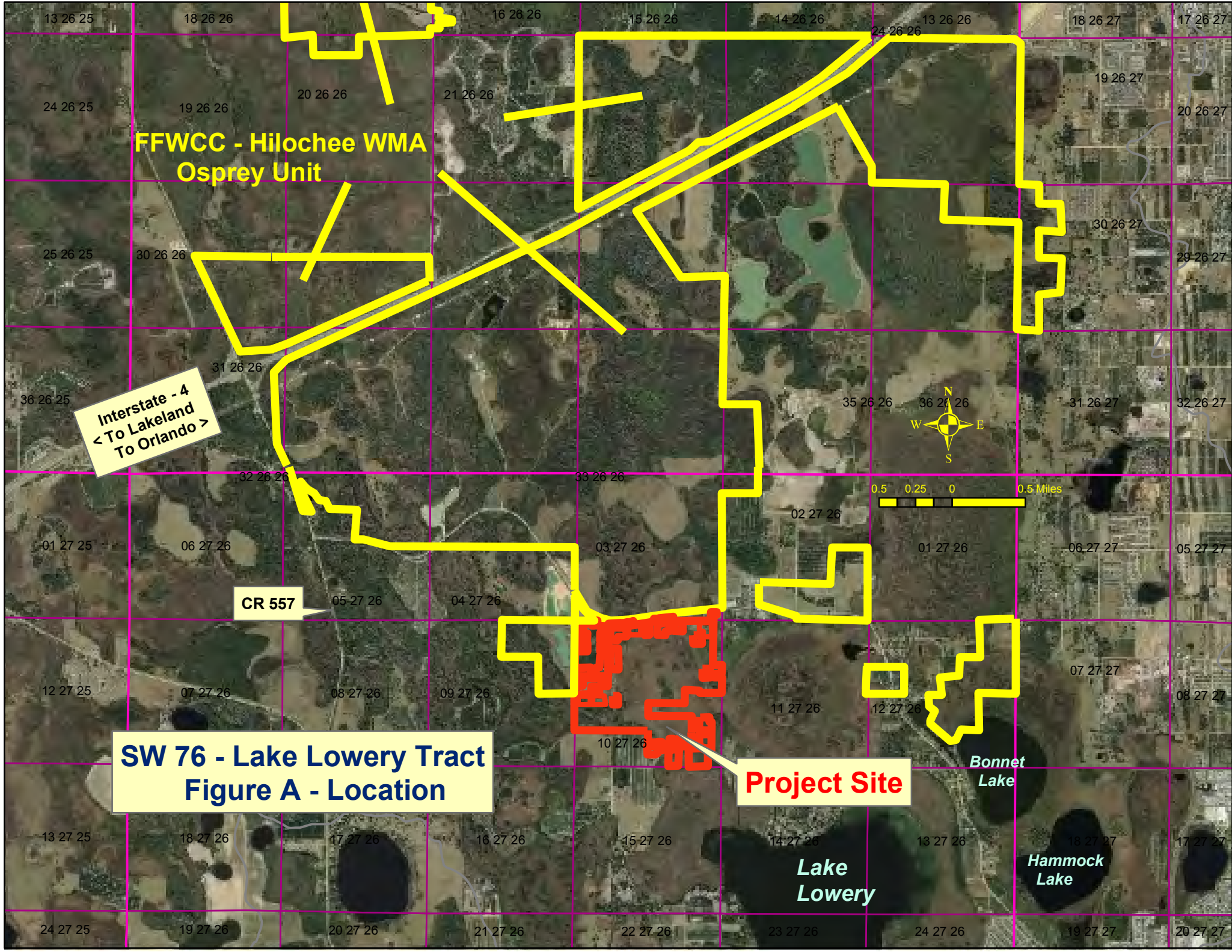
Project Site

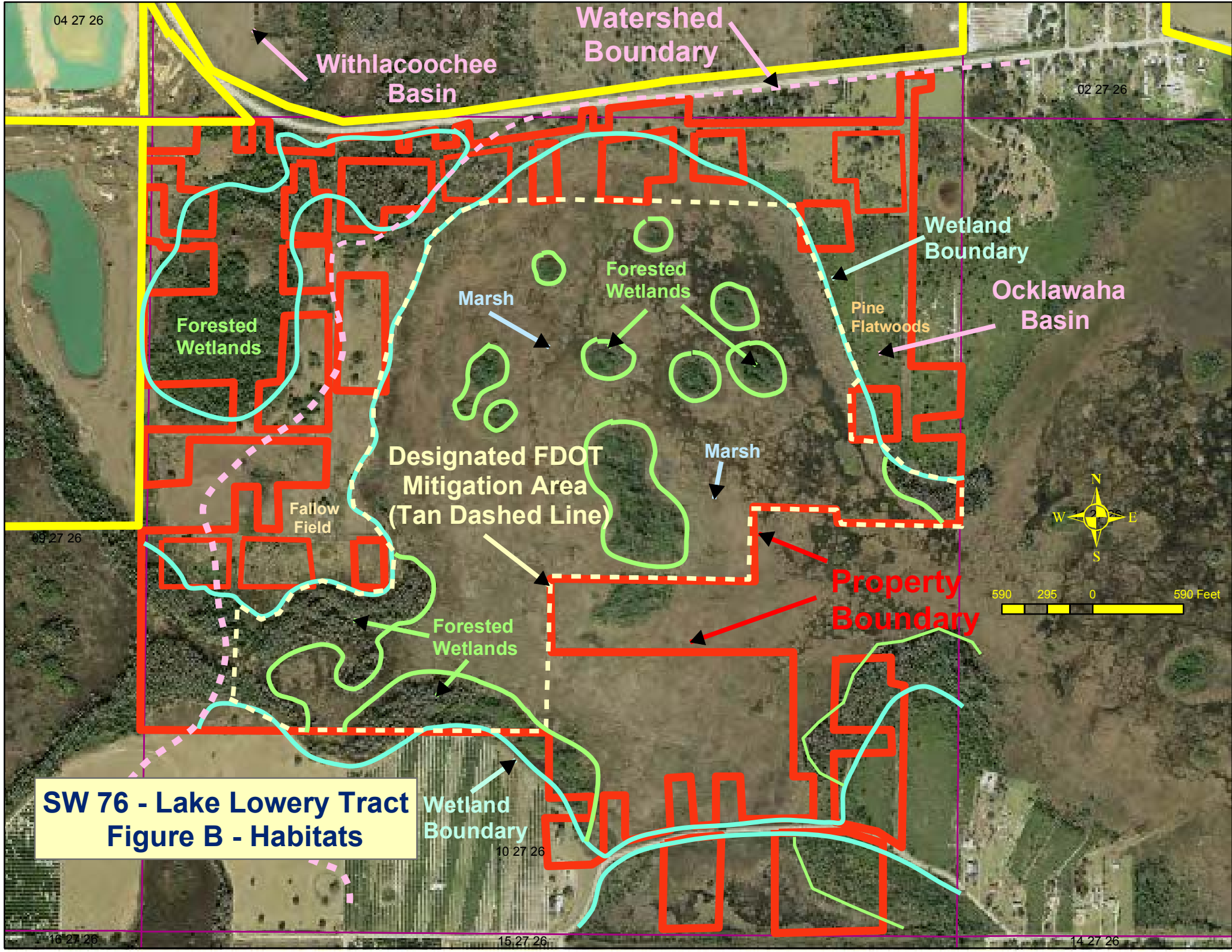


Bonnet Lake

Lake Lowery

Hammock Lake





04 27 26

02 27 26

09 27 26

10 27 26

16 27 26

15 27 26

14 27 26

Withlacoochee Basin

Watershed Boundary

Wetland Boundary

Ocklawaha Basin

Forested Wetlands

Marsh

Forested Wetlands

Pine Flatwoods

Designated FDOT Mitigation Area (Tan Dashed Line)

Marsh

Fallow Field

Property Boundary

Forested Wetlands

Wetland Boundary

SW 76 - Lake Lowery Tract
Figure B - Habitats





The majority of the tract is covered with a high quality marsh with a dominance of maidencane and sand cordgrass along the outer zone (foreground). Pickerelweed, smartweed, and maidencane dominate the interior, with scattered pockets of sawgrass, Carolina willow and forested wetland islands (background).



The forested wetlands are located along the southwestern portion of the property and islands within the marsh. Dominant overstory and sub-canopy is provided by sweet bay, swamp bay, tupelo, cypress, and red maple. Understory vegetation includes a dominance of lizard's-tail and various fern species.

**FDOT – District 1
MITIGATION SITE
(Ocklawaha River Basin)**

**LAKE LOWERY TRACT
(SW 76)**



Within the property boundary, the upland buffers (foreground) along the western and northern perimeters of the marsh (background) have a dominant cover of bahiagrass. Other species include broomsedge, euthamia, dog fennel, blue maidencane, and goldenrod. Scattered myrtles and live oaks are also present.



Within the property boundary, the upland buffers along the eastern and southeastern perimeter of the marsh are pine flatwoods that have dominant cover of saw palmetto, galberry, fetterbush, wax myrtle and scattered slash pine. A forested perimeter dominated by cypress (background) is present along the marsh within the southeastern and southwestern portion of the property.

**FDOT – District 1
MITIGATION SITE
(Ocklawaha River Basin)**

**LAKE LOWERY TRACT
(SW 76)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Conner Preserve**

Project Number: **SW 77**

Project Sponsor: SWFWMD – Land Resources

Phone: (352) 796-7211

County: Pasco

Location: Sec. 11,12,13,14, 22, 23, 24, T25S, R18E; Sec. 7,8,17,18,19,20, T25S, R19E

IMPACT INFORMATION (Anticipated Construction Date)

Upper Coastal Drainage Basin

(1) <u>FM: 4037711, US 19 – Republic Dr. to CR 816 (Alderman)</u>	ERP #: <u>44022085.001</u>	COE #: <u>NW 14PCN</u>
(2) <u>FM: 2571741, US 98 – Hernando Co. Line to US 19</u>	ERP #: <u>4323430.000</u>	COE #: <u>1998-3481 (IP-KF)</u>
(3) <u>FM: 2570501, SR 688 (Ulmerton) – Oakhurst to 119th St.</u>	ERP #: <u>44012347.010</u>	COE #: <u>2002-4931 (NW 14)</u>
(4) <u>FM: 2563221, SR 52 – Moon Lake to Suncoast Parkway</u>	ERP #: <u>43007396.001</u>	COE #: <u>2002-6047 (IP-MN)</u>
(5) <u>FM: 2563321, SR 54 – Rowan Rd. to Mitchell Bypass</u>	MSW #: <u>4011641.004</u>	COE #: <u>1993-2010 (IP-ML)</u>
(6) <u>FM: 2568151, SR 586 (Curlew Rd.) – CR 1 to Fisher Rd.</u>	ERP #: <u>44009837.008</u>	COE #: <u>2002-5245 (NW)</u>
(7) <u>FM: 2563371, SR 54 – Gunn Hwy. to Suncoast Parkway</u>	ERP #: <u>4316251.000</u>	COE #: <u>1999-5203 (IP-ES)</u>
(8) <u>FM: 2563241, US 41 – Tower to Ridge (2010)</u>	ERP #: <u>43033570.000</u>	COE #: <u>2008-0329 (IP-JPF)</u>
(9) <u>FM: 2572983, CR 578 – East Rd. to Mariner (2017)</u>	ERP #: _____	COE #: _____
(10) <u>FM: 4091541, SR 688 (Ulmerton) – Wild Acres to El Centro (2013)</u>	ERP #: <u>Under Review</u>	COE #: <u>Under Review</u>
(11) <u>FM: 2572992, CR 485 (Cobb) – SR 50 to US 98 (2018)</u>	ERP #: _____	COE #: _____
(12) <u>FM: 2572985, CR 578 – Suncoast to US 41 (2018)</u>	ERP #: <u>44014061.002</u>	COE #: <u>Under Review</u>
(13) <u>FM: 2563231, SR 52 – Suncoast Parkway to US 41 (2019)</u>	ERP #: _____	COE #: _____
(14) <u>FM: 2572982, CR 578 – US 19 to East Rd. (2008)</u>	ERP #: <u>44006732.000</u>	COE #: <u>2006-602 (NW-JPF)</u>
(15) <u>FM: 4188602, US 19 – Continuous Turn Lane (2010)</u>	ERP #: <u>44027483.001</u>	COE #: <u>2010-0080 (IP-JPF)</u>
(16) <u>FM: 4058222, US 19 – Green Acres to Jump Court (2016)</u>	ERP #: <u>44009590.002</u>	COE #: <u>2008-3004 (IP-JPF)</u>
(17) <u>FM: 4110142, I-75 – SR 52 to Pasco/Hernando C.L.(2015)*</u>	ERP #: _____	COE #: _____
(18) <u>FM: 2563242, US 41 – Ridge Road to SR 52 (2017)</u>	ERP #: _____	COE #: _____
(19) <u>FM: 2563341, SR 52 - US 41 to CR 581 (2017)**</u>	ERP #: _____	COE #: _____
(20) <u>FM: 2567742, US 19 – SR 580 to CR 95 (2018)</u>	ERP #: _____	COE #: _____
(21) <u>FM: 4079513, SR 50 – US 19 to Mariner (2013)</u>	ERP #: <u>44035066.000</u>	COE #: <u>NPR- Isolated Wet.</u>
(22) <u>FM: 4271571, US 19 – New York to Pasco/Hernando (2011)</u>	ERP #: _____	COE #: _____
(23) <u>FM: 4058223, US 19 – Jump Court to Ft. Island Trail (2017)</u>	ERP #: _____	COE #: _____
(24) <u>FM: 4079512, SR 50 – Mariner to Suncoast (2016)</u>	ERP #: _____	COE #: _____
(25) <u>FM: 2589581, Suncoast Parkway to Ridge Rd. Inter. (Undeter.)</u>	ERP #: _____	COE #: _____

Hillsborough River

(1) <u>FM: 2563341, SR 52 - US 41 to CR 581 (2018)**</u>	ERP #: _____	COE #: _____
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Impact Acres / Habitat Types (FLUCFCS):

Upper Coastal Drainage Basin

(1) FM 4037711 - 0.1 ac. 618

(2) FM 2571741 - 1.4 ac. 621

(3) FM 2570501 - 0.2 ac. 630

(4) FM 2563221 - 3.2 ac. 617
0.9 ac. 618
2.3 ac. 621
0.1 ac. 641x

TOTAL 6.5 acres

(5) FM 2563321 - 0.1 ac. 617
0.2 ac. 618
3.3 ac. 641

TOTAL 3.6 acres

(6) FM 2568151 - 0.1 ac. 618

(7) FM 2563371 - 6.0 ac. 621

(8) FM 2563241 - 0.1 ac. 510
0.4 ac. 610
1.6 ac. 617
5.2 ac. 621
1.5 ac. 631
0.1 ac. 641

TOTAL 8.9 acres

(9) FM 2572983 - 0.4 ac. 641

(10) FM4091541 - 0.62 ac. 617

(11) FM 2572992 - 6.2 ac. 630

(12) FM 2572985 - 0.3 ac. 617

(13) FM 2563231 - 2.0 ac. 610
0.5 ac. 618
1.0 ac. 621
0.7 ac. 641

TOTAL 4.2 acres

(14) FM 2572982 - 0.6 ac. 641

(15) FM 4188602 - 0.4 ac. 617

(16) FM 4058222 - 0.8 ac. 615
0.1 ac. 617
0.4 ac. 621
0.03 ac. 641
0.20 ac. 641x

TOTAL 1.53 acres

(17) 4110142* - 10.3 ac. 610
3.3 ac. 641

TOTAL 13.6 acres

(18) 2563242 - 7.0 ac. 617
1.5 ac. 621
1.0 ac. 641
TOTAL 9.5 acres

(19) 2563341** - 7.2 ac. 621
1.1 ac. 630
4.7 ac. 641
0.7 ac. 643
TOTAL 13.7 acres

(20) 2567742 - 0.5 ac. 630
0.4 ac. 641
TOTAL 0.9 acre

(21) 4079513 - 1.3 ac. 643
0.1 ac. 641
TOTAL 1.4 acres

(22) 4271571 - 0.2 acre 641

(23) 4058223 - 1.0 ac. 617
4.0 ac. 621
0.3 ac. 641
TOTAL 5.3 acres

(24) 4079512 - 0.1 ac. 641

(25) 2589581 - 2.0 ac. 621

TOTAL (Upper Coastal Basin) – 89.1 acres

Hillsborough River Basin

(1) 2563341** - 5.0 ac. 615
6.5 ac. 621
1.8 ac. 630
9.0 ac. 641
4.0 ac. 643
26.3 acres

TOTAL (Hillsborough River) - 26.3 acres

* Note – This I-75 segment has additional wetland impacts proposed in the Hillsborough River & Withlacoochee River basin. The anticipated Withlacoochee and Hillsborough basin impacts designated for mitigation at Colt Creek State Park (SW 84).

** Note – This I-75 segment has anticipated wetland impacts in the Hillsborough River & Upper Coastal basins. The listed impacts within both basins are conservative. This project may be a developer-constructed project so FDOT may elect to require mitigation be conducted by other entities and not through the program.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: ___ Creation X Restoration X Enhancement ___ Preservation Mitigation Area: **2,973 Acres**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? Y
Mitigation Bank? N Drainage Basin: Upper Coastal, Hillsborough River Water Body(s): None SWIM water body? N

Project Description

- A. Overall project goal:** The Conner Preserve (total 2,980 acres) was acquired by the SWFWMD for public ownership in 2003 and adopted into the mitigation program in 2004. The tract has a diverse mosaic of inter-related wetland and upland habitats within a high priority public lands acquisition area since it is located within a core of surrounding public lands in central Pasco County including Cypress Creek Preserve (7,400-acres), Starkey Wilderness Preserve (18,000-acres), and Cross Bar Ranch (12,500-acres)(Figure 1 - Location). The overall project goal includes enhancement of wetland and upland habitat. There are also several improved pasture islands buffering adjacent wetlands that are being restored into upland habitat communities (Figure 2).
- B. Brief description of pre-restoration condition:** The Preserve's habitats consist of pine flatwoods, oak hammocks, sandhill, wetlands and improved pastures. Over half of the Preserve is composed of wetlands (total 1,630 acres). The non-forested wetlands (total 1,014 acres) include a range of habitat and hydrologic conditions varying from wet prairie (290 acres), shallow marshes (675 acres), and deeper emergent systems (49 acres). The forested wetlands (616 acres) are primarily composed of cypress-dominated systems (521 acres) and the remaining predominantly mixed cypress & hardwood communities. Many of the forested wetlands have generated within the outer zones surrounding marsh habitat, as well as cypress strands and cypress dome islands within the interior of many marshes. The wetlands are in moderate to high quality condition, and have adapted to varying hydrologic conditions. Hydroperiod fluctuations have varied due to rainfall conditions and groundwater influence from wellfields in the vicinity (Cross Bar, Cypress Creek). The only area where wetland functions have resulted in noticeable herbaceous vegetative shifts is within the most eastern portion of the property nearest Cypress Creek. As a result of a reduced hydroperiods, many of the emergent marshes within this area have transitioned to more ephemeral and wet prairie systems. From a landscape perspective, prior conversion of upland habitat to improved pastures and minimal land management practices have fragmented the inter-relationship of habitats with adjacent wetland communities. The pastures and previous cattle grazing practices allowed non-native and exotic species to encroach into the wetlands and uplands; particularly pasture grasses, soda apple, skunk vine, camphor trees, and Chinese tallow. Drastic reduction in prescribed fires resulted in inappropriate density and diversity of vegetative species within the uplands; particularly within the buffers closest to the adjacent wetlands. Very dense stands of hardwoods like laurel oaks and wax myrtle minimized appropriate ground cover vegetation and substantially hindered wildlife access between the wetlands and uplands for foraging and nesting opportunities. Several wildlife species have been reported on the Preserve; the most notable listed species observations include Florida scrub jay, bald eagle, Southeastern American kestrel, gopher frog, gopher tortoise, Sherman's fox squirrel, and several wading birds. Documentation of habitat and wildlife conditions is included in the attachment - Conner Preserve Restoration Plan.
- C. Brief description of conducted and current activities:** Primary wetland enhancement has been achieved through eradication of exotic and nuisance species coverage; commencing with mechanical thinning and control of dense vegetative within the facultative wetland zones and adjacent upland buffers. The inappropriate density of hardwoods and myrtles within the wetland fringes and upland buffers were treated with an initial combination of mechanical thinning (hydro-ax), followed by implementation of the prescribed burn management program (3-5 year cycle); thus allowing regeneration of appropriate species. Prescribed fire applications at suitable intervals within the marshes have reduced and prevented encroachment of woody shrubs and trees (particularly exotic and nuisance species such as camphor and Chinese tallow), removed detritus, recycled nutrients, and stimulated the regeneration and recruitment of appropriate hydrophytic herbs. Additional wetland enhancement has occurred

through enhancement and restoration of adjacent upland habitats. For the enhancement of upland habitats (1,046 acres) that buffer the wetlands, herbicide eradication of exotic and nuisance vegetation have been implemented; particularly for weedy and/or exotic species such as bahia, persimmon, Chinese tallow, laurel oak, and wax myrtle that had encroached upon the pine flatwoods and sandhill communities. Additional habitat enhancement has been achieved by implementing a prescribed burn program that minimizes the regeneration and recruitment of undesirable species. There are five upland pastures buffering wetlands (total 304 acres, 296 acres being restored) being restored to their historic habitat conditions of pine flatwoods and sandhill (refer to Figure 2). Restoration of these upland areas have included an intense series of prescribed burns, herbicide application and mechanical disking to eradicate the pasture grasses, followed by direct seeding from upland donor sites within other WMD property, and supplemental planting of appropriate desirable species such as longleaf pine, oaks, tarflower, rusty lyonia, staggerbush, and ericaceous shrubs. Due to the availability of donor seed source material and time lag necessary to implement each phase of the restoration activities associated with the upland habitats, each of the five restored uplands had different schedules of implementation. Through 2010, all the pastures have received all the preparation, seeding and planting, and are currently within the management phase of periodic herbicide treatments and prescribed fire applications. Additional details on the habitat enhancement and restoration activities are included in the attached Restoration Plan. Adjacent to the Conner Preserve there are two tracts totaling 560-acres of wetland and upland habitat improvements (Figure 2). These improvements were conducted to provide mitigation credit associated with construction-related wetland and upland habitat impacts within the adjacent residential development (Connerton) located south of the Conner Preserve. These two mitigation tracts have achieved success criteria stipulated in their permits, and associated title has been transferred to the WMD for ownership and perpetual management.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The Preserve has land within the Hillsborough River Basin (876-acres) and the Upper Coastal Basin (2,104-acres). As of the 2011 mitigation plan, there are 25 roadway projects with a conservative estimate of 115-acres of proposed wetland impacts within the Upper Coastal & Hillsborough basins designated for mitigation at the Preserve. These are very conservative impact estimates that will decrease as the roadway projects progress into the design and permitting phase. The majority of these anticipated wetland impacts are associated with roadway projects within a 10-mile radius of the Preserve and will have proposed impacts to wetlands with similar habitats as the wetlands within Conner Preserve.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection for the roadway projects, there were no existing or proposed mitigation banks in the Upper Coastal or Hillsborough River Basins. Subsequently a private mitigation bank located in the Upper Coastal was added to the mitigation program (SW 91 – Upper Coastal Mitigation Bank). However the substantial habitat improvements completed at the Preserve have resulted in the availability of 179 federal and state mitigation credits for the 2.973 acres, with fewer than 20 credits debited through 2010. With the \$3.1 million in expenditures for habitat improvements and perpetual maintenance and land management activities, the Preserve currently provides more cost-effective (\$17,200/credit) than credit prices offered by private mitigation banks in the Upper Coastal and Hillsborough basins. Since FDOT reimbursement for mitigation costs are the same rate per impact acre, cost savings associated with mitigation conducted at Conner Preserve are allocated to fund the more expensive mitigation activities conducted in urban basins.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: At the time of selection, there were no SWIM sponsored projects proposed in the Upper Coastal or Hillsborough Basins that were appropriate for mitigation credit.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD- Land Resources and Operations Departments.

Contact Name: Mary Barnwell, Senior Land Management Specialist Phone Number: (352) 796-7211, ext. 4475

Entity responsible for monitoring and maintenance: SWFWMD LAND Resources is responsible for maintenance & management. A private contractor selected by the WMD conducted the monitoring through 2009, followed by annual monitoring conducted by WMD staff.

Timeframe for implementation: Commence: Acquisition – end of 2003, Restoration Design – 2004, Restoration Activities, 2005-2015, maintenance & monitoring to achieve success criteria for the entire site 2005-2015, followed by perpetual land management activities by the WMD.

Complete: Maintenance & monitoring complete by 2015 or until success criteria is met for all the sites, followed by perpetual maintenance & management activities.

Project cost: TOTAL \$ 3,078,000

Initial Habitat Restoration & Maintenance Activities - \$618,000

Perpetual Land Maintenance & Management Costs - \$2,460,000

Attachments

X 1. Description of existing site and proposed work. Refer to previous text; additional habitat and wildlife information, and work activities included in the attached Conner Preserve Restoration Plan.

X 2. Aerial and site photographs. Refer to Figure 2 (2009 aerial) and Conner Preserve Restoration Plan.

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figures 1 & 2 – Location & Habitat, and Conner Preserve Restoration Plan.

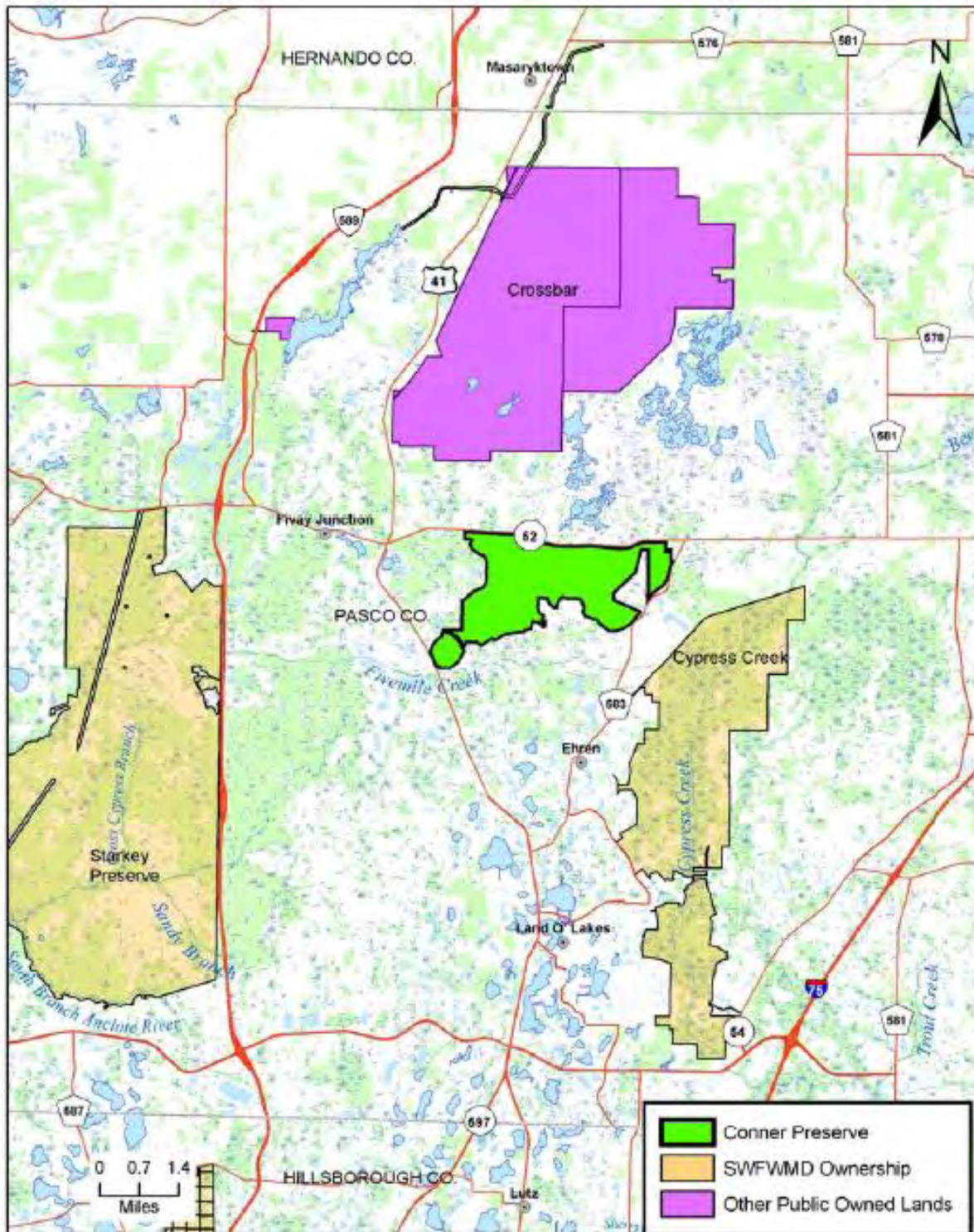
X 4. Detailed schedule for work implementation, including any and all phases. Refer to previous discussion and the Restoration Plan, including Tables 1-3 – Projected & Detailed Task Schedules & Activities. The project's restoration plan was completed in 2004 and implementation commenced in 2005. The upland buffer restoration areas were gradually implemented based on availability of donor seed from other WMD property, with initial preparation, seeding and planting completed within all five former pastures by 2010. Habitat improvements such as mechanical thinning of vegetation and prescribed fire rotations have also been conducted by 2010. Additional herbicide treatments and supplemental seeding and plantings within the previous pasture areas are periodically continued, with success criteria expected to be achieved gradually for the entire site by 2015. After the mitigation has been deemed to meet success criteria, mitigation-related activities and associated funding will continue as part of the WMD's perpetual land management activities to ensure proper density and diversity of the vegetative cover is maintained and continuation of the prescribed fire program.

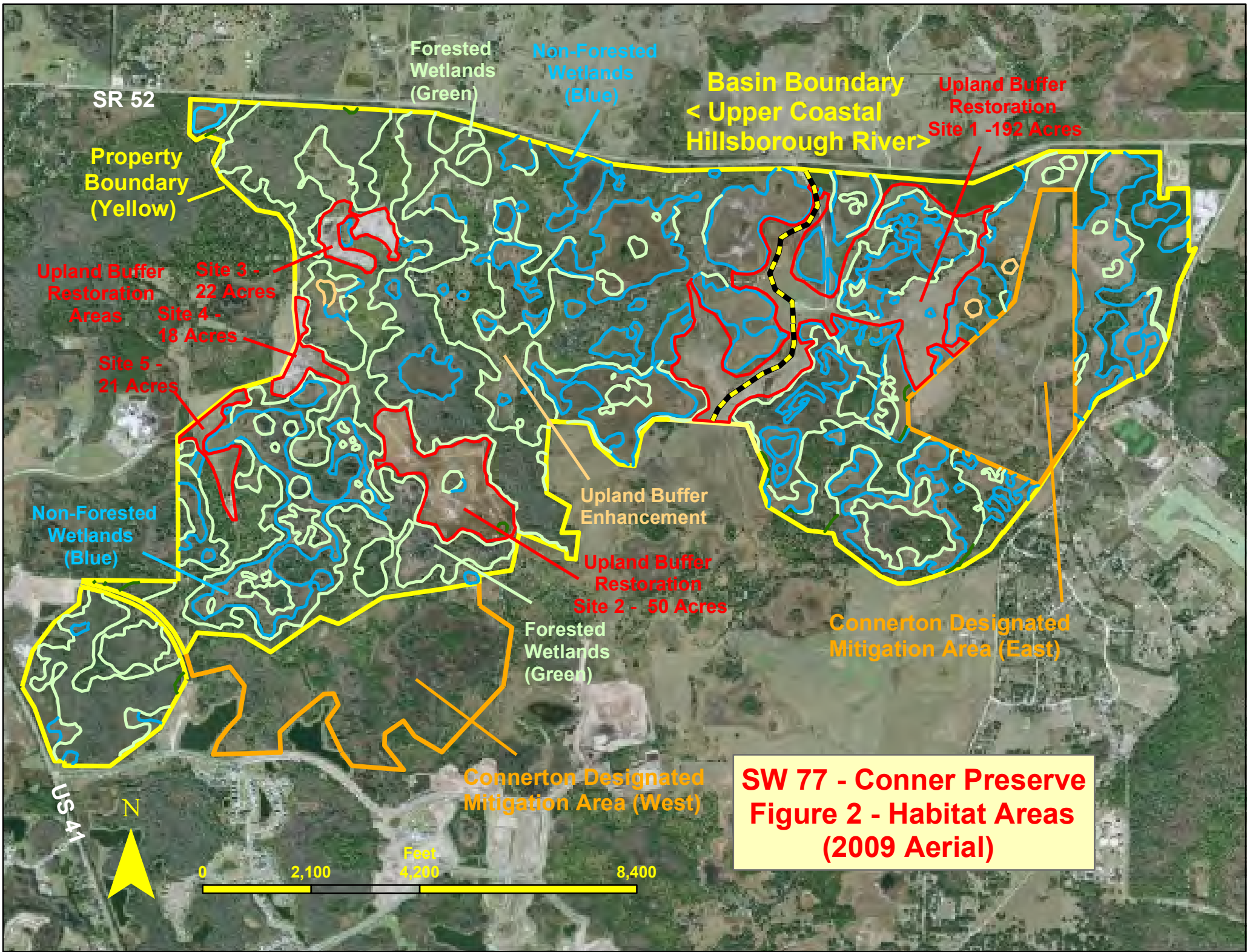
X 5. Proposed success criteria and associated monitoring plan. The monitoring plan includes qualitative and quantitative evaluation of wildlife, vegetative, and habitat conditions. Habitat evaluations are conducted semi-annually with annual monitoring reports. Success criteria includes (1) achieving and maintaining bahiagrass cover to below 20% cover in the former pastures, (2) obtain greater than 80% cover by desirable sandhill and flatwood species in the former pastures, (3) successfully implement prescribed fires through the site, (4) achieve and maintain less than 2% cover of exotic and nuisance species coverage in the wetlands and (5) reduction and maintenance to exclude dense vegetation from re-establishing in the outer zones of the wetlands and adjacent upland buffers. Refer to the Conner Preserve Restoration Plan for details.

X 6. Long term maintenance plan. After initial eradication of exotic and nuisance species, the maintenance and land management activities will continue to be implemented to achieve and maintain success criteria. Refer to the Conner Preserve Restoration Plan for details.

Figure 1. Location Map

Conner Preserve Location Map





**SW 77 - Conner Preserve
Figure 2 - Habitat Areas
(2009 Aerial)**

Conner Preserve Restoration Plan



**Southwest Florida Water Management District
Land Management Section
August 2004**

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INTRODUCTION

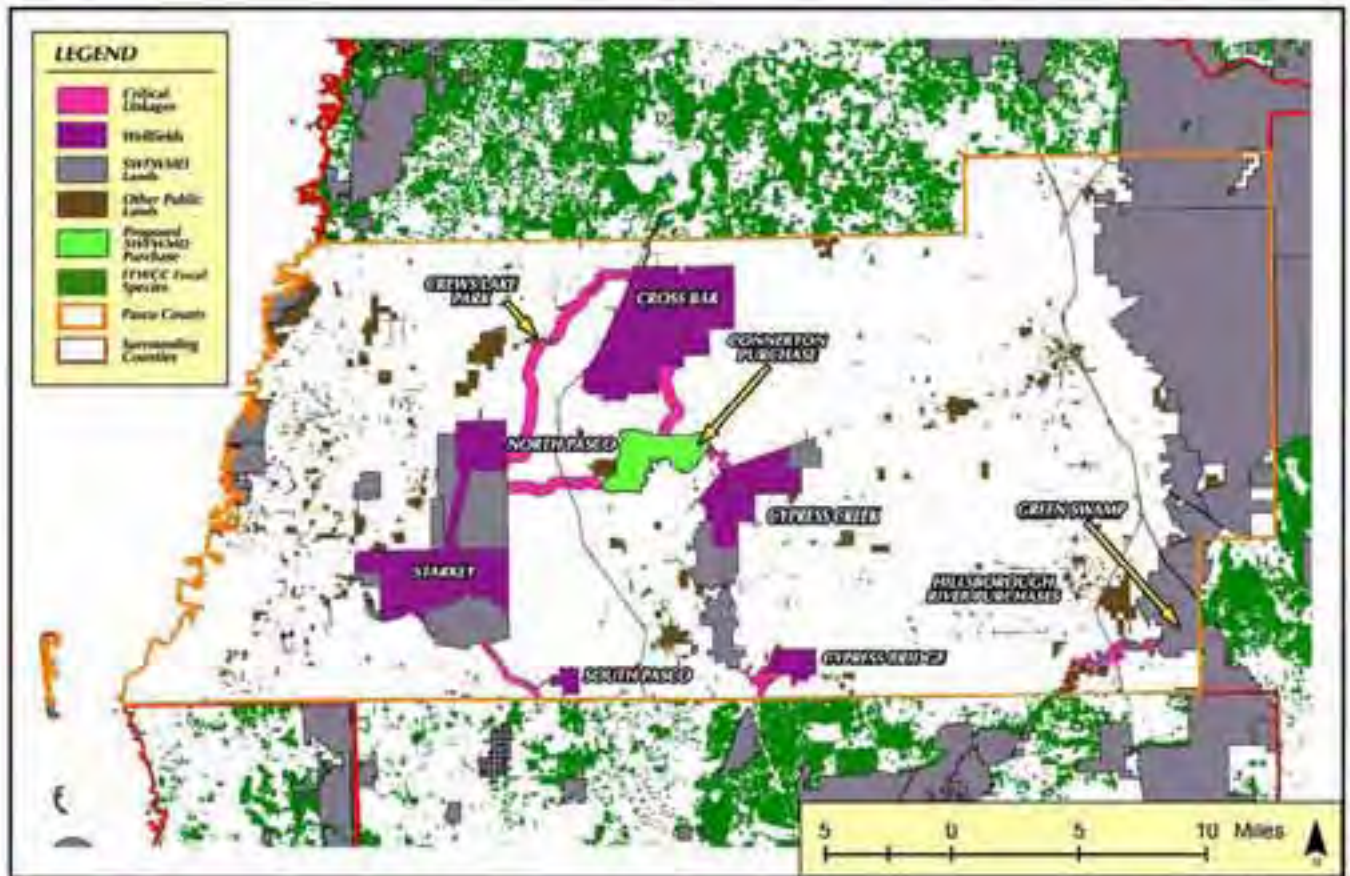
The District purchased the 2,980 Conner Preserve (Preserve), a key parcel in the Pasco I Save Our Rivers/Forever Florida project, in 2003. It is located in central Pasco County approximately 7 miles north of Land O' Lakes, Florida, and is bordered by U.S. Highway 41 to the west, and State Road 52 to the north (Figure 1). The Preserve is a key link in a proposed wildlife habitat corridor connecting the 18,240-acre Starkey Wilderness Park to the west and the 7,460-acre Cypress Creek Wellfield to the east (Figures 2). Natural systems restoration and land management activities proposed in this plan will increase the value and functionality of the Preserve as both core habitat and as a potential linkage between Starkey Wilderness Park and the Cypress Creek Wellfield. This will be accomplished through enhancement of existing wetland habitat and restoration and enhancement of upland habitat adjacent to the wetlands.

Restoration of SWFWMD lands is guided by Board Procedure 61-10 Natural Systems Restoration. This document states that the restoration and maintenance of the natural state and function of all communities making up an ecosystem is the goal of the District's management efforts. The natural successional process and reinstatement of dynamic disturbance processes is recognized as the most environmentally acceptable means of restoration of an altered community. However, when warranted, active intervention shall be employed within the District's management approach as a means of restoration; active intervention may be undertaken to either reestablish an important natural element, function or process which has been removed from the system, or to remove an element, function or process which is not a natural part of the system. When active intervention is considered warranted, only the most cost-effective methods available that will achieve the project goals will be utilized. Priority for allocation of restoration funds and resources shall be given to those communities where intervention will achieve the greatest ecological benefits.

The altered sites on the Preserve have been evaluated pursuant to Board Procedure 61-10 and due to the extent and location of alterations, natural communities and species involved, and the extent of exotics species infestation, the project sites are ranked as high priorities for restoration.

Figure 1. Conner Preserve Location Map





Source: Glatting Jackson and Pasco County



Pasco County, Florida

Figure 7
Critical Linkages (Corridors) of Wildlife Habitat
Between Existing Public Lands

Figure 2. Conner Preserve. Wildlife corridor link between Starkey Wilderness Park and Cypress Creek.

Excerpted from: **Glatting Jackson. 2002. Pasco County Assessment of Measures to Protect Wildlife Habitat in Pasco County. Submitted to Pasco County.

The Conner Preserve consists of a mosaic of pine flatwoods, improved pasture, oak hammock, longleaf pine/turkey oak sandhill, marshes and wet prairies, and cypress ponds. From a landscape perspective, pasture conversion resulted in fragmentation of the forest and the loss of pine flatwoods and globally imperiled longleaf pine/turkey oak sandhill vegetation and associated fauna. The removal of the forest vegetation also impacted the on-site wetlands, exposing them to detrimental edge effects which may include soil erosion and soil moisture loss, exotic plant encroachment, increased predation rates, changes in fire intensity and fire intervals, and species composition changes.

Restoration and enhancement activities proposed for the Preserve have been nominated for designated mitigation credit to compensate for future wetland impacts associated with proposed

Florida Department of Transportation (FDOT) roadway improvement projects. This mitigation nomination will be further reviewed for multi-agency approval during Summer 2004 and for District Governing Board approval in October 2004.

To date, there are approximately 20-30 individual FDOT projects proposed for mitigation at the Preserve, with a total of 30-50 acres of anticipated wetland impacts associated with these projects. The majority of these wetland impacts will include cypress and marsh systems associated with widening SR 52 and US 41 within close proximity to the Preserve. The anticipated FDOT impacts will be revised as roadway projects proceed to design and permitting phases. Based on functional assessment of the wetland impacts and associated mitigation credit designated from activities proposed at Conner Preserve and other future FDOT mitigation opportunities in the Upper Coastal and Hillsborough Basins, there may be additional future roadway projects and wetland impacts proposed to be mitigated at Conner Preserve.

Restoration and enhancement anticipated at the Preserve for FDOT mitigation credit include wetland enhancement (1,630 acres), upland habitat enhancement (1,046 acres), and upland habitat restoration (304 acres) (Figure 3). These improvements will include eradicating exotic and nuisance vegetative species within the wetlands and uplands, restoring upland native habitat on the improved pastures, and implementing land management activities to restore, enhance and maintain appropriate ecosystem composition, function and biological diversity on the Preserve.

SITE DESCRIPTION

Land Uses – Past & Future

Former land uses on the Preserve include cattle grazing, logging, and hunting. The general condition of the property is good. Though nearly 22% of native upland communities were converted to bahia pasture, most of the wetlands were only minimally altered and most of the adjacent uplands were left intact. Relative to surrounding agricultural lands, the Preserve is structurally diverse and compositionally complex. It is anticipated that revenue-generating uses such as cattle grazing and silviculture will not be continued on the Preserve. Tree removal will only be conducted for restoration purposes (hardwood reduction), and for conversion of planted pine stands back to natural species and densities. Hunting is not proposed on the property at this time, but the District may explore opportunities for low intensity special hunts to control feral hog populations. Passive recreational uses such as including hiking, horseback riding, bird watching, fishing, and picnicking will also be allowed on the Preserve. Other compatible uses may be evaluated and implemented during the development of a management plan for the property.

Vegetation Communities

Dominant natural communities present on the Conner Preserve include pine flatwoods, longleaf pine/turkey-oak sandhill, freshwater marsh, wet prairie, and cypress ponds (Figure 4). Bahia pasture was created mostly on the larger contiguous uplands within a matrix of natural communities. Bahia grass was inter-seeded in some of these communities, but the native vegetation was left intact. Wetland communities are in generally good condition, with only minor physical alterations observed. Each of these communities is described below.

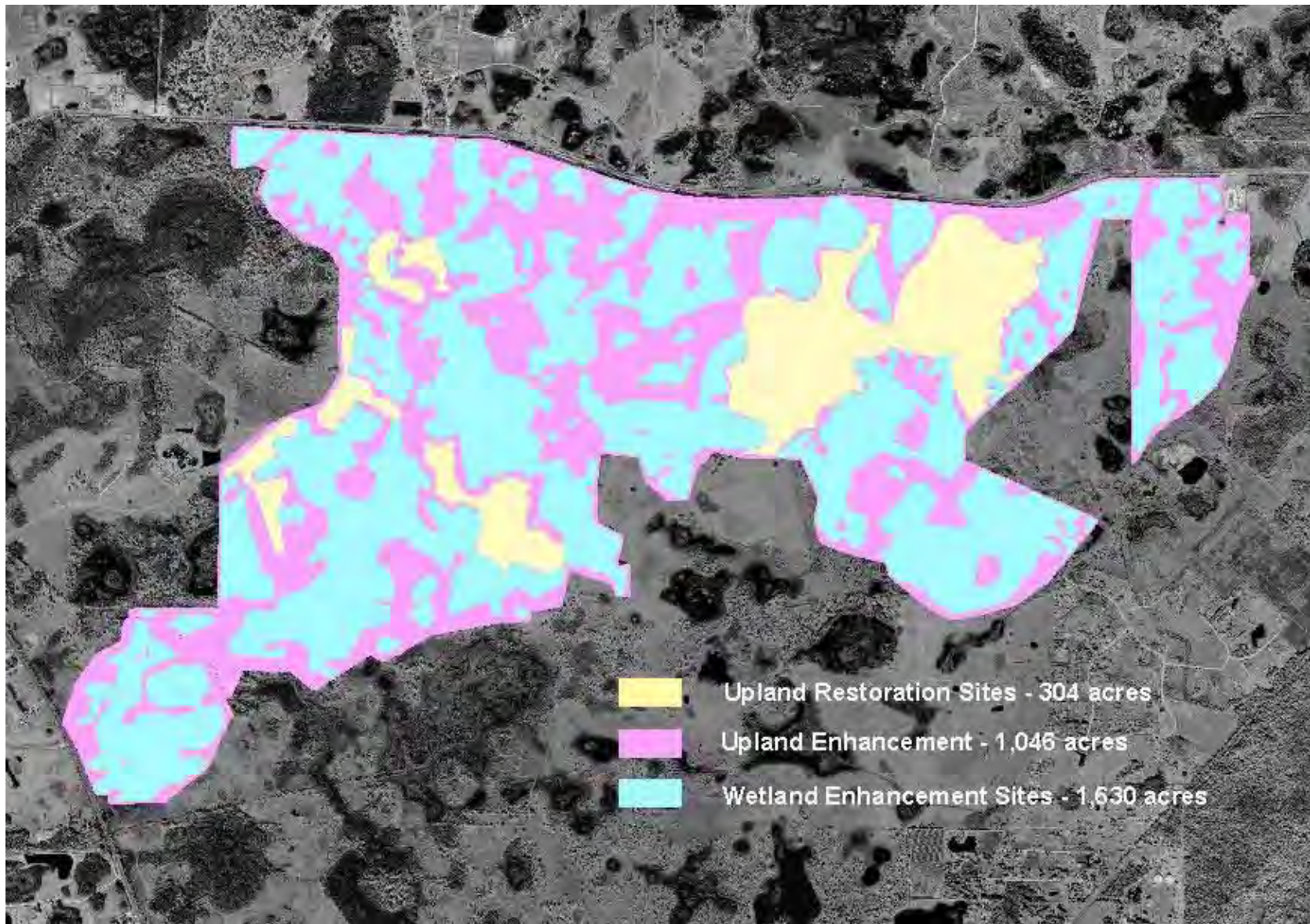
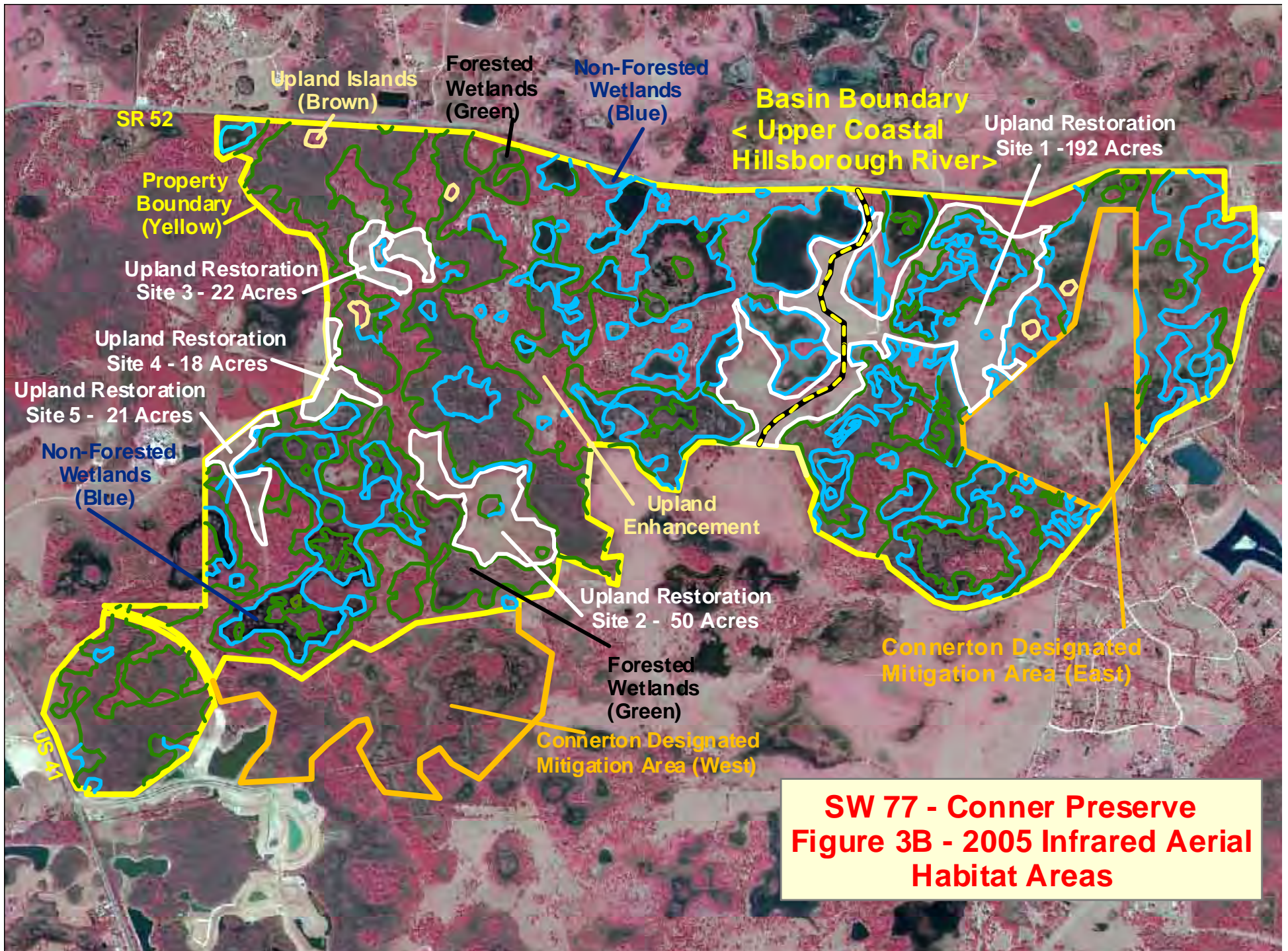


Figure 3. Conner Preserve. Upland restoration and enhancement sites.



Pine flatwoods – The intact pine flatwoods generally occur along the transitional zones between wetlands and bahia pasture. These systems are in fair condition, with uneven aged pine stands and a midstory of saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), staggerbush (*Lyonia fruticosa*), highbush blueberry (*Vaccinium corymbosum*), and St. John's wort (*Hypericum fasciculatum*). In the drier scrubby flatwoods, saw palmetto, sand live oak (*Quercus geminata*) and runner oak (*Quercus pumila*) are more prevalent than gallberry. The understory has been suppressed to varying degrees by fire exclusion. The re-introduction of regular growing season burns should reduce the woody shrubs and increase the abundance of herbaceous groundcover.

Longleaf-pine/turkey-oak sandhill – The longleaf pine/turkey-oak sandhills occur along the high ridges on the Preserve. Turkey oaks (*Quercus laevis*), sand live oaks (*Quercus geminata*) and laurel oaks (*Quercus hemisphaerica*) have obtained heights of 30-60 feet, and the characteristic groundcover has declined due to low fire intensities (or fire suppression) and shading from the hardwood understory. Although bahia grass was inter-seeded within the sandhill vegetation, a diversity of sandhill species are still present, including wiregrass (*Aristida beyrichiana*), beaked panicum (*Panicum anceps*), Florida paspalum (*Paspalum floridanum*), low panicums (*Dicanthelium* spp.), splitbeard bluestem (*Andropogon ternarius*), tread-softly (*Cnidoscolus stimulosus*), elephant's-foot (*Elephantopus elatus*), reticulate pawpaw (*Asimina reticulata*), narrow-leaf pawpaw (*Asimina augustifolia*) and bracken fern (*Pteridium aquilinum*). The re-introduction of growing season fire and mechanical treatments to reduce hardwoods should increase the herbaceous component of the sandhill communities. Bahia grass may be selectively treated with herbicide in these areas.

Freshwater marshes and sloughs – There are several large freshwater marshes interspersed among the uplands. These systems exhibit dominance by maidencane (*Panicum hemitomon*) in the larger marshes, and soft rush (*Juncus effusus*) in the smaller isolated wetlands. Cypress trees (*Taxodium distichum*) rim many of these systems. In wetlands that have burned recently, as evidenced by fireplow scars and dead cypress trees, the species diversity appears higher, with more open water habitat, and the presence of species such as pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria* sp.), pond flag (*Thalia geniculata*), and water lilies (*Nymphaea* sp.). The re-introduction of fire will benefit the marshes by removing detritus, recycling nutrients, and stimulating the re-growth of wetland plants. Many of the herbaceous wetlands are sloughs, providing flow ways between the cypress ponds for water during periods of prolonged rainfall. Chinese tallow tree (*Sapium sebiferum*), a Category I species on the Florida Exotic Pest Plant Council's list, is present in some of these wetlands (Florida EPPC 2004).

Wet prairies – Wet prairies occur in association with the marshes, either along the fringes of the wetlands or as extensions off of them, sometimes functioning as sloughs. Characteristic vegetation in the wet prairie ecosystems on the Preserve include maidencane (*Panicum hemitomon*), blue maidencane (*Amphicarpum muhlenbergia*), meadow beauty (*Rhexia mariana*), white-topped sedge (*Dichromena* sp.), spikerush (*Eleocharis* sp.), bog batchelor's button (*Polygala lutea*), yellow-eyed grass (*Xyris* spp.), sundews (*Drosera rotundifolia*), bog buttons (*Lachnocaulon* spp.) and St. John's-wort (*Hypericum fasciculatum*). There are no apparent physical alterations that contribute to any significant degradation of these systems. Feral hogs have been maintained at low population levels, probably due to hunting pressure, and no ditching or draining of wetlands was conducted. Prescribed fire applications at suitable intervals will prevent encroachment of woody shrubs and trees, and stimulate flowering and proliferation of herbaceous species.

Forested Wetlands – Cypress ponds are the most dominant forested wetlands on the property, closely associated with the marshes and wet prairies. Additionally, there are a few swamps

dominated by sweet bays (*Magnolia virginiana*) and a few characterized as mixed hardwood-cypress, supporting cypress (*Taxodium distichum*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), blackgum (*Nyssa sylvatica*), sweetbay (*Magnolia virginica*), and various oak species (*Quercus* spp.). All these wetlands are in relatively good shape, although the old-growth cypress was harvested and there are some indications of reduced hydroperiods and minor dredging and backfilling evident in a few systems.

Soils

Figure 5 illustrates the soils found on the Preserve. The dominant soils include Sellers mucky loamy fine sands and Samsula muck in the wetlands, and Basinger fine sands and Paola fine sands in the uplands (National Cooperative Soil Survey 1982). More detail is provided on soils specific to restoration sites in the *Restoration Plan* section.

Wildlife

The Florida Fish and Wildlife Conservation Commission designated undeveloped northwest Pasco County as potentially important habitat for wildlife associated with pineland, dry prairie, wetlands, and rangeland (Cox et al. 1994). This region is designated as a Strategic Habitat Conservation Area for rare wading birds, short-tailed hawk (*Buteo brachyurus*), and Florida sandhill crane (*Grus Canadensis pratensis*) (Cox et al. 1994). Wildlife species documented in the area, as reported by field notes of District staff and by the Connerton ERP permit application documents, are included in Appendix A (Biological Research Associates 2004).

The assemblage of fauna that characterizes healthy, intact pine flatwood, sandhill and xeric oak scrub communities has undoubtedly declined. Due to the loss of significant forest habitat, populations of red-cockaded woodpeckers (*Picoides borealis*), red-headed woodpeckers (*Melanerpes erythrocephalus*), Florida scrub-jay (*Aphelocoma coerulescens*), Sherman's fox squirrel (*Sciurus niger*), brown-headed nuthatch (*Sitta pusilla*) and other habitat-specific species appear to have been extirpated or have declined significantly throughout the region.

Three Florida scrub-jay groups were documented on the Conner Ranch (which includes the Preserve, proposed Connerton development, and the two Habitat Mitigation Areas) by Biological Research Associates (BRA) in 2001. One of the groups was within the area proposed for development (south of the Preserve), one was located in Habitat Mitigation Area I (directly east of the preserve lands), and one was located on the area now designated the Conner Preserve. A follow-up survey conducted by BRA in 2002 detected only the jays on the District's Conner Preserve property.

To ensure compliance with state and federal laws and regulations, Terrabrook Development Inc. set-aside approximately 515 acres in two sites for mitigation. Habitat Management Area I (236 acres) was set aside to mitigate for incidental take of two protected species - the Florida scrub-jay and the gopher tortoise. Habitat Management Area II (279 acres) is mitigation for wetland impacts associated with the development. Terrabrook will convey a conservation easement to the District for the two mitigation areas until mitigation requirements are met, and then will either sell or donate them to the District to be appended to the Conner Preserve. Within Habitat Management Area 1, the USFWS required Terrabrook to install 12,000 scrub oaks to compensate for habitat loss to scrub-jays due to proposed development. According to BRA personnel, planting has been completed, but survival rates for these plantings are unknown (Denton pers. comm.). Additionally, TerraBrook has indicated that two small parcels totaling 41-acres may be set aside for additional mitigation requirements.

Gopher tortoises (*Gopherus polyphemus*), a state-listed species of special concern, also occur on the tract, and their burrows may continue to provide habitat for several commensal species, including gopher frog (*Rana capito*), eastern coachwhip (*Masticophis flagellum flagellum*), eastern diamondback rattlesnake (*Crotalus adamanteus*), and eastern indigo snake (*Drymarchon corais couperi*).

The numerous wetlands on the Preserve continue to provide high quality habitat for a variety of wading birds. Species documented utilizing these wetlands include great egret (*Casmerodius albus*), great blue heron (*Ardea herodias*), wood stork (*Mycteria americana*), white ibis (*Eudocimus albus*), and sandhill crane (*Grus canadensis pratensis*). Other species expected to occur are little blue heron (*Egretta caerulea*), green-backed heron (*Butorides virescens*), snowy egret (*Egretta thula*), glossy ibis (*Plegadis falcinellus*), and least bittern (*Ixobrychus exilis*). Many of the herbaceous wetlands provide both suitable nesting and foraging habitat for Florida sandhill cranes. The *Florida Atlas of Breeding Sites for Herons and their Allies: 1986-1989 Update* (FGFWFC 1991) documents 9 rookeries located within 10 miles of the property. Restoration and enhancement activities will substantially improve habitat quality for the suite of wildlife species that occur on the Preserve or on adjacent land proposed for development.

Exotic Species

Control of invasive exotic vegetation is currently, and will continue to be, an ongoing maintenance activity on the Preserve. Exotic plant species observed on the property include skunk vine (*Paderia foetida*), cogongrass (*Imperata cylindrica*), Chinese tallow (*Sapium sebiferum*), camphor tree (*Cinnamomum camphora*) and tropical soda apple (*Solanum viarum*). The most problematic plant at this time is Chinese tallow, which is well-established in the marshes and forested swamps, and occurs as landscape specimens at private residences adjoining the Preserve. A monoculture of bahia grass (*Paspalum notatum*) has replaced the groundcover vegetation typically associated with flatwoods and sandhill. As a component of the upland restoration activities, aggressive management actions will be undertaken to eradicate bahia grass and to maintain it at levels below 10% or less of the total cover. Several other exotic plants are found on the property, including smutgrass (*Sporobolus indicus*), torpedo grass (*Panicum repens*), and natalgrass (*Rhynchrlytrum repens*), and treatment of these species will vary depending on their impact to natural systems and restoration efforts.

Exotic and non-endemic wildlife also occur on the Preserve, but control practices for most of these species have not yet been adopted by land managers due to scarcity of information about their impacts and effective eradication techniques, logistical complexities, and associated costs. Feral hogs and armadillos are present on the property, but physical damage due to these species appear to be minimal at this time, possibly due to hunting pressure imposed on them by the previous landowner. District Land Management staff routinely assesses damage due to feral hogs, and dispatches trappers to capture and remove hogs when damage becomes unacceptable. Coyotes (*Canis latrans*) are known to occur throughout the area; in fact, in some regions of Pasco County this canine has become a nuisance for both cattle ranchers and pet owners. Both the cattle egret (*Bubulcus ibis*) and the greenhouse frog (*Eleutherodactylus planirostris*) have been confirmed on the property (BRA 2004). Other non-endemic wildlife species that potentially occur on the property include the following: marine toad (*Bufo marinus*), Cuban treefrog (*Osteopilus septentrionalis*), and Cuban brown anole (*Anolis segei segei*).

Fire Management

The restoration and long-term maintenance of historic fire patterns – both seasonality and fire return intervals - will be an integral component of the restoration effort on the Conner Preserve.

Prescribed fire is one of the primary tools utilized by public land managers in Florida to maintain the health and character of natural systems. Fire, a naturally occurring process in the Florida landscape, maintains the unique structure and composition of vegetation communities; improves wildlife habitat; induces flowering, seeding, and germination of native plants; contributes to the recovery of threatened and endangered species; and prevents the accumulation of heavy fuel loads and subsequent catastrophic wildfires (US Forest Service 1978). Historically, range managers and forestry personnel have burned during the dormant season (winter) in order to safely and economically generate tender forage for cattle and to reduce competition for pine trees, respectively. However, it is in the spring and summer when fires naturally occurred, and duplication of seasonal fire patterns is now the preferred management strategy by most agencies. Although growing season fire will be utilized whenever feasible to promote maintenance and recovery of natural communities, dormant season burns may also be conducted to achieve management objectives.

There are approximately 460 acres of pine flatwoods and scrubby pine flatwoods occurring on the Conner Preserve. These communities are characterized by a slash pine/longleaf pine canopy exceeding 1 tree per acre, and a shrub component consisting of saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), and wiregrass (*Aristida beyrichiana*) for the former, and scrubby oaks for the latter. Flatwoods burn frequently, with fire return intervals of 3 – 7 years (FNAI 1997; Myers 1986). Pines are fire-adapted species whose seeds require fire disturbance to germinate, and are characterized by long needles that protect the buds and thick insulating bark that protects the cambium tissue (Robbins and Myers 1992). Saw palmetto, which is important as a source of food and cover for wildlife, has thick scaly rhizomes that protect the meristemic tissues from fire and re-sprouts vigorously almost immediately after fire (Robbins and Myers 1992). Wiregrass, which is one of the most important fire fuels in the flatwoods community (along with muhley grass (*Muhlenbergia capillaris*) and pinewoods dropseed (*Sporobulus junceus*)), must experience growing season fire in order to flower and produce viable seed (Robbins and Myers 1992; Bissett 1998; FNAI 1998).

There are approximately 110 acres of historic longleaf pine/turkey oak sandhill on the Conner Preserve, and most of this acreage has suffered from either clearing or exclusion of growing season fire. Sandhill fires occur frequently as low intensity ground fires, with fire return intervals ranging from 1 – 7 years (FNAI 1997; Myers 1986). This community type can best be described as a grassland dominated by species such as wiregrass (*Aristida beyrichiana*), pinewoods dropseed (*Sporobulus junceus*), native crabgrass (*Digitaria* spp.), little bluestem (*Schizachyrium scoparium*) and broomsedge (*Andropogon* spp.), with a sparse canopy of longleaf pine (Myers 1986). As previously discussed, wiregrass requires growing season burns in order to produce viable seeds. Longleaf pine (*Pinus palustris*) is also fire-dependent – it remains in a grass stage, with its terminal bud protected by a thick sheath of longleaf needles up to 18 inches long - until exposed to fire (Robbins and Myers 1992). Once exposed to fire, the pine tree rapidly gains height, sometimes several feet per year, to protect it from the next fire event (Robbins and Myers 1992).

There are approximately 960 acres of depression marsh and wet prairie on the Preserve; these wetland systems provide foraging habitat for wading birds and breeding habitat for amphibians. Average fire return intervals for marshes range from 2-25 years, with fire maintaining the emergent vegetation which characterizes these systems, such as pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria* sp.), fire flag (*Thalia geniculata*), and sawgrass (*Cladium jamaicense*) (FNAI 1997; Myers and Ewell 1990). Spring burns, conducted when water levels are below the ground surface or have receded significantly into the interior of the wetland, are usually required to reduce hardwood encroachment and burn out organic deposits, although sawgrass is susceptible to drought season burns and also rapid flooding after a burn. Colonization of the marshes and prairies

by trees and shrubs, such as willows (*Salix* sp.), wax myrtle (*Myrica cerifera*), and red maple (*Acer rubrum*), is prevented by frequent fire application (Robbins and Myers 1992).

Florida's vegetation communities have evolved with fire, and similarly, many of the wildlife species that co-evolved in these landscapes require fire for their continued existence and maintenance of healthy populations. The Conner Preserve provides habitat for a suite of rare and/or declining species that are dependent on regular disturbance by fire. These species include gopher tortoise, Florida gopher frog, several woodpecker species, bobwhite quail, southeastern American kestrel, Florida sandhill crane, Florida scrub-jay, and Sherman's fox squirrel. Fire improves forage quality of grasses and herbs, increasing the nutrient value of these food sources, promotes the production of mast and berries, and cleans out thick dense undergrowth to facilitate wildlife movement (Robbins and Myers 1992). It facilitates the seeding and germination of southern yellow pine species, and controls forest diseases (Robbins and Myers 1992). Fire also generates snags and stump holes, therefore providing structural habitat for a variety of species. Over 25 bird species that potentially inhabit the Preserve utilize cavities created in dead trees. So do mammals such as the eastern flying squirrel and weasels. Once the tree decays and falls, the deadwood on the ground is utilized as cover by various snakes, lizards, treefrogs, and mammals. Burned out stump holes are important components of eastern indigo snake habitat. Wading birds benefit from early growing season fire, which reduces encroachment of woody species into the marsh, maintains healthy ecotones between the uplands and wetlands, and recycles nutrients, increasing productivity of the wetland ecosystem (Robbins and Myers 1992)

All natural communities will be managed primarily with growing season fire, as feasible. The uplands targeted to be restored will be integrated into the burn cycles of the surrounding landscape when native species are dominant and bahia grass cover is minimal.

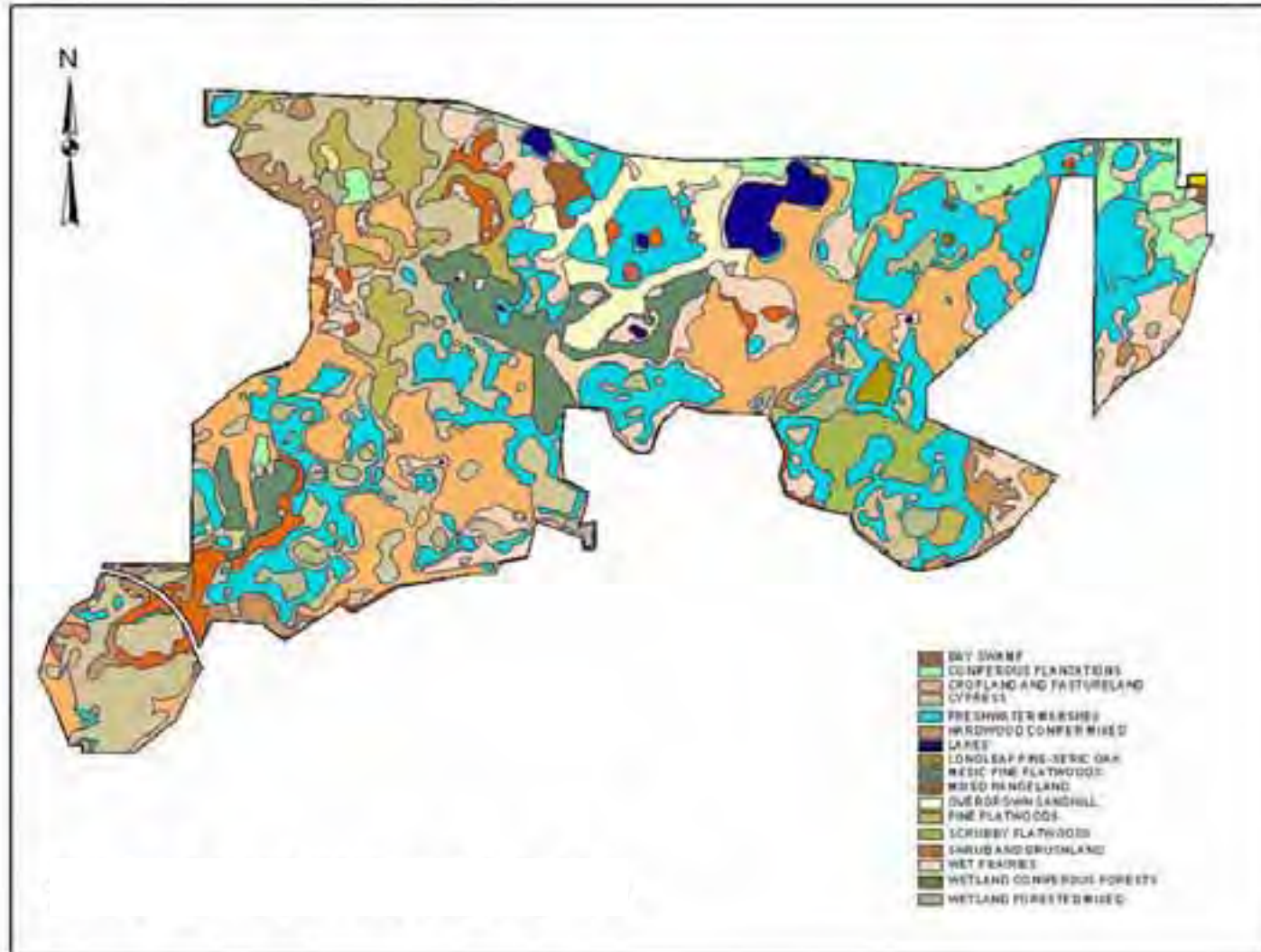


Figure 4. Conner Preserve Land Cover Map.

Figure 4 (Cont.). Conner Preserve Land Cover Classification Acreage By ERP Watershed Basin			
DRNBASIN	FLUCCSCODE	FLUCSDISC	Sum_Acres
HILLSBOROUGH RIVER BASIN	1800	RECREATIONAL	1.55
HILLSBOROUGH RIVER BASIN	2100	CROPLAND AND PASTURELAND	149.02
HILLSBOROUGH RIVER BASIN	2600	OTHER OPEN LANDS <RURAL>	1.70
HILLSBOROUGH RIVER BASIN	3200	SHRUB AND BRUSHLAND	4.27
HILLSBOROUGH RIVER BASIN	4110	PINE FLATWOODS	9.33
HILLSBOROUGH RIVER BASIN	4112	SCRUBBY FLATWOODS	58.65
HILLSBOROUGH RIVER BASIN	4120	LONGLEAF PINE-XERIC OAK	9.96
HILLSBOROUGH RIVER BASIN	4340	HARDWOOD CONIFER MIXED	31.71
HILLSBOROUGH RIVER BASIN	4400	TREE PLANTATIONS	30.53
HILLSBOROUGH RIVER BASIN	4410	CONIFEROUS PLANTATIONS	39.07
HILLSBOROUGH RIVER BASIN	4410	CONIFEROUS PLANTATIONS	14.23
HILLSBOROUGH RIVER BASIN	5200	LAKES	0.25
HILLSBOROUGH RIVER BASIN	6200	WETLAND CONIFEROUS FORESTS	2.05
HILLSBOROUGH RIVER BASIN	6210	CYPRESS	57.13
HILLSBOROUGH RIVER BASIN	6300	WETLAND FORESTED MIXED	38.33
HILLSBOROUGH RIVER BASIN	6410	FRESHWATER MARSHES	330.38
HILLSBOROUGH RIVER BASIN	6430	WET PRAIRIES	98.27
		TOTAL	876.43
UPPER COASTAL AREAS	1100	RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS	0.05
UPPER COASTAL AREAS	2100	CROPLAND AND PASTURELAND	403.46
UPPER COASTAL AREAS	2300	FEEDING OPERATIONS	2.84
UPPER COASTAL AREAS	3200	SHRUB AND BRUSHLAND	80.55
UPPER COASTAL AREAS	3300	MIXED RANGELAND	14.16
UPPER COASTAL AREAS	4110	PINE FLATWOODS	144.28
UPPER COASTAL AREAS	4111	MESIC PINE FLATWOODS	143.78
UPPER COASTAL AREAS	4121	OVERGROWN SANDHILL	110.57
UPPER COASTAL AREAS	4340	HARDWOOD CONIFER MIXED	71.89
UPPER COASTAL AREAS	4400	TREE PLANTATIONS	21.42
UPPER COASTAL AREAS	4410	CONIFEROUS PLANTATIONS	3.20
UPPER COASTAL AREAS	4410	CONIFEROUS PLANTATIONS	6.97
UPPER COASTAL AREAS	5200	LAKES	47.82
UPPER COASTAL AREAS	5300	RESERVOIRS	0.70
UPPER COASTAL AREAS	6110	BAY SWAMP	2.18
UPPER COASTAL AREAS	6210	CYPRESS	462.29
UPPER COASTAL AREAS	6300	WETLAND FORESTED MIXED	54.32
UPPER COASTAL AREAS	6410	FRESHWATER MARSHES	341.74
UPPER COASTAL AREAS	6430	WET PRAIRIES	190.58
UPPER COASTAL AREAS	6440	EMERGENT AQUATIC VEGETATION	1.07
		TOTAL	2,103.89

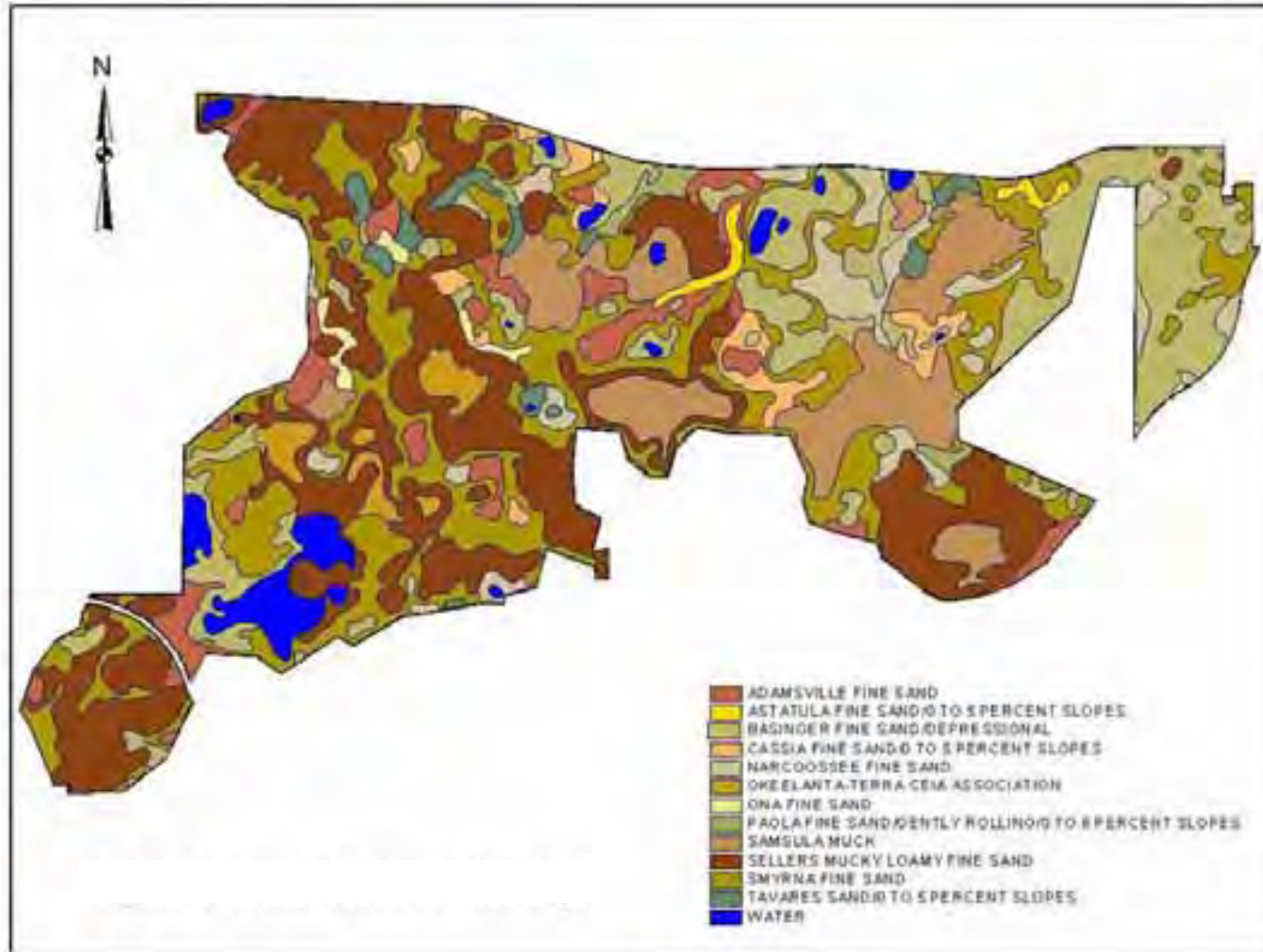


Figure 5. Conner Preserve Soils Map.

RESTORATION PLAN

Restoration Methods

Due to the dominance of bahia grass on the restoration sites, the only feasible method to restore the rich diversity and structural complexity characteristic of sandhill and flatwoods communities is to eradicate the bahia grass using a combination of herbicide treatments, prescribed fire application, and disking, and then to re-vegetate using a combination of seeding and planting with containerized material. Restoration of the groundcover will be completed and deemed successful prior to introducing other components of the community, such as longleaf pine (*Pinus palustris*), oaks (*Quercus* spp.), tarflower (*Beferia racemosa*), rusty lyonia (*Lyonia ferruginea*), staggerbush (*Lyonia fruiticosa*), and ericaceous shrubs (Family Ericicacae - blueberries, huckleberries). This tactic will allow maintenance activities to proceed without any undue constraints. Appendix B includes a detailed discussion of the overall restoration strategy.

Restoration Site Prescriptions

Five altered upland sites totaling 304-acres are being proposed for restoration; all are former pine flatwoods or sandhill communities that were converted to bahia pasture. Site characterizations and implementation plans are outlined below. Appendix C includes a more detailed discussion of upland restoration methodologies that will be utilized on the sites.

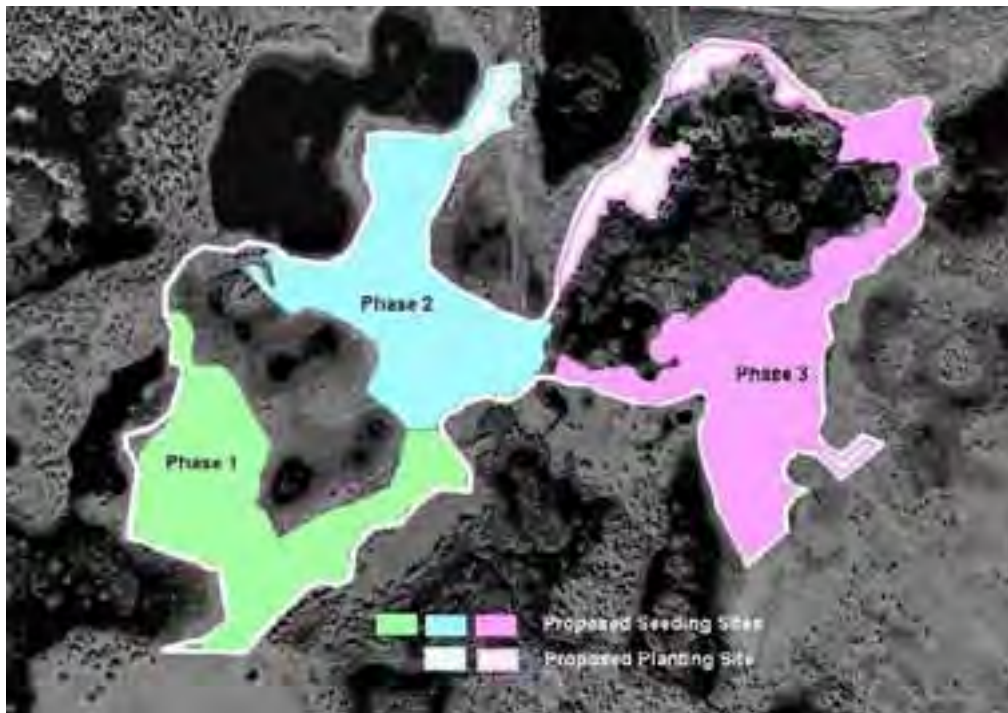


Figure 6. Conner Preserve Upland Restoration Site 1.

Site 1

Consists of 192-acres centrally located on the tract in sections 7, 8, 17, & 18 Township 25 Range 19 (Figure 6). The native upland vegetation has been cleared and replaced with bahia grass, but linear strips of pine flatwoods are still present around the perimeters of the wetlands.

Several soil types are represented on this site. Remnant sandhill vegetation still occurs on the high ridges, characterized by Tarvares, Narcoosee, and Paola fine sands (National

Cooperative Soil Survey 1982). The former flatwoods, which have been entirely converted to improved pasture, occurred in those areas mapped as Cassia and Adamsville soils (National Cooperative Soil Survey 1982). The large forested wetland in the eastern portion of the site is dominated by Samsula muck (National Cooperative Soil Survey 1982). Site 1 will be restored to scrubby flatwoods and sandhill in three phases in 2006-2008 via direct seeding methods and plant installation.

Site preparation will start in February 2005. The entire site (all three phases) will be burned in late winter to early spring 2005, after it has been hit by a hard frost. Following fire application, several herbicide applications will be conducted as necessary to remove exotic vegetation from the Phase I unit. Due to the interspersions of several wetlands within and adjacent to the restoration unit, the herbicide AquaStar will be used. AquaStar is equivalent to Rodeo in labeling (can be used in aquatic environments) and similar in pounds of active ingredient. If fuels are continuous enough to facilitate the spread of fire, another prescribed burn may be conducted. Finally, if deemed necessary, the Phase I unit will be disked and rolled in late summer, and a final herbicide application will be conducted in September or October. The 57-acre Phase I unit will be seeded in November/December 2005. Seeding of Phase 2 (60-acres) and Phase 3 (54-acres) will be conducted in 2006 and 2007 respectively, following a similar sequence of site preparation events. However, herbicide application may be extended 1-2 years in advance of seeding on Phase II and Phase III if deemed necessary to effectively eradicate bahia grass. An aerial application of Plateau, applied at a rate of 12 ounces per acre, will be conducted 4-5 months after seeding, in April or May, to eradicate bahia grass seedlings. A total of 15-acres will be planted during Phase 2 and Phase 3. Installation of longleaf pine will be conducted on all sites after success criteria are achieved.



Figure 7. Conner Preserve Upland Restoration Site 2.

Site 2

Consists of 50-acres located in the south-central region of the tract almost exclusively in Section 13 Township 25 Range 18. The dominant soils are Adamsville and Smyrna fine sands, with smaller pockets of Sellers mucky loamy fine sand, Cassia fine sands, and Narcossee fine sands (National Cooperative Soil Survey 1982).

Site 2 will be restored in 2008 using a combination of direct seeding and plant installation (Figure 7). Site preparation will begin 1-2 years in advance of seeding with 2-3 aerial herbicide applications per year to effectively reduce bahia grass, accompanied by one or two disking treatments. If introduced grasses (bahia, Bermuda, cogon, natal) are sufficiently eradicated, the site may be allowed to lie fallow the summer prior to seeding to provide a firmly packed seedbed, facilitate full recharge of soil moisture profile, enhance nutrient availability, and to reduce recruitment of undesirable weeds. The site will be burned in February 2008, followed by several aerial applications of either Roundup or AquaStar herbicide, and another burn, if feasible. Disking and rolling requirements will be based on the results of the 2006 and 2007 seeding events and site conditions. In November 2008, seeding will be conducted on the entire 50-acres, followed by installation of primarily wiregrass on approximately 8-acres around the perimeter and westernmost portion of the site. An aerial application of Plateau may be applied at a rate of 12 ounces per acre 4-5 months after seeding to reduce survival of bahia grass seedlings. Installation of longleaf pine will be conducted on the site after success criteria are achieved.



Figure 8. Conner Preserve Upland Restoration Site 3.

Site 3

This site is 22-acres in size and located in the northwest portion of the tract at the junction of Sections 11, 12, 13, & 14 in Township 25 Range 18. The dry upland ridges are characterized by Tavares and Adamsville fine sand (National Cooperative Soil Survey 1982). These will be targeted for restoration of sandhill vegetation. The lower elevations, which will be re-vegetated to pine flatwoods groundcover, are comprised primarily of Smyrna fine sands.

Site 3 will be restored in 2006 using a combination of direct seeding and plant installation (Figure 8). Site preparation for Site 3 will start in February 2005, when the site will be burned. Herbicide applications will then be conducted throughout 2005. In 2006, the site will continue to be treated with herbicide to remove nuisance and exotic vegetation, and burned periodically as fuel loads allow. Disking will be conducted in mid- to late-summer, followed by one more herbicide treatments and potentially shallow disturbance with a chain drag immediately before seeding. Site preparation on Sites 3, 4, and 5 may be more intensive than on Sites 1 and 2 because the former sites will be treated with a Grasslander seeder instead of the modified sod sprigger. In November 2006, seed will be distributed on the eastern lobe of the site, and in the interior of the western lobe, and then plants will be installed on 8-acres in the western lobe in July or August 2007. Installation of longleaf pine will be conducted after success criteria are achieved.



Figure 9. Conner Preserve Upland Restoration Site 4.

Site 4

This site is 18-acres located centrally along the west boundary of the tract in Section 14 Township 25 Range 18. The higher elevations are comprised of Adamsville soils and the lower

elevations, which once supported pine flatwoods, are comprised of Ona fine sands (National Cooperative Soil Survey 1982).

Site 4 will be restored in 2007 using a combination of direct seeding and plant installation (Figure 9). The site will be burned in February/March 2006, and herbicide treatments will commence through 2006 and 2007, with burns conducted as necessary to reduce biomass. The site will be seeded in November 2007, and plants will be installed on 6-acres in the narrow, unseeded portions of the site in July/August 2008. Aerial applications of Plateau may be applied at a rate of 12 ounces per acre to reduce competition and establishment of bahia grass. A long period of herbicide treatment prior to seeding the site is anticipated to reduce the post-construction herbicide needs on the site. Installation of longleaf pine will be conducted on the site after success criteria are achieved.



Figure 10. Conner Preserve Upland Restoration Site 5.

Site 5

Site 5 is comprised of 21-acres, is located directly south of Site 4 in Section 14 Township 25 Range 18. Smyrna and Adamsville are the primary soils on this site (National Cooperative Soil Survey 1982).

Site 5 will be restored in 2009 using a combination of direct seeding and plant installation (Figure 10). The site will be burned in February 2008. Herbicide treatments will then be conducted throughout 2008 and early 2009, with fire applied as necessary to reduce above-ground biomass. Seeding will be conducted in November/December 2009, followed by plant

installation on 6 acres in July/August 2009. A long period of herbicide treatment prior to seeding the site is anticipated to reduce the post-construction herbicide needs on the site. Installation of longleaf pine will be conducted after success criteria are achieved.

Post-Restoration Maintenance

Plateau, a grass-specific American Cyanamid BASF product that contains the active ingredient Imazapic, will be utilized at the rate of 10-12 ounces per acre for bahia maintenance treatments on all five sites. This product was developed for use on tall-grass prairie restoration sites and it selectively controls for weedy species, leaving most of the native species undamaged (Kurtz 2001). Several surfactants may be utilized with this product including Sunwest, Silnet, Induce, and Dynamic. Both aerial applications with a helicopter or terrestrial applications with a Terrigator (liquid fertilizer spreader), backpack sprayers and ATV's may be utilized, depending on site conditions, selected herbicide, time of year, and treatment objectives. Plateau will be applied only in Spring or Fall, but not during the summer months. Spot applications of glyphosate herbicides such as Roundup or AquaStar may be used to ensure that label rates (12 ounces per acre per year) for Plateau are not surpassed if additional treatments are still required.

Mowing may also be used to control some weedy species that may be shielding the bahia grass from the herbicide or preventing establishment of seeded species. Since several of the undesirable exotic species seed over a wide temporal period, manual removal of individual plants and seed heads may be required. Optimally mowing should be conducted before seeds from targeted species are formed.

Seed Donor Site – Site Preparation and Seed Collection

Six seed donor sites are proposed to be utilized for seed collection. Five of the proposed seed donor sites are located on the Starkey Wilderness Park in Pasco County (Figure 11). Approximately 1,200 acres of pine flatwoods are suitable and available for harvesting on this property. Starkey is about 10 miles west of the Conner Preserve, and travel distance between the two properties is approximately 18 miles. The pine flatwoods that characterize the donor sites have been managed with growing season fire at 3-4 year intervals for approximately 30 years. The soils characterizing these flatwoods include Pomona, Myakka, Immokalee, Smyrna, and Candler fine sands (National Cooperative Soil Survey 1982). Predominant species on these seed donor sites include wiregrass (*Aristida beyrichiana*), bottlebrush three-awn (*Aristida spiciformis*), toothachegrass (*Ctenium aromaticum*), panic grasses (*Dicanthelium* spp.), splitbeard bluestem (*Andropogon ternarius*), broomsedge (*Andropogon virginicus*), roserush (*Lygodesmia aphylla*), bog button (*Lachnocaulon anceps*), narrow-leaved sabatia (*Sabatia brevifolia*), blackroot (*Pterocaulon pycnostachyum*), false hoarhound (*Eupatorium rotundifolium*), saw palmetto (*Serenoa minor*), gallberry (*Ilex glabra*), sand live oak (*Quercus geminata*), and longleaf pine (*Pinus palustris*).



Figure 11. Starkey Wilderness Park. Five seed donor sites are available.



JB Starkey Wilderness Park seed donor site.



Figure 12. Green Swamp West seed donor site.

The sixth donor site is located in the Green Swamp West Wildlife Management Area, also in Pasco County (Figure 12). There are approximately 900 – 1,100 acres available for harvesting on this property, although the majority is sandhill vegetation. Green Swamp West is located approximately 22 miles to the east of the Conner Preserve. The travel distance between this seed donor site and the Conner Preserve is about 35 miles. The dominant soils include Tavares, Millhopper and Astatula fine sands (National Cooperative Soil Survey 1982).



Green Swamp West seed donor site.

All of the seed donor sites will be matched to the appropriate restoration site based on vegetation, soil type and elevation characteristics. See Appendix C for a detailed discussion of proposed donor site preparation and harvesting techniques.

Proposed Upland Enhancement

Upland enhancement is proposed on 1,046 acres of upland communities that were not converted to pasture. The primary targets of enhancement will be pine flatwoods and sandhill. Generally, enhancement actions will consist of re-introduction of natural fire and disturbance regimes, and long-term control and/or eradication of invasive exotic species.

Sandhill – Approximately 120 acres of sandhill will be enhanced. The longleaf pine/turkey-oak ecosystem located primarily on one centrally located ridge on the property has suffered from fire suppression, introduction of exotics, and logging. Longleaf pines occur at reduced densities and turkey oaks have formed thickets and hammocks. The encroachment of bahia grass and hardwoods have resulted in a greatly diminished groundcover. Enhancement of the sandhill community will consist of longleaf pine planting, mechanical reduction (hydroaxing) of turkey oak thickets, the manual removal of large mature turkey oaks, and prescribed fire application. Sandhill sites will be burned on a 3 to 5 year rotation. In addition, some sites will be hydro-axed and then burned. There will also be hand removal of some native trees that have become problematic due to lack of fire or reduced fire intensity, such as persimmon, laurel oak, and wax myrtle. Long-term fire management will be perpetuated utilizing funds from the Water Management Lands Trust Fund.

Flatwoods – Several hundred acres of flatwoods and scrubby flatwoods will be enhanced by re-introducing natural fire cycles, including fire seasonality and fire return intervals, to the extent practicable. A combination of fire exclusion and long-term winter burning has facilitated the development of a hardwood canopy, resulting in the suppression of the rich and diverse understory that characterizes these two communities in their natural state. Additionally, the introduction of bahia grass has reduced the structural and compositional diversity of the project site, and also greatly reduced fire intensities. Upland enhancement of flatwoods will include the application of at least 2 growing season fire cycles at 3-5 year intervals, treatment of any Category 1 and/or Category 2 exotics, and potentially mechanical work or manual labor to reduce hardwoods. Long-term fire management will be perpetuated utilizing funds from the Water Management Lands Trust Fund.

Proposed Wetland Enhancement

Wetland enhancement is proposed to include the 1,630 acres of wetlands existing within the Conner Preserve. Generally, enhancement actions will consist of control of invasive exotic species in the wetlands and enhancement and restoration of the upland buffers surrounding the wetlands. The species targeted initially for eradication is Chinese tallow. It is typically treated with Garlon – foliar and basal treatments of Garlon 4 are effective on saplings and seedlings, and stem injections of Garlon 3A are often used on large trees.

Monitoring

Permanent photo plot locations have been established on all restoration and enhancement sites, and a map showing the location of all photo plots and the baseline photographs are provided in Appendix D. Photos will be re-taken annually, and filed with monitoring data. Quantitative monitoring will be conducted on all upland restoration sites in accordance with standard procedures for such. A simple random stratified sampling design will be utilized identify and measure cover of all species encountered within randomly established quadrats. The site will be stratified by elevation, with higher elevations assigned to sandhill community and lower elevations to the flatwoods community. Cover for each species will be estimated utilizing 2m x 2m quadrats; the number of sampling quadrats required will be determined using Stein's two-stage sampling. Coordinates for quadrat placement will be selected from a random

number generation table generated in Microsoft Excel Analysis Tool Pak or a similar software package using the uniform distribution format. Using ArcMap 8.3, a digital infrared photograph of the site will be divided into 1 meter interval grids, the set of random numbers inserted into the grid system, and then a shape file will be created and downloaded as a background file into a Trimble GeoExplorer 3 GPS unit with real time differential correction and submeter accuracy. Using the navigate feature, each quadrat will be located and permanently marked with 1 6-foot rebar at the southeast corner, and 3 6-inch survey spikes on the subsequent corners to facilitate permanent long-term monitoring. Both the x- and y-axis will be offset 3-meters inward from the perimeter fire lanes in order to minimize edge effects that may result in sampling error (for example, deposition of nuisance and exotic seeds by vehicles treads; physical disturbance of soils adjacent to road). A species inventory on the site, with vegetation nomenclature following Wunderlin (1982), will be completed; each species will then be assigned to one of three groups – desirable native, nuisance native, and exotic. Additionally, a coefficient of conservatism between 1-10 will be assigned to each species (0= pioneer or early successional weedy species and 10=difficult species to establish that is rare and typically only found in well-managed, relatively undisturbed system) to determine site quality relative to selected reference sites (Appendix E). A mean coefficient will be determined for the site using the following equation:

Mean C = sum of coefficients of conservatism/number of species

and then a Floristic Quality Index will be determined using the following equation:

Floristic Quality Index = Mean C x square root of number of species

Data collection and analysis will be conducted to obtain the following: complete species list, absolute and relative cover of each species, classification of each species as to native, nuisance or exotic status; and absolute and relative percent cover for each status classification. The analysis will include the combined cover central tendency (mean) and variability (standard deviation) for each cover classification (native, nuisance, exotic, bare ground & litter), and the 95% percent confidence intervals, the interquartile range and the median value for each status. The central tendency of the data, as determined by the estimated mean value, and the variability, as determined by the standard deviation, for each cover classification will be reported. The following success criteria are proposed:

1. To maintain bahiagrass cover below 20%;
2. To obtain greater than 80% cover by desirable sandhill and flatwoods species within 4 years.
3. To be able to successfully run a growing season (June-September) fire through the site within 5 years.
4. To achieve and maintain less than 2% cover of exotic and nuisance species coverage in the wetlands.

TIMELINE AND BUDGET

This project will start in FY-05 and it is anticipated all sites will achieve success criteria by 2015, which will include construction and post-construction monitoring and maintenance requirements. The conceptual plan described above may be modified as necessary based on unanticipated site conditions or alterations, revisions to currently accepted techniques, results of ongoing projects, including successes and failures, and new findings in the scientific literature. The anticipated timeline and budget for the project is provided in this section.

Timeline

Project construction is scheduled to start in FY2005 and continue until completion in FY2012. Success criteria are not expected to be achieved for all sites until FY2015. Table 1 provides the general schedule, with specific task completion dates and a timeline provided in Appendix F.

Table 1. Projected Schedule.

Restoration Site	Year	Seed (acres)	Seed Donor Site	Plant Installation (acres)	Total Acres to be Restored
Site 1-Phase 1	2005	57	Starkey	0	57
Site 1- Phase 2	2006	60	Starkey	5	65
Site 1- Phase 3	2007	54	Starkey	10	64
Site 2	2008	50	Starkey	8 (3-acres in seeded matrix)	55
Site 3	2006	7	Green Swamp West	12	19
Site 4	2007	16	Green Swamp West	6	22
Site 5	2009	16	Starkey	6	22
Total Acres Proposed for Restoration					304

Budget

The estimated cost to complete the project as described is \$1,701,887 (Table 3). Generally, this cost includes, for each restoration site, 4-6 pre-restoration herbicide treatments, 4-5 post-restoration herbicide treatments (2 aerial broadcast events and 2-3 spot treatments with backpack sprayers), 4 prescribed fires, 2 pre-restoration disking events, 4 post-restoration mowing events in selected areas, re-vegetation (seeding and planting events, including final reforestation with longleaf pine seedlings), soil and seed viability testing lab fees, and monitoring. It also includes, for the upland enhancement areas, hydroax treatments on 250 acres and 4 prescribed fires. Additionally, costs to prepare seed donor sites for harvesting have been added into the budget. Some site preparation is anticipated, particularly on the Green Swamp West site, but it is difficult to propose degree of preparation that may be required. It also includes treatment of exotic vegetation (excluding treatment of pasture grasses) such as tropical soda apple and Chinese tallow for a period of 15 years.

However, this budget is general, and the tasks itemized are not uniformly applied to each site. Sites scheduled to be restored early in the cycle (2005-2006) may not receive the full complement of herbicide and disking treatments as sites scheduled for subsequent years. Additionally, the current restoration schedule provides the minimum treatments necessary on all sites, but the budget provides for contingencies. These contingencies include unscheduled pre- and post-construction herbicide treatments which are sure to be required, but for which scheduling is difficult to predict. At least one disking treatment will be required on all sites prior to seeding, but two treatments are proposed on most of the sites. On Sites 3, 4, and 5, proposed seeding methods may require shallow harrowing immediately prior to seeding; these sites will be seeded using a Grasslander seeder instead of the modified seed sprigger proposed for use on Sites 1 and 2. However, recent research conducted in the Midwest suggest that it may be beneficial to let well-prepared sites lie fallow the summer prior to seeding, so the second disking treatment currently proposed on some sites may be eliminated. Also, prescribed fire application may be conducted whenever possible in order to reduce organic debris, volatilize excess nutrients, and expose bare mineral soil. Fuel load build-up may vary depending on soil type, elevation, nutrient levels, rainfall, seedbank deposits, prevailing winds, and prior land use activities, thereby affecting how many fire cycles may be feasible. This budget reflects the amount of funding necessary to ensure successful completion of all components of the project, including the restoration of altered uplands, and the enhancement of both degraded uplands and wetlands.

Table 3. Projected Project Costs.

Management Activity	Unit	Cost per Unit	# of Units	Total Cost
Prescribed fire on Restoration Areas	Acre	\$15	1,216	\$18,240
Plateau herbicide applications	Acre	\$105	2,432	\$255,360
Roundup/Aqua Star herbicide applications	Acre	\$95	1,216	\$115,520
Disking	Acre	\$100	608	\$60,800
Seeding (Harvest, transport, & broadcasting)	Acre	\$1,400	304	\$425,600
Groundcover plants	Acre	\$7,000	49	\$343,000
Longleaf trees	Acre	\$333	304	\$101,232
Mechanical tree installation	Acre	\$75	304	\$22,800
Mowing (Maintenance)	Acre	\$25	200	\$5,000
Mowing (Seed donor site preparation)	Acre	\$25	600	\$15,000
Exotic plant treatments	Year	\$5,000	15	\$75,000
Monitoring	Event	\$4,620	30	\$138,600
Soil pH testing	Sample	\$5	12	\$60
Seed viability testing	Sample	\$20	20	\$400
Hydroax (Enhancement)	Acre	\$125	250	\$31,250
Hydroax (Seed donor site preparation)	Acre	\$125	100	\$12,500
Prescribed Fire (Enhancement)	Acre	\$15	5,435	\$81,525
TOTAL				\$1,701,887

Literature Referenced

- Biological Research Associates. 2004. Connerton Environmental Management Plan. Prepared for Connerton LLC, Terrabrook. 72 pp.
- Bissett, Nancy J. 1998. Mechanical, direct-seeding of wiregrass and associated species (Florida) In Restoration & Management Notes 16(1): 98-99.
- Cox, James, Randy Kautz, Maureen MacLaughlin, and Terry Gilbert. 1994. Closing the Gaps in Florida's Wildlife Habitat Conservation System: Recommendations to meet minimum conservation goals for declining wildlife species and rare plant and animal communities. Florida Game and Freshwater Fish Commission, Office of Environmental Services. 239 pp.
- Denton, Shirley. BRA. Pers. comm..
- Egan, Dave and Evelyn A. Howell (Eds). 2001. The historical ecology handbook: a restorationist's guide to reference ecosystems. Society for Ecological Restoration. Island Press. 457 pp.
- Fitzpatrick, J. W., G.E. Woolfenden, and M.T. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub-jay (*Aphelocoma coerulescens coerulescens*). Nongame Wildlife Program Technical Report No. 8. Office of Environmental Services.
- Florida Exotic Pest Plant Council. 2003 Invasive Plant List. World-wide-web site <http://www.fleppc.org/Plantlist/03list.htm>. Accessed 07-29-2004.
- Florida Game and Freshwater Fish Commission. 1991. Florida Atlas of Breeding Sites for Herons and their Allies: Update 1986-1989. Nongame Wildlife Program. Technical Report #10. September 1991. 147 pp.
- Florida Natural Areas Inventory. 1997. Fire management in Florida workshop. Archbold Biological Station.
- Glattig Jackson. 2002. Pasco County Assessment of Measures to Protect Wildlife Habitat in Pasco County. Submitted to Pasco County.
- Gordon, Doria. 1997. Ecological Effects of Invasive Plant Species in Florida: a review of the literature. Florida Native Plant Society Annual Conference.
- Kurtz, Carl. 2001. A practical guide to prairie reconstruction. University of Iowa Press. 57 pp.
- Langeland, K.A. and K. Craddock Burks (Eds.). 1998. Identification and biology of non-native plants in Florida's natural areas. University of Florida. 165 pp.
- Myers, Ronald L. 1986. Scrub and high pine. Pages 150-193 *in* Ronald L. Myers and John J. Ewel (eds.). Ecosystems of Florida. University of Central Florida Press, Orlando.
- Myers, Ronald L. and John J. Ewell. (Eds.). 1990. Ecosystems of Florida. University of Central Florida Press. 765 pp.
- National Cooperative Soil Survey. 1982. Soil Survey of PascoCounty, Florida. United States Department of Agriculture Soil Conservation Service and University of Florida Institute of Food and Agricultural Services. 231 pp.

- Norby, Monica Manton. Weed-beating herbicide treatment bolsters prairies planting success. world-wide-web site <http://ard.unl.edu/rn/0998/flowers.html>. Accessed 06-14-2001.
- Packard, Stephen and Cornelia F. Mutel (Eds.). 1997. The tallgrass prairie restoration handbook for prairies, savannas, and woodlands. Society for Ecological Restoration. 463 pp.
- Payne, Neil F. and Fred C. Bryant. Techniques for wildlife habitat management of uplands. Biological Resource Management Series. McGraw-Hill, Inc. 840 pp.
- Payne, Neil F. 1992. Techniques for wildlife habitat management of wetlands. McGraw-Hill Biological Resource Management Series. 549 pp.
- Pfaff, Sharon and Mary Ann Gonter. 1996. Florida native plant collection, production and direct seeding techniques: interim report. Prepared by U.S. Department of Agriculture – Natural Resources Conservation Service for Florida Institute of Phosphate Research. 61 pp.
- Robbins, E. Louise and Ronald L. Myers. 1992. Seasonal effects of prescribed burning in Florida: a review. Tall Timbers Research, Inc. Miscellaneous Publication No. 8. 93 pp.
- Simberloff, Daniel, Don C. Schnitz, and Tom C. Brown (Eds.). Strangers in paradise: impact and management of non-indigenous species in Florida.
- Southwest Florida Water Management District. 1998. Pasco One Resource Evaluation. 37 pp.
- Uridel, Keith Walker. 1994. Restoration of native herbs in abandoned *Paspalum notatum* (bahiagrass) pastures. University of Florida. M.S. Thesis. 61 pp.
- US Forest Service. 1978. Mobley, Hugh E., Robert S. Jackson, William E. Balmer, Wayne E. Ruziska and Walter A. Hough. A guide for prescribed fire in southern forests. 40 pp.
- Williams, E. Darrell. Improving upland native plant re-vegetation potential. USDA – Soil Conservation Service. Unpaginated.
- Wood, D. A. 1996. Florida's endangered species, threatened species and species of special concern: Official lists. 29 April 1996. Florida Game and Fresh Water Fish Commission., Tallahassee, Florida. 14 pp.
- Young, James A. and Cheryl G. Young. 1986. Collecting, processing, and germinating seeds of wildland plants. Timber Press, Inc. Portland, Oregon. 236 pp.

Appendix A – Wildlife Observations and Protected Species Checklist

Table A. Wildlife Species Documented Occurrence List.

Cottonmouth Moccasin (*Agkistodon piscivorus*)

American Alligator (*Alligator mississippiensis*)

Green Anole (*Anolis carolinensis*)

Six-lined Racerunner (*Cnemidophorus sexlineatus*)

Southern Black Racer (*Coluber constrictor priapus*)

Eastern Diamondback Rattlesnake (*Crotalus adamanteus*)

Southern Ringneck Snake (*Diadophis punctatus punctatus*)

Southeastern Five-lined Skink (*Eumeces inexpectatus*)

Gopher Tortoise (*Gopherus polyphemus*)

Eastern Mud Turtle (*Kinosternon subrubrum*)

Brown water snake (*Nerodia taxispilota*)

River cooter (*Psuedemys floridana*)

Eastern fence lizard (*Sceloporus undulatus*)

Ground Skink (*Scincella lateralis*)

Dusky Pygmy Rattlesnake (*Sistrurus miliarius*)

Stinkpot Turtle (*Sternotherus odoratus*)

Florida Box Turtle (*Terrepenne carolina bauri*)

Southern Cricket Frog (*Acris gryllus gryllus*)

Southern Toad (*Bufo terrestris*)

Greenhouse Frog (*Eleuthrodactylus planirostis*)

Eastern Narrowmouth Toad (*Gastrophyne carolinensis*)

Green Tree Frog (*Hyla cinerea*)

Squirrel Treefrog (*Hyla squirella*)

Southern Chorus Frog (*Pseudacris nigrita*)

Gopher Frog (*Rana aerolata*)

Pig Frog (*Rana grylio*)

Southern Leopard Frog (*Rana sphenoccephala*)

Cooper's hawk (*Accipiter cooperii*)

Red-winged blackbird (*Agelaius phoeniceus*)

Roseate spoonbill (*Ajaia ajaja*)

Anhinga (*Anhinga anhinga*)

Florida scrub-jay (*Aphelocoma coerulescens*)

Great blue heron (*Ardea herodias*)

Red-tailed hawk (*Buteo jamaicensis*)

Red-shouldered hawk (*Buteo lineatus*)

Cattle egret (*Bubulcus ibis*)

Turkey vulture (*Cathartes aura*)

Great egret (*Casmerodius albus*)

Killdeer (*Charadrius vociferus*)

Common nighthawk (*Chordeiles minor*)

Northern harrier (*Circus cyaneus*)

Northern bobwhite (*Colinus virginianus*)

Common ground-dove (*Columbina passerina*)

Black vulture (*Coragyps atratus*)

Little blue heron (*Egretta caerulea*)

Snowy egret (*Egretta thula*)

Tri-colored heron (*Egretta tricolor*)

American swallow-tailed kite (*Elanoides forficatus*)

White ibis (*Eudocimus albus*)

American kestrel (*Falco sparverius*)

Southeastern American kestrel (*Falco sparverius paulus*)

Greater Sandhill crane (*Grus canadensis*)

Florida sandhill crane (*Grus canadensis pratensis*)

Southern bald eagle (*Haliaeetus leucocephalus leucocephalus*)

Wild turkey (*Meleagris gallopavo*)

Woodstork (*Mycteria Americana*)

Osprey (*Pandion haliaetus*)

Rufous-sided towhee (*Pipilo erythrophthalmus*)

Boat-tailed grackle (*Quiscalus major*)

Field sparrow (*Spizella pusilla*)

Barred owl (*Strix varia*)

Eastern meadowlark (*Sturnella magna*)

Greater yellowlegs (*Tringa melanoleuca*)

Mourning dove (*Zenaida macroura*)

Coyote (*Canis latrans*)

Nine-banded armadillo (*Dasybus novemcinctus*)

Virginia opossum (*Didelphis marsupialis*)

Southeastern Pocket Gopher (*Geomys pinetis*)

Southern flying squirrel (*Glaucomys volans*)

Whitetail deer (*Odocoileus virginianus*)

Raccoon (*Procyon lotor*)

Gray squirrel (*Sciurus caroliniana*)

Sherman's fox squirrel (*Sciurus niger*)

Hispid cotton rat (*Sigmodon hispidus*)

Feral hog (*Sus scrofa*)

Eastern cottontail (*Sylvilagus floridanus*)

Gray fox (*Urocyon cinereoargenteus*)

Table B. Conner Preserve FDOT Mitigation Project Listed Wildlife Species Occurrence Checklist

COMMON NAME	SCIENTIFIC NAME	STATUS*		OCCURRENCE			
		GFC	USFWS	Observed	Probable	Possible	Unusual
BIRDS							
S.E. American Kestrel	<i>Falco sparverius paulus</i>	T		X			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T	X			
Burrowing Owl	<i>Speotyto cunicularia</i>	SSC				X	
Florida Sandhill Crane	<i>Grus canadensis pratensis</i>	T		X			
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	T	T	X			
Limpkin	<i>Aramus guarauna</i>	SSC			X		
Little Blue Heron	<i>Egretta caerulea</i>	SSC		X			
Red-Cockaded Woodpecker	<i>Picoides borealis</i>	T	E				X
Snowy Egret	<i>Egretta thula</i>	SSC			X		
Tricolored Heron	<i>Egretta tricolor</i>	SSC		X			
White Ibis	<i>Eudocimus albus</i>	SSC		X			
Wood Stork	<i>Mycteria americana</i>	E	E	X			
Roseate Spoonbill	<i>Ajaia ajaja</i>	SSC					
REPTILES/AMPHIBIANS							
American Alligator	<i>Alligator mississippiensis</i>	SSC	T (S/A)		X		
Eastern Indigo Snake	<i>Drymarchon corais couperi</i>	T	T		X		
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>	SSC			X		
Gopher Frog	<i>Rana capito</i>	SSC		X			
Gopher Tortoise	<i>Gopherus polyphemus</i>	SSC		X			
Short-tailed Snake	<i>Stilosoma extenuatum</i>	T				X	
MAMMALS							
Florida Black Bear	<i>Ursus americanus floridanus</i>	T					X
Florida Mouse	<i>Podomys floridanus</i>	SSC				X	
Sherman's Fox Squirrel	<i>Sciurus niger shermani</i>	SSC	X				
Round-tailed muskrat	<i>Neofiber alleni</i>			X			

USFWS = United States Fish and Wildlife Service; GFC = Florida Fish and Wildlife Conservation Commission; E = Endangered; T = Threatened; T(S/A) = Threatened/Similarity if Appearance; SSC = Species of Special Concern Based on Florida's Endangered Species, Threatened Species and Species of Special Concern - Official Lists', Florida Game and Fresh Water Fish Commission (April 1997).

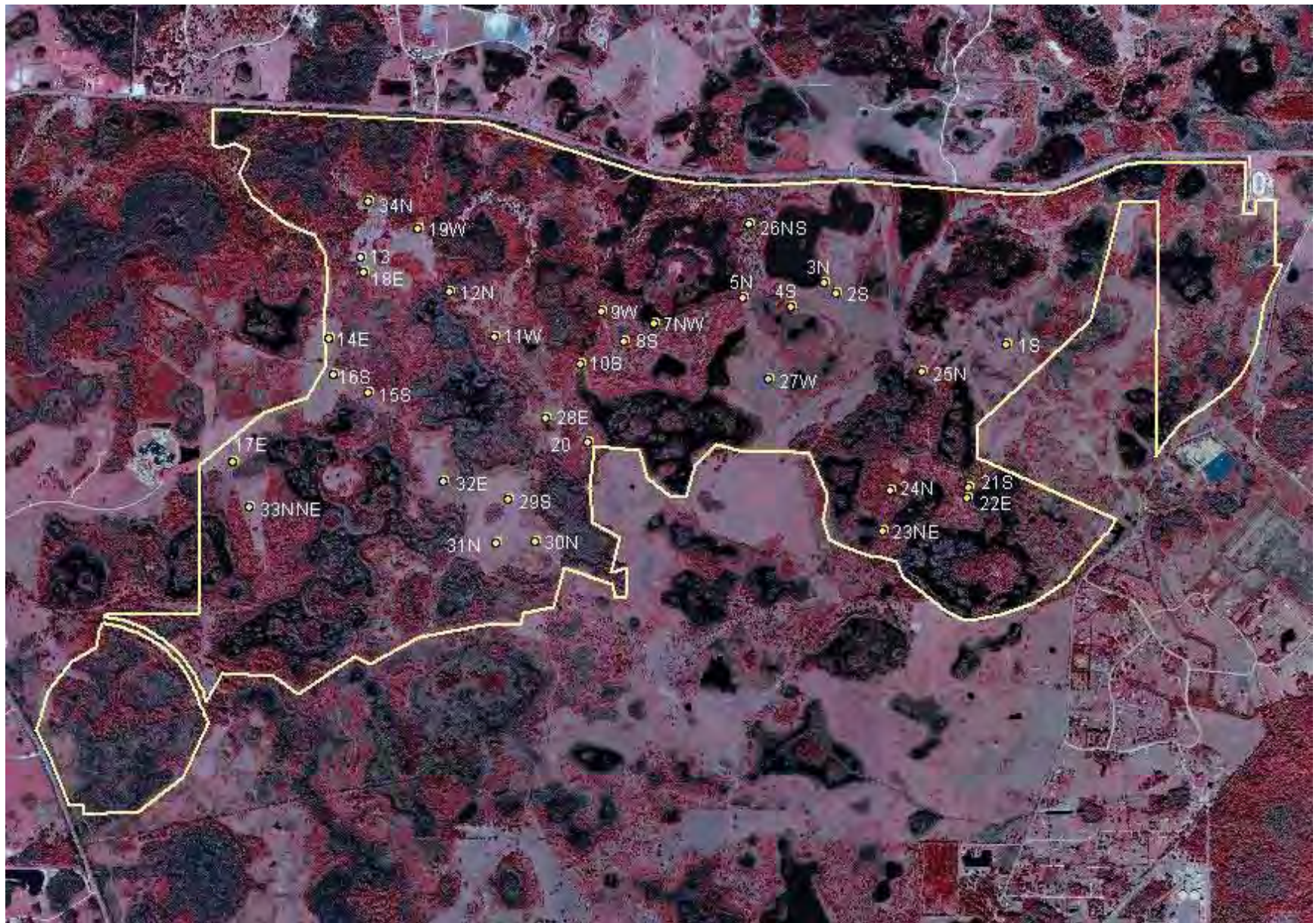
APPENDIX B – PROPOSED RESTORATION TECHNIQUES

Proposed Restoration Techniques – The restoration sites must be prepared in advance of seeding to ensure exotic vegetation (pasture grasses) are eradicated and soil is aerated. Site preparation may begin 1-2 years prior to re-vegetating in order to ensure a weed-free substrate. Prior to any treatments, the soil pH will be tested to ensure pH is between the optimal levels of about 6 – 7; a slightly acidic pH value is preferred over an alkaline one. A late winter burn will be conducted in late January to early March to reduce biomass of bahia grass and other exotic forage species. The sites will then be treated with a 2-5% percent solution of RoundupPro or AquaStar as soon as above-ground biomass of bahiagrass is sufficient. Application methods will depend on size of site, the existing vegetation on the site, and the presence of wetlands interspersed within the site or adjacent to it. Another burn may be conducted 2-4 weeks following herbicide treatment depending on fuel continuity and loads. A second herbicide application will be conducted in early summer. The sites may also be disked to break up bahia rhizomes and also to expose seed remaining in soil bank. Following disking, the site may be rolled to put any remaining weed seeds in contact with the soil, thus promoting their germination. Finally, at least one additional application of RoundupPro or AquaStar, at a rate of 2 - 5%, will be conducted in September/early October. This sequence can be repeated for a second year if weed species are still present on the site. The site may be harrowed with a disk or a chain drag just prior to seeding if deemed necessary and also based on results of similar treatments at GSW8 restoration site. Species that will be problematic if still present on the site (pre- or post-seeding) include the following: bahia grass (*Paspalum notatum*), Bermudagrass (*Cynodon dactylon*), natal grass (*Rhynchelytrum repens*), purple nutsedge (*Cyperus rotundus*), cogongrass (*Imperata cylindrica*), tropical soda apple (*Solanum viarum*), smutgrass (*Sporobolus indicus*). Species that initially may appear to be problematic will probably not be after 2-3 years – these may include: dog fennel (*Eupatorium* spp.), common ragweed (*Ambrosia artemisiifolia*), Brazil pusley (*Richardia brasiliensis*), Florida pusley (*Richardia scabra*), hairy indigo (*Indigofera hirsuta*). Seeds will be transported to the site from the Starkey and/or Green Swamp West seed donor site, and either distributed immediately or allowed to dry for 24-hours. Modified sod spriggers and/or the Grasslander seeder will be utilized to broadcast the seed at a rate of 40-60 seeds per square foot on to the prepared site. Both of these seed dispensers are designed to scarify the soil slightly, dispense the seed, and then roll the seed into the soil. After restoration is complete, continued maintenance to control undesirable vegetation will be conducted utilizing a combination of herbicide treatments, mowing, and prescribed fire. In addition to direct seeding, plant installation will also be utilized, either alone or in combination with seeding, to re-vegetate the restoration sites. The primary focus will be to restore fine flashy fire fuels to the site to facilitate required intensity and seasonality of burns, and also to provide competition against weedy species that might otherwise invade. Wiregrass plugs will be ordered in advance from the Florida Division of Forestry. Appropriate grasses, sedges, and wildflowers may also be planted, depending on availability and site conditions. Plants will be contract-grown in advance and planted during the rainy season. Additionally, seeds of species not represented in the seed mix may be hand-collected and added.

APPENDIX C – SEED DONOR SITE PREPARATION TECHNIQUES

Proposed Donor Site Preparation and Harvesting Techniques – Native seed will be collected from intact pine flatwoods and longleaf pine-turkey oak sandhills. The optimal seed donor site has an abundance of grasses and wildflowers, with low to moderate density of large pines and oaks. A combination of mowing and/or hydroaxing overgrown turkey oaks, scrub oaks, and other shrubs may be utilized to prepare the seed donor site prior to prescribed fire application. To stimulate the flowering and production of maximum viable seeds for most of the native grasses and asters, a late spring to early summer burn will be conducted, as conditions allow (mid-April through mid-July). The optimal seed collection period is from late November through late December, and the precise window will be determined based on presence of ripe seed on wiregrass stems. This is determined by bending the floret – if floret snaps it is full, if it does not, the floret is empty (Bissett, 1998). Other native species have a higher seed viability and germination rate, exhibit after-ripening following cutting, and have a long period of seeding, so the collection window is not a critical. During the time period specified above, the abundance and overall viability of native seed in general is highest. Species collected via mechanical equipment will include wiregrass (*Aristida beyrichiana*), bluestem sedges (*Andropogon* spp.), creeping bluestem (*Schizachyrium stoloniferum*), dalea (*Dalea* spp.) deer's tongue (*Carphephorus* spp.), blazing star (*Liatris* spp.), and other members of the Asteraceae. Two methods will be utilized for large-scale collection of seed – the flail-vac and the green silage cutter. The District owns a 12-foot wide Woodward flail-vac seed stripper that attaches to a tractor's front-end loader. A hydraulically powered brush sweeps the ripe seed off of the vegetation, and then deposits it in a bin. The flail-vac is more flexible and can operate in somewhat rougher conditions than the green silage cutter. It will be utilized to collect seed for the smaller sites proposed for restoration (Sites 3, 4, and 5). The green silage cutter can collect more seed than the flail-vac. This machine cuts the seed stalk, so both ripe and unripe seed is collected, and the cut material is then blown into a large trailer that is pulled behind the tractor. The green silage cutter requires a wide turning radius and wide-open areas with few trees. The flail-vac will be utilized to collect from the smaller and more heavily forested sites, and the green silage cutter will be utilized in larger, lightly forested areas. Hand-collection of seeds may be conducted to supplement the seed mix; targeted species may include saw palmetto (*Serenoa repens*), scrub oaks (*Quercus* spp.), pinewoods dropseed (*Sporobolus junceus*), beaked panicum (*Panicum anceps*), lop-sided Indiangrass (*Sorghastrum secundum*), gopher apple (*Licania michauxii*), winged sumac (*Rhus copallinum*), blue curls (*Trichostema dichotomum*), green eyes (*Berlandiera subacaulis*), beard tongue (*Penstemon multiflorus*), butterfly pea (*Centrosema virginianum*), dollarweed (*Rhynchosia reniformis*), sandspur (*Krameria lanceolata*), , pawpaw (*Asimina reticulata*), gallberry (*Ilex glabra*), tarflower (*Befaria racemosa*), and beautyberry (*Callicarpa americana*). Since the seed donor site is diverse and an entire suite of species will be represented in the seed mix, seeds will be collected to provide a ratio of 2-5 acres collected to 1 acre seeded, depending on the collection method. When utilizing the green silage cutter, seed will be collected at rate of approximately 2:1 of donor site to recipient site. When collecting with a flail-vac, the rate of seed collected will be increased to approximately 3-5 acres for every acre to be seeded. Testing of seed viability is not proposed at this time, since multiple species will be collected and distributed. However, if testing is deemed necessary, seeds will be sent to Oregon State University Agricultural Lab or Sterling Seed Testing in Oklahoma. Seeds will be transported from the seed donor sites at Starkey and Green Swamp West directly to the restoration sites via large dump trucks. They will then be dumped in regularly spaced mounds on the restoration site, spread with a front-end loader, and allowed to dry for 24-hours prior to being distributed on the site.

APPENDIX D – – REPRESENTATIVE PHOTOGRAPHS





Photograph 1



Photograph 2



Photograph 3



Photograph 4



Photograph 5



Photograph 7



Photograph 8



Photograph 9



Photograph 10



Photograph 11



Photograph 12



Photograph 13



Photograph 14



Photograph 15



Photograph 16



Photograph 17



Photograph 18



Photograph 19



Photograph 20



Photograph 21



Photograph 22



Photograph 23



Photograph 24



Photograph 25



Photograph 26



Photograph 27



Photograph 28



Photograph 29



Photograph 30



Photograph 31



Photograph 32



Photograph 33

APPENDIX E – FLORISTIC QUALITY INDEX (EXAMPLE)

APPENDIX F - PROJECT CONSTRUCTION TASK SCHEDULE & TIMELINE

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Bahia Beach

Project Number: SW 78

Project Sponsors: Hillsborough County EPC, Hillsborough Conservation, SWFWMD – SWIM Section

Managers: Tom Ash, Laura Thorne, Hillsb. County EPC

Phone No: (813) 627-2600

County: Hillsborough

Location: Sec. 1, T32S, R18E

IMPACT INFORMATION (Proposed Construction Date)

(1) FM 4061511: <u>Veteran's Expressway, Memorial to Gunn (2010)</u>	ERP #: _____	COE #: _____
(2) FM: <u>4143481- Tampa Airport, 36R Runway Protection Zone</u>	ERP #: <u>49008387.026</u>	COE #: <u>SAJ-2001-12399</u>
(3) FM: <u>4143481- Tampa Airport, Taxiway "V & W"</u>	ERP #: <u>49008387.028</u>	COE #: <u>Pending</u>
(4) FM: <u>4143481- Tampa Airport, Drew Park (2008-2025)</u>	ERP #: _____	COE #: _____
(5) FM: <u>4143481- Tampa Airport, Runway 17-35 System (2016)</u>	ERP #: _____	COE #: _____
(6) FM: <u>4143481- Tampa Airport, Rental Car Area (Undetermined)</u>	ERP #: _____	COE #: _____

Drainage Basin: Tampa Bay Water Body(s): Sweetwater Creek, Tampa Bay, Fish Creek SWIM water body? Yes

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 4061511	2.87 ac. 641
	0.20 ac. 615
	1.48 ac. 621
	<u>0.13 ac. 630</u>
TOTAL	4.68 acres
(2) 36R Runway	0.210 ac. 619
	3.710 ac. 617
	<u>4.020 ac. 640</u>
TOTAL	7.940 acres
(3) Taxiway V&W	0.038 ac. 630
	<u>0.028 ac. 617</u>
TOTAL	0.066 acres
(4) Drew Park	0.634 ac. 619
(5) Runway 17-35	0.700 ac. 651
	2.813 ac. 619
	0.325 ac. 621
	0.577 ac. 630
	<u>1.639 ac. 640</u>
TOTAL	6.054 acres
(6) Rental Car Area	0.797 ac. 610
	0.118 ac. 618
	0.607 ac. 621
	<u>2.407 ac. 640</u>
TOTAL	3.929 acres

TOTAL: 23.30 Acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation Mitigation Area: 147.4 acres

SWIM project? Aquatic Plant Control project? Exotic Plant Control Project?

Mitigation Bank? Drainage Basin: Tampa Bay Drainage Water Body(s): Tampa Bay SWIM water body?

Project Description

A. Overall project goal: The Bahia Beach tract (148 acres) was acquired in 2001 by Hillsborough County through their Environmental Lands Acquisition and Protection Program (ELAPP), one of several contiguous habitat tracts owned and managed by the County west of Ruskin (Figures A & B). The project is being co-sponsored and managed by

the Hillsborough County Conservation Section, Hillsborough County Environmental Protection Commission (EPC) and SWFWMD-SWIM Section to conduct a variety of habitat improvements including freshwater and oligohaline wetland creation within an existing upland fallow field, enhancement of forested wetland hammock habitat, and enhancement of salt-marsh/mangrove habitat (Figures C & D, site photos).

- B. Brief description of current condition:** As part of the acquisition agreement, the previous landowner removed the citrus trees from the upland area, and subsequently the fallow field (58 acres) has generated bahia grass, guinea grass, torpedo grass, dog fennel, and extensive Brazilian pepper. The field is bordered to the west by two large parallel upland-cut drainage ditches dredged to convey contributing storm and surface water when the grove was present. The shear-slope ditches are tidally connected, allowing the generation of white and black mangrove species in the lower elevations and B. pepper along the slopes and top-of-bank. West of these ditches, a forested wetland of coastal hydric hammock habitat (32 acres) is dominated by an overstory of cabbage palm, live oak, laurel oaks, red juniper and slash pine. The subcanopy of the hammock includes minor to moderate coverage of Brazilian pepper, cabbage palm, salt-bush, wax myrtle, and saw palmetto. Small pockets of black needle rush, cordgrass, and sawgrass are located in the interior of the hammock. North of the field is a temperate hardwood wetland area (9 acres) with cabbage palm, slash pine, laurel oak, and ground cover of scattered palmetto, sawgrass, and swamp fern. Brazilian pepper and lead tree have invaded this area as well. A large mosaic of salt-marsh (14 acres) and mangrove habitat (35 acres) is located west of the hammock. Vegetation in the marsh portion is dominated by saltwort, glasswort, and salt-grass. The mangrove portion is dominated by white mangrove with scattered black mangrove and buttonwood. Shrub-size mangroves transition into the marsh component. This saltwater habitat has interconnecting mosquito ditches with adjacent spoil piles covered with Brazilian pepper. In part due to the altered hydrology from the ditching, the transition between the hammock and saltwater habitat has generated a dense stand of Brazilian pepper (photo). Additional site information is provided in Attachment A.
- C. Brief description of proposed work:** Piezometers were installed in the fallow field and routinely monitored from 2003-2008 to evaluate the surficial groundwater conditions. To determine wetland creation design, this information was critical to determine appropriate hydroperiods and extent of saltwater intrusion; some of which the result of the two large tidally-connected ditches. Commencing in 2005, the Mira Lago subdivision was constructed east of the Bahia Beach tract. So the construction design was delayed and piezometer monitoring extended to evaluate and incorporate habitat design revisions due to changes in the contributing ground and surface water as a result of the residential development. As a result, the fallow field will be graded to create a dominance of freshwater marshes (40 acres) transitioning to oligohaline marsh habitat (9 acres) closer to the forested wetland hammock, and buffered from Mira Lago by creating mixed forested wetland habitat (5 acres) along the eastern perimeter of the created marsh habitat (Figures C & D). Treated stormwater that currently discharges from Mira Lago and flows via the ditches to Tampa Bay will receive additional treatment, attenuation and increase groundwater recharge by the construction of the created wetlands. The hammock, salt-marsh and mangrove habitat, and temperate hardwood areas will be enhanced with the eradication of Brazilian pepper, however due to the potential of off-site drainage alterations, no construction to remove the associated mosquito ditches will be conducted in these areas. The combination of constructed and enhanced wetland habitats with different habitat features and functions will provide corridors for wildlife utilizing the ecosystems on this tract and the adjacent public lands. Additional information is provided in Attachment B.
- D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s):** Through 2010, the majority of the anticipated wetland impacts proposed for mitigation at the Bahia Beach project include

wetlands associated with long-range future expansion activities at Tampa International Airport (TIA). Due to the close proximity to Tampa Bay and high quantity of ditched wetlands, the majority of the proposed wetland impact areas at TIA are low quality systems. There will be future roadway proposals and associated wetland impacts that will be evaluated or potential mitigation at Bahia Beach. The combination of various wetland creation and enhancement activities at Bahia Beach will provide appropriate mitigation options to compensate for impacts associated with a combination of forested and non-forested freshwater and saltwater wetland impacts. With Bahia Beach construction planned for 2011, these habitat improvements will provide valuable ecological benefits years in advance of the future anticipated wetland impacts proposed for mitigation at the site.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection, the only existing or proposed mitigation bank within the Tampa Bay Drainage Basin was the Tampa Bay Mitigation Bank (TBMB). TBMB was not under construction or credits available during the period of mitigation selection for the referenced projects.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The Bahia Beach project is a SWIM-sponsored project adjacent to a SWIM water body (Tampa Bay), to be constructed on property owned and managed by the Hillsborough County Parks, Recreation & Conservation Dept.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: SWFWMD – Operations Dept. and/or a selected private contractor
Contact: Laura Thorne, Hills. Co. Env. Protection Commission Phone: (813) 272-5955
Mark Brown, SWFWMD (352) 796-7211, ext. 4488

Entity responsible for monitoring and maintenance: Minimum 5 years post-construction maintenance & monitoring under contract through SWFWMD, perpetual management conducted by Hillsborough County Conservation and/or designated contractor with financial support through the FDOT mitigation program.

Proposed timeframe for implementation: Commence: Design and Permitting 2003-2010, Construction 2011, minimum 5 years maintenance & semi-annual monitoring; perpetual maintenance and land management activities with annual monitoring to ensure successful habitat conditions are maintained and managed.

Estimated Project cost:	\$3,750,000 ;
Design & Permitting	\$150,000
Construction & Planting	\$2,600,000
Maintenance & Monitoring	\$1,200,000

Attachments

X 1. Description of existing site and proposed work. Refer to Attachment A, additional information available from the FDOT Mitigation Program Manager.

X 2. Recent aerial and site photographs. Refer to Figure B, 2007 aerial and site photos.

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A (Location Map) Figures C & D of existing and proposed design plan.

X 4. Schedule for work implementation, including any and all phases. Refer to Attachment B – Schedule.

X 5. Success criteria and associated monitoring plan. Refer to Attachment C – Maintenance & Monitoring Plan, Success Criteria.

X 6. Long term maintenance plan. Refer to Attachment C – Maintenance & Monitoring Plan, Success Criteria.

Attachment A – Existing Site & Proposed Work

The Bahia Beach tract is one of a series of public land acquisitions along Tampa Bay west of Ruskin (Figure B). The parcel was acquired in 2001 through the Hillsborough County ELAP program, with partial reimbursement by the FDEP and USFWS. Project coordination is being conducted through Hillsborough County Environmental Protection Commission, Hillsborough County Conservation Section, SWFWMD - SWIM Section, and a design consultant to prepare a plan that includes wetland habitat creation and enhancement. FDOT mitigation credit and associated funds are utilized for design, construction, planting, and maintenance & monitoring activities. The following information describes the existing site conditions and proposed habitat improvements.

Fallow Field Conversion to Wetland Creation (54 acres)

The fallow upland habitat was historically pine flatwoods converted to a citrus grove. The grove was removed by the previous landowner as part of the agreement of County acquisition. Subsequently, the former grove area naturally recruited to fallow field conditions with a variety of nuisance and exotic vegetative species. The dominant cover is provided by bahiagrass (*Paspalum notatum*), natalgrass (*Rhynchelytrum repens*), dog fennel (*Eupatorium capillifolium*), Brazilian pepper (*Schinus terebinthifolus*) recruited and generated into the area in subsequent years and provides moderate coverage.

In 2003, twelve (12) piezometers were installed in the fallow field to measure groundwater elevations and salinity; with a total of 41 sampling events between August, 2003 and June, 2008. The groundwater data was collected over the extended period to identify seasonal and annual fluctuations used to establish the hydroperiods and final grades within the wetland creation areas and the salinity data was used to determine plant species composition. Salinity levels in the piezometers along the western portion of the field range from 1-5 ppt (oligohaline), in part due to the twin parallel tidally-connected ditches along the perimeter of the coastal hydric hammock described below. It was also necessary to evaluate contributing treated stormwater and any groundwater changes as a result of the constructed Mira Lago residential development located southwest of the Bahia Beach tract (Figures B).

Hydraulic and hydrologic modeling was cross-referenced with the contributing groundwater and surface water conditions. This information resulted in the design of oligohaline marsh creation (9 acres) that will also displace the twin ditches along the hammock perimeter, and freshwater marsh creation (40 acres). The freshwater marsh has proposed grade elevations of -0.5 to 3.0 feet NAVD88; with ten separate freshwater marsh basins constructed at various elevations, thus providing a range of hydroperiods within the marsh. These areas will be primarily planted with softstem bulrush (*Schoenoplectus tabernaemontani*), arrowhead (*Sagittaria lancifolia*), pickerelweed (*Pontederia cordata*), marshhay cordgrass (*Spartina patens*), and sand cordgrass (*Spartina bakeri*). The created oligohaline marsh habitat will be graded to elevations -0.5 to 2 feet NAVD88. Plantings will primarily include needle rush (*Juncus roemerianus*), sawgrass, and marshhay cordgrass.

A benefit to the created marshes at variable grading elevations is the opportunity to establish ephemeral to obligate marsh habitats conducive to provide a range of foraging and nesting opportunities for various mammal, amphibian, fish and avian species. Also, the design has incorporated receiving some of the treated stormwater that discharges from Mira Lago that currently flows via ditches to Tampa Bay. The marsh will provide additional treatment and attenuation of contributing flow and provide the opportunity for additional groundwater recharge, further reducing some of the saltwater intrusion.

The creation of mixed forested wetland (5 acres) is proposed along the southeastern project boundary; graded to elevations of 3.0 to 4.0 feet NAVD88. This forested wetland will provide a buffer from the Mira Lago development and the constructed marsh, as well as roosting and nesting opportunities for wading birds. This forested wetland will be planted with species representative of the coastal hydric hammock located on the western side of the marsh; including cabbage palm, laurel oak, slash pine, red cedar, swamp bay, red maple and sand cordgrass. For additional buffer, 3 acres of pine flatwood habitat will be created along the southern boundary of the site adjacent to Shell Point Road. The area will be graded to elevations of 4.0 to 5.0 feet NAVD88. The pine flatwoods will act as a buffer between the created wetlands and Shell Point Road, and will be planted with cabbage palm, slash pine, and saw palmetto. Depending on the selected contractor's proposed schedule to haul excavated sand material from the site, the proposed

flatwood area may be a temporary stockpile location. If the stockpile has to remain for a period after the excavation is completed, the mound will be leveled, seeded with grass, and used as an observation platform overlooking the constructed marsh. No mitigation credits will be debited for this area until the mound is removed, final grade is achieved and proposed planting is complete.

Forested Wetland - Coastal Hydric Hammock Enhancement (32 acres)

The coastal hydric hammock is located between the fallow fields and the mosaic of mangrove and saltwater marsh. The coastal hammock has dominant canopy coverage of cabbage palm, with scattered slash pine, red cedar (*Juniperus virginiana*), and oaks (*Quercus virginiana*, *Q. laurifolia*). Within the less dense canopy areas, the B. pepper provides minor to moderate canopy and sub-canopy cover within the hammock. Other sub-canopy species include cabbage palm, salt-bush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), and saw palmetto (*Serenova repens*). Ground cover varies depending on the shade coverage, but includes sawgrass (*Caladium jamaicense*), broomsedge (*Andropogon glomeratus*), swamp fern (*Blechnum serrulatum*), fleabane (*Pluchea odorata*), and various sedges. Where the canopy has slightly opened, there are also a few pockets of sawgrass, black needle rush (*Juncus roemerianus*), and cordgrass (*Spartina patens*) within the hammock.

The boundary between the fallow field and the hammock has two large parallel, shear-sided perimeter ditches with upper slopes and adjacent spoil ridges covered with dense Brazilian pepper. Within the lower sideslopes of these steep and deep ditches, there is coverage of mangrove species (*Aviennia germinans*, *Rhizophora mangle*, *Laguncularia racemosa*). These deep ditches connect with the mosquito ditches and swales dredged through the salt-marsh and mangroves, allowing saltwater intrusion to move further inland than historic conditions. Kept in place, the deep ditches and spoil ridges substantially hinder wildlife movement from the hammock to the created marsh habitats. Enhancement objectives include backfilling the two perimeter ditches to create the oligohaline marsh transition to the hammock. In addition, the B. pepper will be eradicated and controlled via herbicide within the hammock.

Mangrove & Salt-Marsh (49 acres)

Mangrove swamp (35 acres) forms an inter-related mosaic with the salt-marsh habitat (14 acres). The mangrove habitat includes red, black and white mangrove species. The marsh habitat has saltwort (*Batis maritima*), glasswort (*Salicornia bigelovii*) and salt grass (*Distichlis spicata*). Habitat improvements will include herbicide eradication of exotic & nuisance species, which is primarily B. pepper located on the spoil mounds. Since the mosquito ditches could not be graded without the potential alteration of drainage conditions west of the tract at the Bahia Beach Marina complex, no earthwork activities will be conducted in these habitats.

Temperate Hardwoods (9 acres)

The temperate hardwood area is within the northeast corner of the tract. The minor canopy coverage is comprised of cabbage palm, slash pine, and laurel oak. Groundcover includes saw palmetto, sawgrass, and swamp fern. Exotic species coverage include B. pepper, lead tree (*Leucaena leucocephala*) and cogon grass (*Imperata cylindrica*). Improvements to this transitional wetland habitat will include the herbicide eradication and maintenance to control exotic and nuisance species.

Attachment B – Schedule

The schedule has included contracting with a consulting firm (PBS&J) to obtain additional site information and prepare the design plan (Figures C, D). Final design, permitting and contractor selection is scheduled through 2010, construction and planting during 2011; followed by minimum five years of extensive herbicide maintenance & semi-annual monitoring activities. Periodic maintenance and annual monitoring will be conducted after achieving success to ensure the desired habitat conditions will be present.

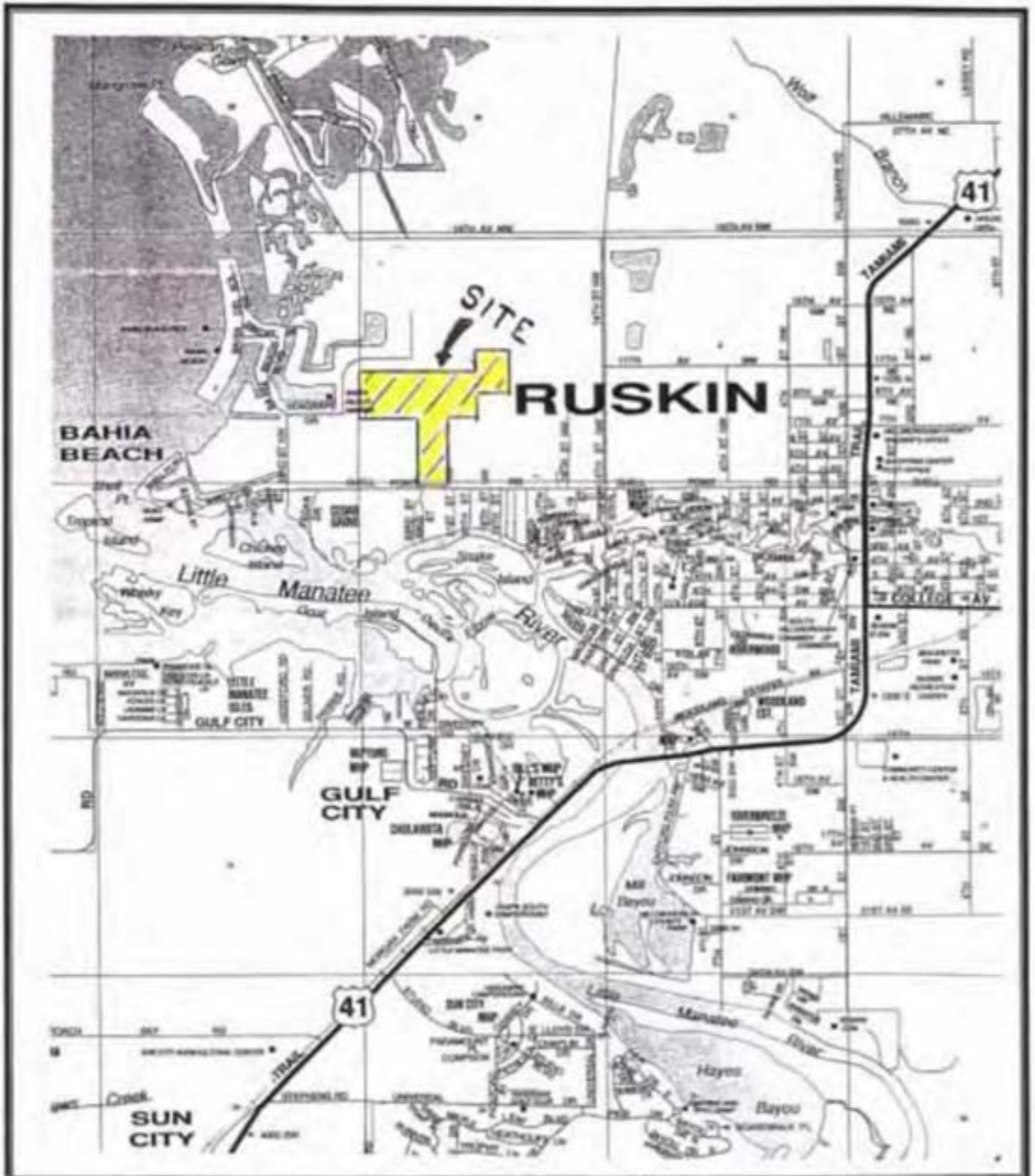
Attachment C – Maintenance & Monitoring, Success Criteria

The primary maintenance activity will include herbicide treatment of exotic and nuisance vegetation. Treatments will be conducted as necessary, anticipated more intensive applications during the first 3-5 years after planting to allow for establishment of planted vegetation and less frequent maintenance as the habitat matures. Based on the conditions of the various habitats and status of species proposed for planting, supplemental planting will be conducted where necessary to fulfill desired results of habitat conditions. After a minimum five years and the desired habitat conditions and mitigation success has been

achieved, perpetual maintenance will be conducted as part of normal land management activities by the Hillsborough County Conservation Section and/or licensed maintenance contractor. The Conservation Section employs a full-time crew that conducts herbicide eradication of exotic & nuisance species. The FDOT mitigation program will continue to provide financial support of the maintenance activities.

A minimum five years of semi-annual monitoring will be conducted by a consultant selected either as part or separate of the construction contract. Monitoring will include a comprehensive qualitative assessment of habitats, including but not limited to plant health & survivorship, recruited plant species, cumulative plant coverage, exotic & nuisance species coverage, wildlife activity, and recommended & proposed actions necessary to ensure and further enhance habitat conditions. Annual monitoring reports will be prepared to document habitat conditions evaluated during the previous year, with the first monitoring report including qualitative and photo documentation of pre-construction conditions, construction activities, and habitat conditions within the project area. The monitoring reports will document the habitat conditions, any problems and solutions, and anticipated maintenance & management activities for the following year. After success criteria is achieved, sufficient monitoring will be periodically conducted each year to evaluate the habitat conditions and presence of exotic and nuisance species to coordinate maintenance events.

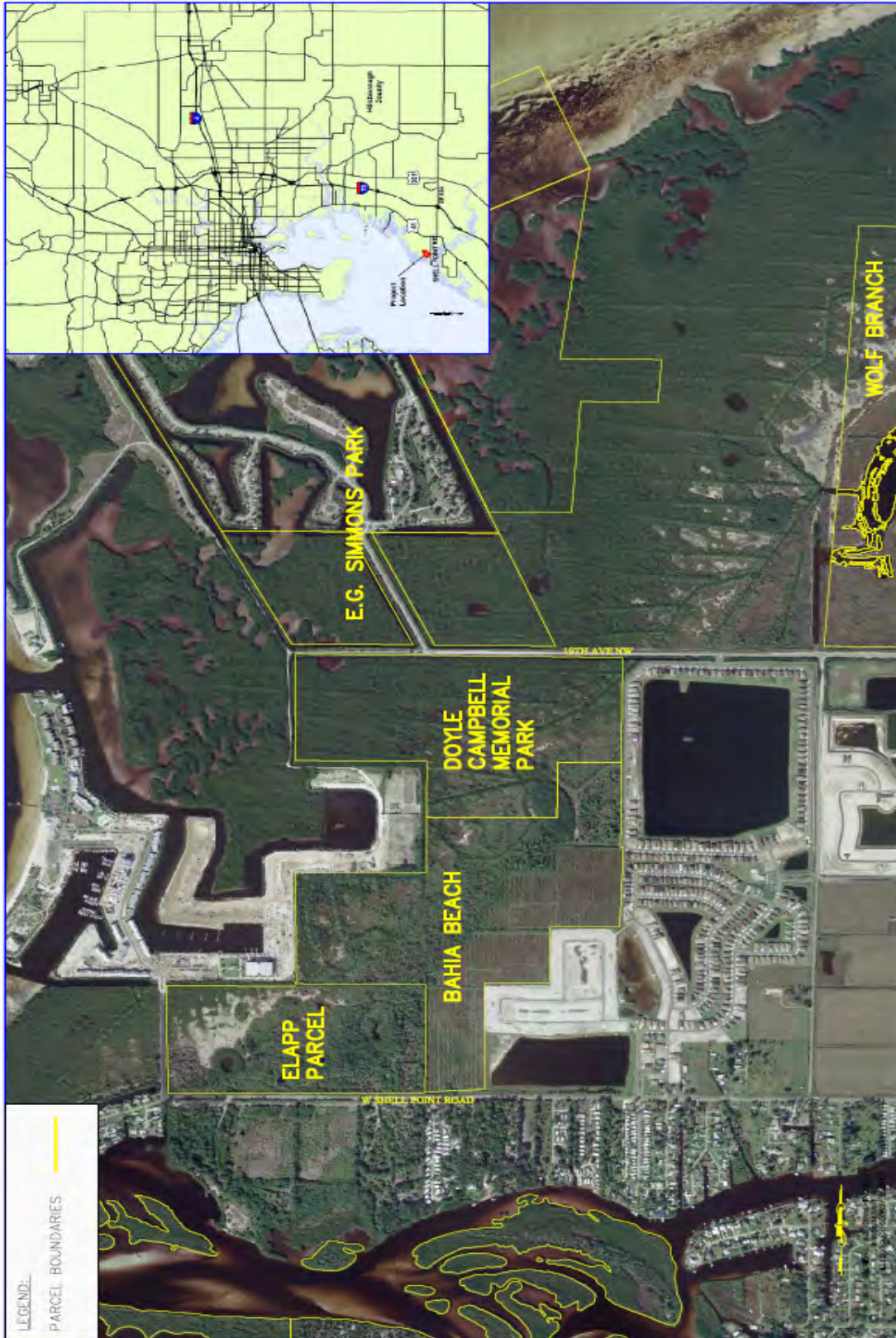
Success criteria will require a minimum 90% survivorship of planted material for a minimum one year post-installation. Any plant mortality will be replaced with appropriate species to be agreed upon between Hillsborough County and the SWFWMD. Plant coverage for the created wetlands is required to include a minimum 80% coverage of planted and recruited desirable species. Exotic and nuisance vegetation eradication will be conducted to as little coverage as possible for all the various habitat areas, with no more than 5% present to achieve success criteria.



FDOT – District 7
 MITIGATION SITE
 (Tampa Bay Drainage Basin)

BAHIA BEACH
 (SW 78)

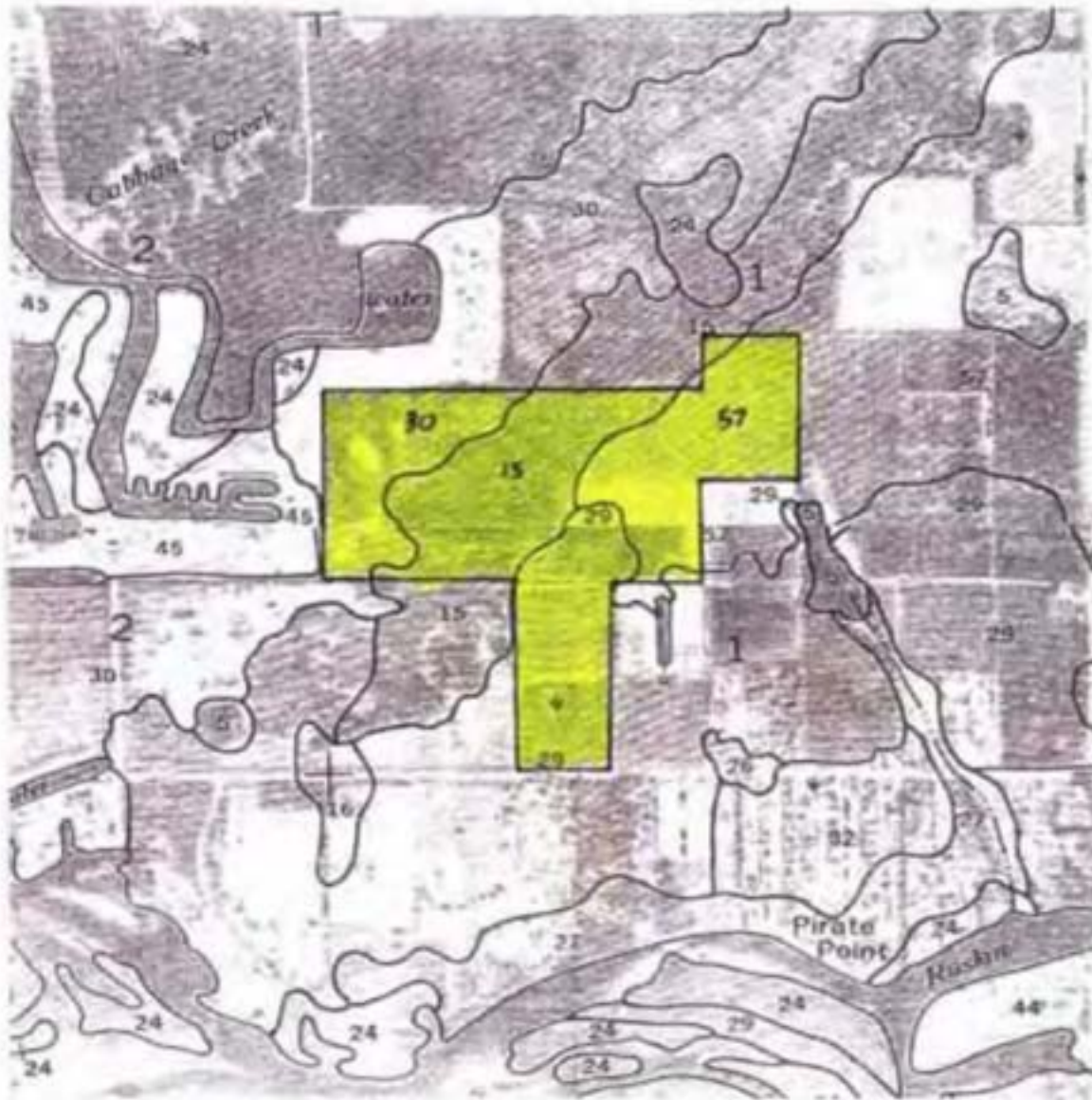
FIGURE A – Location Map
 Scale 2 in. = 1 mile, ^North



FDOT MITIGATION
(Tampa Bay Drainage
Basin)

BAHIA BEACH
(SW 78)

FIGURE B
LOCATION AERIAL,
ADJACENT PUBLIC LANDS



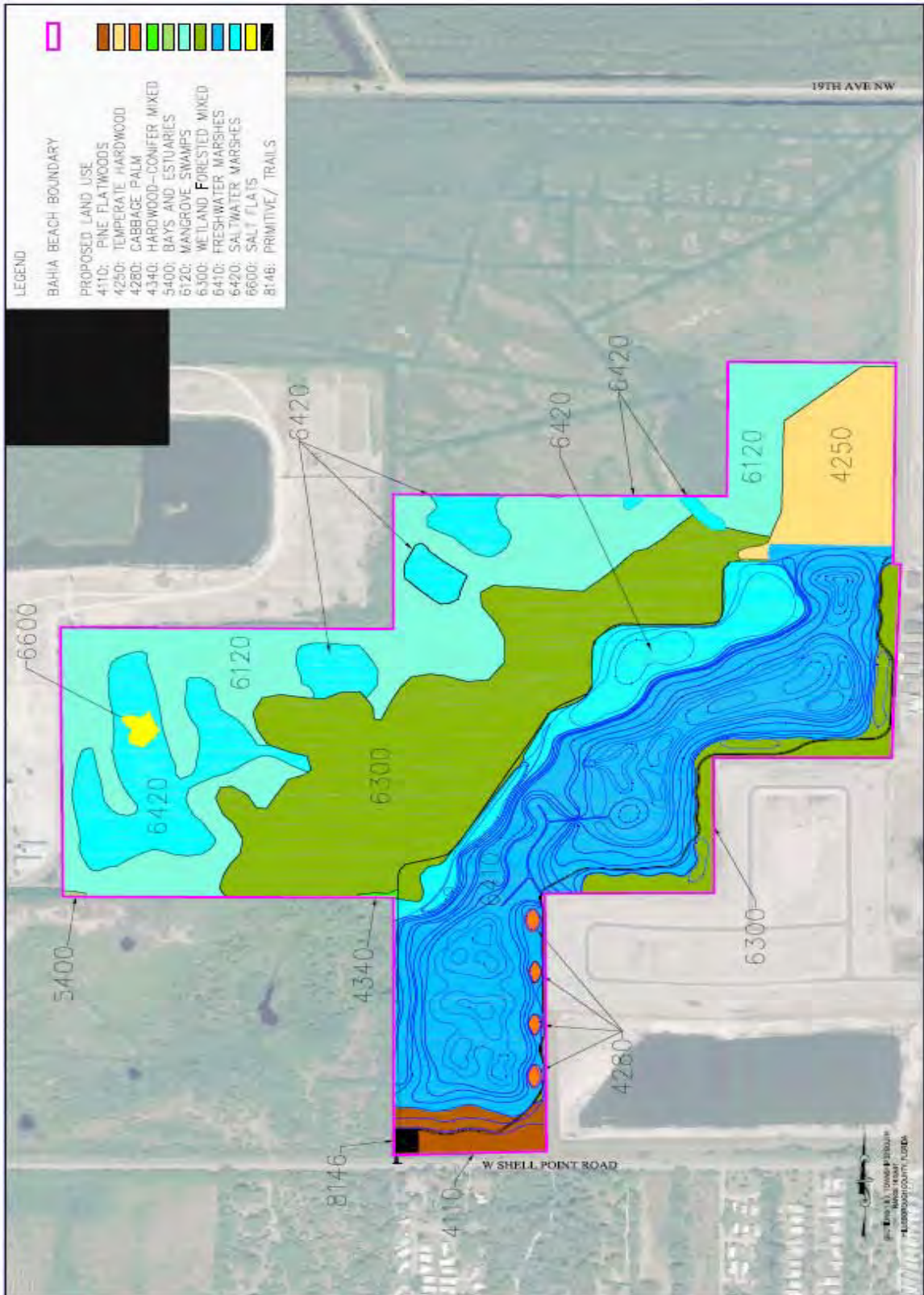
LEGEND

- #15 - Felda fine sand**
- #29 - Myakka fine sand
- #30 - Myakka fine sand, frequently flooded**
- #57 - Wabasso fine sand
- ** - Hydric soils

**FDOT – District 7
MITIGATION SITE
(Tampa Bay Drainage Basin)**

**BAHIA BEACH
(SW 78)**

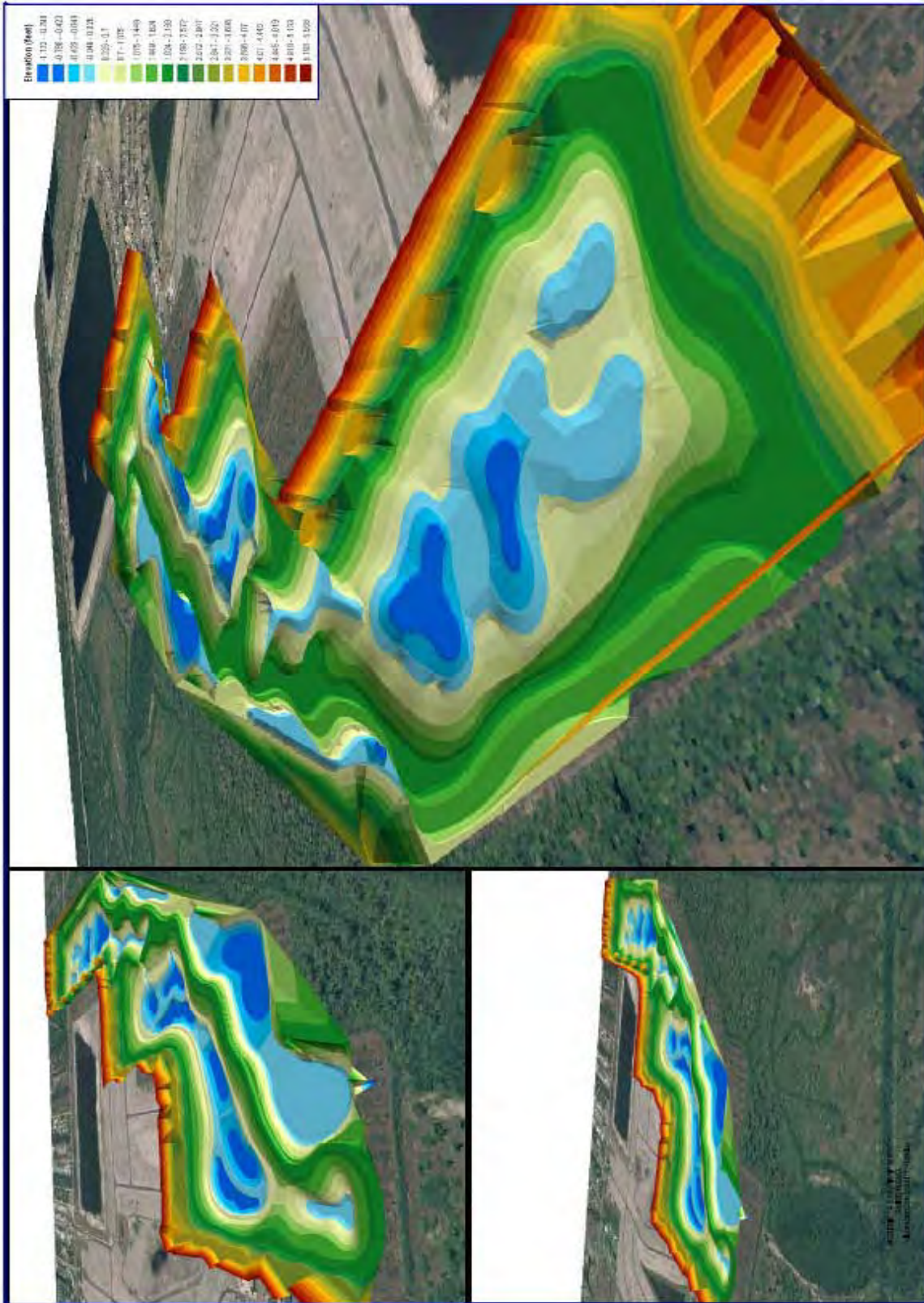
**FIGURE D
NRCS Hills. Co. Soil Survey
Scale 4.2 in. = 1 mile ^North**



FDOT MITIGATION
(Tampa Bay Drainage
Basin)

BAHIA BEACH
(SW 78)

FIGURE E - DESIGN PLAN
EXISTING HABITATS (NORTHWEST),
MARSH CREATION (SOUTHEAST)



FDOT MITIGATION
(Tampa Bay Drainage
Basin)

BAHIA BEACH
(SW 78)

FIGURE F - DESIGN PLAN
WETLAND CREATION AREA
(Vertically Exaggerated 15:1)



The citrus groves were removed from the uplands, allowing the generation of nuisance vegetation such as natalgrass, bahiagrass, dog fennel, ragweed, smutgrass, chickweed, beggar'-tick, and nutsedge.



Upland-cut swales (left and right) were used to provide grove drainage to collector ditches. Two large ditches were constructed along the perimeter between the grove and coastal hammock. The associated spoil ridges are covered with a dense stand of Brazilian pepper (background).

**FDOT – District 7
MITIGATION SITE
(Tampa Bay Drainage Basin)**

**BAHIA BEACH
(SW 78)**



The coastal wetland hammock has a dominant cover of cabbage palm with scattered oaks and slash pine. The Brazilian pepper provides minor to moderate coverage. Other common species include salt-bush, saw palmetto, broomsedge, and swamp fern.



The hammock has a few marsh pockets, dominant species include sawgrass, cordgrass, and for this particular marsh, a dominance of black needle rush and marsh fleabane.

**FDOT – District 7
MITIGATION SITE
(Tampa Bay Drainage Basin)**

**BAHIA BEACH
(SW 78)**



The transition between the coastal hammock and the mangrove & salt-marsh area is a dense stand of Brazilian pepper with very minimal coverage of other species; scattered small cabbage palm, salt-bush, and leather fern.



View from within the core of the mangrove & salt-marsh area, looking east toward the B. pepper transition and coastal hammock. The salt-marsh has dominant cover of glasswort, saltwail, and salt-grass. Shrub-size white and black mangroves transition to larger mangroves along the northwestern and western portions of this ecosystem.

**FDOT – District 7
MITIGATION SITE
(Tampa Bay Drainage Basin)**

**BAHIA BEACH
(SW 78)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Fox Creek Regional Off-Site Mitigation Area (ROMA)

Project Number: SW 79

Project Sponsor: Sarasota County – Public Works

County: Sarasota County

Location: Sec. 20, 29, T38S, R19E

IMPACT INFORMATION (Proposed Construction)

(1) FM: 4063143, I-75 – North River Rd. (CR 577) to SR 681*
(2) FM: 1980172, US 41 - Center Rd. to US Bus. 41 (Unknown)

ERP #: 43034226.000 COE #: 2008-02298 (IP-JPF)
ERP #: _____ COE #: _____

Drainage Basin: Lower Coastal Water Body(s): Fox Creek, Salt Creek, Curry Creek, Cow Pen Slough SWIM water body? N

Impact Acres /Types (FLUCFCS):

(1) FM 4063143 0.60 ac. 615 (2) FM 1980172 0.2 ac. 641
 1.31 ac. 631
 12.64 ac. 641

TOTAL 14.55 acres

TOTAL 14.55 acres

*Note – this I-75 segment also has tidal creek wetland impacts mitigated at Sarasota's Curry Creek ROMA (SW 88).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation

Mitigation: **Estim - 8.6 credits**

* Note – the total parcel covers 140-acres, the credits designated for FDOT mitigation will be determined based on the final acreage and habitat value of the proposed wetland impacts. The UMAM assessment method is used to evaluate the proposed wetland impacts and associated mitigation.

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? Y Mitigation Bank? N
ROMA? Y WMD ERP# 43027077 ACOE # SAJ-2004-5757-MEP Drainage Basin: Lower Coastal
Water Body(s): Fox Creek, Cow Pen Slough SWIM? N

Project Description

A. Overall project goal: Sarasota County acquired the 140-acre Fox Creek parcel in 2004 with the goal of preserving, enhancing, and creating a variety of diverse native habitats on the tract. In addition, these activities have been proposed to provide mitigation to compensation for unavoidable wetland and upland habitat impacts associated with public infrastructure projects; including County and FDOT roadway improvements in the Lower Coastal basin. The mitigation project objectives include a combination of freshwater wetland creation (forested and herbaceous), freshwater wetland enhancement (forested), estuarine wetland creation, upland scrub creation & enhancement, mesic hammock restoration & enhancement, and pine flatwood habitat enhancement and preservation. (Figure B) Details are provided in Attachment A and within the permits issued to Sarasota County.

B. Brief description of pre-construction condition: The parcel includes the lower reaches of Fox Creek, mesic hammocks, improved pasture, semi-improved pasture, pine flatwoods of various quality and coverage, and a large borrow pit. Site description information is provided in Attachment A.

C. Brief description of current activities: The Fox Creek parcel has been delineated into 16 mitigation areas with a variety of proposed habitat improvement activities based on the existing conditions and overall objectives of creating a mosaic of inter-related habitat conditions. Many of the improved and semi-improved pastures are being graded to

create wetland habitat, with the northwestern pasture enhanced and restored into appropriate scrub habitat conditions (Figure B). The dredged material from constructing wetlands is used to partially fill the 15-acre borrow pit to create appropriate littoral zone habitat transitioning to the open water component. The pine flatwood and mesic hammock habitats have variable coverage of exotic and nuisance species (e.g. Brazilian pepper, bahiagrass) that are being eradicated as well as supplemented with planted native species. The County perpetually manages the mosaic of habitats with appropriate activities (e.g. herbicide exotics/nuisance vegetation, prescribed burns, supplemental plantings, etc.). Additional information of proposed activities is provided in Attachment A.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The majority of FDOT roadway wetland impacts proposed for mitigation at Fox Creek includes widening improvements of I-75 from SR 681 to North River Road. As exhibited on the location map (Figure A), this long segment of I-75 is partially located adjacent to the Fox Creek property so this tract is essentially providing an on-site mitigation opportunity. The majority of the proposed I-75 wetland impacts include freshwater marsh habitat that is appropriately compensated with the creation of freshwater marsh and other habitat improvements at Fox Creek. Additional FDOT mitigation information is provided in Attachment C. The following information indicates the permitted wetland impact, habitat type (FLUCFCS), and mitigation habitats & credits proposed for mitigation at Fox Creek:

- (1) FM 4063143 – Impact 14.55 acres – Mitig. 0.36 credits of forested forested and 8.2 credits of freshwater marsh
- (2) FM 1980172- Impact 0.2 acre – Estimated Mitig. 0.1 credit of freshwater marsh

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: There were no existing or proposed mitigation banks in the Lower Coastal basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: At the time of mitigation selection, there were not any current or proposed SWIM projects in the Lower Coastal basin that could provide appropriate mitigation for the proposed wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Sarasota County has contracted for construction activities

Contact Name: Kris Fehlberg, Environmental Specialist III, Sarasota County – Regional Environmental Mitigation Program

Phone Number: 941 – 861 - 0764

Entity responsible for monitoring and maintenance: Sarasota County or designee

Proposed timeframe for implementation: Commence: Acquisition, Design & Permitting, 2004,

Phase I Construction & Planting, 2005-2007, other phases constructed in the future

Complete: Mitigation Maintenance & Monitoring (M&M) - minimum 5 years, followed by perpetual management activities.

Cost for FDOT Mitigation credits through 2010: \$1,702,241

- (1) FM 4063143 – 6.37 credits x \$198,860 = \$1,266,738 (purchased fall, 2008)
- 2.19 credits x \$198,860 = \$435,503 (purchased spring, 2010)

Attachments

- X 1. Description of existing site and proposed work. Refer to Attachment A – Existing & Proposed Site Conditions.
- X 2. Aerial photograph with date and scale. Refer to Figure B (1999 Infrared Aerial).
- X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A (Location Map), Figures B & C (Proposed Design), Figure D (Planting Plan), and Figure E (Rendition of Future Habitat Conditions).
- X 4. Schedule for work implementation, including any and all phases. Refer to previous discussion of schedule.
- X 5. Success criteria and associated monitoring plan. Refer to Attachment B – Maintenance & Monitoring Plan.
- X 6. Long term maintenance plan. Refer to Attachment B – Maintenance & Monitoring Plan.

Attachment A – Pre-Post Site Conditions and Activities

Pre-Construction Habitat Conditions

Located along the coastal areas of western Manatee, Sarasota, and Charlotte County; the Lower Coastal Basin (also referred to as the Southern Coastal Watershed) has one of highest concentrations of urban land uses in southwest Florida. In an effort to acquire and protect some of the remaining undeveloped and native habitat areas in the basin portion located within Sarasota County, the County contracted for an extensive evaluation of undeveloped parcels within the basin. In order to justify the substantial acquisition costs associated with purchasing any remaining undeveloped tracts in the basin, the County evaluated the possibility of utilizing the tracts to fulfill upland and wetland mitigation requirements. As a result, a total of 10 tracts were evaluated and ranked for their potential habitat value (protected species, wildlife corridor, water quality improvements, flood attenuation) relative to costs associated with acquisition and construction. Other factors that were considered included proximity to known future roadway projects, existing hydrology, landscape disturbance & potential for enhancement, hydric soils data, and existing habitat buffers. As a result of this evaluation, the highest ranked site was Fox Creek. This tract was actively pursued and acquired in 2004 to serve as an off-site regional mitigation area (ROMA) to compensate for wetland impacts associated with County and other public infrastructure projects.

The parcel includes the lower reaches of Fox Creek along the western border of the property (Figure B). The site has improved pasture, semi-improved pasture transitioning into pine flatwoods, mesic hammocks and a 15-acre borrow pit that was dredged by FDOT for fill material associated with constructing the adjacent I-75; the same segment of I-75 proposed for widening with associated wetland impacts proposed for mitigation at Fox Creek.

Adjacent to Fox Creek, there is a mature mesic hammock buffer consisting of live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), and sand live oak (*Quercus geminata*). The banks of Fox Creek are incised, which has precluded the establishment of riparian vegetation, though some leatherfern (*Acrostichum danaeifolium*) does exist near the toe-of-slope. The upland adjacent to the northern portion of the creek is an improved pasture covered with bahiagrass (*Paspalum notatum*). Though few native groundcover species exist, native trees and shrubs are beginning to regenerate with the removal of cattle. Species include scattered seedlings of saw palmetto (*Serenova repens*) and sand live oak. The soils in the area are well drained and densely occupied by both active and inactive gopher tortoise (*Gopherus polyphemus*) burrows. Within the northern portion of the improved pasture, there are several large live oaks and a few pignut hickory (*Carya glabra*), which are providing habitat and food to a population of Sherman's fox squirrels (*Sciurus niger shermani*).

The interior of the tract has variable coverage of a pine flatwood community intermixed with semi-improved pasture conditions. The flatwood portion that still has moderate density of longleaf pine (*Pinus palustris*), saw palmetto, scattered wiregrass (*Aristida stricta*), and pawpaw (*Asimina reticulata*) is predominantly in the

west-central portion of the tract, and will be preserved and enhanced within the project's plan. Beyond this core area, there are remnant pockets of scattered pine, palmetto and variable cover of semi-improved pasture with sedges and bahia. The design was prepared to protect and enhance many of these remnant flatwood stands as upland habitat peninsulas extended into proposed graded areas that will be converted to wetland creation areas (Figure B). This will enhance the preserved flatwoods while concentrating minimal vegetative loss to scattered pines and palmetto. As a result, the mosaic of created wetland and enhanced upland habitat will be a substantial benefit to wildlife and there is very limited freshwater wetland habitat (marsh and forested systems) within the Lower Coastal basin. These wetland systems are important for various periods of the life cycle of many wildlife species, and the design plan for Fox Creek proposes substantial wetland creation while recognizing the benefits of protecting and enhancing the ecological value of the adjacent upland habitat. Within the preserved flatwood community, a bald eagle nest (SA009) exists that was last reported as active in 2002. Currently, the nest is occupied by great horned owls that have been observed in the nest during site inspections. A second bald eagle nest (no assigned number) exists in the flatwoods located just south of the Fox Creek parcel.

There are a few mesic oak hammocks on the property, along the top-of-bank for Fox Creek, within the southwestern corner along Fox Creek, and along the southeastern border of the property. Live oak provides the dominant canopy cover, however Brazilian pepper (*Schinus terebinthifolius*) and carrotwood (*Cupaniopsis anacardiodes*) encroached the hammock, particularly in the southeastern community.

Proposed Habitat Conditions

A combination of mitigation types is proposed that includes freshwater wetland creation (forested and herbaceous), freshwater wetland enhancement (forested), estuarine wetland creation, upland scrub creation & enhancement, mesic hammock enhancement, and upland enhancement and preservation. A total of 16 areas are proposed for mitigation credit; 15 of these areas are being requested for mitigation credit with the remaining upland enhancement area likely utilized to compensate for potential upland scrub impacts. The freshwater marsh creation areas will include interior obligate zones planted with spatterdock (*Nuphar luteum*) that transition to bulrush (*Scirpus californicus*), arrowhead (*Sagittaria lancifolia*), pickerelweed (*Pontederia cordata*), spikerush (*Eleocharis cellulose*), maidencane (*Panicum hemitomon*), soft rush (*Juncus effusus*), and sawgrass (*Cladium jamaicense*). The soil material scalped to create wetlands will be deposited in the borrow pit to create littoral zones that are not currently present (Photo 4). The lack of littoral features has precluded the growth of herbaceous vegetation that has reduced the habitat value for many species of birds, reptiles, amphibians, and fish. An open water core will still be present to create habitat diversity for many wildlife species including fish, waterfowl, and raptors such as osprey and bald eagles.

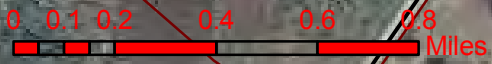
Forested wetland components will be strategically placed within the created marshes and will include species common to the forested wetlands in the area including dahoon holly (*Ilex cassine*), red maple (*Acer rubrum*), pop ash (*Fraxinus carolinana*), loblolly bay (*Gordonia lasianthus*) and sweet bay (*Magnolia virginiana*). The enhancement of the mesic hammocks will have the exotics eradicated (B. pepper dominant) and supplemented with plantings of live oak, sand live oak, cabbage palm, and laurel oak (*Quercus laurifolia*). The upland restoration area will have bahiagrass eradication and replaced with native groundcover such as wiregrass, as well as native shrubs and trees.

One of the most unique aspects of the design includes the creation of an estuarine marsh system by constructing channel connections to the tidal waters of Shakett Creek. The northern boundary of Shakett Creek occurs at the southernmost control structure of the freshwater flow of Cow Pen Slough (Figures B and C). This control structure defines the saltwater/freshwater interface and is located just east of the project area. Currently, freshwater levels are maintained in Cow Pen Slough at elevation 11 ft. NGVD during the months of November through June; then dropped to 7 ft. NGVD through the summer to alleviate the potential of upstream flooding. During the dry season, freshwater flow will be diverted from Cow Pen Slough into created freshwater wetlands on Fox Creek. The freshwater overflows into the estuarine marsh constructed in the southeast corner of the property. This will result in a salinity gradient, diverse vegetative species, variable habitat conditions, and water quality treatment before the flow discharges into Shakett Creek. The created low salt-marsh will be planted with needle rush (*Juncus roemerianus*) and saltmarsh

cordgrass (*Spartina alterniflora*). The high salt-marsh will be planted with a mixture of leatherfern, saltbush (*Baccharis halmifolia*), buttonwood (*Conocarpus erectus*), and Atlantic white cedar (*Chamaecyparis thyoides*).

Attachment B – Maintenance & Monitoring Plan

Sarasota County implements an adaptive management and monitoring program to ensure the success of this regional mitigation project. The management plan includes a detailed habitat plan (maintenance activities, schedules, etc.), maps of existing and proposed habitat types, access points, and allowable site uses (passive recreational). This management plan incorporates data from the monitoring plans to provide for an adaptive management approach for the entire site. The adaptive management is used to regularly measure site criteria and adjust treatments and activities, as necessary. The expected benefits of this approach extends the values of multiple wetland functions, including wildlife use, appropriate hydroperiods, water quality opportunities, passive recreation, and aesthetics.



**SW 79 - Fox Creek ROMA
Figure A - Location Aerial
Sarasota County**

**Fox Creek Regional
Mitigation Site**

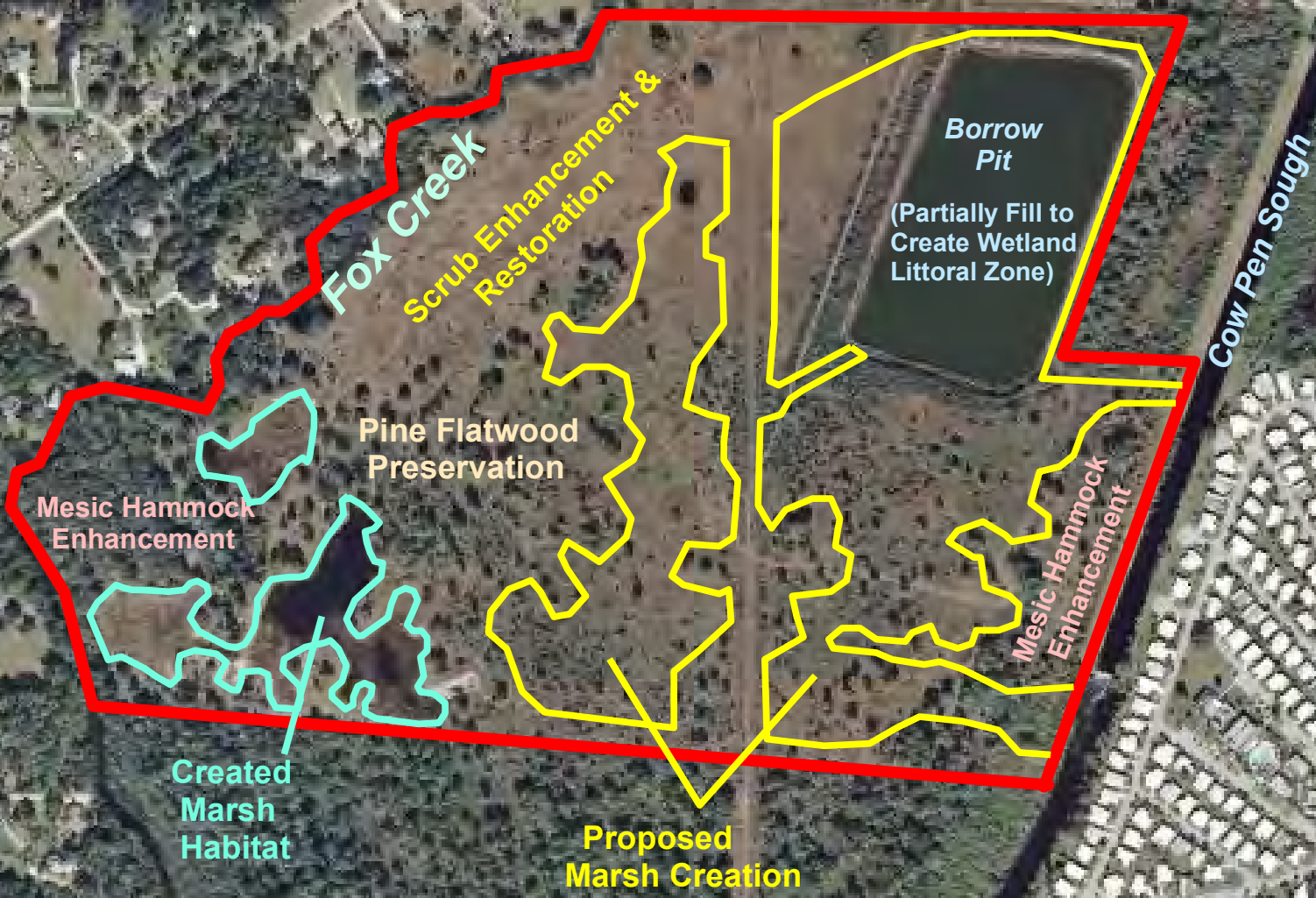


681

75

41

**SW 79 - Fox Creek ROMA
Proposed Habitat Activities
Figure B - 2010 Aerial**



Interstate -75

Cow Pen Sough

Shakett Creek





Photo 1 – Fox Creek meanders along the western boundary of the tract. Deeply incised, the creek is bordered by a mesic hammock dominated by live oak and cabbage palm.



Photo 2 – The northwest pasture is dominated by bahia and will be restored into a scrub habitat community.

**FDOT - District 1 Mitigation Site
Lower Coastal Basin**

**FOX CREEK
REGIONAL MITIGATION PROJECT
(SW 79)**



Photo 3 – Portions of the semi-improved pasture with scattered palmetto and sedges mixed with the bahia (foreground) will be graded to create wetlands. Remnant pine flatwoods (background) will be preserved and enhanced as part of the proposed mitigation plan.



Photo 4 – Improved pastures (foreground) will be graded and material placed into the borrow pit (background) to create extended marsh littoral zones.

FDOT - District 1 Mitigation Site
Lower Coastal Basin

FOX CREEK
REGIONAL MITIGATION PROJECT
(SW 79)

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Hidden Harbour
Project Sponsor: Manatee County
County: Manatee

Project Number: SW 80
Location: Sec. 17, R19E, T34S

IMPACT INFORMATION (Proposed Construction Date)

1 – FM 1960224, SR 64 – Lakewood Ranch to Lorraine Rd. (Seg. 3)	ERP #: <u>43025776.000</u>	COE #: <u>2004-734-JPF</u>
2 – FM 4226031, US 301 (Segment B), Erie Road to CR 675	ERP #: <u>43012295.005</u>	COE #: <u>2008-1430 (IP-JPF)</u>
3 – FM 4161201, SR 64 – Carlton Arms Blvd. to I-75 (Undetermined)	ERP #: <u>44035561.000</u>	COE #: <u>Under Review</u>
4 – FM 4279951, US 301 – CR 765 to Moccasin Wallow (Undeter.)	ERP #: _____	COE #: _____

Drainage Basin: Manatee Water Body(s): Manatee River SWIM water body? (Y/N) Yes

Impact Acres / Habitat Types (FLUCFCS)

1 – FM 1960224 3.5 ac. 630	3 – FM 4161201 0.09 ac. 510
0.5 ac. 641	0.67 ac. 641
<u>TOTAL 4.0 acres</u>	<u>TOTAL 0.76 acre</u>
2- FM 42260431 1.64 ac. 617	4 – FM 4279951 1.00 acre 630
0.07 ac. 631	
1.02 ac. 641	
<u>TOTAL 2.73 acres</u>	TOTAL 8.49 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation **Mitigation Area: 58.8 Acres**

SWIM project? (Y/N) N Aquatic Plant Control project? (Y/N) N Exotic Plant Control Project? (Y/N) Y
Mitigation Bank? (Y/N) N Drainage Basin(s): Manatee River Water Body(s): Manatee River, Gamble Creek
SWIM water body? (Y/N) Y

Project Description

A. Overall project goal: The Hidden Harbour tract (Figure A - 229 acres) was acquired by Manatee County in late, 2004 and portions of the property were adopted to the mitigation program in 2005. Within the southeastern portion of the property, there is the presence of a unique, inter-related mosaic of parallel, alluvial deposits that formed along the convergence of Gamble Creek and the Manatee River (Figure B). The habitat on these deposits formed into forested wetland hammocks alternating with brackish marsh and inter-tidal creeks. These hammocks are in need of habitat enhancement by eradication of Brazilian pepper. Additional habitat improvements planned for mitigation credit include freshwater marsh enhancement. The combination of wetland enhancement will be buffered by upland habitat restoration and potentially some marsh creation (not for mitigation credits) to provide more habitat diversity and buffer from proposed school and recreational facilities currently planned for the central portion of the tract. The goal of conducting these habitat improvements will provide wetland and riverine buffers that will benefit water quality functions, floodwater attenuation, and wildlife habitat corridors adjacent to the Manatee River and Gamble Creek. Due to the existing and potential ecological benefits this tract provides for the Manatee River and Gamble Creek, the tract was also previously listed within the SWFWMD's Florida Forever Plan prior to the County's purchase for public land acquisition.

B. Brief description of current condition: The hammocks (Figure B, FWE 1-3, total 57 acres) have dominant tree cover of live oak, laurel oak, cabbage palm, with subdominant coverage of Brazilian pepper, red cedar, and slash pine. Sub-canopy and understory vegetation include the same species with additional cover provided by saw palmetto, wax myrtle, myrsine, greenbriar, swamp fern; with black rush and leather fern along the marsh/hammock transition. The freshwater marsh (ME 1, 1.8 acres) has seepage hydrology contributing downstream to the adjacent hammock (FWE 3) and brackish marsh. The marsh also has a small abandoned point well; this free-flowing surficial aquifer well will be grouted and capped to stop the groundwater withdrawal. Dominant vegetative cover of the marsh includes broomsedge, dog fennel, maidencane, and low panicums, The majority of the uplands within the property have been more recently used for row crop production and was proposed for residential development until the tract was acquired by the County. There is an upland area east of the marsh to river that was historically flatwood habitat with scattered live oaks until the area was cleared in preparation of development. However rather than converting to row crops, this cleared area was allowed to transition to fallow conditions and has dominant cover of low panicums (*Dichanthelium* spp.) with minor cover of muhly grass, broomsedge, flat-top goldenrod, winged sumac, ragweed, and scattered palmetto regeneration. In spite of the agricultural use within the majority of the tract, wildlife activity is active within the remaining native habitats. The hammocks provide safe cover for roosting, nesting, foraging, denning and wildlife corridor connections. Wildlife observations and signs include deer, raccoon, rabbit, bobcat, opossum, and several bird species. The hammocks also provide access to the river for reptiles and amphibians (refer to alligator nest photo). Additional information of site conditions are provided in Attachment A and depicted in the site photographs.

C. Brief description of proposed work: The hammocks provide moderate habitat condition with the primary limitation associated with the presence of Brazilian pepper. The B. pepper particularly provides moderate coverage along the transition interface of the marsh and hammock habitat that hinders wildlife movement for foraging, and minimizes the coverage of desirable vegetation. The habitat improvements for mitigation credit include extensive herbicide eradication of the B. pepper within the hammocks (Figure B – FWE 1-3). There is adequate coverage of adjacent desirable species that will naturally recruit to displace and minimize the regeneration of the B. pepper. However after the initial eradication, annual herbicide treatments will be conducted of recruited and generated B. pepper. There are a few north-south ditches dredged within and along the perimeter of the forested wetland bordering the north property boundary (FWE 1 – 5 acres). In addition to the B. pepper eradication, the spoil material will be removed through backfilling ditches and/or complete fill removal from the wetland. Maple and laurel oak will be planted to restore the wetland habitat areas displaced by the ditches & spoil material. The enhanced wetlands will be buffered by upland habitat restoration and possibly wetland creation within some of the adjacent upland fallow fields. These areas and activities were previously proposed to provide FDOT mitigation credit for anticipated wetland impacts associated with the proposed Upper Manatee River Road extension that has R/W designated along the western boundary of the Hidden Harbour tract (Figure B). Manatee County may still propose these activities to provide mitigation credits associated with the Upper Manatee River Road, however since the potential road will be totally funded by Manatee County and not FDOT, these proposed activities were removed from the FDOT mitigation program. Additional details of the mitigation plan are included in Attachment B. This information is updated annually to reflect the current status and any proposed plan revisions. Depending on future plans of the school, recreational facilities, and potential mitigation for the proposed Upper Manatee River Road, depending on the goals and desires of Manatee County, the FDOT mitigation plan objectives may be revised in the future to include additional habitat improvements for mitigation credits.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): Anticipated wetland impacts associated with only the four nearby roadway projects are proposed for mitigation at Hidden Harbour. As noted, additional habitat improvements may be proposed and conducted by Manatee County to provide mitigation for wetland impacts associated with Upper Manatee River Road. As the plans adjacent school and/or recreational facilities are finalized for the central portion of tract, the mitigation boundaries, habitat types and associated acreage are updated in the annual FDOT mitigation plans.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection for projects 1 & 2, no mitigation banks were proposed in the Manatee River basin. Subsequently the Braden River Mitigation Bank received ERP approval, however that bank will not receive federal approval to compensate for ACOE-jurisdictional wetlands.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: This project is not specifically sponsored through the SWIM program. However the Manatee River is a designated SWIM water body and the proposed habitat improvements will provide ecological enhancement for the river and Tampa Bay.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Manatee County Parks and/or contractors working for the County.
Contact Name: Candie Pederson, Manatee Co. Parks Designer Phone Number: 941-792-8784

Entity responsible for monitoring and maintenance: Maintenance activities will be conducted through Manatee County, monitoring activities will be conducted by private environmental consultants under contract for the SWFWMD.

Proposed timeframe for implementation:

Spring, 2011 - Initial herbicide treatments (Forested Wetland & Marsh Enhancement Areas)
2012-2013 – Backfill FWE #1 ditches and plant
2012-2017 – Annual herbicide treatments and monitoring
Post-2017 – Annual herbicide treatments

Project Cost Estimates: **\$180,000***

Note - additional funding provided if designated FDOT mitigation area expanded, or additional contingency funds are necessary to assist the County's goal of achieving connectivity of habitat improvements with the current designated FDOT mitigation areas.

Attachments

- 1. Description of existing site and proposed work. Refer to previous description and Attachment A.
- 2. Aerial photograph. Refer to Figures A & B (2010 aerial).
- 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A (Location Map), Attachment A for existing and proposed conditions, Figure B (Conceptual Mitigation Plan), and site photographs.
- 4. Schedule for work implementation. Refer to previous discussion.
- 5. Proposed success criteria and associated monitoring plan. Refer to Attachment B.
- 6. Long term maintenance plan. Refer to Attachment B.

Hidden Harbour - Attachment A – Existing and Proposed Habitat Conditions

The Hidden Harbour parcel covers 229-acres with the majority of the tract previously used for row crop production. Prior to the County acquisition in 2004, the property was proposed and designed for a residential community referred to as Hidden Harbour. Due to the substantial residential development under construction and planned for the vicinity between Ellenton and Parrish, the County acquired this property to adequately plan for necessary school, recreational, and regional park facilities. The County is planning to construct the school and associated athletic fields in the western and central fallow upland portions of the tract, and the regional park within the eastern portion. In collaboration with the SWFWMD, Manatee County agreed to allow habitat improvement on the property to provide appropriate mitigation credits for wetland impacts associated with proposed roadway facilities that will directly benefit the vicinity (e.g. SR 64, US Hwy. 301). In addition, a portion along the western boundary of the Hidden Harbour property will be necessary to fulfill right-of-way requirements for the Upper Manatee River Road and associated stormwater and floodplain compensation facilities (Figure B). Since originally adopted within the 2005 mitigation plan, the County's site design has provided additional acreage for habitat improvements; particularly the opportunity to expand and restore additional upland habitat buffers that will be particularly beneficial for wildlife corridors and connectivity. The following provides additional information on the existing and proposed habitat conditions for the various mitigation portions of the property. Refer to Figure B for the designated locations and photographs for representative conditions. Figure D depicts the conceptual site plan for the adjacent school and recreational facilities.

Forested Wetland Enhancement Area 1 (FWE 1 – 5 acres) – This forested wetland is a mesic oak hammock with an east-west channelized creek connecting to Gamble Creek at the northeast corner of the property. The dominant tree cover includes live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), and cabbage palm (*Sabal palmetto*), with additional coverage provided by water oak (*Quercus nigra*), Brazilian pepper (*Schinus terebinthifolius*), and scattered red maple (*Acer rubrum*). Understory coverage varies with pockets of saw palmetto (*Serenoa repens*), scattered wax myrtle (*Myrica cerifera*) and saplings of the above referenced tree species. The hydrology of the majority of this system is primarily groundwater saturation near the surface grade elevation with inundation during flood events. In order to achieve positive hydraulic surface and storm water connections from the upland row crop areas to the ditched creek channel, deep lateral drainage ditches were historically dredged through this wetland to connect with the creek (refer to Figure B and site photographs). The ditches diverted and channelized contributing watershed conditions, altering appropriate seepage hydrology for this wetland system. As a result, most of this wetland system within the County property has only minimal opportunities to maintain adequate wetland hydrology. The upland row crop areas within property north of Hidden Harbour were recently converted to a residential community. To provide mitigation credit, the ditch & spoil segment within this same wetland system on the adjacent property has been graded and planted with trees. In order to continue enhancing the hydrology of this wetland, the ditch segments dredged through and adjacent to this wetland will also be backfilled with the adjacent spoil material. In areas where the ditch grade has silted and covered with desirable vegetation, excess spoil material will be removed from the wetland to match the natural grade elevations. Depending on the slope gradient, proposed tree and shrub plantings (min. 10 ft. spacings) will primarily include laurel oak, water oak, red maple and wax myrtle. In order to minimize the potential of erosion, silt screens will be intermittently installed perpendicular to flow, and depending on the season of earthwork; winter rye (fall, winter) or brown-top millet (spring, summer) will be seeded to provide quick temporary cover. As evident by the adjacent restoration activities in the same wetland, ground cover planting is not anticipated to be necessary. However, a contingency plan of supplemental herbs will be planted if there is insufficient natural recruitment of desirable ground cover. Along with the hydrologic improvements, the B. pepper will be eradicated from this system.

Forested Wetland Enhancement Areas 2 & 3 (FWE 2 – 9 acres, FWE 3 – 43 acres) – These coastal hydric hammock wetlands are closer, have lower grade elevations, more B. pepper cover, and are more influenced by the hydrology of Gamble Creek and the Manatee River compared to FWE 1. Dominant tree cover is provided by laurel oak, live oak, and cabbage palm. The B. pepper is more prevalent along the upper transition between the hammock and adjacent marsh habitat within FWE 3. Other common canopy and shrub species include red cedar (*Juniperus silicicola*), slash pine (*Pinus elliottii*), myrsine (*Myrsine*

floridana), saw palmetto, greenbriar (*Smilax rotundifolia*), grapevine (*Vitis* spp.) and swamp fern (*Blechnum serrulatum*). Along the lower transition between the hammocks and adjacent marsh, there is a narrow zone of scattered white mangrove (*Laguncularia racemosa*) and few red mangrove (*Rhizophora mangle*). The marsh is dominated by black needlerush (*Juncus roemerianus*) and leather fern (*Acrostichum aureum*), with some minor bands of cattails (*Typha* sp.) along the water's edge. The cattails are generally located within limited narrow zones with minimal potential to recruit and generate into the adjacent marsh habitat.

A title search was conducted by the County as part of the acquisition process to determine the limits of the sovereign state lands (SSL) versus private ownership. The hammock areas are above mean high tide elevations and were part of the County acquisition of Hidden Harbour. The 50-60 acres of marsh habitat and 20-30 acres of tidal creek and bay area buffered by the hammocks are sovereign lands. These sovereign wetland areas will receive secondary ecological benefits by the proposed enhancement activities but are not quantified for mitigation credit under the proposed plan. Enhancement of these hammocks will be conducted by herbicide application of the B. pepper, which in some areas are particularly large trees (refer to photos). Due to the environmental damage that cutting and removing the snags would cause, the B. pepper will be allowed to decay in place and no construction activities are proposed within the system. This will allow the natural recruitment and generation of appropriate hydrophytic vegetation, while opening areas for easier wildlife access to forage and nest. An intensive initial effort to eradicate the B. pepper will be conducted, followed by annual maintenance for a minimum of five years. As with all the habitat creation and enhancement areas for the property, the quantity and schedule of maintenance events will be evaluated to ensure continued success with emphasis on eradication with as minimal coverage of exotics as possible.

There is additional acreage of coastal hammock habitat along the north bank of the Manatee River and within the western portion of Hidden Harbour. This acreage may be included within the mitigation plan at a later date. This linear zone along the river was purposely removed from inclusion to evaluate how this habitat may provide any necessary buffers and/or mitigation associated with the County school facilities, as well the relationship with the proposed Upper Manatee River Road and associated stormwater and floodplain compensation facilities constructed on the Hidden Harbour property.

Marsh Enhancement (ME 1 – 1.8 acres) – aeriels indicate the marsh was historically impacted by clearing of the adjacent upland area (to be restored by Manatee County) and the installation of a free-flowing surficial well that will be appropriately grouted and capped. The dominant marsh vegetation includes chalky bluestem (*Andropogon glomeratus*), dog fennel (*Eupatorium capillifolium*), with additional coverage provided by maidencane (*Panicum hemitomon*), low panicums, and scattered primrose willow (*Ludwigia repens*). The proposed enhancement of this system includes herbicide eradication of the fennel and willow; with a dense planting of wax myrtle along the perimeter to provide buffer cover. An existing wet access road crossing is located near the southern extent where the marsh connects to the adjacent forested wetland hammock. This road will be vacated and hydrophytic vegetation will be allowed to regenerate in this area.

Non-FDOT Mitigation Habitat Improvements –

Upland Habitat Restoration (Estimated 40-50 Acres) & Marsh Creation (Estimated 4-6 Acres)

As noted, these additional habitat improvements were previously proposed to provide FDOT mitigation credits, and will still be conducted to some degree by Manatee County to provide mitigation for anticipated wetland impacts associated with county roadway facilities; which may include the proposed Upper Manatee River Road. All these habitat activities are planned adjacent to the designated FDOT mitigation areas, and some may be incorporated back into the FDOT mitigation program in the future.

The majority of the upland habitat restoration acreage includes former row crop activities that will be restored to flatwood habitats to buffer the adjacent enhanced forested wetlands (FWE 2-3). Anticipated plantings will include species such as slash pine, live oak, laurel oak, wax myrtle, and various herbs such as muhly grass (*Muhlenbergia capillaries*), broomsedge (*Andropogon virginicus*), Fakahatchee grass (*Tripsacum dactyloides*), and lovegrass (*Eragrostis spectabilis*). Since the southeastern upland area was cleared but not root raked in preparation of development activities, the seed source and presence of desirable ground cover species provide an opportunity for appropriate upland habitat restoration. The dominant ground cover includes low panicums (*Dicanthelium* spp.), with additional coverage provided by

muhly grass, flat-top goldenrod (*Euthamia caroliniana*), and broomsedge. The majority of saw palmetto roots are still present which helps stabilize the soil and there has been some minor palmetto regeneration. There is a narrow band of palmetto and live oak along the steep eastern sideslope of this area along the border of Gilley Creek and the Manatee River (refer to photo); which provides a seed source for additional recruitment. Aerial photos indicate this area was primarily covered with palmetto with scattered oaks and pines concentrated within the eastern portion adjacent to the seepage marsh (ME 1). The anticipated restoration will include a dense planting (10 ft. centers) of live oak and slash pine; with shrub plantings of gallberry, fetterbush, wax myrtle, and some saw palmetto. Herb planting may not be necessary since there is adequate coverage of appropriate species. However, supplemental herb planting may include muhly grass, love grass (*Eragrotis spectabilis*), and wiregrass (*Aristida stricta*).

Restoration of appropriate upland habitat at this location is particularly important because it will provide a wildlife corridor connection from the wetland hammocks adjacent to the Manatee River (FWE 2 & 3) to the forested wetland (FWE 1), and the off-site forested wetland corridors along the north boundary of the property and Gilley Creek in the northeast. Considering so many of the upland areas in the region have been and will continue to be converted to residential communities, restoring upland habitat will be of particular benefit for wildlife use.

Overall, the habitat plan incorporates and enhances the currently available upland and wetland habitat areas of the property; as well as appropriately and adequately compensates for the wetland impacts associated with the three roadway projects. The correlation and corridor connectivity of these habitats relative to the Manatee River and Gamble Creek provide an opportunity to preserve and enhance ecologically valuable habitats that continue to be rapidly lost and impacted by development along the Manatee River. In addition, these habitat activities will provide secondary wetland and wildlife benefits to the marshes, tidal creeks, Gamble Creek and the Manatee River that border the mitigation area. Manatee County recognizes the ecological value the tract can provide, and have made the efforts to preserve, restore and enhance the habitat. The County has made plans to incorporate a canoe launch, nature trail and boardwalk crossing the forested wetland along the river. With the proposed school and public recreational facilities, the trail facilities will provide valuable opportunities for environmental educational.

Attachment B – Maintenance & Monitoring Plan, Success Criteria

After the extensive initial herbicide eradication of exotic and nuisance species during the winter-spring, 2011, (primarily Brazilian pepper), additional treatments will be conducted for a minimum of five years within the designated forested wetlands and the marsh. Afterward, Manatee County will continue herbicide treatments as part of normal land management practices.

Monitoring will commence upon the initial herbicide treatment and continue for a minimum of five years. This monitoring will include qualitative assessments of the wildlife use, vegetative cover and diversity, hydrologic conditions, and any problem areas. The results of the monitoring events will be compiled into annual monitoring reports, which will be conducted for a minimum of five years and until success criteria is met.

Success criteria require the eradication of B. pepper to the degree possible, with the no more than 5% coverage within the hammocks. Enhancement for the north forested wetland (FWE 1) will also include demonstration of restored habitat conditions within the ditch segments; with at least 40% coverage of planted and naturally recruited trees and shrubs, 70% coverage of ground cover vegetation, and demonstration of appropriate grade stabilization. For the marsh enhancement area, the exotic and nuisance species will be eradicated and success conditions will be limited to no more than 5% coverage.



< To Ellenton - US 301 - To Parrish >

301

Hidden Harbour

Manatee River

Gamble Creek

0 0.25 0.5 1 1.5 2 Miles



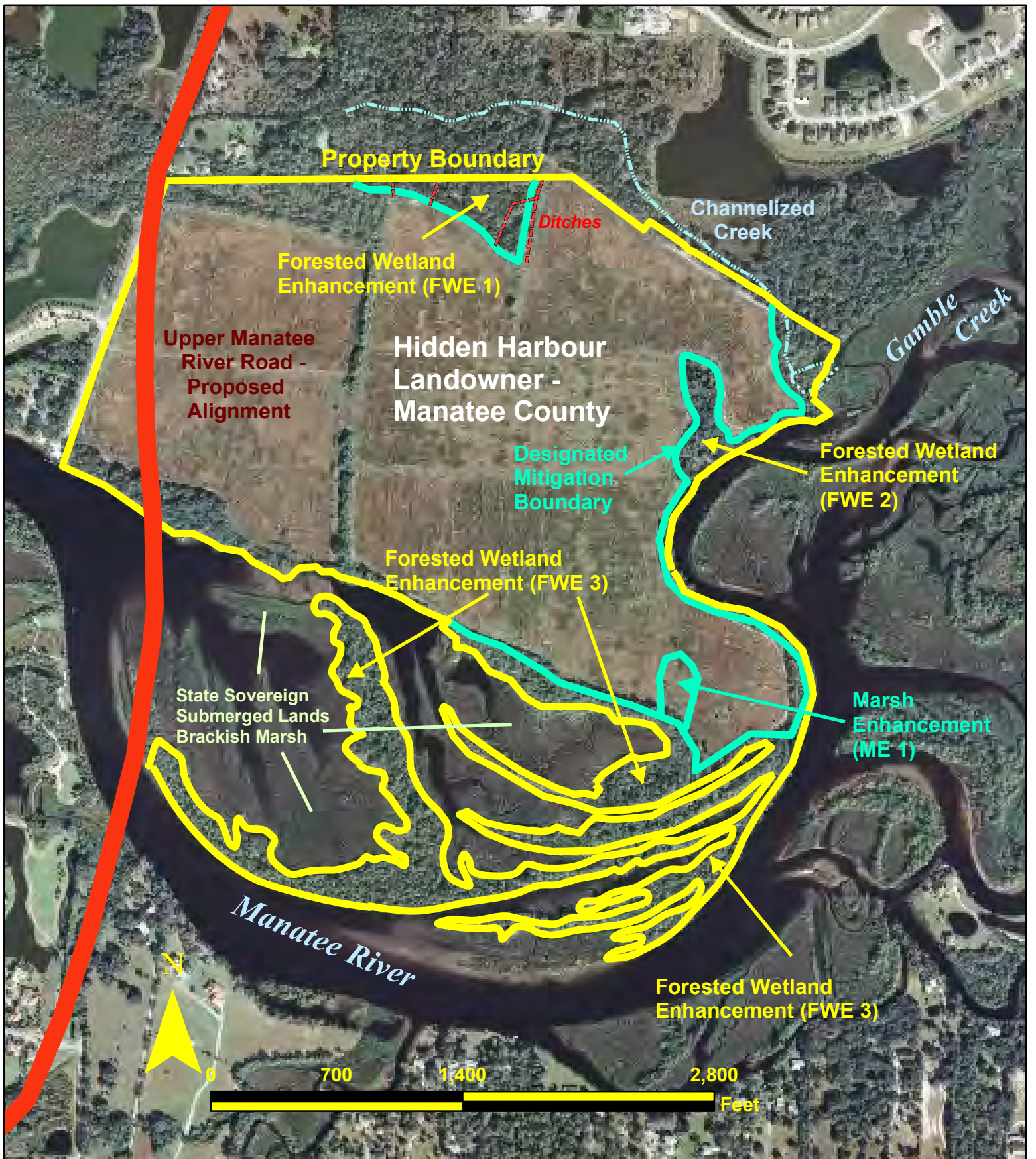
SW 80 - Hidden Harbour
Figure A - Location

< To Bradenton

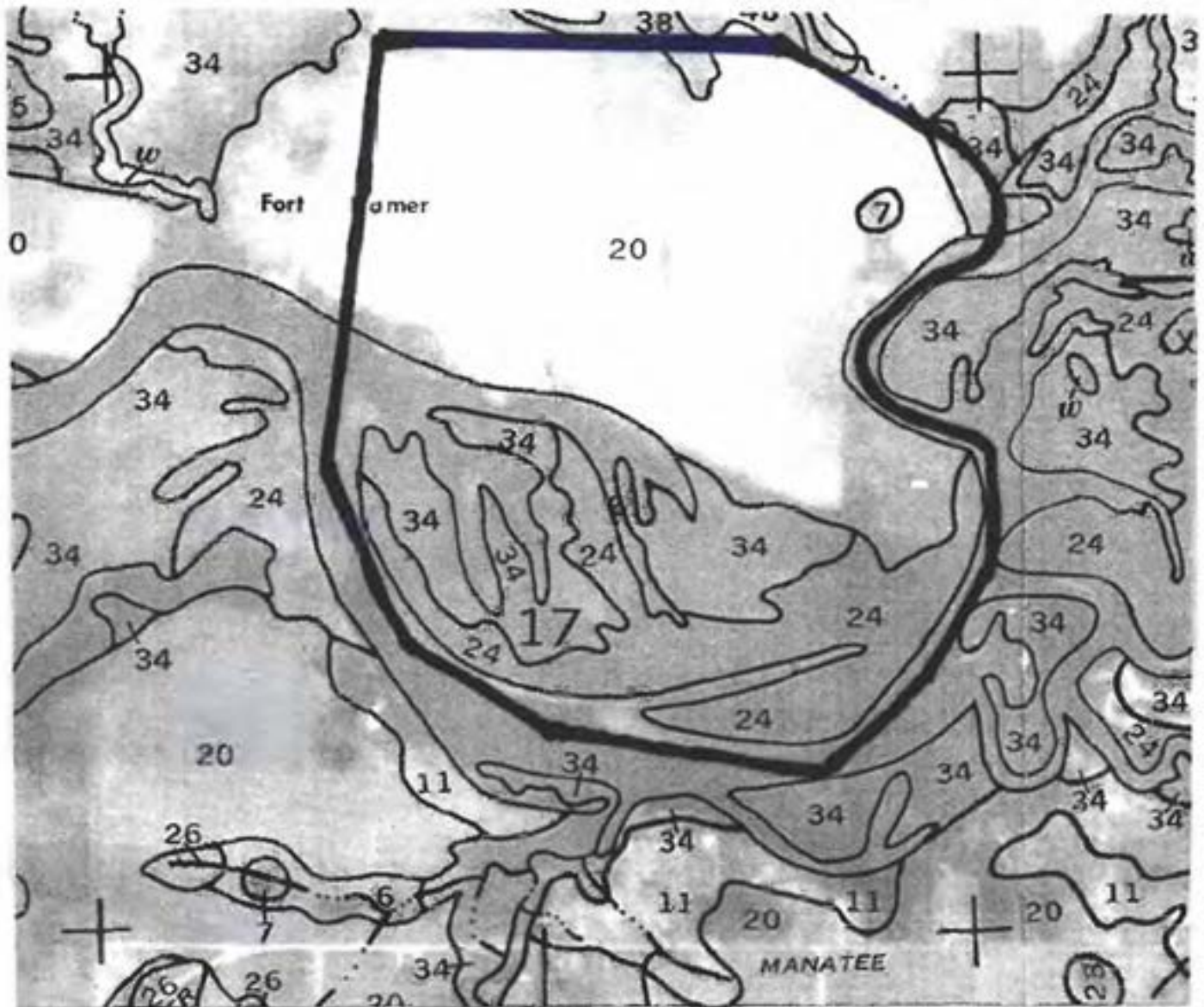
64

SR 64

75



**SW 80 - Hidden Harbour
Figure B - Habitat Mitigation Areas**



LEGEND

SCALE 5.2 inches = 1 mile North ^

- #7 – Canova, Anclote, and Okeelanta soils **
- #20 – EauGallie fine sand
- #24 – Fel-da-Wabasso association, frequently flooded **
- #34 – Okeelanta muck, tidal **
- #38 – Palmetto sand **

** - Hydric Soils

**FDOT - District 1
MITIGATION SITE
(Manatee River Basin)**

**HIDDEN HARBOUR
(SW 80)**

**FIGURE C
NRCS Manatee County
Soil Survey**

**Hidden Harbour
Conceptual Site Plan
County Recreation Area
& School Site**

**SW 80 – Hidden Harbour
Figure D – Conceptual Site Plan**

-  Interpretive Signage
-  Canoe launch
-  Parking
-  Observation site
-  Pavilion/Restrooms
-  Pavilion
-  Playground

- Legend**
-  Fort Hamer Road
 -  FOOT Property
 -  School Property Outline
 -  HIGH SCHOOL BLDG
 -  FOOTBALL STADIUM
 -  PRACTICE FIELD
 -  SOCCER FIELD
 -  SOFTBALL FIELD
 -  BASEBALL FIELD
 -  OTHER REC
 -  CONCESSION
 -  RETENTION POND
 -  FCT SIGN
 -  Site Property (107.9 acres)
 -  landscaping

Approximate FDOT
Mitigation Areas (Purple)





Forested Wetland Enhancement (FWE 1) – This mesic oak hammock has dominant cover of laurel oak, live oak, water oak, and cabbage palm. Understory is minimal except pockets of saw palmetto.



Forested Wetland Enhancement (FWE 1) – One of the large north-south ditches that collects surface water from the uplands and directly discharges to the channelized creek north of property boundary. Spoil material (right) is 15-20 ft. wide and 5-6 ft. high, covered with paragrass and various sedges. This material will be backfilled into the ditch to restore grade, seeded, and planted with shrubs and trees. Additional enhancement will include eradication of Brazilian pepper (left) that has encroached into this wetland.

FDOT - District 1 Mitigation Site

**MANATEE COUNTY
HIDDEN HARBOR (SW 80)**



Forested Wetland Enhancement (FWE 2,3) – Brazilian pepper is prominent within many areas of the mesic hammocks, particularly along the transition interface with the adjacent marsh habitat.



Forested Wetland Enhancement (FWE 2,3) – The mesic hammocks provide refuge for nesting, foraging, and denning by a variety of wildlife that utilize the range of habitats (Manatee River, Gamble Creek, brackish marshes, hammocks, upland restoration areas) within the vicinity of Hidden Harbour. This alligator nest was built within the base of a B. pepper near one of the tidal creek fingers bisecting the hammocks.

**FDOT - District 1 Mitigation Site
(Manatee River Basin)**

**MANATEE COUNTY
HIDDEN HARBOR (SW 80)**



Forested Wetland Enhancement (FWE 3) – *These mesic hammocks have a dominance of laurel oak, live oak, cabbage palm, red cedar, and scattered large slash pine. Understory coverage varies in density with scattered saw palmetto, mysine, grapevine, greenbriar, and swamp fern along the lower slopes.*



Forested Wetland Enhancement (FWE 3) – *Another view of the mesic hammock with an area of more red cedar coverage. These hammocks will be enhanced with the eradication of Brazilian pepper that will open more area for desirable species to recruit and generate.*

**FDOT - District 1 Mitigation Site
(Manatee River Basin)**

**MANATEE COUNTY
HIDDEN HARBOR (SW 80)**



Forested Wetland Enhancement (FWE 3) – One of the tidally- connected, dead-end finger creeks that bisect the hammocks, providing more inter-related mosaic of habitats for wildlife use. Substantial fish, amphibian and wading bird activity present within these systems due to variable water levels. Dominant vegetation within the marsh zone includes black needlerush and leather fern.



Manatee River – View from along the north shoreline of the Manatee River along the southwest boundary of Hidden Harbour, looking southeast toward two tidal creek channels and adjacent brackish marsh habitat leading into the forested wetland habitat (FWE 3).

**FDOT - District 1 Mitigation Site
(Manatee River Basin)**

**MANATEE COUNTY
HIDDEN HARBOR (SW 80)**



Upland Habitat Restoration (UHR 2) – This area was cleared but not rock raked, allowing the generation of low panicums, flat-top goldenrod, muhly grass, and broomsedge; good foraging area for deer entering from the hammocks. Proposed restoration includes dense plantings of slash pine, live oak, gallberry, fetterbush, wax myrtle and saw palmetto.



Upland Habitat Restoration (UHR 2) – A narrow band of palmetto and live oaks remain along the steep sideslopes of Gamble Creek and the Manatee River. The restoration of UHR 2 will provide a riverine buffer and wildlife corridor connection between forested wetland habitats north (FWE 1&2) and south (FWE 3).

**FDOT - District 1 Mitigation Site
(Manatee River Basin)**

**MANATEE COUNTY
HIDDEN HARBOR (SW 80)**



Marsh Creation (MC 1) – This upland peninsula is surrounded by forested wetlands east and west (FWE 2), Gamble Creek to the south, and additional former row crop area to the north. Marsh creation will be conducted to provide foraging opportunities and wildlife habitat corridor connections between the wetlands. Upland habitat restoration (UHR 1) will provide additional habitat diversity, wildlife connectivity and buffer the marsh from the adjacent wetlands and creek.



Marsh Enhancement (ME 1) – This seepage marsh has dominant coverage of broomsedge, fennel, and maidencane. Proposed enhancement includes herbicide eradication of the fennel and primrose willow. The access road crossing (forefront) will be vacated, allowing the vegetation to regenerate.

**FDOT - District 1 Mitigation Site
(Manatee River Basin)**

**MANATEE COUNTY
HIDDEN HARBOR (SW 80)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Balm Boyette – Stallion Hammock Restoration**

Project Number: **SW 81**

Project Sponsors: Hillsborough Co. Conservation
SWFWMD, SWIM Section

Phone No: (813) 272-5810
(813) 985-7481

County: Hillsborough

Location: Sec. 15, 16, 17, 20, 21, 22, T31E, R21E

IMPACT INFORMATION (Proposed Construction Date)

(1) FM: <u>4154891 – US 301, Balm Road to Gibsonton Drive (2008) *</u>	ERP #: <u>43031128.000</u>	COE #: <u>2006-4230 (IP-JPF)</u>
(2) FM: <u>4131361 - McMullen Road, Balm Riverview to Boyette Rd. (2012)**</u>	ERP #: _____	COE #: _____
(3) FM: <u>4259461 - I-75 Southbound Ramp & Gibsonton Drive (2014)</u>	ERP #: _____	COE #: _____
(4) FM: <u>1973941 – SR 563, Pipkin Rd. to SR 572 (Undetermined) ***</u>	ERP #: _____	COE #: _____

Drainage Basin: Alafia Water Body: None SWIM water body? N

Impact Acres / Types (FLUCFCS):

(1) FM 4154891 –	<u>0.3</u> ac. <u>631</u>
(2) FM 4131361 -	<u>0.2</u> ac. <u>641</u>
(3) FM 4259461 -	<u>0.2</u> ac. <u>641</u>
(4) FM 1973941 –	<u>4.0</u> ac. <u>615</u>
	<u>5.0</u> ac. <u>617</u>
	<u>2.0</u> ac. <u>641</u>

TOTAL 11.0 acres***

TOTAL: 11.7 acres***

* This project has additional wetland impacts (11.5 acres) in the Tampa Bay drainage basin, with the impacts mitigated at the Ekker Tract (SW 82).

** The final design of this project may result in no wetland impacts.

*** This roadway project has a high probability of not being funded for R/W acquisition or construction, so is unlikely to remain on the FDOT mitigation program. As a result, the total wetland impacts proposed for mitigation at Stallion Hammock will probably decrease to 0.7 acre.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation

Mitigation Area: **11-12 acres**

(Note: additional mitigation area and associated habitat activities at Stallion Hammock may be proposed for inclusion into the mitigation project plan pending whether the SR 563 wetland impacts will remain on the FDOT mitigation program).

SWIM project? Aquatic Plant Control project? Exotic Plant Control Project?

Mitigation Bank? Drainage Basin(s): Alafia Water Body(s): Pringle Branch SWIM water body? N

Project Description

A. Overall project goal: The Balm Boyette Scrub Preserve (Figs. A & B) is a 4,933-acre tract acquired by Hillsborough County Parks, Recreation and Conservation Department through their Environmental Lands Acquisition Program

(ELAPP). The majority of the tract has high quality wetland and upland habitat communities. The eastern third of the tract was mined for phosphate ore in the 1960's, and has partially reclaimed landscape features comprised of wide linear open water pits, steep upland sideslopes, and rolling upland terrain (Figures. B-F, site photos). Prior to mining, there were three wetland tributaries that formed the headwaters of a forested wetland referred to as Stallion Hammock with an interior meandering creek named Pringle Branch. This creek is a tributary of Fishhawk Creek and the Alafia River. The majority of two tributaries were mined, resulting in two isolated lobes of forested wetlands that historically connected to Stallion Hammock (Figures D&E). The main objective of the designated mitigation area includes improving the contributing hydrology from the open water pit areas through the forested & shrub wetland component that naturally recruited within proximity of the historic eastern tributary (Figure F). This improvement will correlate with the restoration and creation of 15-25 acres of wetland habitat from the open water pit and spoil complex within the vicinity of the historic western tributary and adjacent to Stallion Hammock (Figure E); however this additional western tributary area is not providing FDOT mitigation credit. The combination of restoring and enhancing wetland habitat for both tributaries will improve the wildlife habitat conditions and corridor connections in the eastern portion of the tract and particularly within the vicinity of Stallion Hammock.

B. Brief description of current condition: The mine pits within proximity of Stallion Hammock include steep slopes above and below the water elevation; typically steeper than 4:1 slopes. The slopes extend an average of 6-8 ft. below the water elevation and rise 8-12 ft. above the waterline (refer to photos). As a result, the slopes minimize the width and acreage of vegetated littoral zones with dominant coverage of cattails, primrose willow, Carolina willow, various sedges, and spatterdock. However the majority of the pits are primarily open water with some occasional duckweed pockets formed from having stagnant water conditions due to minimal or no water outfall. For the pits that do have outfall ditch conditions into adjacent downstream pits, the ditches have sheer slopes that drop several feet in elevation with dense cover of shrub vegetation such as myrtle and saltbush (refer to photos). Some of these ditches historically had culverts that have become dislodged, plugged, or undermined so the majority of the culverts are non-functioning. The Stallion Hammock floodplain habitat has mixed forested wetlands primarily dependent upon contributing groundwater seepage hydrology and the periodic overflow of the narrow, meandering and incised Pringle Branch. The current designated mitigation area of 10-12 acres include a dominance of red maple, laurel oak, wax myrtle, elderberry, blackberry, and grapevine. This vegetation naturally recruited into this partially reclaimed wetland area.

C. Brief description of proposed work: Evaluation of existing and appropriate surface water hydrology within the contributing watershed of Stallion Hammock will determine grade and culvert elevation connections to achieve appropriate and adequate hydrology and hydroperiods for the 10-12 acres of the forested and shrub wetland habitat. This will also include constructing a ditch block, replacing or reinforcing the existing fill road, and the filling and/or replacement of existing culverts that circumvent the desired drainage patterns (Figure F). Three shallow monitoring well with a continuous recorder was installed in 2009 to provide important information on ground and surface water conditions under pre-post construction conditions. The existing dirt road is currently elevated 12-24 inches above the adjacent wetland grade, and has only one culvert to allow flow from east to west side of the road. This road fill material will either be replaced with a wet crossing or reinforced with additional culverts to accommodate the additional contributing water flow.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The proposed SR 563 roadway project has been proposed since the late 1980's and been on the mitigation program since 2004. As of 2010, the roadway projects has not been funded for design and construction. This new roadway alignment includes crossing open forested wetlands primarily associated with unreclaimed phosphate mine pits, similar to the mine cuts at Balm Boyette. At a later date, it will be determined if and where the mitigation for the SR 563 wetland impacts would be designated, including whether the mitigation is conducted with habitat improvements at Balm Boyette or elsewhere. Until such time those issues are resolved, the proposed 10-12 acres of wetland enhancement is only designated to provide mitigation for the total 0.7-acre wetland impact associated with the three other roadway projects, and may be evaluated to provide additional mitigation credits for other Alafia basin roadway wetland impacts that may be submitted to the program in the future.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the time of mitigation selection for the four roadway projects and as of 2010, there are no existing or proposed mitigation banks in the Alafia basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: This Balm Boyette project has been proposed for restoration and enhancement by Hillsborough County and the SWIM program for several years but could not proceed due to insufficient funding sources.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Hillsborough County and SWFWMD will collaborate toward contractor selection

Contact: Mark Brown (SWFWMD – 352- 796-7211, ext. 4488).

Entity responsible for monitoring and maintenance: Consultant on contract with Hills. Co. and/or SWFWMD

Proposed timeframe for implementation:

Commence: Planning – 2005-2009, Design & Permitting 2009-2011, Construction 2012-2013 Complete: Maintenance & Monitoring – 2013-2016

Project cost: \$400,000*

*Note – this only includes the anticipated funding costs for design, permitting and construction for the area designated for FDOT mitigation credit (eastern tributary). Additional funds from FDEP's Pollution Recovery Program will provide the necessary design and construction costs for the western tributary that is not being utilized for mitigation credit.

Attachments

X 1. Description of existing site and proposed work. Refer to Attachment A.

X 2. Recent aerial photograph with date and scale. Refer to Figures E & F (2007 aerials).

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A for location map and Figures E & F for design plans. Additional evaluation and engineering design information is available from Mark Brown (SWFWMD – 352-796-7211, ext. 4488).

X 4. Schedule for work implementation, including any and all phases. Refer to Attachment B and following draft schedule:

Site Evaluation, Hydrologic Modeling, Restoration Design & Permitting – 2005 - 2010
Construction & Planting – 2011 - 2012
Maintenance & Monitoring – 2012 – 2015 (minimum)

X 5. Success criteria and associated monitoring plan. Refer to Attachment B.

X 6. Long term maintenance plan. Refer to Attachment B.

X 7. Detailed explanation of how this work serves to offset the impacts of the specified DOT project(s). Refer to previous discussion.

Attachment A – Existing Site & Proposed Work

At 4,933 acres, the Balm Boyette Scrub Preserve represents one of the largest contiguous tracts of public lands in Hillsborough County. There is a great diversity of wildlife, vegetation and habitat communities on the property, and the tract contains some of the largest undeveloped xeric habitat remaining in the County. The County has an extensive land management plan that provides details of the various habitat and management activities. The phosphate mining area within the eastern third of the property represents the largest area of displaced habitat on the tract, and it has been the desire and goal of Hillsborough County to restore and enhance some wetland habitat, and associated hydrologic flow patterns to improve the remaining Stallion Hammock. These same goals have been proposed in the SWFWMD's SWIM habitat restoration plan since the mid-1990's. The following information summarizes the existing and proposed habitat conditions associated with the area.

Forested/Shrub Wetland Enhancement (11 acres) – Upon review of the 1968 aerial taken during the mining operations, mine pits, spoil ribbons, and a drainage ditch replaced the eastern tributary. Reclamation resulted in a wetland slough contoured from a pit that connects to Stallion Hammock. However, the contributing basin flow through the wetland was short-circuited with the construction of a large north-south ditch that connects to mine pits located north and south of the wetland (Figure F). As a result, this wetland tributary slough has minimal hydroperiods, resulting in substantial coverage of opportunistic transitional species such as elderberry (*Sambucus canadensis*), wax myrtle (*Myrica cerifera*), salt-bush (*Baccharis halimifolia*) and blackberry (*Rubus* spp.). Hydrologic flow patterns and an increase in the wetland hydroperiod will be achieved by constructing a block at the ditch outfall of the wetland, and diverting the contributing water flow from the northern pit to another revised culvert outfall located several hundred feet upstream.

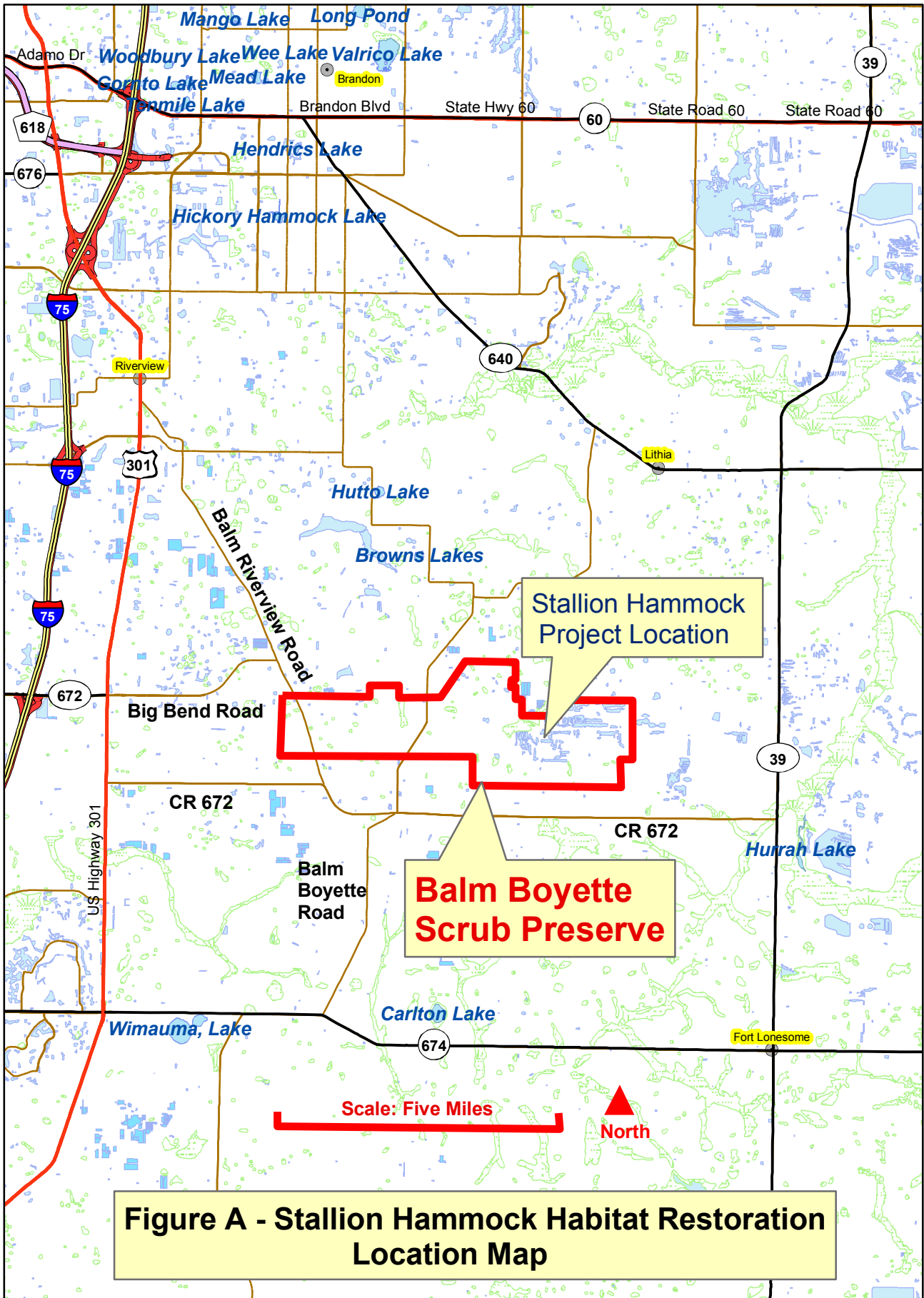
As previously noted, there are conveyance ditches that hydrologically connect the mine pits associated with the historic eastern tributary area (Figure E). These ditches have sheer slopes that have continuously eroded and undermined, resulting in several feet of drop from the top of bank. Existing ditch cross sections and flow estimates (volume, velocity, etc.) will be evaluated and incorporated with the surface water modeling effort to determine appropriate elevations for not only contributing appropriate volumes to the restored and existing Stallion Hammock, but the conveyance dimensions necessary to resemble natural habitat for easier wildlife access. In order to create and maintain a more appropriate conveyance and minimize the potential of erosion and undermining, the lowest swale elevations may require some structural support such as geoweb, rip-rap rubble, etc. A few of these conveyance crossings also require vehicular access for land management activities. These crossings will probably incorporate shallow wet crossings during the rainy season, with geoweb material or large rubble rock that allows lateral seepage as well as periodic overflow. The geoweb and rock is typically capped with limerock base material for vehicle access. This material will be kept to a minimum where necessary to achieve stability, and constructed with gradual slopes to resemble most natural wetland corridor features. Due to the steep slopes and high top-of-bank elevations of these ditches, it will be necessary to grade back the side-slopes 50 feet or more to create a more natural conveyance of 10:1 slopes or greater. In order to quickly stabilize these slopes, it will be

necessary to seed with brown-top millet, winter rye, and/or bahia. However, these slopes will also be planted with trees (slash pine, laurel oak, red maple) on 10 ft. centers and wax myrtle on separate 20 ft. centers to quickly establish ground and canopy cover. These conveyance improvements are necessary components to restore and enhance hydrologic connectivity while providing wildlife access and habitat corridors. However, the hydrologic and habitat improvements associated with the crossings will not be quantified in the mitigation credits.

Attachment B – Schedule, Maintenance & Monitoring, Success Criteria

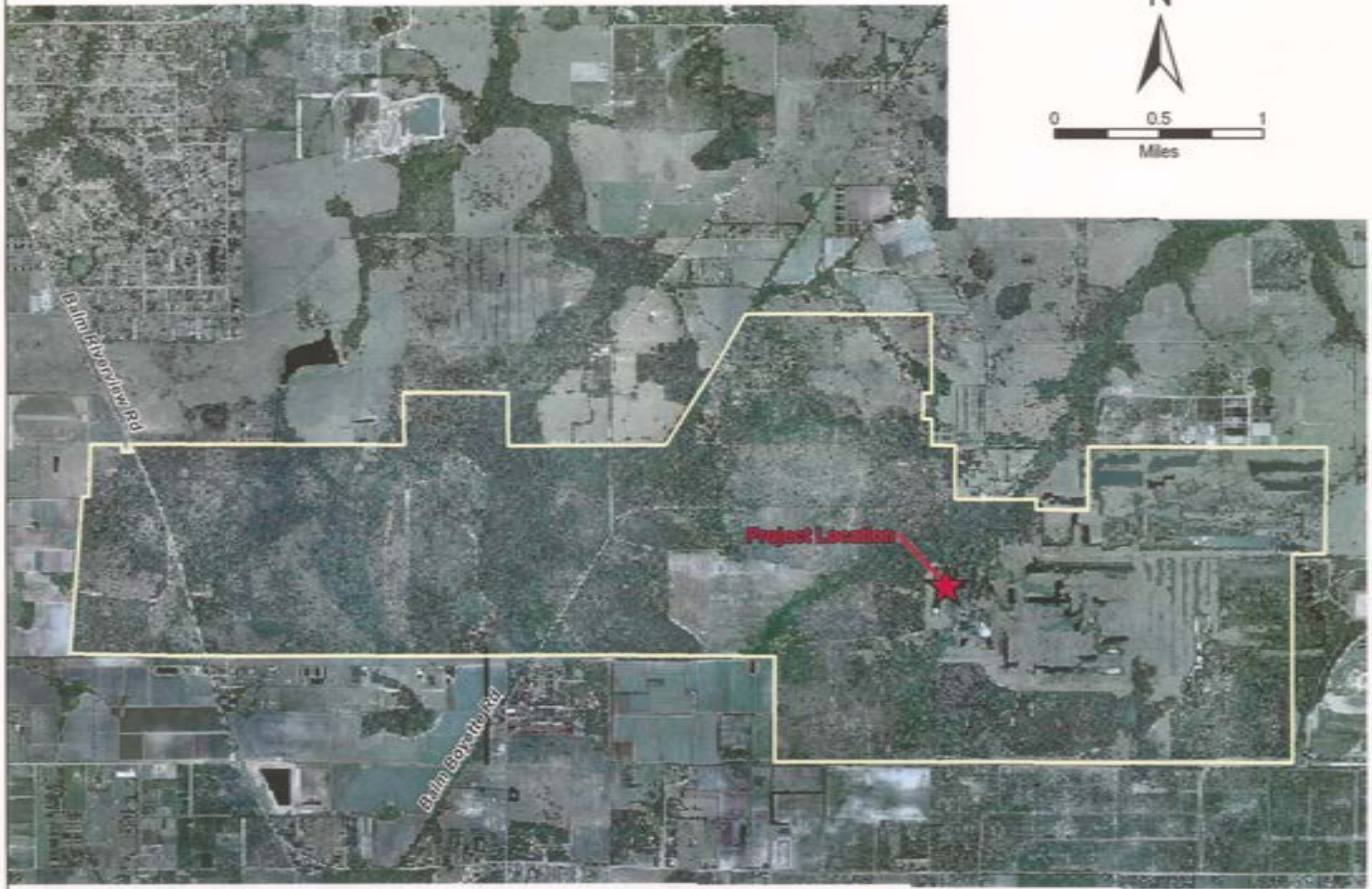
Site evaluation, bathymetric study, earthwork estimates, and concept plans were conducted from 2005-2008. Necessary surface water modeling, construction plan preparation and permitting are being conducted in 2009-2010, followed by construction and planting in 2011. Post-construction, there will be a minimum three years of maintenance & monitoring to guarantee success criteria. Maintenance will be conducted a minimum of three years to ensure sufficient vegetative coverage at the graded hydrologic connections between the pits, and that the structures are stabilized and functioning as designed. Monitoring will be conducted by the SWFWMD on a semi-annual basis for a minimum three years post-construction and until meeting success criteria. Monitoring will include a comprehensive qualitative habitat and hydrologic assessment of each graded wetland corridors between the pits, and the 11-acres of forested and shrub wetland habitat designated for FDOT mitigation credit. The habitat monitoring within these areas will include vegetative coverage and any species transition, wildlife utilization, stability and function of installed structures, and recommended actions necessary to ensure and further enhance habitat success. Documentation of the planted vegetation survivorship and growth rates will be conducted within graded hydrologic corridor conditions. Annual monitoring reports will be prepared, and the report will include qualitative and photo documentation of pre-construction habitat conditions, construction activities, and any problems and solutions.

Success criteria includes a minimum 90% survivorship of planted material in the corridor connections for a minimum of one year from the selected nursery contractor(s). Any plant mortality will be replaced with appropriate species to be agreed upon with Hillsborough County and the SWFWMD. Plant coverage requirements for the hydrologic conveyance areas include a minimum 90% coverage of planted and recruited desirable species. Success criteria for the enhanced forested & shrub wetland requires halting the ditch drainage to the south with a stabilized ditch block, and achieving the proposed east to west hydrologic flow pattern through the wetland to Stallion Hammock.



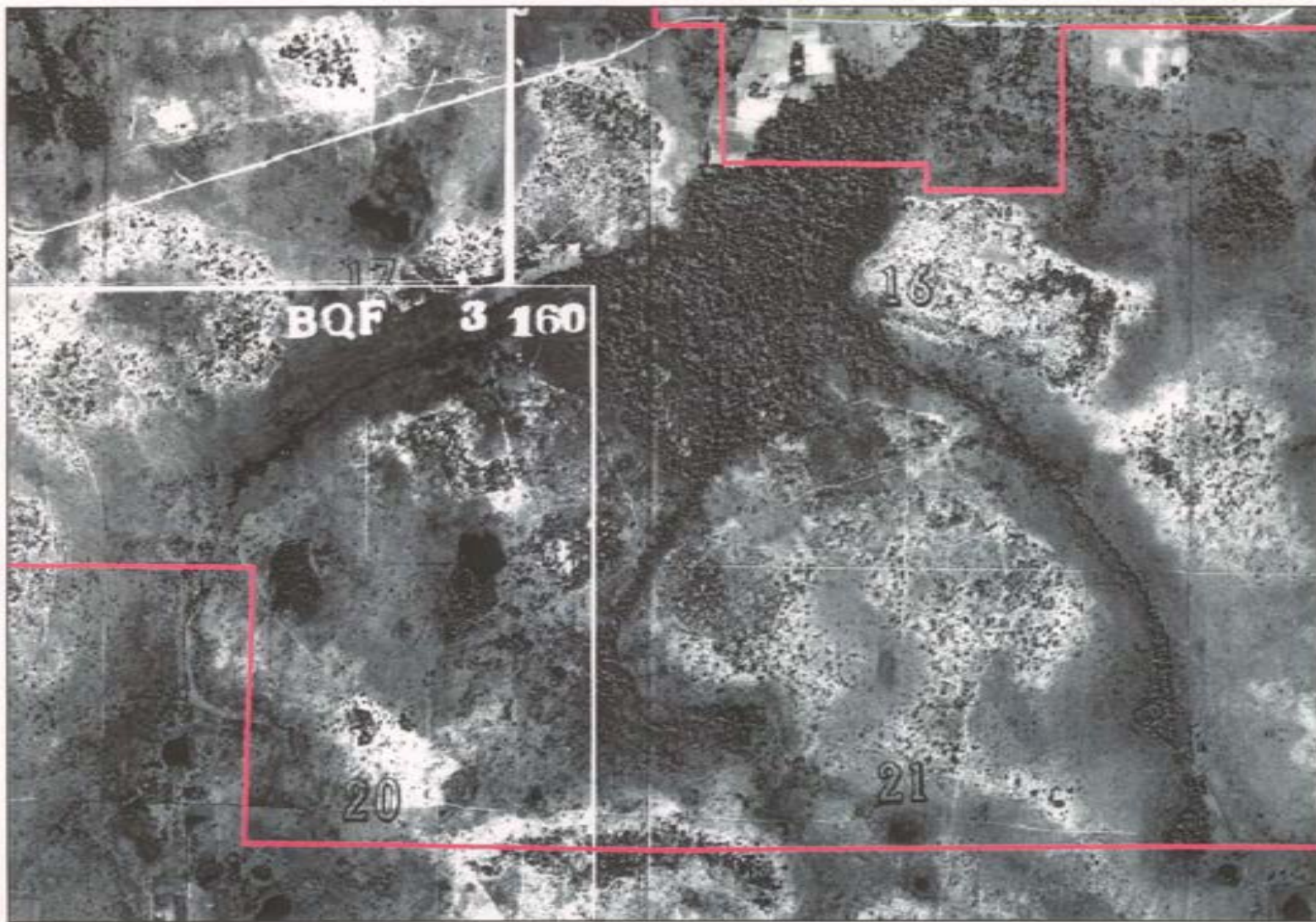
Balm Boyette Scrub Preserve

Figure B - 2004 Aerial



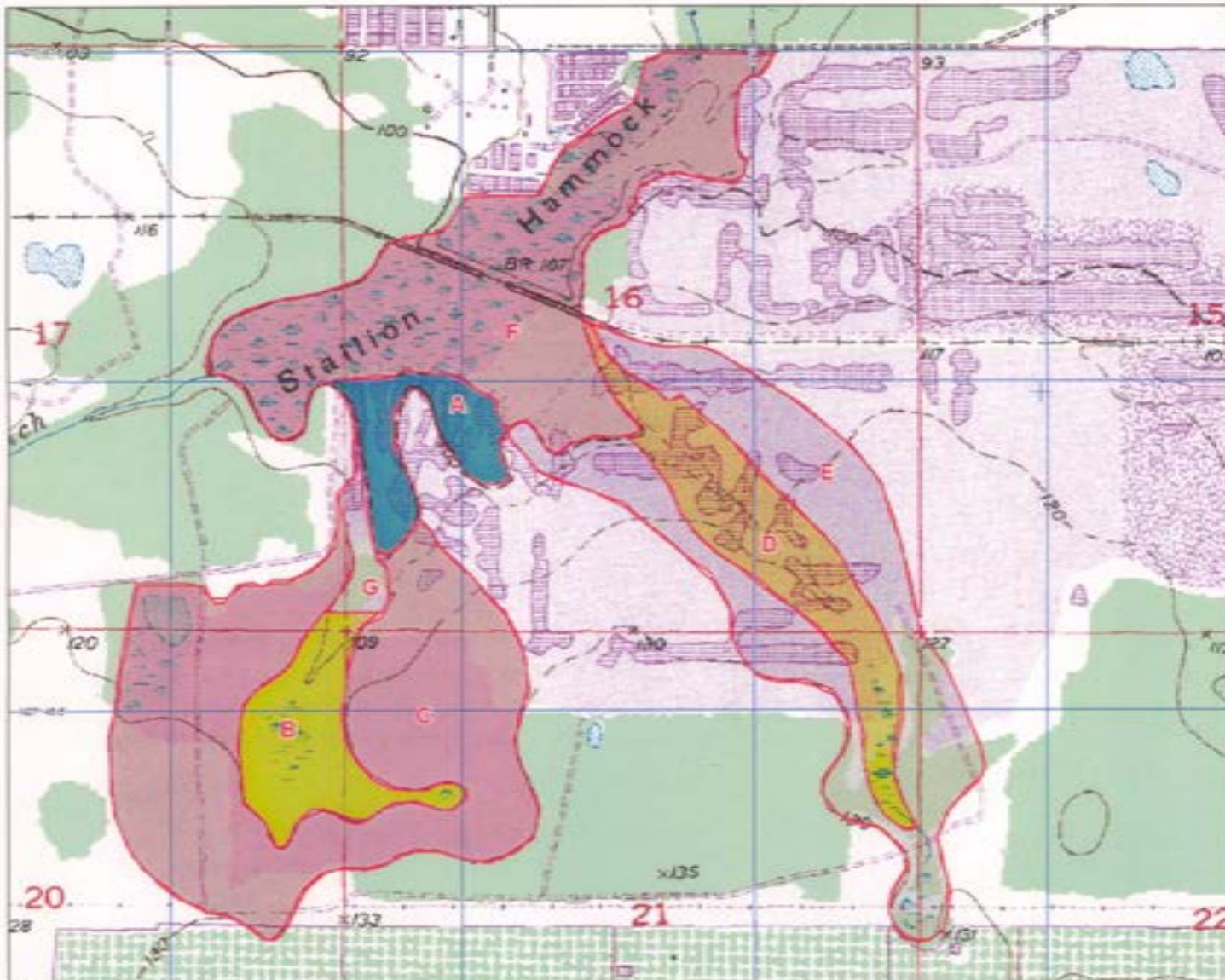
Balm-Boyette Scrub Preserve
Stallion Hammock 1938

Figure C - Pre-Mining Aerial



0 500 1,000 2,000
Feet

Figure D - Stallion Hammock Watershed



Legend

- A. Portion of Stallion Hammock (Lost to Mining)
- B. Original western tributary wetland boundary
- C. Western tributary watershed
- D. Eastern tributary (historic) wetland boundary
- E. Eastern tributary watershed
- F. Remaining portions of Stallion Hammock (boundary= S-15 to North)
- G. Western tributary (destroyed)

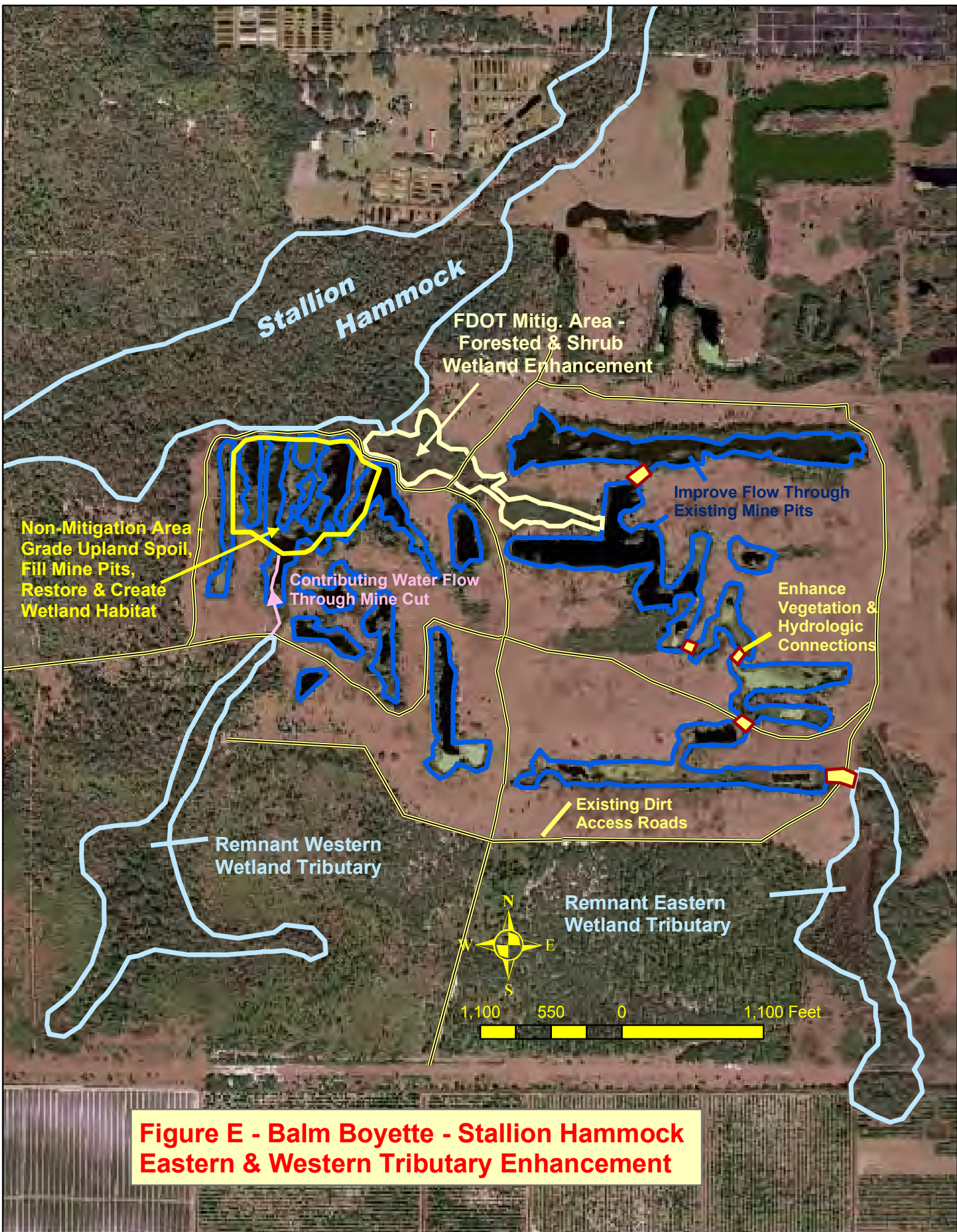
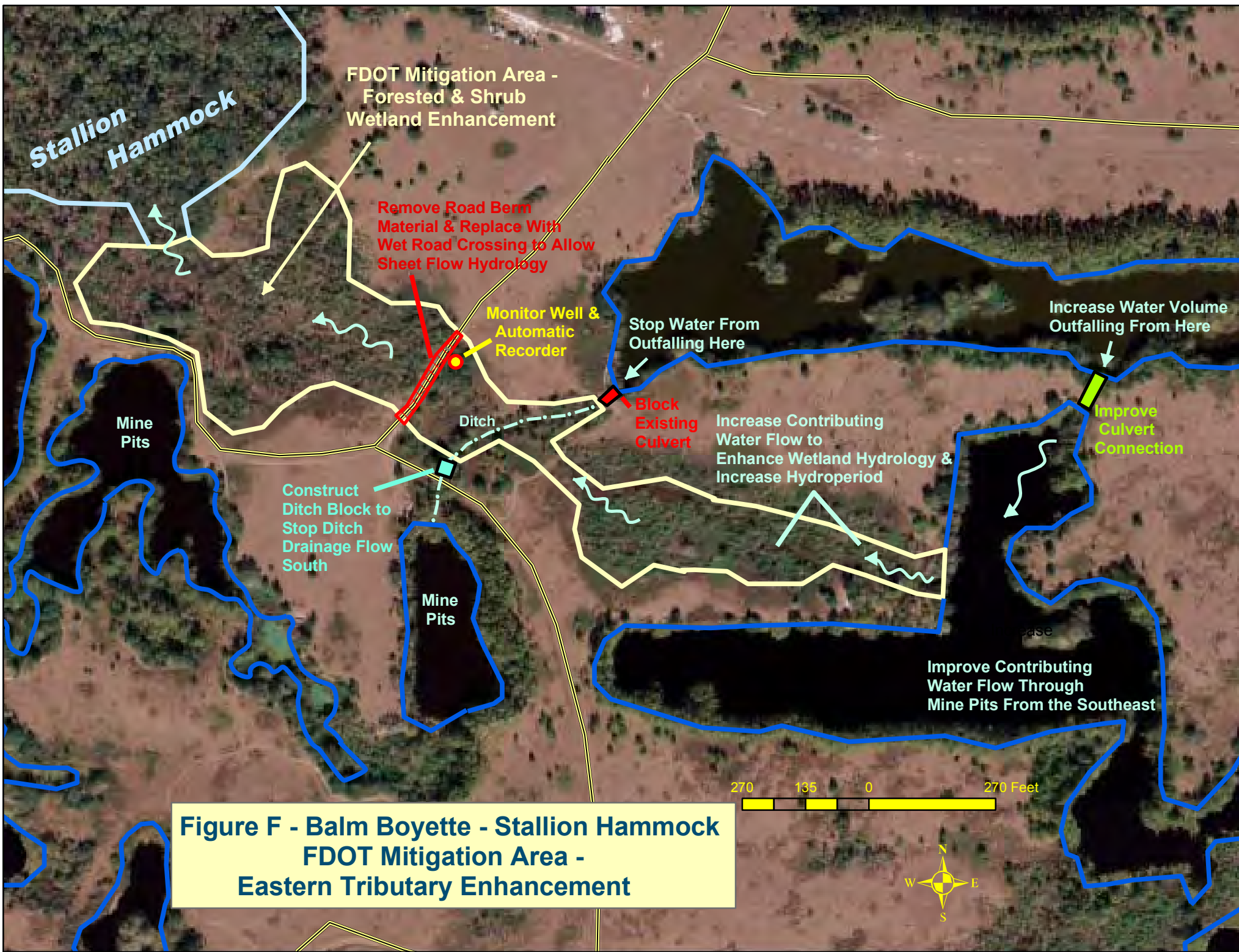


Figure E - Balm Boyette - Stallion Hammock Eastern & Western Tributary Enhancement



**Figure F - Balm Boyette - Stallion Hammock
FDOT Mitigation Area -
Eastern Tributary Enhancement**



Wetland Restoration – One of the open water pits adjacent to Stallion Hammock. Proposed plan includes grading the upland spoil ridge (background) into the pit; elevating the bottom of the pit to appropriate grades to restore wetland habitat.



Spoil Ridge – One of the narrow spoil ridges proposed for grading into the adjacent pits. Vegetation primarily includes pines, wax myrtle, grapevine and bahiagrass.

**FDOT Mitigation Site
(Alafia River Basin)**

**BALM BOYETTE
STALLION HAMMOCK RESTORATION
(SW 81)**



Forest & Shrub Wetland Enhancement – A naturally regenerated wetland within the mine reclamation area; near the historic location of the mined eastern tributary to Stallion Hammock. The wetland is dominated by facultative species (elderberry, salt-bush, wax myrtle, blackberry) and hydrologically altered by a large ditch proposed for fill.



Stallion Hammock – The remaining forested wetland hammock has forested canopy dominated by laurel oak, red maple, and bays; understory dominated by various fern species. The wetland hydrology is primarily from contributing basin groundwater seepage with periodic floodwater overflow from the narrow, incised Pringle Branch.

FDOT Mitigation Site
(Alafia River Basin)

BALM BOYETTE
STALLION HAMMOCK RESTORATION
(SW 81)



Upland Enhancement – The uplands between the pit slopes east of the proposed wetland restoration area has rolling terrain. Dominant vegetative cover includes bahiagrass, fennel, blackberry, salt-bush and minimal canopy species. Proposed enhancement will include planting various tree species.



Pit Slopes – One of the pits not proposed for fill. Average slope grades are 4:1, 8-10 feet elevation drop from the upland to the water. These buffers average 50 ft. wide with vegetative cover dominated by preserved pines, myrtle and grapevine. Some of the pits have duckweed due to stagnant and non-flowing water.

**FDOT Mitigation Site
(Alafia River Basin)**

**BALM BOYETTE
STALLION HAMMOCK RESTORATION
(SW 81)**



Upland Enhancement – The majority of pit areas (not proposed for filling) have water elevations several feet below top-of-bank, typically 4:1 slopes of pine, oak, and myrtle buffers. The fallow uplands are dominated by bahiagrass. By planting trees in these fallow areas, there will be more habitat connectivity and corridors between the tract’s native habitats and the open water components used by wildlife.



Hydrologic Connections – The majority of the ditches between the pits have sheer slopes with bottom grade elevations several feet below top-of-bank. The slopes and dense vegetative cover (predominantly exotics) present hazards for wildlife access. These connections will be enhanced by grading the slopes to resemble natural creek conditions; with wide swales, gentle slopes, planting wetland vegetation and adjacent upland buffers to create habitat corridors for wildlife.

**FDOT Mitigation Site
(Alafia River Basin)**

**BALM BOYETTE
STALLION HAMMOCK RESTORATION
(SW 81)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Ekker Tract**

Project Number: **SW 82**

Project Sponsors: SWFWMD – SWIM Section, Hillsborough County – Conservation Section

County: Hillsborough

Location: Sec. 12, T 31S, R22E

IMPACT INFORMATION (Proposed Construction Date)

1 - FM 4154892 – US 301, Balm Road to Gibsonton Road* ERP #: 43031128.000 COE #: 2006-4230 (IP-JPF)
2 - FM 4154893 – US 301, Sun City Center to Balm Road (2014)** ERP #: 43034464.000 COE #: 2008-3613
3 - FM 4113371 – US 92, Eureka Springs to Thonot. Rd.*** ERP #: 43031172.000 COE #: 2006-602-JPF
4 - Tampa Hills. Exp. Auth. – Lee Roy Selmon – Temp Haul Rd. ERP #: 44021031.006 COE #: NA-Isolated Wet.

Drainage Basin: Tampa Bay Water Body(s): Tampa By-Pass Canal, Big Bullfrog Creek, Little Bullfrog Creek
SWIM water body? N

Impact Acres / Types (FLUCFCS):

(1) FM 4154892 <u>1.5</u> ac. <u>610</u>	(2) FM 4154893 <u>2.0</u> ac. <u>631</u>
<u>7.2</u> ac. <u>631</u>	<u>1.2</u> ac. <u>524</u>
<u>2.8</u> ac. <u>640</u>	<u>TOTAL 3.2 acres</u>
<u>TOTAL 11.5 acres</u>	
(3) FM 4113371 <u>0.1</u> ac. <u>610</u>	(4) THEA <u>0.21</u> ac. <u>641</u>
<u>0.1</u> ac. <u>640</u>	
<u>TOTAL 0.2 acre</u>	TOTAL – 15.11 acres

* Additional wetland impacts (0.3 acre) associated with this project are within the Alafia River basin, with mitigation designated at Balm Boyette (SW 81).

** Additional wetland impacts being mitigated by FDOT with on-site wetland creation on ELAPP property and forested wetland impacts at Boyd Hill Nature Park (SW 71); additional wetland impacts within the Little Manatee River basin being mitigated at the Little Manatee River – Lower Tract (SW 83).

*** This US 92 segment proposes additional wetland impacts (1.6 acres) in the Hillsborough basin with the associated mitigation designated for Colt Creek State Park (SW 84).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation X Restoration X Enhancement ___ Preservation Mitigation Area: **84 acres**

SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? Y
Mitigation Bank? N Drainage Basin: Tampa Bay Drainage Basin Water Body(s): Bullfrog Creek, Smith Creek
SWIM water body? Bullfrog Creek outfalls to Tampa Bay which is a SWIM water body.

Project Description

A. Overall project goal: The 85-acre Ekker Tract was acquired by the SWFWMD to conduct habitat improvements that will benefit Bullfrog Creek and Tampa Bay (Figure A). The northern portion of the property is dominated by mesic oak hammock and planted pine plantation (Figure B, site photos). An objective is to enhance the upland habitat by primarily removing nuisance and exotic vegetation, appropriate pine thinning to restore pine flatwood habitat, conduct supplemental planting, and implementation of a land management plan. The southern portion of the property had a substantially altered landscape comprised of 158 excavated tropical fish ponds covering 23 acres. The aquaculture

operation was discontinued prior to public acquisition, and the vegetative conditions included substantial domination of exotic and nuisance species; dominated by cattails in the ponds and Brazilian pepper surrounding the ponds. The plan included exotics eradication and appropriate grading of the ponds to create approximately 19 acres wetlands that includes forested and marsh habitat (Figure C). Excavated material to create the wetlands was partially kept on-site to fill the perimeter ponds and bordering Ekker Road and Symmes Road to restore upland habitat to provide an appropriate upland buffer around the created wetlands.

B. Brief description of pre-construction condition: The mesic oak hammock habitats (total 33 acres) is predominantly within the northwestern portion of the property and a linear buffer adjacent to Bullfrog Creek (Figure B, photos). The pine plantation (approx. 24 acres) is within the north-central and southeastern portion of the tract. The pine plantation was comprised of small slash pines less than 6-inch DBH and 20-30 ft. high. The majority of the pines were planted on dense 5-10 ft. centers so with the canopy closure and substantial pine straw thatch, there was minimal ground cover in the plantation (photos). The oak hammock habitat and pine plantation had minor coverage of exotic and nuisance species, predominantly scattered Brazilian pepper. The tropical fish ponds were located within the southwestern portion, with the various ponds ranging in size from 600 to 5000 square feet (less than 0.1acre each). The pond bottom grades ranged 3-5 feet below top-of-bank with dominant coverage of exotic vegetation such as cattails and torpedo grass, and surrounded with Bermuda grass and Brazilian pepper. There is a small retention pond (0.4 acre) northeast of the fish ponds with an outfall into an intermittent creek (Smith's Creek) that seeps and meanders north to Bullfrog Creek. Additional details on the pre-construction habitat conditions are described in Attachment A and site photographs.

C. Brief description of conducted work: The construction and planting of the wetland creation area was conducted in 2010 (Figures C,E). Some of the excavated material necessary to construct the ponds was hauled off-site and the remaining used to fill the outer ponds along the property boundary. The on-site filled ponds were rounded and extended 4-6 ft. above historic grade to restore an upland habitat buffer around the constructed wetland habitat. The mounded material was overlain with a dense mat of recycled wood mulch to minimize the generation of the exotic and nuisance species and planted with native vegetative species. The created wetlands include a mosaic of habitats including forested, high marsh, low marsh, obligate/open water and ephemeral ponds (Figure E, photos). By thinning the pines, this opened the canopy to allow understory vegetation to naturally recruit and regenerate; particularly various sedges, myrtles and salt-marsh. To further restore the pine flatwood habitat and enhance the oak hammocks, a prescribed burn program was initiated with a controlled fire in 2010. More information of the habitat improvements and planting plan are described in Attachment A.

D. Brief explanation of how this work serves to offset the impacts of the specified FDOT project(s): Almost all the roadway wetland impacts designated for mitigation at Ekker include two US 301 segments in the vicinity, and many of the wetland impacts are associated with crossings over Bullfrog Creek and Little Bullfrog Creek. Since these two creek crossings are upstream of the Ekker Tract that is also located adjacent to Bullfrog Creek, the loss of this habitat along the creek will be appropriately mitigated with habitat improvements at Ekker.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection, the only existing or proposed mitigation bank in the basin is the Tampa Bay Mitigation Bank (TBMB); the bank area was under construction and did not have available credits released for purchase.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The habitat improvements associated with this Ekker Tract project is a SWIM-sponsored project.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: The project was constructed in 2010 by a private contractor working through the SWIM Section.

Entity responsible for monitoring and maintenance: Private consultant on contract through the SWFWMD
Timeframe for implementation: Commence: Planning & Design – 2005-2009, Construction – 2010 Complete: Maintenance & Monitoring -2010- 2015, followed by periodic monitoring and perpetual maintenance activities conducted when necessary (refer to schedule below).

Project cost: \$ 963,000 (total)
Planning & Design - \$100,000
Construction & Planting - \$563,000
Maintenance & Monitoring - \$300,000

Attachments

X 1. Description of existing site and proposed work. Refer to Attachment A.

X 2. Recent aerial photograph with date and scale. Refer to Figure B (2008 pre-construction aerial) & Figure C (2010 current construction aerial). Post-construction aerial photos will be added in future mitigation plans.

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A for location map, Figure B of pre-construction habitats, Figure C for habitat improvements and construction in 2010, and Figure E for the design plan for the wetland creation portion of the project. Additional project details are available through the SWFWMD-SWM Section and FDOT Mitigation Program Manager.

X 4. Detailed schedule for work implementation, including any and all phases. Refer to Attachment B and following schedule:

Site Evaluation, Hydrologic Modeling, Restoration Design & Permitting – 2005 – 2009
Construction & Planting – 2010
Quarterly Maintenance & Semi-Annual Monitoring – 2010 – 2015
Maintenance & Management – 2015 - Perpetual

X 5. Success criteria and associated monitoring plan. Refer to Attachment B.

X 6. Long term maintenance plan. Refer to Attachment B.

Attachment A – Ekker Tract – Existing Site and Proposed Work

Due to the high concentration of developed lands within the Tampa Bay Drainage Basin, the SWFWMD and Hillsborough County primarily have to pursue acquisition of parcels impacted by past agricultural activities. Habitat creation, restoration and enhancement on these parcels provide valuable ecological improvements within this highly urbanized basin and receiving waters of Tampa Bay. The SWFWMD purchased the 70-acre Ekker parcel in 2001, and the adjoining 15 acres along the northwestern property boundary in 2003. The property is managed through the Hillsborough County Parks, Recreation and Conservation Department as part of their Environmental Lands Acquisition and Protection Program (ELAPP). As exhibited by Figure A, the Ekker Tract is within a few miles of Tampa Bay.

The historical aerials indicate the majority of the Ekker property was cleared of native flatwood vegetation between 1938 and 1957, and converted to improved pasture. By 1957, the majority of the tropical fish ponds were excavated, with the remaining 26 ponds installed by 1980. Hundreds of other fish ponds were excavated on surrounding property in Gibsonton, many of which have been and will continue to be converted to residential communities. With the loss of substantial freshwater wetland habitat in the Tampa Bay basin, the County and SWIM decided the best ecological alternative for this area of the property was to convert the fish ponds to appropriate and ecologically beneficial wetland habitat.

What made the decision even more ecologically valuable is the available upland habitat enhancement opportunities on the tract. The combination of improvements to wetland and upland habitat has resulted in diverse and inter-related ecological communities that will result in habitat improvements for wildlife activities. This is particularly important for the Gibsonton area. As evident on the aerial (Figure A), there is very minimal undeveloped property in the vicinity; particularly any native habitat adjacent to Bullfrog Creek. In January, 2001, members of the National Audubon Society conducted an avifaunal study of the site and noted 14 bird species. In addition, fauna species observed on the property include opossum (*Didelphys marsupialis*), red fox (*Vulpes vulpes*), river otter (*Lutra canadensis*), raccoon (*Procyon lotor*), armadillo (*Dasypus novemcinctus*), and gopher tortoise (*Gopherus polyphemus*). Due to the developed land use of the surrounding property that will only increase in the future, this places more importance on the ecological capacity of the Ekker tract to not only sustain the existing and future generations of wildlife populations, but also improve habitat conditions in order to receive displaced wildlife. The direct connection of the tract to Bullfrog Creek is also valuable since wildlife utilize this creek corridor to travel upstream and downstream to the natural habitat along Tampa Bay.

Wetland Creation & Adjacent Upland Buffer (Approx. 23 Acres) – Prior to construction, the tropical fish pond area on the property had vegetatively transitioned to an almost exclusive coverage of exotic and nuisance species (refer to photos). The most common pond vegetation includes cattails (*Typha* spp.), torpedo grass (*Panicum repens*), spikerush (*Eleocharis* spp.), duckweed (*Lemna* spp.) with occasional primrose willow (*Ludwigia peruviana*) and Carolina willow (*Salix caroliniana*). Brazilian pepper (*Schinus terebinthifolius*) is common along the sideslopes and top-of-bank. Ground coverage around the ponds includes bahiagrass (*Paspalum notatum*), Bermuda grass (*Cynodon dactylon*), dog fennel (*Eupatorium capillifolium*), and broomsedge (*Andropogon virginicus*). The ponds were buffered along Symmes Road and Ekker Road by a dense monoculture perimeter of B. pepper and roadside drainage ditches covered with cattails and other exotics. In general, there was minimal habitat value associated with the aquaculture area that would have substantially deteriorated with generation of more exotic vegetation if not converted to appropriate habitat.

The wetland creation design for the pond area (Figures C & E) includes marsh habitat (12.4 acres), forested wetlands (2.1 acres), obligate/open water (4.4 acres), ephemeral ponds (0.6 acre) and buffer by elevated mounds planted with upland vegetation (5.0 acres). The design incorporated cross-sectional surveys and groundwater elevations obtained from piezometers installed on the property. Wetland plantings were conducted during the summer, 2010 to quickly establish coverage and minimize turbidity. Plantings included a diverse assemblage of bare root and potted herb species installed on 3 ft. centers within appropriate elevation zones; with such species as arrowhead (*Sagittaria lancifolia*), bulrush (*Scirpus validus*), fireflag (*Thalia geniculata*), pickerelweed (*Pontederia cordata*), sand cordgrass (*Spartina bakeri*), soft rush (*Juncus*

effusus), spatterdock (*Nuphar luteum*), and spikerush (*Eleocharis interstincta*). Diverse tree species include 1-gallon nursery stock planted on staggered 20 ft. centers; primarily bald cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica biflora*), laurel oak (*Quercus laurifolia*), popash (*Fraxinus caroliniana*), red maple (*Acer rubrum*), and sweet bay (*Magnolia virginiana*). Some shrub plantings included wax myrtle (*Myrica cerifera*) and buttonbush (*Cephalantus occidentalis*).

The mounded upland buffer restoration around the wetland creation area is an important habitat component of the plan. The ground cover vegetation plantings included a dominance of love grass (*Ergrostis* spp.), muhly grass (*Muhlenbergia capillaries*), and sand cordgrass (*Spartina bakeri*), as well as the establishment, growth and coverage of shrubs and trees. The most common tree plantings will include 1-gallon stock (10 ft. spacings) of laurel oak (*Quercus laurifolia*), live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), red maple (*Acer rubrum*), and slash pine (*Pinus elliottii*). In order to establish the vegetative buffer with a shorter duration while the trees become established and reach maturity, 1-gallon wax myrtle (*Myrica cerifera*) will be densely planted on 10 ft. spacings.

Oak Hammock (34 Acres) and Pine Flatwood Enhancement (24 Acres) - The historical aerials indicate the oak hammock habitats approximate the same general limits present during the 1930's but currently have more canopy closure. There has been an increase of some oak habitat along the western portion of the tract with the removal of historic pine flatwood habitat. The hammocks have dominant canopy cover provided by live oak (*Quercus virginiana*), laurel oak, water oak (*Quercus nigra*) with scattered cabbage palm (*Sabal palmetto*) and pine (*Pinus elliottii*, *Pinus palustris*). The understory varies in species and coverage. The oak hammock within the northwest portion of the tract is dominated with live oak and tend to have moderate to dense understory coverage of saw palmetto (*Serenoa repens*), cabbage palm, grapevine; with pockets of various fern species under dense canopy (*Nephrolepis exalta*, *Pteridium aquilinum*, *Osmunda cinnamomoea*, *Thelypteris* spp.). Other common species include dog fennel, beggar's-tick (*Bidens alba*), grapevine (*Vitis* spp.), various sedges (*Andropogon* spp.), carpetgrass (*Axonopus* spp.), flat-top goldenrod (*Euthamia minor*), blackberry (*Rubus* spp.) and low panicums (*Dicanthelium* spp.). The live oaks extend along the upper steep banks of Bullfrog Creek where there is also coverage of dense palmetto transitioning down to scattered mangrove (*Laguncularia racemosa*) and leatherfern (*Acrostichum* spp.) along the waterline of this tidally connected creek. Brazilian pepper is scattered within the oaks and pine plantation of the property, particularly along the upper banks of Bullfrog Creek. The more recent natural recruitment and generation of oak hammock habitat within the southwest portion of the property has more coverage of the opportunistic and younger laurel oak than the old generation of live oaks present for several decades in the northwest portion. In some small areas of the laurel oaks, the canopy density has resulted in substantial shade that has limited ground coverage.

Enhancement of the oak habitat was initiated in 2010 Brazilian pepper and incorporating a prescribed fire program to provide more open canopy and sub-canopy for the natural regeneration of understory vegetative. The pine plantation received a major thinning of pines in 2010 to widen the tree spacings to 30-40 feet; followed by prescribed fire that substantially reduced the pine thatch. The combination of the pine removal and fire allowed the natural regeneration and recruitment of desirable herbs and sedges in the flatwoods. The enhanced and restored upland habitats have attracted and improved habitat conditions for wildlife use. There are several gopher tortoise residing on the property. One of the more unique opportunities included using excess fill material to construct a few long, low, and linear mounds in the flatwoods to provide the potential establishment of gopher tortoise burrows.

Retention Pond (0.4 acre) – The dredged retention pond has the associated spoil material around the pond perimeter and essentially no available littoral shelf. There are some oaks on the spoil mounds but also B. pepper. A portion of the pond was backfilled to create a planted littoral zone. The wetland creation area that replaced the fish ponds hydrologically connect to the regraded pond to provide some additional water quality treatment and attenuation before outfalling into Smith Creek and Bullfrog Creek.

The Ekker homestead and driveway entrance are located on the tract and the associated one acre of coverage is excluded from the mitigation plan. The sale of Ekker property to the SWFWMD included a life estate agreement so the residence will not be conveyed to another party. The residence will eventually be

conveyed to Hillsborough Parks and used by the Conservation Section as a residence for on-site land management and security.

Attachment B – Schedule, Maintenance & Monitoring, Success Criteria

The schedule includes engineering and environmental evaluation from 2005-2009 to obtain site information, conduct the necessary surface and groundwater modeling for the final design. Construction and planting was conducted in 2010. Post-construction maintenance and monitoring will be conducted for a minimum five years and until success criteria is met, followed by perpetual maintenance and land management activities.

Herbicide maintenance activities are conducted on a quarterly basis to eradicate and control exotic and nuisance species from the tract and will continue post-construction to allow for establishment of appropriate plant species, and less frequent herbicide applications as the habitats mature. Based on the conditions of the various habitats and status of selected species proposed for planting, supplemental planting will be conducted where necessary to fulfill desired results of each habitat area and associated success criteria. Herbicide applications will be conducted through a licensed herbicide applicator on contract through the SWFWMD. After a minimum of five years and the desired habitat conditions and mitigation success has been achieved, perpetual management will be conducted through the Hillsborough County Parks, Recreation & Conservation Department and/or designee to maintain the same success criteria. The Conservation Section may choose to utilize their herbicide crew or contract with a private licensed applicator. Based on the progress of the habitat conditions, perpetual herbicide treatment is anticipated to occur on no less than a semi-annual basis to eradicate exotics and nuisance species.

Monitoring will be conducted through the SWFWMD on a semi-annual basis for a minimum of five years and until meeting success criteria. Monitoring will include a comprehensive qualitative assessment of each habitat component within the wetland creation area including but not limited to plant health & survivorship, recruited plant species, cumulative plant coverage, exotic & nuisance species coverage, wildlife use & opportunities, and recommended actions necessary to ensure and further enhance habitat success. Qualitative monitoring will also be conducted for the restored and enhanced upland habitats. Annual monitoring reports will be prepared, and the report will include qualitative and photo documentation of post-construction habitat conditions and wildlife utilization for the entire site as well as established monitoring stations.

Success criteria includes a minimum of 90% survivorship of planted material for a minimum of one year after installation. This includes plantings within the wetland creation and upland buffer restoration. Any plant mortality will be replaced with appropriate species to be agreed upon with Hillsborough County and the SWFWMD. Plant coverage requirements for the created wetland creation will include a minimum 85% of desirable species, and 10% coverage in the obligate/open water area. Vegetative coverage requirements of planted and recruited desirable species; 60% for the enhanced uplands. Tree canopy coverage requirements for the constructed forested wetlands and restored uplands will be a minimum of 20%, Exotic and nuisance vegetation eradication will be conducted within the entire tract; with maximum coverage limit of 5% to achieve and maintain success criteria.

enhanced upland habitats. Annual monitoring reports will be prepared, and the report will include qualitative and photo documentation of post-construction habitat conditions and wildlife utilization for the entire site as well as established monitoring stations.

Success criteria includes a minimum of 90% survivorship of planted material for a minimum of one year after installation. This includes plantings within the wetland creation, as well as upland restoration and enhancement communities. Any plant mortality will be replaced with appropriate species to be agreed upon with Hillsborough County and the SWFWMD. Plant coverage requirements for the wetland creation and restored upland habitat buffer will include a minimum 90% coverage of planted and recruited desirable species; 60% for the enhanced uplands. Tree canopy coverage requirements for the constructed forested wetlands and restored uplands will be a minimum of 20%, 50% for the enhanced uplands. Exotic and nuisance vegetation eradication will be conducted within the entire tract; with maximum coverage limit of 5% to achieve and maintain success criteria.



Alafia River

Gibsonton

Ekker Tract

Bullfrog Creek

Tampa Bay

41

75

2,700 1,350 0 2,700 Feet



**SW 82 - Ekker Tract
Figure A - Location**

**SW 82 - Ekker Tract
Figure B - Pre-Construction
Habitat Conditions (2008)**



Marsh

Oak Hammock
Enhancement



410 205 0 410 Feet

Bullfrog Creek

Ekker House

Oak Hammock

Smith Creek

Property
Boundary

Pine Plantation
Restore to
Pine Flatwoods

Retention
Pond

Abandoned Tropical
Fish Ponds -
Proposed Wetland
Creation & Restore
Upland Habitat
Buffer Area

Pine Plantation
Restore to
Pine Flatwoods

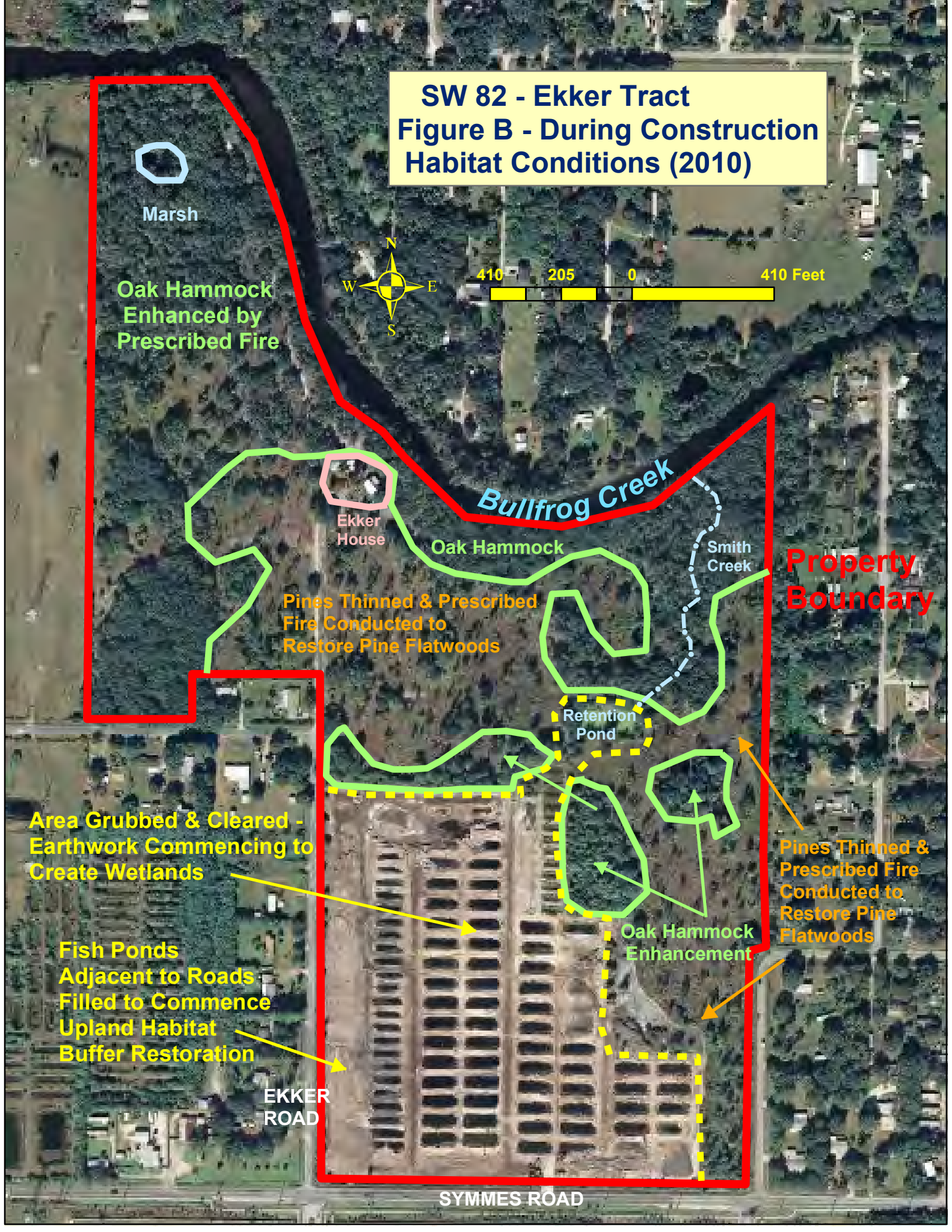
Oak Hammock
Enhancement

EKKER
ROAD

SYMMES ROAD



SW 82 - Ekker Tract
Figure B - During Construction
Habitat Conditions (2010)



Marsh

Oak Hammock
Enhanced by
Prescribed Fire



410 205 0 410 Feet

Ekker
House

Oak Hammock

Bullfrog Creek

Smith
Creek

Property
Boundary

Pines Thinned & Prescribed
Fire Conducted to
Restore Pine Flatwoods

Retention
Pond

Area Grubbed & Cleared -
Earthwork Commencing to
Create Wetlands

Pines Thinned &
Prescribed Fire
Conducted to
Restore Pine
Flatwoods

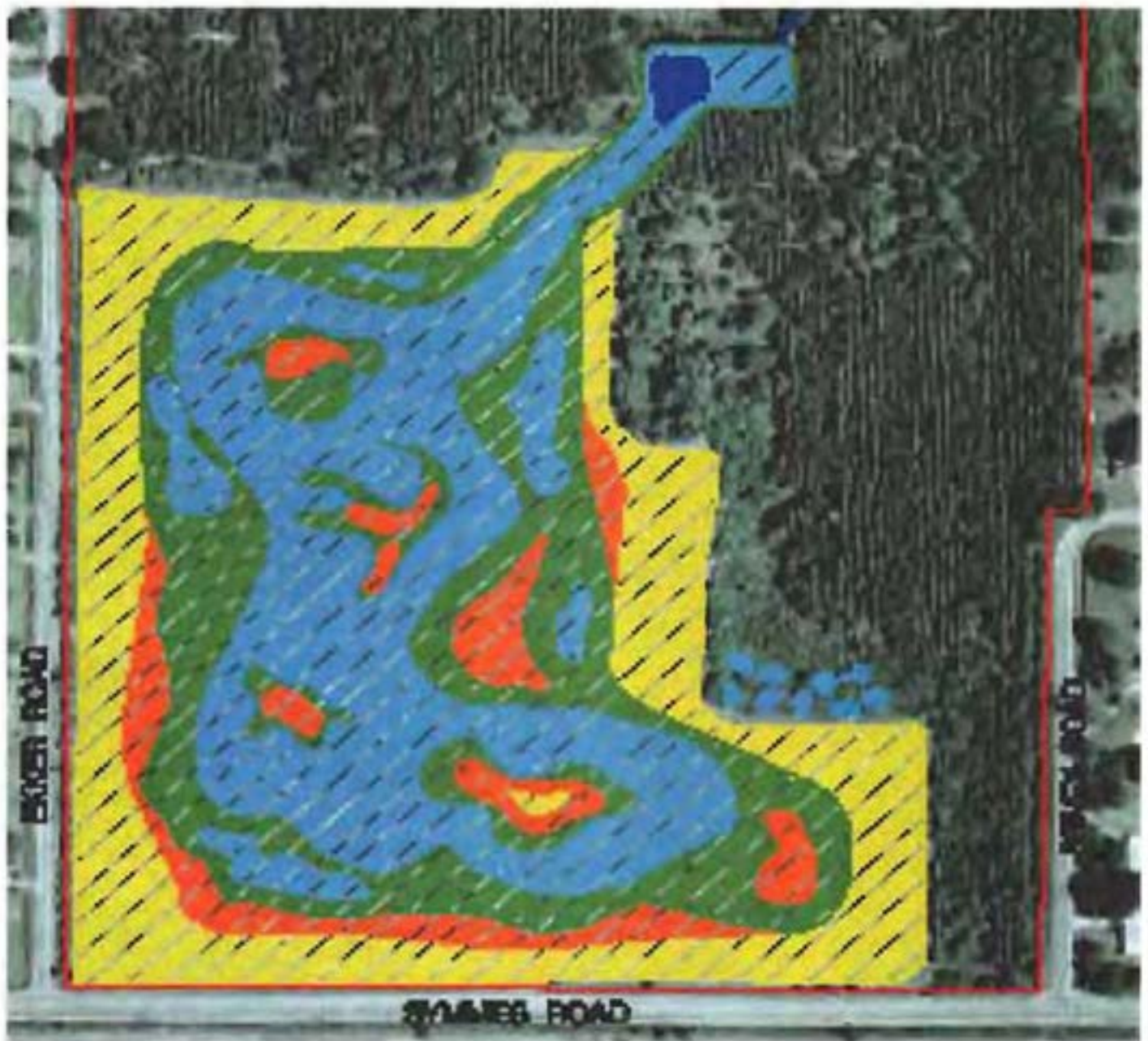
Fish Ponds
Adjacent to Roads
Filled to Commence
Upland Habitat
Buffer Restoration

Oak Hammock
Enhancement

EKKER
ROAD

SYMMES ROAD





**FDOT
MITIGATION SITE
(Tampa Bay
Drainage Basin)**

**EKKER TRACT
(SW 82)**

**FIGURE E
CONCEPTUAL WETLAND
CREATION PLAN**



Tropical Fish Ponds – Typical vegetative conditions include a substantial dominance of exotic and nuisance species such cattails, torpedo grass, duckweed, primrose willow; with side bank coverage of bermuda grass and Brazilian pepper. Proposed plan includes herbicide eradication of existing vegetation, regrading the fish ponds to create and plant forested and marsh wetland habitat, and buffer with restored upland habitat.



Retention Pond – The small dredged retention pond is located north of the fish ponds. The proposed plan includes backfilling a portion of the pond to create and plant a littoral zone. The wetland creation displacing the fish pond area will hydrologically outfall to this regraded pond for additional water quality treatment and attenuation before outfalling into Smith Creek and Bullfrog Creek.

**FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)**

**EKKER TRACT
(SW 82)**



Oak Hammock Buffer – A high quality habitat buffer (left) is located adjacent to Bullfrog Creek. In the northwest portion of the property, a narrow open canopy break along the buffer provides an easily accessible wildlife corridor and gopher tortoise forage on the bahiagrass.



Bullfrog Creek - The upland and wetland habitat improvements proposed for the Ekker Tract will provide many water resource and wildlife benefits for the creek and Tampa Bay.

**FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)**

**EKKER TRACT
(SW 82)**



Oak Hammock – The oak hammock in the northwest portion of the property has diverse coverage provided by live oak, laurel oak, cabbage palm, longleaf pine, saw palmetto, and various fern species. Scattered exotic species such as Brazilian pepper and Australian pine (far left) will require eradication.



Oak Hammock – Dense laurel oak canopy within the southwest portion has minimized understory coverage. Planned activities include selective laurel oak thinning and supplemental planting of various shrubs and herbs such as cabbage palm, wax myrtle, broomsedge, wiregrass and carpetgrass.

**FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)**

**EKKER TRACT
(SW 82)**



Pine Plantation – Typical condition of dense pines and minimal ground cover due to canopy closure and pine straw thatch. Proposed plan includes eradicating scattered Brazilian pepper, thinning the pines, minimizing thatch, and planting shrubs and herbs such as saw palmetto, wax myrtle, gallberry, broomsedge and wire grass.



Pine Plantation – Canopy openings within and adjacent to the pine plantations support appropriate herb and shrub vegetation. As pines are thinned and thatch is minimized, these ecotones will provide opportunities for natural recruitment and generation of understory vegetation.

**FDOT – District 7 Mitigation Site
(Tampa Bay Drainage Basin)**

**EKKER TRACT
(SW 82)**



REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Little Manatee River - Lower Tract

Project Number: SW 83

Project Sponsor: Hillsborough County Parks, Conservation Services Section

County: Hillsborough

Location: Sec. 20, 29, T 32S, R19E

IMPACT INFORMATION (Proposed Roadway Construction)

1 – FM 4154893, US 301 – Sun City Center to Balm Road (2014) ERP #: 43034464.000 COE #: SAJ-2008-3613

Drainage Basin: Little Manatee River Water Body(s): Carlton Branch, Pierce Branch, Howard Prairie, Little Manatee River SWIM water body? (Y/N) No

Impact Acres / Habitat Types (FLUCFCS):

1- FM 4154893	0.6 ac.	610	TOTAL 0.9 acre
	0.3 ac.	640	
<u>TOTAL</u>	<u>0.9 acre</u>		

* This US 301 segment proposes additional wetland impacts in the Tampa Bay Drainage Basin; mitigation is designated within the Ekker Tract (SW 82) and on-site wetland creation by FDOT.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation

Mitigation Area: 142 acres

SWIM project? (Y/N) N Aquatic Plant Control project? (Y/N) N Exotic Plant Control Project? (Y/N) Y
Mitigation Bank? (Y/N) N If yes, give DEP/WMD mit bank permit #: _____ COE # _____

Drainage Basin(s): Little Manatee River Water Body(s): Little Manatee River SWIM water body? (Y/N) N, however the river does outfall into Tampa Bay, which is a designated SWIM water body. The Little Manatee River is also designated an Outstanding Florida Water.

Project Description

A. Overall project goal: The Little Manatee River – Lower Tract (LMR) was acquired by the Hillsborough County Parks, Recreation and Conservation Department and the SWFWMD, and is managed by Hillsborough Parks – Conservation Services Section. The 1,902-acre tract is bisected by Interstate-75 and the Little Manatee River meanders through the parcel (Figures A & B). The majority of the LMR tract has high quality native habitat conditions. However, there is a 142-acre portion of previously cleared upland and wetland habitat that generated exotic species, predominantly Brazilian pepper and cogon grass. The goal is to eradicate exotics and conduct appropriate species planting to enhance approximately 137 acres of uplands and 5 acres of wetlands (Figure C).

B. Brief description of pre-construction conditions: Except for the designated project area, the majority of the LMR tract has high quality and diverse upland and wetland ecosystems. The upland habitats include a dominance of pine flatwoods, with areas of sand pine scrub predominantly located along the riverbank, mixed hardwoods, and coastal hammocks located on slight ridges between meandering tributaries of the river (Fig. B). Wetland systems are dominated by estuarine marsh habitats bordering the river and associated tributaries, as well as scattered freshwater marshes in the flatwoods. The designated 142-acre project area was historically dominated by pine flatwood habitat prior to conversion to improved pasture in the 1980's. After cattle operations were discontinued and the LMR tract was

publicly acquired, generation of native and exotic vegetation occurred in the pasture. Dominant ground cover currently consists of bahiagrass and broomsedge, with scattered pockets of cogongrass throughout (refer to photos). A generated shrub component includes scattered Brazilian pepper, wax myrtle, cabbage palms and longleaf pine. There are three wetlands within the designated project area. Wetland #1 (0.4 acre) is an isolated marsh with a dominance of cattails, smartweed, and maidencane. Wetland #2 (1.2 acres) has similar herb species with a transitional perimeter of wax myrtle and Brazilian pepper. The northern portion of Wetland #3 (3.2 acres) is a marsh system with similar dominant species as the other two wetlands. During extreme wet conditions, this marsh has a hydrologic connection south to the river through a shrub component of B. pepper and wax myrtle. The project area is bordered on the west by Interstate-75, north by an FDOT rest area, and the northeast by row crop areas. South and southeast of the project area is a borrow pit, high quality pine flatwoods, and sand pine scrub along the riverbank (refer to photos).

C. Brief description of conducted & proposed work: In 2004, there was a partial herbicide eradication of some Brazilian pepper within the western and northern portion of the project area. As depicted on the 2005 aerial (Figure C), the dead pepper was pushed into separate piles. The activities conducted in 2007 included treatment, cutting and burning the previously untreated and re-generated B. pepper. The cogon grass in the uplands and cattails within the marshes are also being treated with herbicide. In both cases, there is adequate and appropriate native herb species that have generated to displace these exotics. However, supplemental activities will include planting longleaf pine (1-gallon size material) at sufficient distance from existing pines and cabbage palms to restore the flatwoods canopy component. Routine herbicide maintenance is conducted to control regeneration of the B. pepper, cogon grass, and cattails. As the pines reach maturity and broomsedge recruits into the cogon covered areas, a prescribed burn management schedule will be implemented for the project area. This will further enhance the habitat conditions, attracting and providing more opportunities for wildlife to access and utilize the entire LMR tract. This is particularly important since it will expand upon the native habitat corridor along the river, and restore the portion of the LMR tract that is currently not covered with appropriate habitat.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): There are very few state roadways located within the small Little Manatee River basin, and the US 301 segment is the first project since the inception of the FDOT mitigation program in 1996 that has any proposed wetland impacts in the basin. The anticipated minor marsh impacts (0.9-acre) are low quality and appropriately mitigated at the LMR tract years in advance of the anticipated roadway construction (late, 2014). As of 2010, there are very few anticipated roadway projects within this basin during FDOT's proposed 10-year work program, so the LMR habitat improvements are being conducted many years in advance of any additional wetland impacts that may also be proposed for mitigation at the LMR tract.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the mitigation selection during 2006, there were no existing or proposed mitigation banks in the Little Manatee River Basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body : The LMR project was within SWIM's Five-Year Habitat Restoration Plan.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Independent maintenance contractor working for the Hillsborough Co. Parks Dept.

Entity responsible for monitoring and maintenance: Private maintenance contractors working for Hillsborough Conservation, periodic monitoring conducted by SWFWMD.

Timeframe for implementation:

1 – Initial Herbicide Eradication & B. Pepper Burning – Summer – Winter, 2007

2 - Additional herbicide treatments – Winter, 2007 – Winter, 2010

3 – Supplemental pine plantings – Summer, 2010

Project cost: TOTAL – \$90,000 - 100,000

\$66,300 – Initial Herbicide Eradication & B. Pepper Burning

\$10,000 – Additional Herbicide Treatments

\$10,000 – Supplemental Planting

Attachments

X 1. Description of existing site and proposed work. Refer to previous discussion.

X 2. Recent aerial photograph with date and scale. Refer to Figures B & C (2005 natural color aerial).

X 3. Location map and information on existing and proposed conditions. Refer to Figure A (location map), previous discussion, and site photos.

X 4. Detailed schedule for work implementation, including any and all phases. Refer to above timeframe for implementation.

X 5. Success criteria and associated monitoring plan. Refer to previous discussion and Attachment A.

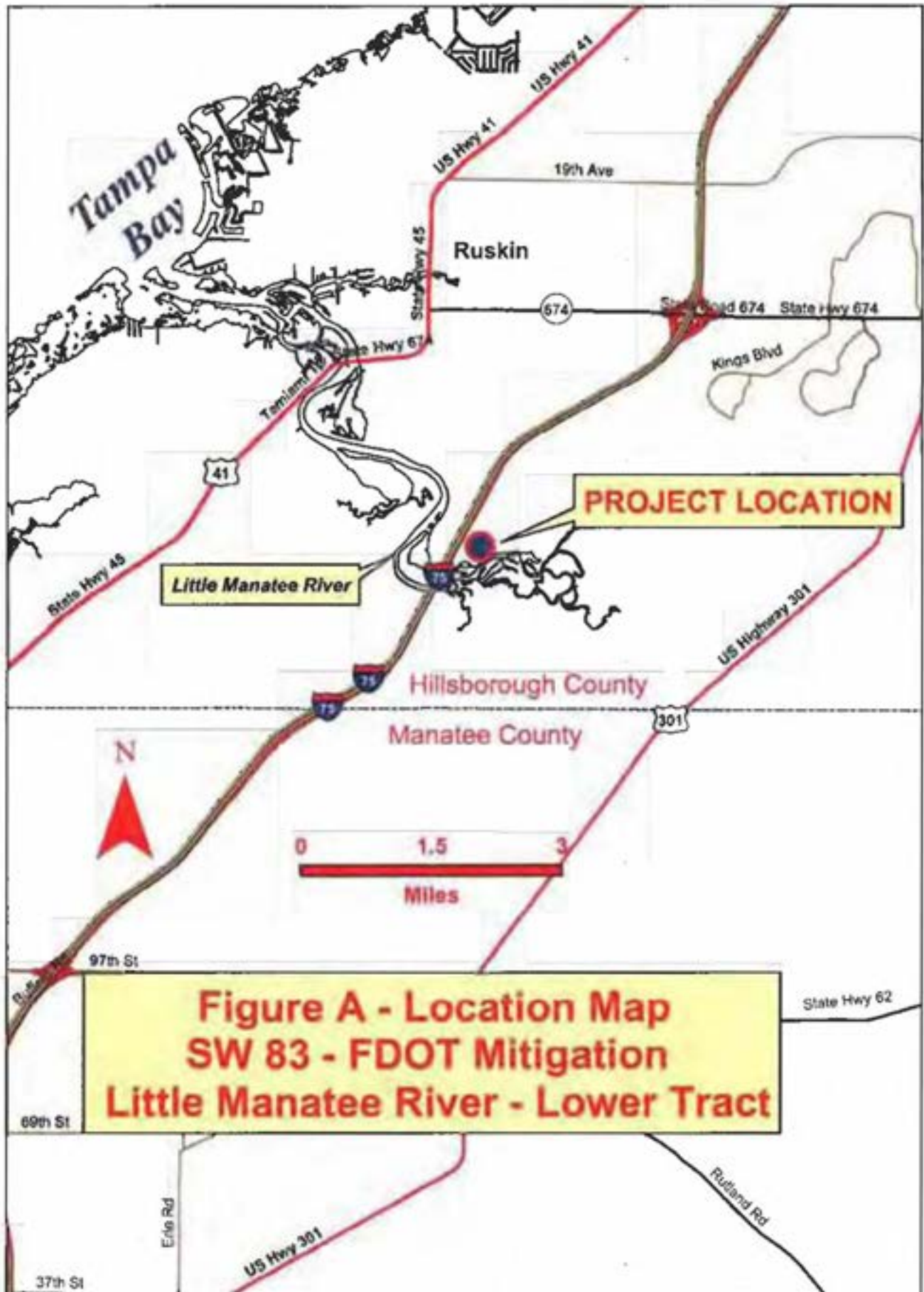
X 6. Long term maintenance plan. Refer to previous discussion and Attachment A.

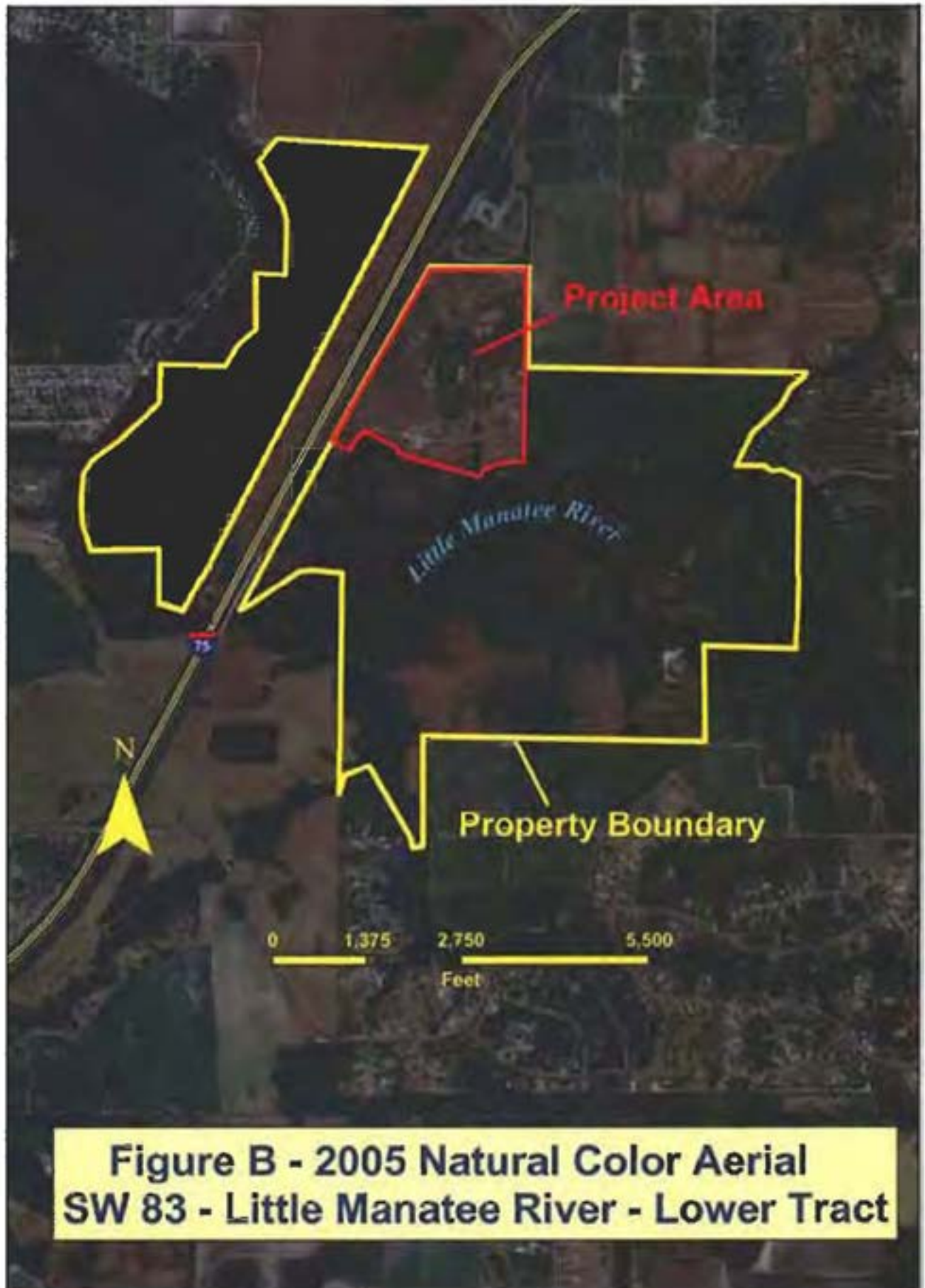
X 7. Explanation of how this work serves to offset the impacts of the specified DOT project(s). Refer to previous discussion.

Attachment A – Maintenance & Monitoring Plan, Success Criteria

Maintenance activities are anticipated for a minimum three years and until success criteria is met. These activities include herbicide treatments as necessary of Brazilian pepper, cogon grass, cattails and any other generated exotic and nuisance species. Herbicide treatments are expected on a minimum semi-annual schedule and are conducted under the supervision of a licensed herbicide applicator working under the management of the Hillsborough County Conservation Section. It is envisioned that the same long-term land management activities of the remaining LMR tract will be adopted in the project area, particularly implementation of a prescribed burn program on 3-5 year rotation cycles, and any supplemental pine planting necessary to provide appropriate coverage.

Monitoring is annually conducted by the SWFWMD; includes qualitative assessment and photo documentation of vegetative conditions, wildlife activities, wetland hydrology and hydroperiods, and any miscellaneous activities such as land management and herbicide maintenance. Success criteria vary and are dependent on the habitat areas. Herb cover for the wetlands will include 80% cover of desirable species and less than 5% cover of exotic and nuisance species. For the enhanced uplands, success criteria includes achieving less than 5% coverage of exotic and nuisance species, greater than 90% survivorship of planted material, and site conditions must be maintained to allow implementation of a prescribed fire program.









Wetland Enhancement – Wetland 1 is a small, ephemeral isolated marsh (0.4 acre) with cattails in the core. Proposed herbicide eradication of the cattails, allowing maidencane to regenerate, along with supplemental planting of soft rush and pickerweed. Brazilian pepper (background) will also be eradicated and replaced with pine plantings.



Wetland Enhancement – Wetland 2 has similar functions and characteristics as Wetland 1, except for a buffer of wax myrtle and Brazilian pepper. The B. pepper and cattails will be eradicated, with supplemental planting of wetland herbs where necessary.

**FDOT Mitigation Site
(Little Manatee River Basin)**

**LITTLE MANATEE RIVER TRACT
(SW 83)**



Upland Enhancement – The dominant exotic vegetation generated within the uplands include cogon grass (foreground) and Brazilian pepper (background). Eradication and control of the exotic vegetation will allow native species regeneration and supplemented with pine plantings.



Upland Enhancement – Some eradication and piling of B. pepper has been conducted in the past for a portion of the project area. Removing the remaining and regenerated B. pepper within the project area, planting pines, and incorporating the area into a prescribed burn program will minimize the B. pepper seed source and regeneration rates.

**FDOT Mitigation Site
(Little Manatee River Basin)**

**LITTLE MANATEE RIVER TRACT
(SW 83)**



High quality flatwood habitat within the LMR tract, located along the southeast boundary of the designated project area. By enhancing, restoring and managing appropriate habitats in the project area, there will be more vegetative cover and foraging opportunities to attract more wildlife from the adjacent native habitats.



Many of the highest quality ecosystems at the LMR tract are associated with the Little Manatee River. An inter-related mosaic of habitats such as estuarine marshes, hardwood hammocks, and sand pine scrub along the riverbanks. However, the existing habitat buffer along the northern bank of the river is narrow along portions of the designated project area. With the habitat improvements, the buffer, connectivity and corridor along the river will be enhanced for wildlife access.

**FDOT Mitigation Site
(Little Manatee River Basin)**

**LITTLE MANATEE RIVER TRACT
(SW 83)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Colt Creek State Park**
 Project Sponsors: FDEP – Parks, SWFWMD – Land Resources
 County: Polk

Project Number: **SW 84**
 Location: Colt Creek St. Park – Sec. 6, T26S, R23E;
Sec. 31, 32, 30, 29, 19, 20, 17, 18, T25S, R23E;
Fussell Tract – Sec. 5, 8, T26S, R23E

IMPACT INFORMATION (Proposed Construction Dates)

Hillsborough Basin

1 - <u>FM 4113371 – US 92, Eureka Springs to Thonotassassa Rd.*</u>	ERP #: <u>43031172.000</u>	COE #: <u>2006-4072 (IP-JPF)</u>
2 - <u>FM 4084592 – I-75, Fowler to BB Downs (2014)</u>	ERP #: <u>43021639.004</u>	COE #: <u>2007-4495 (IP-JPF)</u>
3 - <u>FM 4218311 – I-75, BB Downs to SR 56 (Waddah Ramps)</u>	ERP #: <u>430330200.002</u>	COE #: <u>2008-1707 (IP-JPF)</u>
4 - <u>FM 4079441 – I-75 Northbound Rest Area</u>	ERP #: <u>43033020.007</u>	COE #: <u>2009-04372 (IP-JPF)</u>
5 - <u>FM 2555851 – SR 39, I-4 to Knights Griffin (2014)</u>	ERP #: <u>43034467.007</u>	COE #: <u>2009-04064 (IP-JPF)</u>
6 - <u>FM 2578622 – Park Road, I-4 to Sam Allen</u>	ERP #: <u>44029780.001</u>	COE #: <u>2007-1606 (IP-JPF)</u>
7 - <u>FM 4089321 – SR 39 @ Hillsborough River</u>	ERP #: <u>43033500.001</u>	COE #: <u>2008-0211 (NW-JPF)</u>
8 - <u>FM 4218314 – I-75, S of CR 54 to N of CR 54</u>	ERP #: <u>43033020.002</u>	COE #: <u>2007-4508</u>
9 - <u>FM 2587362 – I-75, CR 54 to SR 52 (2018)</u>	ERP #: _____	COE #: _____
10 - <u>FM 2564222 – US 301, SR 39 to CR 54 (2016)</u>	ERP #: _____	COE #: _____
11 - <u>FM 2562432 – SR 52, CR 581 to Old Pasco Road (2017)</u>	ERP #: _____	COE #: _____
12 - <u>FM 4110142 – I-75, SR 52 to Pasco/Hernando C.L.. (2015)**</u>	ERP #: _____	COE #: _____
13 - <u>FM 2578623 – Sam Allen Road, Alexander to Park (2016)</u>	ERP #: _____	COE #: _____
14 - <u>FM 4165611 – SR 54, I-75 to US 301 (2018)</u>	ERP #: _____	COE #: _____
15 - <u>FM 4084594 – I-75, SR 56 to CR 54 (2015)</u>	ERP #: <u>43033030.008</u>	COE #: <u>2010-00468 (IP-JPF)</u>
16 - <u>FM 4084593 – I-75, BB Downs to SR 56 (Mainline) (2014)</u>	ERP #: <u>43033020.004</u>	COE #: <u>2008-3059 (IP-JPF)</u>
17 - <u>FM 4168491 – US 92, Reynolds to Mobley (Sidewalk) (2011)</u>	ERP #: _____	COE #: _____
18 - <u>FM 4230891 – SR 580 – George Rd. to Benjamin (2011)</u>	ERP #: _____	COE #: _____
19 - <u>FM 4245571 – SR 580 – Marelynn Lane to N. Armenia (2012)</u>	ERP #: _____	COE #: _____
20 - <u>FM 4165612 – SR 54 – CR 577 to Morris Bridge (2018)</u>	ERP #: _____	COE #: _____
21 - <u>FM 4079442 – I-75 Southbound Rest Area</u>	ERP #: <u>43034467.007</u>	COE #: <u>2009-04064 (IP-JPF)</u>
22 - <u>FM 1960251 – High Speed Rail – Lane Shift & Mainline (2011)***</u>	ERP #: _____	COE #: _____
23 - <u>FM 4271491 – US 41/92 (SR 600) – 56th to Orient Road (2012)</u>	ERP #: _____	COE #: _____
24 - <u>FM 4271591 – US 92 – Benjamin Rd. to Westshore (2013)</u>	ERP #: _____	COE #: _____

Withlacoochee Basin

1 - <u>FM 4110122 – I-75, SR 50 to Hernando/Sumter Co. (2018)</u>	ERP #: _____	COE #: _____
2 - <u>FM 4110142 – I-75, SR 52 to Pasco/Hernando Co.(2016)**</u>	ERP #: _____	COE #: _____
3 - <u>FM 4110112 – I-75, Pasco/Hernando to SR 50 (2018)</u>	ERP #: _____	COE #: _____
4 - <u>FM 2426262 – I-75, Hernando CL to SR 50 (Undetermined)</u>	ERP #: _____	COE #: _____
5 - <u>FM 2426263 – I-75, SR 470 to Turnpike (Undetermined)</u>	ERP #: _____	COE #: _____
6 - <u>FM 4271651 – US 301/98, Pioneer Museum to Moccasin (2013)</u>	ERP #: _____	COE #: _____

Drainage Basin(s): Hillsborough River, Withlacoochee River Water Body(s): Hillsborough River, Cowhouse Slough, Cypress Creek SWIM water body? (Y/N) No

* NOTE: This project has additional wetland impacts in the Tampa Bay Drainage Basin. The designated mitigation for these impacts includes habitat creation and enhancement at the Ekker Tract (SW 81).

** NOTE: This project has wetland impacts in the Hillsborough, Upper Coastal, and Withlacoochee basins. The designated mitigation for the Hillsborough & Withlacoochee basins is conducted at Colt Creek; the Upper Coastal impacts are mitigated at Conner Preserve.

*** NOTE: The HSR project also has wetland impacts in the Withlacoochee Basin. The designated mitigation for these impacts includes wetland habitat enhancement at the Hampton Tract (SW 59).

Impact Acres / Habitat Types (FLUCFCS code): Hillsborough River Basin Impacts

(1) FM 4113371	0.75 ac. 610
	0.43 ac. 618
	0.47 ac. 640
TOTAL	1.65 acres

(2) FM 4084592 4.54 ac. 615
 8.94 ac. 617
 1.03 ac. 624
 3.66 ac. 630
 5.62 ac. 631
 TOTAL 23.79 acres

(3) FM 4218311 0.8 ac. 510
 8.3 ac. 617
 7.4 ac. 625
 4.6 ac. 630
 9.6 ac. 631
 TOTAL 30.7 acres

(4) FM 4079441 1.2 ac. 617
 TOTAL 1.2 acres

(5) FM 2555851 7.1 ac. 617
 7.1 ac. 641
 TOTAL 14.2 acres

(6) FM 2578622 0.5 ac. 617
 0.3 ac. 641
 TOTAL 0.8 acre

(7) FM 4089321 1.7 ac. 630
 TOTAL 1.7 acre

(8) FM 4218314 1.2 ac. 617
 9.9 ac. 630
 2.1 ac. 631
 3.7 ac. 641
 TOTAL 16.9 acres

(9) FM 2587362 8.7 ac. 630
 1.5 ac. 641
 TOTAL 10.2 acres

(10) FM 2564222 0.1 ac. 641x
 TOTAL 0.1 acre

(11) FM 2562432 0.8 ac. 641
 TOTAL 0.8 acre

(12) FM 4110142 0.9 ac. 510
 8.8 ac. 610
 TOTAL 9.7 acres

(13) FM 2578623 0.9 ac. 617
 0.8 ac. 641
 TOTAL 1.7 acres

(14) FM 4165611 0.1 ac. 631
 1.9 ac. 641x
 TOTAL 2.0 acres

(15) FM 4084594 1.3 ac. 617
 8.6 ac. 630
 1.0 ac. 631
 0.8 ac. 641
 0.2 ac. - upland
 TOTAL 11.7 acres

(16) FM 4084593 4.3 ac. 617
 2.5 ac. 621
 4.2 ac. 630
 3.5 ac. 631
 0.5 ac. 641
 TOTAL 15.0 acres

(17) FM 4168491 0.2 ac. 641
 TOTAL 0.2 acre

(18) FM 4230891 0.1 ac. 641
 TOTAL 0.1 acre

(19) FM 4245571 0.1 ac. 631
 TOTAL 0.1 acre

(20) FM 4165612 0.1 ac. 631
 1.9 ac. 641
 TOTAL 2.0 acres

(21) FM 4079442 1.0 ac. 617
 TOTAL 1.0 acre

(22) FM 19602581 2.0 ac. 630
 1.0 ac. 641
 TOTAL 3.0 acres

(23) FM 4271491 0.2 ac. 641
 TOTAL 0.2 acre

(24) FM 4271591 0.2 ac. 641
 TOTAL 0.2 acre

TOTAL – HILLSBOROUGH BASIN: 151.3 acres

Withlacoochee River Basin Impacts

(1) FM 4110122 0.3 ac. 510
 TOTAL 0.3 acre

(2) FM 4110142 2.3 ac. 610
 TOTAL 2.3 acres

(3) FM 4110112 14.0 ac. 617
 1.1 ac. 618
 TOTAL 15.1 acres

(4) FM 2426262 3.0 ac. 641
 TOTAL 3.0 acres

(5) FM 2426263 1.0 ac. 640
 TOTAL 1.0 acre

(6) FM 4271651 0.2 acre 641
 TOTAL 0.2 acre

TOTAL – WITHLACOOCHEE BASIN: 21.9 acres
TOTAL: 173.2 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: ___ Creation X Restoration X Enhancement X Preservation

Mitigation Area (Hillsborough Basin): 1,051 acres

Mitigation Area (Withlacoochee Basin – Colt Creek): 170 acres

Mitigation Area (Withlacoochee Basin – Gator Creek): estimated 440-800 acres

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N

Drainage Basins: Hillsborough River, Withlacoochee River Water Bodies: Withlacoochee River, Gator Creek, Colt Creek SWIM water body? N

Project Description

A. Overall project goal: The Colt Creek State Park (5,118 acres) tract was a high priority tract for public land acquisition for over 30 years, and was jointly acquired from the Overstreet family by the SWFWMD, FDEP, and Polk County in June, 2006. The tract was considered a priority acquisition for habitat preservation, restoration and enhancement due to the ecologically valuable location within the Green Swamp (Designated Area of Critical State Concern) and thousands of acres of adjacent public lands (refer to Figures A & B). One of the adjacent parcels is the SWFWMD-owned Fussell Tract (Figures A, B, D). The overall project goal is to utilize the FDOT mitigation program for the preservation, restoration, and enhancement of wetland and upland habitat (720 acres) within the Hillsborough River watershed portion of Colt Creek S.P., hydrologic restoration to enhance and restore wetland habitat (600-1,000 acres) within the Withlacoochee River watershed portion of Colt Creek S.P. hydrologic restoration to enhance forested wetlands (338 acres) within the adjacent Fussell Tract that is owned and managed by the SWFWMD.

B. Brief description of current condition: Colt Creek S.P. has a variety of upland and wetland habitats, however the Overstreet family incorporated many land use changes and drainage ditch features over a 60-year period to increase the productivity for ranching operations. The tract has an extensive network of wetland and upland-cut ditches, and approximately half of the former upland habitats were converted to improved pastures. The majority of the remaining native habitats have various alterations to hydrology and vegetative communities due to the ditch drainage features and land use activities. Some of the pastures were historically wetland habitat (Figures C & E), and the remaining wetlands have altered drainage patterns and minimal hydroperiods due to the drainage ditches. As a result, pine flatwoods and hardwood hammocks that historically bordered the cypress-dominated forested wetlands have provided a seed source to generate pine and hardwood species in the drained wetlands; particularly slash pine, live oak, laurel oak, and red maple. Many of the unconverted upland habitats that were historically dominated by pine flatwoods haven't received adequate fire management, resulting in recruitment and generation of the same hardwood species present in the outer wetland zones. The adjacent Fussell Tract is appropriately managed by the SWFWMD, however a north-south drainage ditch short-circuits historic meandering drainage patterns through forested wetlands, altering hydrology and hydroperiods as well (Figure D). Additional site information is provided in Attachment A and site photos. Figures C-F depicts the wetland ecosystems present at the tract proposed for enhancement.

C. Brief description of proposed work: The total acquisition of Colt Creek S.P. cost \$54.5 million. The FDOT mitigation program funded \$7.5 million toward the acquisition of the 713-acre portion within the Hillsborough basin to provide associated preservation mitigation credit. Additional mitigation credit in the Hillsborough basin portion is

provided by enhancing and restoring forested and non-forested wetland habitat (Figures C-F) by constructing ditch blocks to restore historic surface and ground water flow conditions. These wetlands will be buffered by restoring upland habitat buffers within adjacent pastures, and enhancement of existing upland habitats by reintroducing appropriate land management activities such as thinning hardwoods and implementing a prescribed burn plan. For the adjacent Fussell Tract also in the Hillsborough Basin, forested wetlands will be enhanced by constructing ditch blocks to hydrologically restore meandering surface & sheet water flow drainage patterns (Figure D). Additional wetland habitat restoration and enhancement will be conducted within the core of Colt Creek S.P. for mitigation credit associated with wetland impacts in the Withlacoochee basin. This primarily includes installing ditch blocks that have diverted flow away from the historic drainage pattern of a segment of the Colt Creek forested wetland floodplain (Figure E), and ditch blocks within the substantial Gator Creek ditch to restore drainage patterns and enhance wetland habitat (Figure F). Additional details are provided in Attachment A, and will be annually updated in the mitigation plan as additional site evaluation, design and implementation of construction and planting activities.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The largest percentage of the anticipated wetland impacts in the Hillsborough basin include approximately 30 acres of forested wetland habitats associated with widening Interstate-75 in northern Hillsborough and Pasco Counties. The majority of the proposed mitigation activities for these impacts are associated with preservation, restoration and enhancement of 598 acres of forested wetlands at Colt Creek S.P. and the Fussell Tract. The wetland habitat improvements at Colt Creek will be buffered by upland habitat enhancement and restoration to provide an interdependent mosaic of habitats critical to support wetland-dependent wildlife species. Since both tracts are predominantly bordered by over 260,000 acres of public lands that also have native habitats being enhanced, restored and appropriately managed, there is even more ecological value associated with this selected mitigation project. Hydrologic restoration of wetlands within two of these tracts is also being conducted through the FDOT mitigation program, including the 7,500-acre District-owned Hampton Tract (SW 59) and 11,000-acre FDOF-owned Baird Tract (SW 64).

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the time of mitigation selection of the listed roadway projects, there were no established or proposed mitigation banks within the Hillsborough or Withlacoochee River Basins.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: During the mitigation selection period, there were no new SWIM-associated projects proposed in the Hillsborough or Withlacoochee basins.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private contractors and WMD-Operations Dept.
Contact Name: Mark Brown, WMD Environmental Scientist Phone Number: (352) 796-7211, ext. 4488

Entity responsible for monitoring and maintenance: Private contractor selected by the SWFWMD will conduct monitoring and maintenance. Land management activities will be coordinated between the SWFWMD and FDEP.

Proposed timeframe for implementation:
Land Acquisition & Associated Preservation Mitigation Credits – June, 2006
Site Evaluation & Develop Conceptual Plan – 2006-2010

Phase I - Wetland Restoration (Marsh) (Figure C - Hillsborough Basin) – Construction & Planting – 2010-2011
Maintenance & Monitoring - 3 years minimum – 2011 - 2014
Colt Creek Floodplain (Forested Wetland) - (Figure E - Withlacoochee Basin) – Const. & Planting – 2010-2011
Maintenance & Monitoring – 5 years minimum – 2011-2016

Phase II - Watershed Modeling – 2010-2011
Wetland Hydrologic Restoration - Design & Permitting – 2011
Wetland Enhancement Construction – Hills. & Withlacoochee Basins – 2012-2013 (Figures C, F)
Maintenance & Monitoring (Minimum five years) - 2013 – 2018

Phase III – Upland Enhancement & Restoration
Enhancement – Commenced 2010 – Prescribed Fire Management
Restoration – Commence 2013

Project cost: \$8.9 million (total)

Acquisition - \$7,560,000 (Hillsborough portion of Colt Creek, preservation mitigation credit;
720 acres x \$10,500 per acre = \$7,560,000)

Watershed Modeling, Design, Permitting - \$250,000

Wetland Restoration & Enhancement - \$900,000

Upland Restoration & Enhancement - \$790,000

Post-Construction Maintenance & Monitoring - \$400,000

Attachments

X 1. Description of existing site and proposed work. Previous discussion & Attachment A – Existing Site & Proposed Activities

X 2. Aerial photographs. Figures A-F, 2009 aerials.

X 3. Location map and figures of existing and proposed conditions. Figure A – Location Map, Figure B – Watershed Boundaries, Figures C-F – Existing & Proposed Habitat Improvements.

X 4. Schedule for work implementation, including any and all phases. The work schedule for proposed activities presented under Project Implementation.

X 5. Success criteria and associated maintenance & monitoring plan. Refer to Attachment B – Maintenance & Monitoring Plan, Success Criteria.

ATTACHMENT A – Existing & Proposed Activities

Green Swamp - Background

Colt Creek State Park (5,118 acres) is located within the region referred to as the Green Swamp (Area of Critical State Concern). The Green Swamp consists of 870 square miles (560,000 acres), of which 260,000 acres have been protected through public ownership and conservation easements. This includes approximately 118,000 acres acquired by the SWFWMD in fee and conservation easements. The Green Swamp is considered a unique and critical natural resource asset with statewide significance. The water-related resource values of the Green Swamp have made the region one of the highest priority protection areas through public acquisition by the State and SWFWMD. The Green Swamp contains the headwaters of four major rivers: the Hillsborough, Withlacoochee, Peace and Ocklawaha. These four major headwater river channels and tributaries of the Green Swamp play a vital role in conveying water to significant downstream natural systems. Public ownership and conservation easements of the Green Swamp serves to protect the important upstream reaches of the Hillsborough and Withlacoochee Rivers, and the volume of freshwater which they contribute to Tampa Bay, Withlacoochee Bay, Tsala Apopka Lake and many other natural systems and habitats.

With over 70% of the adjacent property comprised of existing public lands (Figure A), public acquisition of the Colt Creek S.P. property from the Overstreet family was one of the major missing tracts due to the existing and potential ecological value and benefits to wildlife habitat and water resources in the Green Swamp. To the west of Colt Creek S.P., the SWFWMD owns and manages an area referred to "Green Swamp – West Tract" (37,350 acres). To the north and east, the SWFWMD owns and manages "Green Swamp – East Tract" (67,670 acres). Combined, these areas are referred to as the "Green Swamp Wilderness Preserve" (GSWP). As part of the East Tract, there are portions referred to as the Fussell Tract (1,280 acres) and Hampton Tract (7,500 acres). Wetland hydrologic restoration of the Hampton Tract was selected to the FDOT mitigation program in 2000 (SW 59), and due to the hydraulic conveyance connection of wetlands between the Fussell Tract and Colt Creek S.P., these two tracts are combined as part of the same mitigation evaluation and implementation. North of GSWP is the Withlacoochee State Forest – Richloam Tract (62,720 acres), owned and managed by the Florida Division of Forestry. Within the Richloam Tract is the Baird Tract (11,000 acres). Wetland hydrologic restoration of the Baird Tract (SW 64) was nominated and selected to the SWFWMD's FDOT Mitigation Plan in 2001.

Colt Creek State Park – Existing Conditions

The Overstreet family owned the property from 1941 to 2006, and over that period, the SWFWMD made several offers to acquire the property either through fee simple or a conservation easement. In 2005, the Overstreet family proposed the construction of a 750-lot residential development on the tract. Fortunately after months of negotiation, the family agreed to sell the tract fee simple for public ownership. The \$54.5 million acquisition was funded by the SWFWMD (\$24.3 million), FDEP (\$24.3 million), and Polk County (\$5 million). For preservation mitigation credit, the 720-acre portion of the tract within the Hillsborough River basin was funded (\$7.5 million) by the FDOT mitigation program. Of the 720 acres, 7 acres of an existing access road R/W are not accounted for mitigation credit.

Even though Colt Creek S.P. provides important ecological value for the region, there have been substantial activities conducted on the property during the past six decades to improve conditions for ranching operations and cattle production. The network of extensive large and small ditches has altered the hydraulic and hydrologic features and conveyances within the property, as well adjacent public and private lands. Many upland habitat communities and some wetland areas within the tract were sufficiently drained to gradually convert into improved pasture. Remaining native upland habitats in the Hillsborough basin portion of the tract have not been incorporated into regular prescribed burn cycles. As a result, pines (*Pinus elliotii*) and hardwoods such as live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), and red maple (*Acer rubrum*) have recruited and generated within the forested wetlands as well as former pine flatwoods. The wetland hydroperiods have been altered to a minimal depth and duration as a result of the ditching and short-circuiting of drainage flow patterns. This has allowed facultative vegetative species to recruit and encroach upon wetland ecosystems that were historically vegetated by obligate species and canopy dominated by bald cypress (*Taxodium distichum*). As a result, regeneration of appropriate hydrophytic vegetation is minimal, particularly the lack of cypress saplings. This altered transition of vegetative species is exhibited in the site photographs.

Colt Creek State Park – Proposed Conditions

For purposes of providing wetland mitigation, activities will primarily include enhancing and restoring wetland and upland buffering habitats within the 713-acre portion at Colt Creek located within the Hillsborough River watershed (Figure C), enhancing and restoring forested wetland habitats within a 170 acre-portion of the Colt Creek floodplain (Figure E) and 440 acres of the northern Gator Creek floodplain within the Withlacoochee River watershed (Figure F). Additional wetland enhancement opportunities are anticipated within the southern portions of the Gator Creek floodplain however the exact acreages will not be designated into the plan until completion of the current surface water modeling effort. The following information further describes the proposed activities.

Wetland Restoration (Hillsborough - 10 acres, Withlacoochee – 18 acres) – There are two former wetland areas historically ditched and converted to improved pasture. These include an area in the southwest pasture adjacent to CR 471 (Figure C), and an 18-acre former forested wetland in the Colt Creek floodplain (Figure E – Wetland Restoration Area #1).

The southwest pasture area that was historically a forested wetland has been restored to a shallow marsh habitat buffered with a forested and shrub component in the outer zone and perimeter. Grading is complete and planting scheduled for 2011. Herb species will include bare root material planted on 3 ft. centers. Dominant species will include soft rush (*Juncus effusus*), arrowhead (*Sagittaria lancifolia*), pickerelweed (*Pontederia cordata*), spikerush (*Eleocharis interstincta*), sand cordgrass (*Spartina bakeri*).

The 18-acre forested wetland segment of the Colt Creek floodplain was converted to wet pasture from the construction of a large upland cut ditch that parallels the historic wetland boundary (Figure E). In 2010, an existing dirt road that crosses this pasture was elevated to construct an entrance road that will eventually lead to the Park's proposed campground and cabin facilities. The existing upland-cut ditch remains and a new 42-inch culvert with flashboard risers replaces the existing culvert; and the associated risers block and restore the contributing basin hydrology to the historic east-west sheet flow drainage through the restored wetland area. The new road has 12 cross-drains installed to facilitate the restored water sheet flow however the culvert risers will be removed if and when flood events become evident to reduce the potential of flow over the entrance road. Proposed planting will be conducted during the dry season in early 2011, and will primarily include laurel oak, bald cypress, red maple, tupelo (*Nyssa sylvatica* var. *biflora*), and popash (*Fraxinus caroliniana*). Trees will be one and three-gallon nursery stock material planted on 20 ft. centers. To provide more buffer and cover while the trees achieve higher canopy, wax myrtle (*Myrica cerifera*) will be planted in the shallow grades within the facultative zones, and buttonbush (*Cephalanthus occidentalis*) within the obligate zones.

Wetland Enhancement (Hillsborough – Colt Creek State Park - Forested – 244 acres, Marsh – 21 acres, Fussell Tract – Forested – 338 Acres; Withlacoochee – Colt Creek – Forested - 152 acres, Gator Creek – 440-800 acres). Surface water modeling of the contributing watershed will determine the appropriate drainage patterns to hydrologically restore flow through associated wetland hydroperiods. Many of the ditches in the Park divert and direct water flow through and around the outer zones and perimeter of the wetland systems, resulting in more direct hydraulic and hydroperiod impacts to the wetland cores. This includes the Colt Creek & Gator Creek ditches (Figures E & F). These perimeter ditches will be easy to access with construction equipment to install ditch blocks to restore appropriate water sheet flow patterns through the forested wetland systems. As of 2010, there are additional areas being evaluated for wetland hydrologic restoration and enhancement associated with the Gator Creek ditch system. The results of that evaluation and subsequent modeling by a selected consultant will determine whether additional wetland enhancement can be conducted and quantified beyond the 440 acres designated on Figure F.

As a result of acquiring the Overstreet Tract, the desired hydrologic improvements of the adjacent Fussell Tract can also be conducted (Figure D). The 1,280-acre Fussell Tract is owned by the SWFWMD and considered part of the Green Swamp – East Tract. Historically, there was a drainage flow pattern meandering through 223 acres of cypress domes and strands, as well as the 115-acre mixed forested wetland in the north part of the tract referred to as "Williams Hammock." This drainage pattern was drastically short-circuited by the construction of a 1.5-mile long north-south ditch (Figure D). The proposed plan includes ditch blocks to restore the meandering drainage pattern and hydroperiods to enhance the wetland habitat conditions.

With ditch blocks, the initial wetland enhancement will result in halting the decades of altered wetland hydrologic functions. In turn, this will result in the mortality of inappropriate vegetative species and regeneration of desirable hydrophytic species; particularly evident with the loss of laurel oaks and pines within the wetland cores, and live oaks in the outer facultative zones. The mortality of pines and oaks will be more rapid since they cannot sustain long periods of inundation, thus providing conditions for the generation of cypress saplings and appropriate understory species that have had limited opportunities for recruitment, generation and growth due to extensive shading and insufficient hydrology. However, other hardwood species that can endure longer hydroperiods will still be present and provide diversity and cover (i.e. red maple). In addition to the increase in appropriate vegetative species within the canopy, sub-canopy, and ground cover, the restored hydroperiods will provide more nesting, denning and foraging opportunities for

wildlife species that utilize wetlands for portions of their life cycles. Dead trees will be allowed to decay in place, providing snags and niches for wildlife use.

The wetland enhancement will be evaluated through pre-post qualitative assessment of vegetative conditions and wildlife use, and hydrologic monitoring conducted with continuous automatic recorders installed in select wetlands.

Wetland Preservation (Colt Creek State Park – Hillsborough Basin - 16 acres) – Because the FDOT program funded the acquisition of the designated 720-acre area in the Hillsborough Basin, preservation mitigation credit is designated for the associated upland and wetland habitats. There are four isolated forested wetlands within close proximity of each other that have not been directly altered by ditching and draining (Figure C). These wetlands are dominated by cypress, but there is appropriate coverage of maple and laurel oak along the perimeters. The preservation mitigation value for these wetlands will be primarily associated with ensuring logging will not be conducted; minor enhancement will be achieved through enhancement of adjacent upland habitat buffers however this minor improvement was not proposed for additional mitigation credits.

Upland Habitat Enhancement & Restoration (Hillsborough - 433 acres)– Buffering the wetlands, there are ten designated upland areas comprised of native habitat (182 acres) and pasture (239 acres) (Figure C). The native habitat is comprised of hardwoods (i.e. live oak, laurel oak, red maple, sweet gum) that have recruited from the outer wetland zones to generate within historic pine flatwood areas. Remnants of the flatwood community such as scattered slash pine and saw palmetto are still present, however the hardwoods have become dominant due to insufficient fire management and cattle grazing activities. These upland habitats will be enhanced primarily through cattle removal and implementing prescribed burn management on a 3-5 cycle. This burning will minimize the generation and cover of hardwood species, open some of the canopy for sunlight to penetrate to the understory to regenerate appropriate ground and understory vegetation for wildlife foraging. In turn, more ground cover vegetation provides more fuel to carry fire during the prescribed burns. The pastures will be evaluated for appropriate restoration methods to re-establish ground cover necessary to implement a prescribed burn program. Longleaf and/or slash pine saplings may be planted on 10 - 15 ft. centers, thinned over subsequent years to 40-50 ft. spacings. As pine thinning occurs, natural recruitment and supplemental plantings of native species where necessary to provide appropriate shrub and ground cover for wildlife use and foraging opportunities; with a goal of being able to implement a prescribed burn program. Monitoring of water level and natural recruitment and generation of shrub and herb cover will determine the need for supplemental planting. None of the upland habitat activities will be proposed to provide mitigation credits for wetland impacts under ACOE jurisdiction.

The hydrologic restoration activities and associated habitat improvements being pursued at the Colt Creek State Park and Fussell Tracts will continue the corridor pattern of improvements from the adjacent Hampton Tract, as well as the overall trend and objective of attenuating water in the wetlands on public lands in the Green Swamp. There will be secondary and indirect enhancement of other habitats associated with restoring the drainage patterns, but they are not quantified for mitigation credit.

Attachment B – Maintenance & Monitoring, Success Criteria

Maintenance activities will vary based on the type of habitat restoration and enhancement, and coordinated between FDEP and the SWFWMD. For the wetland restoration areas, maintenance will be primarily associated with eradicating exotic and nuisance species vegetation that generate post-construction. Supplemental planting will also be conducted where necessary. For the wetland enhancement areas, maintenance activities will primarily involve ensuring construction-related areas such as backfilled ditches, installed ditch blocks, and breaches cut into spoil rims are well-stabilized, vegetated and functioning as intended. Maintenance of enhanced upland habitats will primarily include adoption of a prescribed burn program on 3-5 year rotation cycles, and any supplemental planting necessary to provide appropriate coverage. It is envisioned that many of the same long-term land management activities will include the same principles applied on adjacent public tracts and documented in the "*Plan for Use & Management of the*

Green Swamp Wilderness Preserve, SWFWMD, January, 1994." Additional management details will be coordinated with FDEP and reported in subsequent annual updates to the mitigation plan.

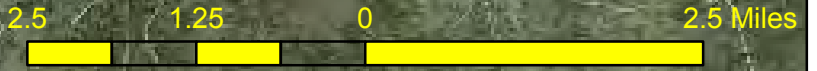
A minimum five years of semi-annual monitoring will be conducted by the SWFWMD of the two wetland restoration areas (10-acre marsh in Hillsborough basin, 18-acre forested wetland associated with Colt Creek). Monitoring will include a comprehensive qualitative assessment of habitats, including but not limited to plant health & survivorship, recruited plant species, cumulative plant coverage, exotic & nuisance species coverage, wildlife activity, and recommended & proposed actions necessary to ensure and further enhance habitat conditions. Annual monitoring reports will be prepared to document habitat conditions evaluated during the previous year, with the first monitoring report including qualitative and photo documentation of pre-construction conditions, construction activities, and habitat conditions within the project area. The monitoring reports will document the habitat conditions, any problems and solutions, and anticipated maintenance & management activities for the following year. After success criteria is achieved, sufficient monitoring will be periodically conducted each year through the SWFWMD to evaluate the habitat conditions and presence of exotic and nuisance species, and to coordinate maintenance events. Monitoring locations to demonstrate hydrologic restoration are being evaluated and will include monitoring wells with automated data recorders, similar to the nine wetland monitoring wells used within the mitigation areas on the adjacent Hampton Tract. Annual monitoring of the upland enhancement and restoration projects will provide qualitative and photo documentation, and details on current and future plans.

Success criteria varies and dependent on the habitat areas. For the forested wetland restoration, criteria will include a minimum 95% survivorship of planted material, and 30% canopy for trees over 10 ft. tall and shrubs over 5 ft. tall. Herb cover for the marsh restoration will include 85% cover of desirable species and less than 5% cover of exotic and nuisance species. Appropriate wetland hydrology and hydroperiods are also required in the restored wetlands. For the enhanced wetlands, documentation of restored hydrologic conditions and hydraulic flow patterns, stabilization and appropriate stability of the ditch blocks. Shifts in vegetative cover and diversity will be noted in the monitoring reports, but no specific success criteria is proposed since the major transitions and regeneration of desirable species will gradually occur. Success criteria for the enhanced upland habitat include implementation of a prescribed fire program and creating a vegetative shift from fewer hardwoods and more pine generation. For the upland pastures that will be gradually enhanced and restored to flatwood habitat, success criteria requires documenting implementation of a program that will include removal of cattle, planting establishment, and implementation of a sustained prescribed fire program.

SW 84 - Colt Creek State Park Figure A - Location



CR 471-
To Tarrytown ^



Green Swamp
Wilderness
Preserve
(West Tract) - WMD

**SW 84 - Project Area
Colt Creek State Park
(DEP/WMD)**

Green Swamp
Wilderness
Preserve
(East Tract) - WMD

471

With Iacoochee River

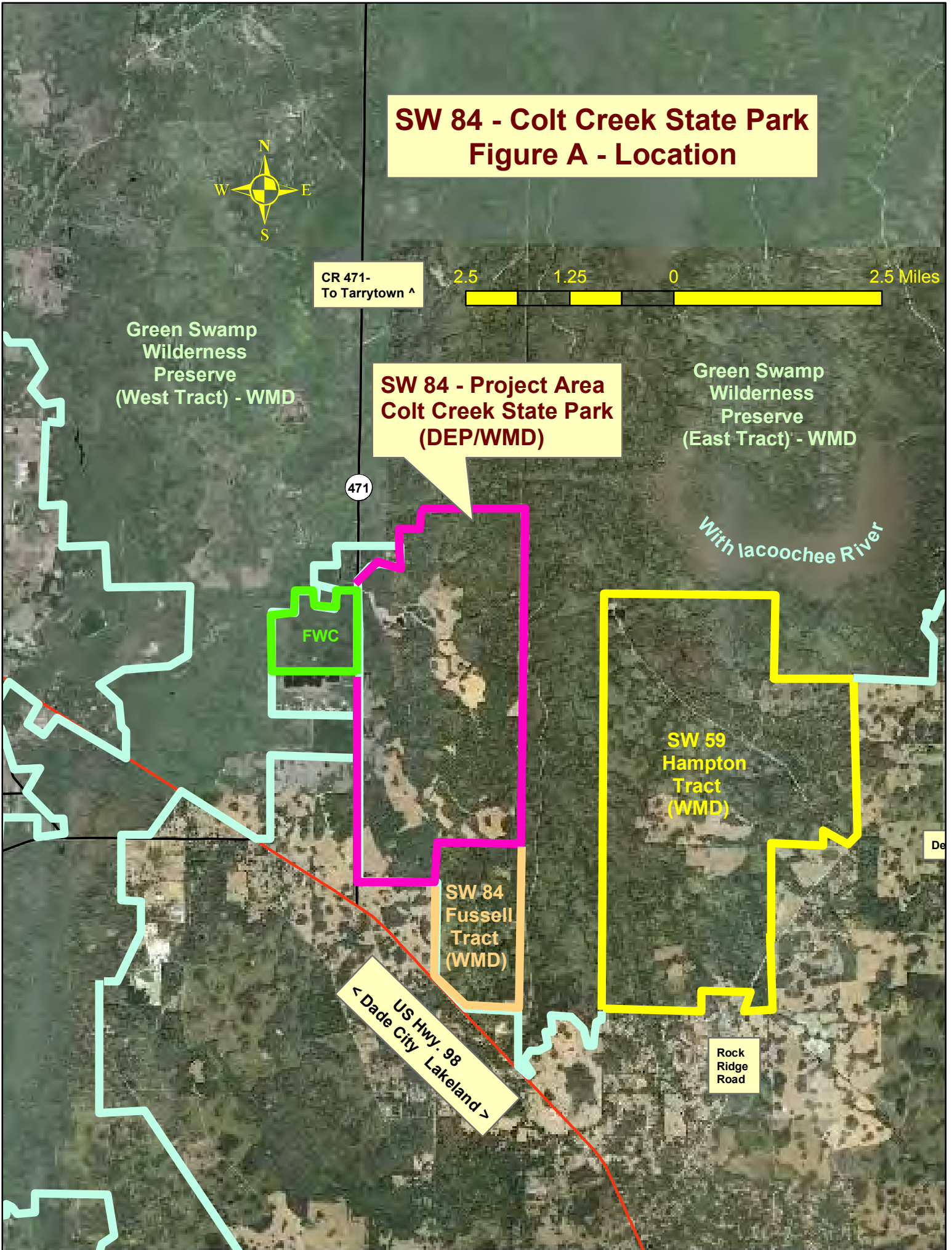
FWC

SW 59
Hampton
Tract
(WMD)

SW 84
Fussell
Tract
(WMD)

< Dade City Lakeland >
US Hwy. 98

Rock
Ridge
Road



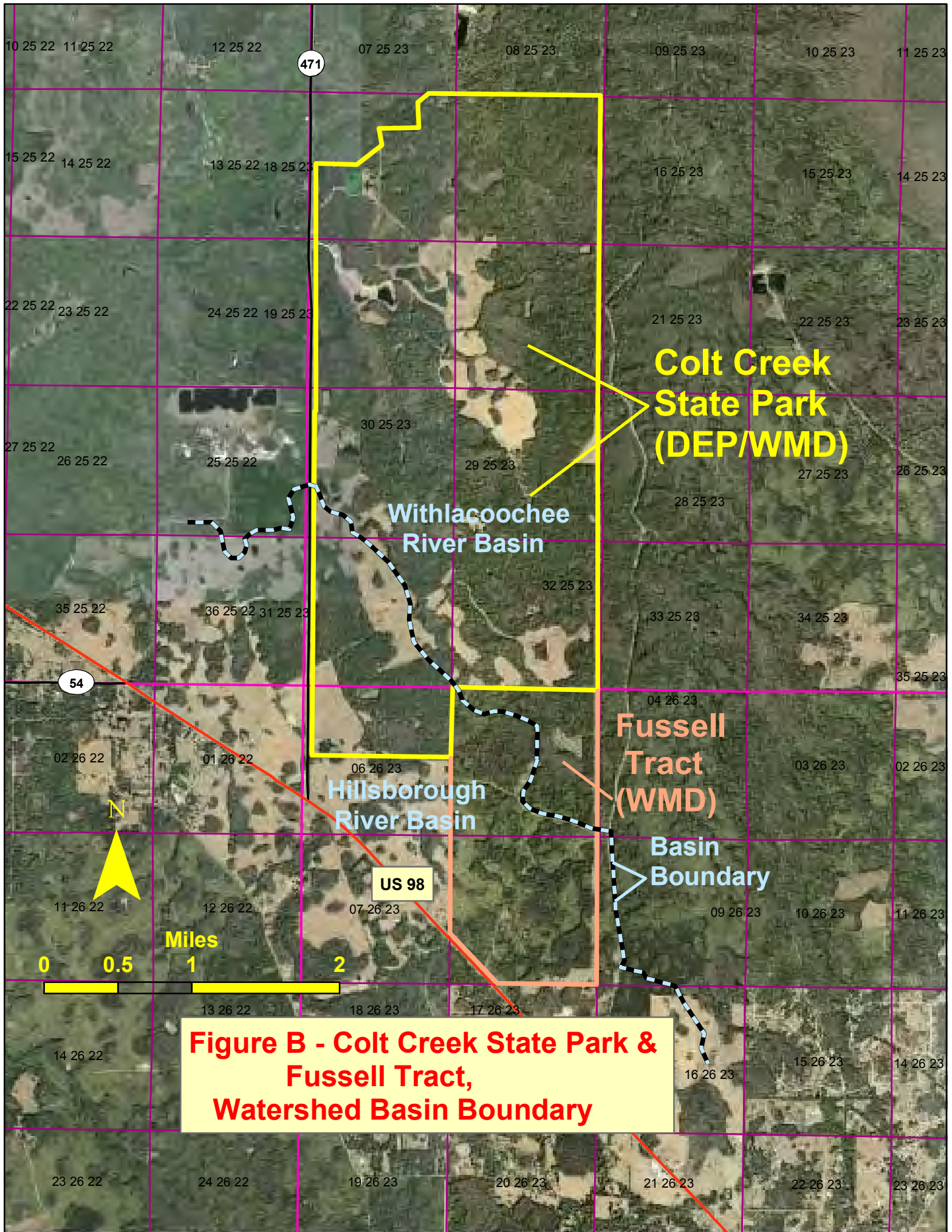
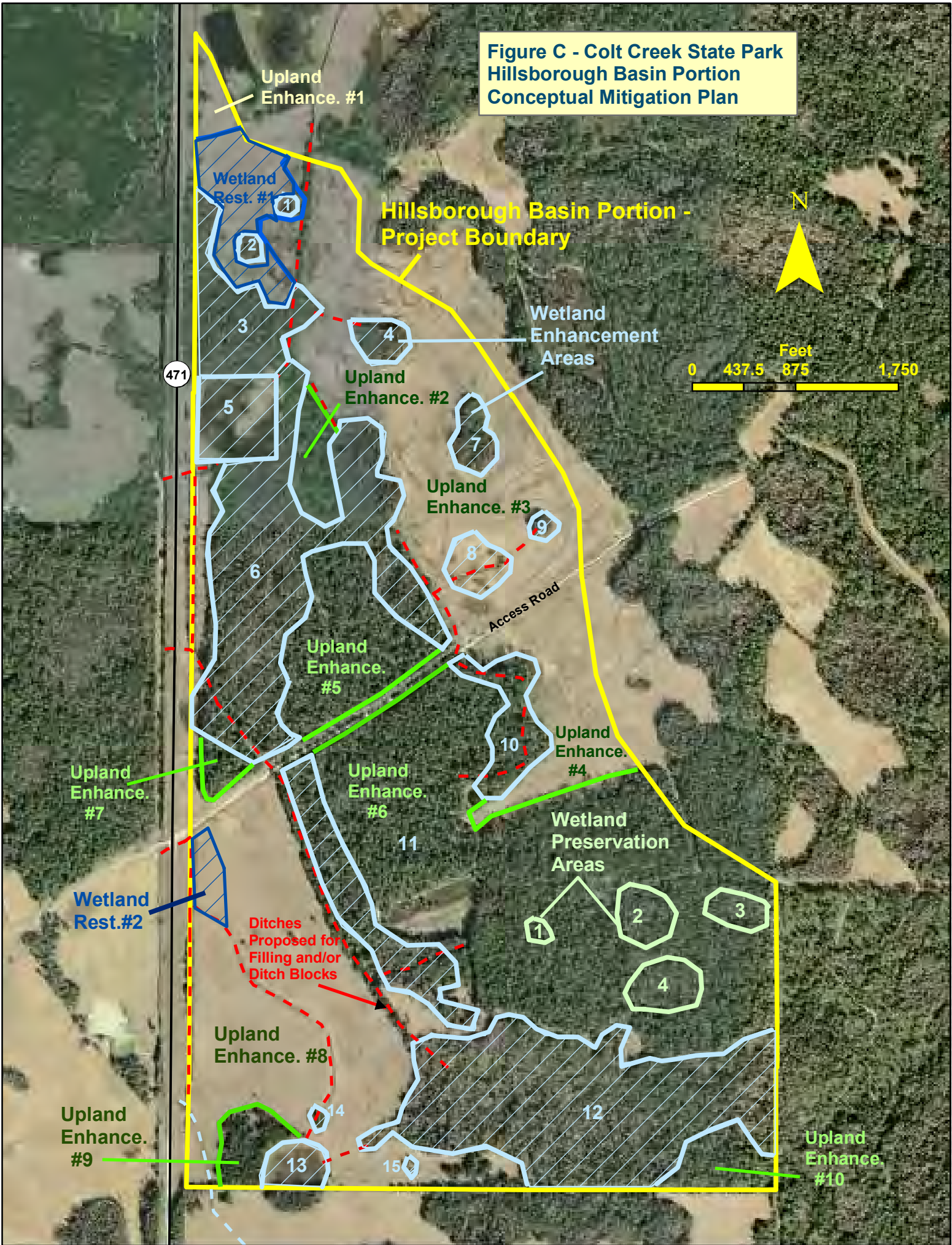
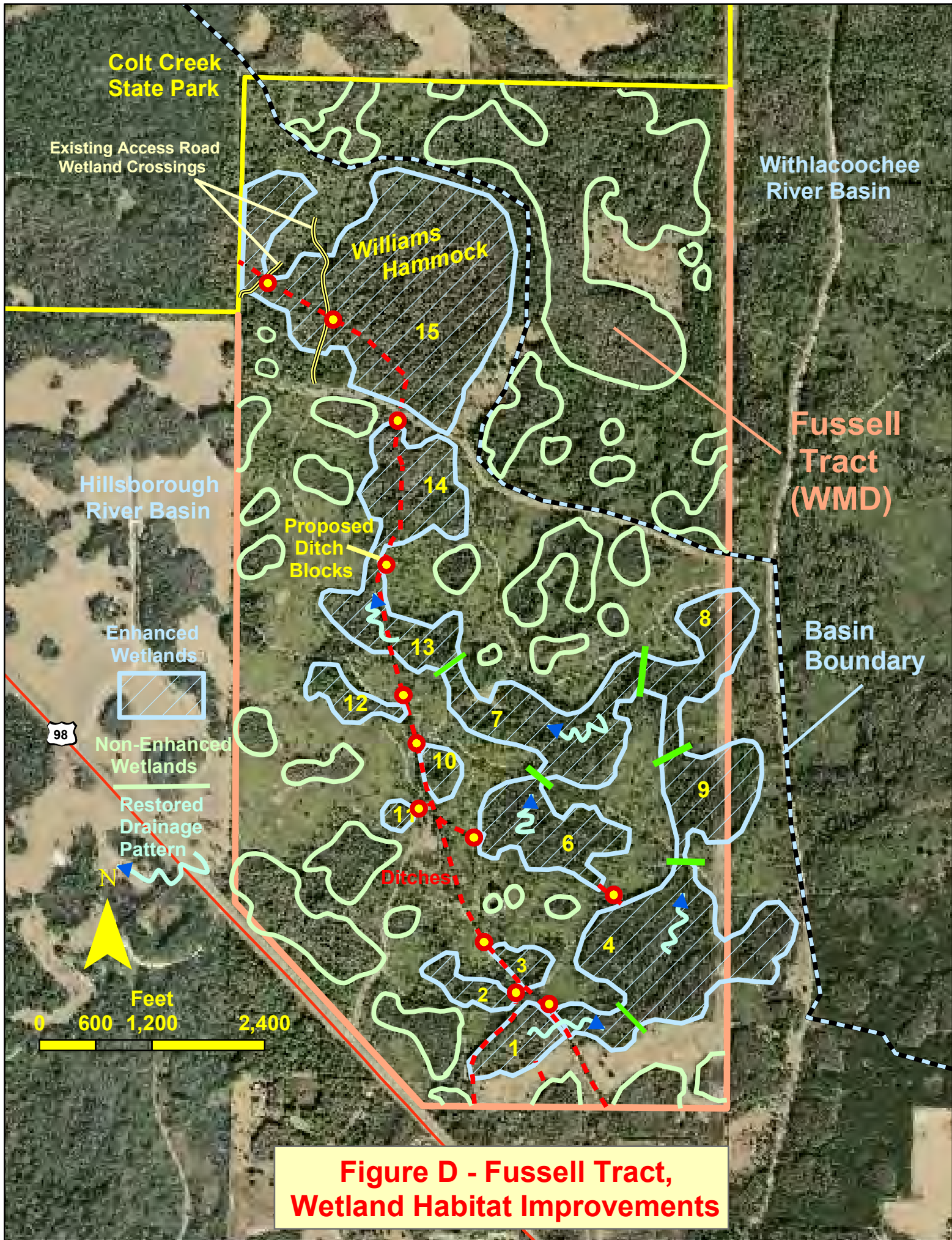
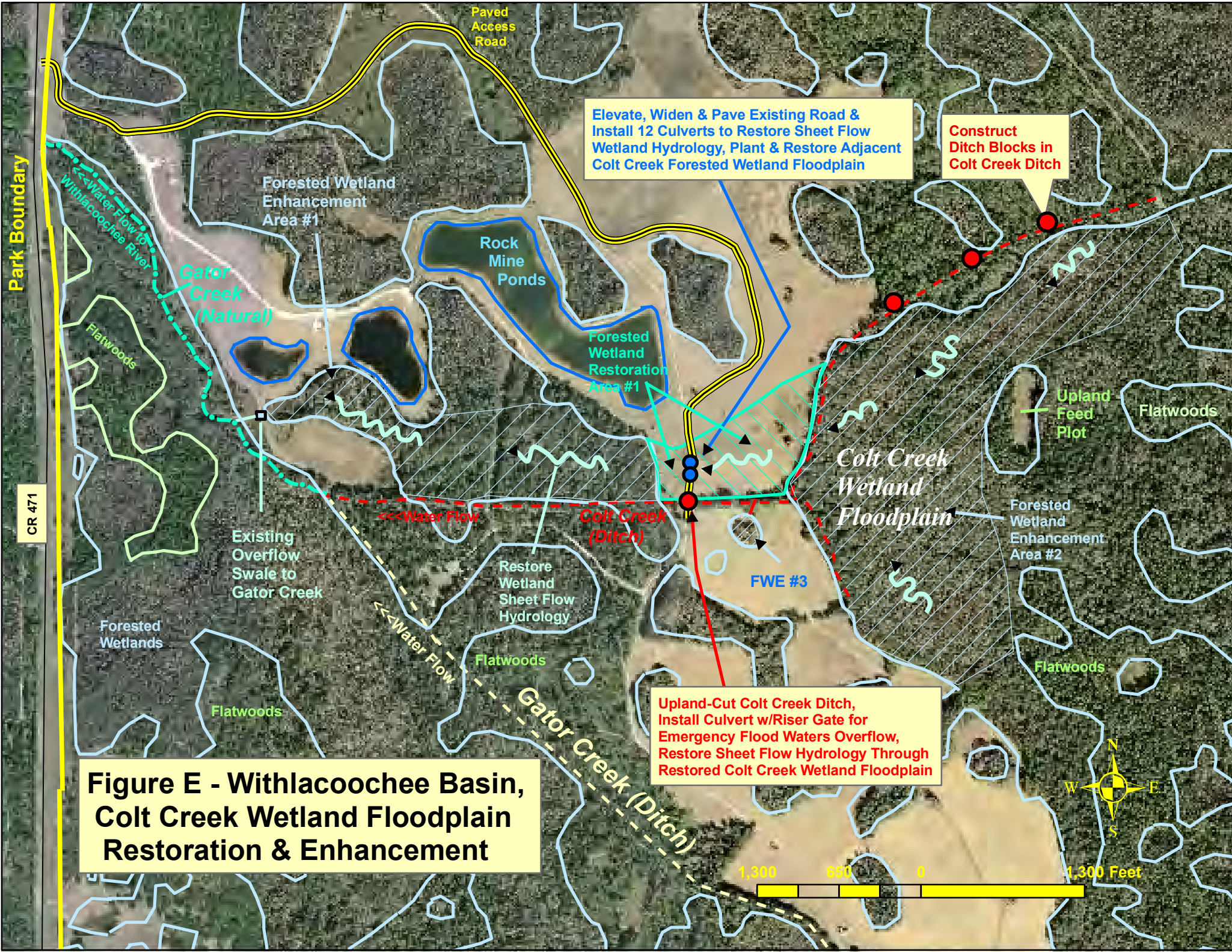


Figure B - Colt Creek State Park & Fussell Tract, Watershed Basin Boundary

**Figure C - Colt Creek State Park
Hillsborough Basin Portion
Conceptual Mitigation Plan**







Elevate, Widen & Pave Existing Road & Install 12 Culverts to Restore Sheet Flow Wetland Hydrology, Plant & Restore Adjacent Colt Creek Forested Wetland Floodplain

Construct Ditch Blocks in Colt Creek Ditch

Upland-Cut Colt Creek Ditch, Install Culvert w/Riser Gate for Emergency Flood Waters Overflow, Restore Sheet Flow Hydrology Through Restored Colt Creek Wetland Floodplain

Figure E - Withlacoochee Basin, Colt Creek Wetland Floodplain Restoration & Enhancement



Park Boundary

CR 471

Paved Access Road

Forested Wetland Enhancement Area #1

Rock Mine Ponds

Forested Wetland Restoration Area #1

Gator Creek (Natural)

Flatwoods

Upland Feed Plot

Flatwoods

Colt Creek Wetland Floodplain

Forested Wetland Enhancement Area #2

Existing Overflow Swale to Gator Creek

Colt Creek (Ditch)

FWE #3

Forested Wetlands

Restore Wetland Sheet Flow Hydrology

Flatwoods

Flatwoods

Flatwoods

Gator Creek (Ditch)

Water Flow

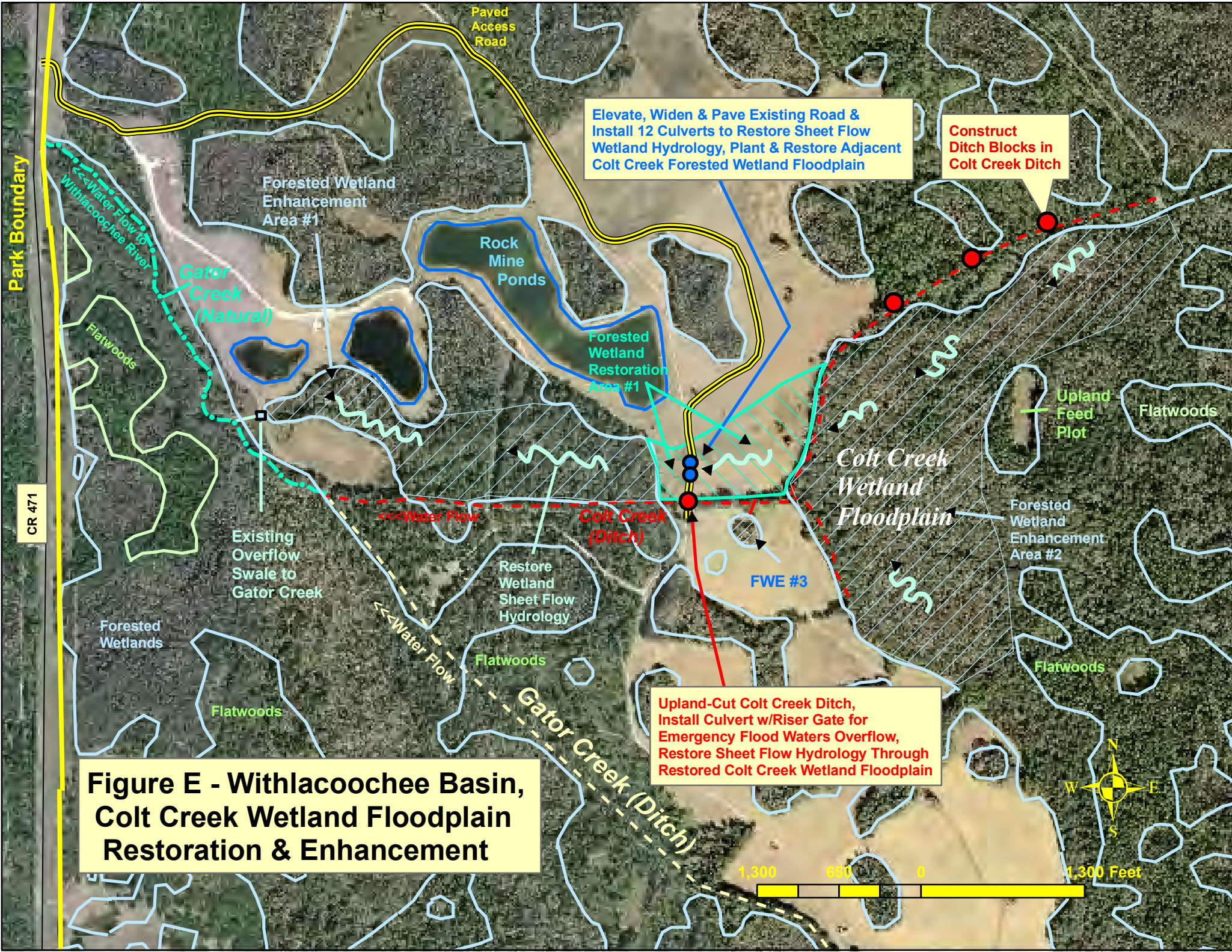
Water Flow

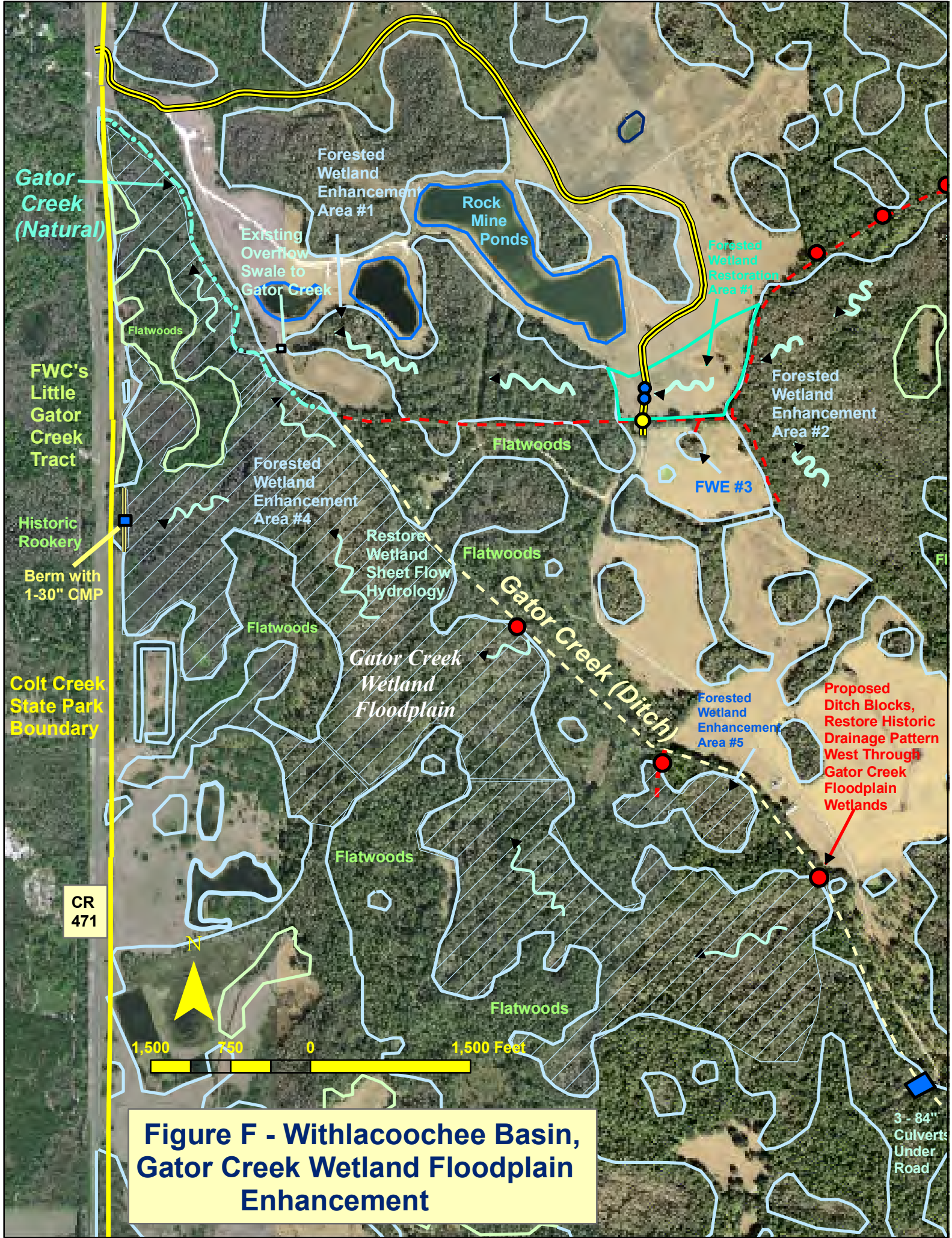
Water Flow

Water Flow

Water Flow

Water Flow





**Figure G - Withlacoochee Basin
Gator Creek Wetland Tributary
Enhancement (West)**





Wetland Restoration – Eastern view from the western project boundary, at the intersection of north-south and east-west cross ditch in the 90-acre pasture. Grading and planting is proposed to restore the forested wetland (foreground) and marsh habitat (background).



Wetland Restoration – Northern limits of the pasture along access road, looking south at the proposed forested wetland restoration area (foreground) and marsh habitat (background).

**FDOT Mitigation Site
(Hillsborough Basin)**

**COLT CREEK STATE PARK
(SW 84)**



Wetland Enhancement #11 – View from the access road looking south at the north-south drainage ditch (avg. 10-15 ft., 2 ft. deep). Historically a cypress strand, the drainage has resulted in pines and oaks recruiting and generating in the strand (left) and conversion of wetland to pasture (right). Proposed plan includes filling ditch to restore drainage patterns to enhance forested wetland and restore wetland in the pasture.



Wetland Enhancement #6 – Due to ditching and drainage, hydroperiods are minimal; allowing pines and hardwoods such as live oak, laurel oak, and red maple to generate within the historically cypress-dominated wetlands. Enhancement will include restoring hydrology and drainage patterns through the wetlands.

**FDOT Mitigation Site
(Hillsborough Basin)**

**COLT CREEK STATE PARK
(SW 84)**



Upland Restoration #2 – View of the pasture and swales (foreground) cut for drainage. Wetland #9 (background) is drained to west (left) through Wetland #8. The ditches will be filled to restore wetland and upland hydrology, and the pasture will be restored to pine flatwood habitat. Wetland #8 will have the cypress canopy restored.



Upland Enhancement #2 – Hardwoods such as live oak, laurel oak, and red maple have recruited and generated within the historic pine flatwoods. Enhancement will include adopting these upland areas into prescribed burn management on a 3-5 year cycle to decrease hardwoods and open understory for generating more foraging herbs for wildlife.

**FDOT Mitigation Site
(Hillsborough Basin)**

**COLT CREEK STATE PARK
(SW 84)**



Wetland Enhancement – The ditch (avg. 20 ft. wide, avg. 2-3 ft. deep) along the northern perimeter of Wetland 1 diverts and reroutes contributing surface and groundwater flow around the wetland. Proposed ditch filling will restore historic hydroperiods and hydraulic flow patterns through many wetlands and allow easier access for wildlife into the wetlands and adjacent uplands.



North-South Ditch – The main ditch drains and diverts drainage flow patterns in not only the wetlands, but also the adjacent uplands. Surface and ground water conditions will be restored by combination of total ditch filling, as well as installation of 50-70 ft. long ditch blocks. This will provide wide natural crossings and some open water sources in the flatwoods for wildlife, which is particularly valuable during the dry season.

**FDOT Mitigation Site
(Hillsborough Basin)**

**FUSSELL TRACT
(SW 84)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project Name: Peace River Mitigation Bank

Project Number: SW 85

Project Manager: Wade Waltmyer, Senior Biologist
EarthBalance, Corporation

Phone No: 941- 426 - 7878

County: Hardee

Location: Sec. 14, 15, 22, 23 T34S, R25E

IMPACT INFORMATION

1 – FM 4154901 – US 17 – Charlotte C.L. to SW Collins*

ERP #: 43013044.006 COE #: 20074765 (IP-JF)

Drainage Basin: Peace River Water Body(s): None SWIM water body? No

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 4154901*	1.39 ac. (615)
	0.80 ac. (617)
TOTAL	2.19 acres

TOTAL – 2.19 Acres

* Note – this US 17 segment also has non-forested wetland impacts mitigated by purchasing marsh credits from the Boran Ranch Mitigation Bank (SW 53) located in DeSoto County.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: __ Creation __ Restoration X Enhancement X Preservation Mitigation Area: **1.15 credits**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? Y
Mitigation Bank Permits WMD ERP# 43029983, ACOE # SAJ 2006-4057 Drainage Basin: Peace River Basin
Water Body: Peace River SWIM water body? N

Project Description

A. Overall project goal: The Peace River Mitigation Bank (PRMB) is located within a regionally significant and critical habitat and wildlife corridor along the Peace River in Hardee County (Fig. A & B). The tract has been targeted for public land acquisition through the Florida Forever program. The primary goal includes the preservation and enhancement of ecologically significant forested wetland and forested upland habitat along the core of the targeted riverine corridor.

B. Brief description of current condition: The PRMB (total 487 acres) is bisected by the Peace River with almost 2 miles of river frontage along the eastern portion (Figure B). The majority of the tract (369 acres) has high quality mixed forested wetlands (FLUCFCS #617). The varied topography within the expansive riverine forested wetlands creates a variety of micro-habitats including cypress bogs, bay swamps, and bottomland hardwood forests. The dominant canopy coverage is provided by bald cypress, pond cypress, sweetbay, swamp tupelo, red maple, sweetgum, cabbage palm, water oak, and Carolina willow. The understory is sparse but contains a variety of herbaceous and shrubby species, including netted chain fern, cinnamon fern, lizard's-tail, hatpin, yellow-eyed grass, saw palmetto, cabbage palm seedlings, wax myrtle and elderberry. The remaining portion of the tract (118 acres) is upland habitat characterized as coniferous-hardwood mix (FLUCFCS #434). The vegetative composition is dominated by a mix of slash pine, sweetgum, a variety of oak species, and cabbage palm. The majority of the upland areas have moderate to significant vine coverage, including grapevine, blackberry, poison ivy, Virginia creeper and greenbrier. Other species frequently present in the uplands include dogfennel, ragweed, wax myrtle, winged sumac, and saltbush.

C. Brief description of proposed work: The primary goal of the PRMB is the preservation and enhancement of the habitat conditions by conveying a conservation easement over the site, restricting site use and access, installing strategic fencing and signage, removing existing nuisance and exotic vegetation, reducing brush levels in uplands, and applying habitat land management techniques to the site through the implementation of a funded long-term management plan. The conservation easement will prevent future likely uses of the land that would have been ecologically detrimental, such as silviculture, cattle ranching, and/or residential development of the upland parcels. Even without these stresses on vegetative structure, species composition, and water quality, the site would further degrade without active management. Highly invasive species such as primrose willow, cogon grass, and Japanese climbing fern have been identified on site. The management plan recorded with the easement will prevent current exotic vegetative populations from expanding, and re-introduce a natural prescribed fire regime back into upland habitats to increase vegetative diversity and reduce shrub coverage.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The wetland impacts designated for mitigation at PRMB include forested wetlands within the Peace River watershed. The non-forested wetland impacts associated with the roadway project is mitigated through purchasing credits of non-forested wetland habitat at the Boran Ranch Mitigation Bank in DeSoto County. Both banks have habitat conditions that adequately and appropriately compensate for the proposed wetland impacts.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The PRMB is a mitigation bank in the Peace River basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: At the time during mitigation selection, there were no SWIM projects planned in the Peace River basin that would appropriately compensate for the proposed wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Peace River Mitigation Bank

Contact Name: Wade Waltmyer, EarthBalance, Corporation

Phone Number: 941 – 426 - 7878

Entity responsible for monitoring and maintenance: EarthBalance, Corporation

Proposed timeframe for implementation: Commence: Design & Permitting: 2005-2006 Complete: No construction required, routine land management, maintenance & monitoring

Project Cost: \$163,300 expended through Project #1

Attachments

1. Description of existing site and proposed work. Refer previous discussion, SWFWMD ERP #44029983, ACOE #SAJ-2006-4057, attached site photos.

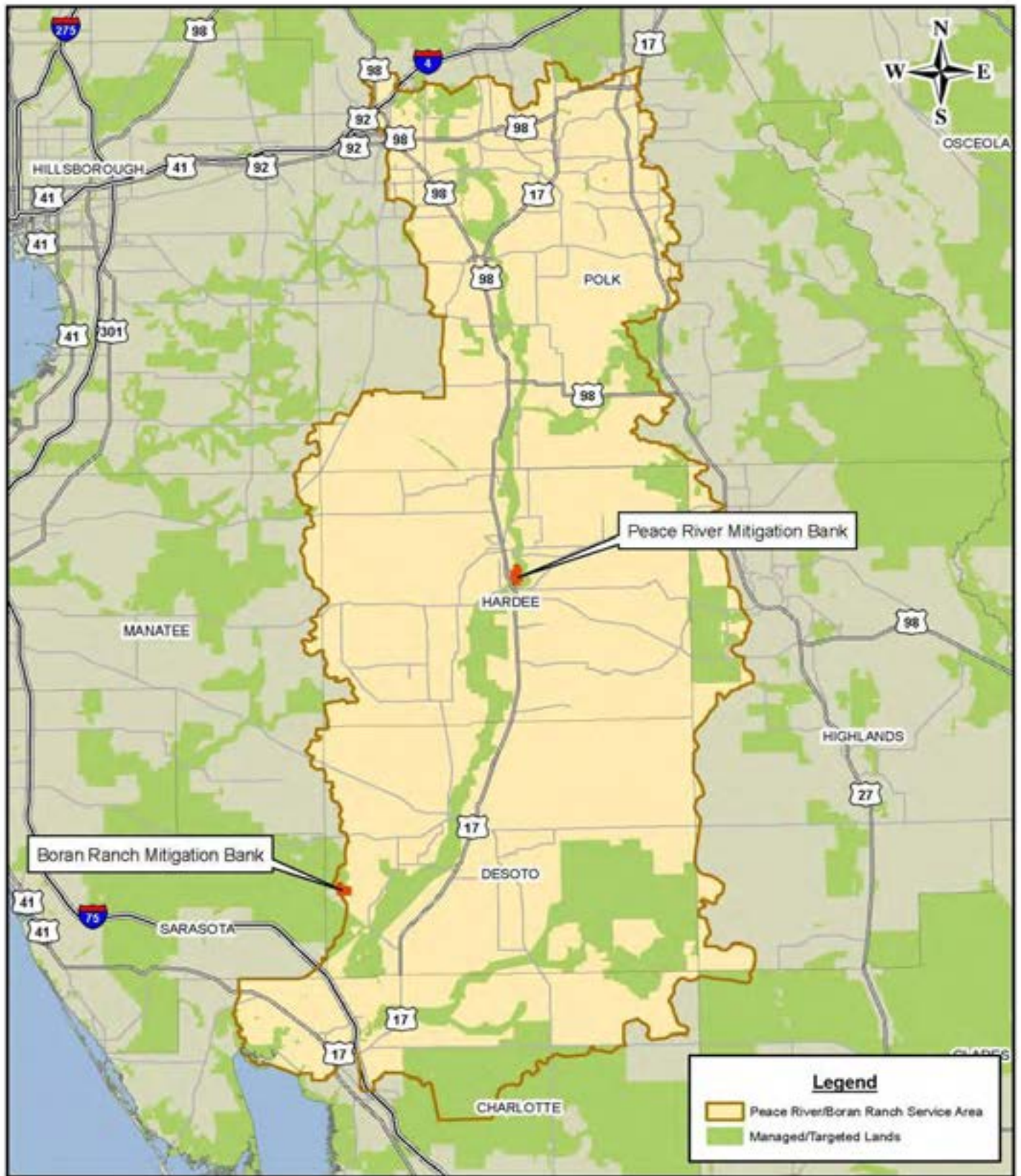
2. Recent aerial photograph with date and scale. Refer to Figure B, 2004 aerial.

X_3. Location map and design drawings of existing and proposed conditions. Refer to Figure A (location map), Figure B (existing & proposed habitat).

X_4. Detailed schedule for work implementation, including any and all phases. Refer to previous implementation discussion. No construction activities required, currently within the land management, maintenance & monitoring activities.

X_5. Success criteria and associated monitoring plan. Monitoring and success criteria for habitat enhancement are specified in the WMD & ACOE permits issued for the PRMB. Since the site is proposed as a mature preservation and enhancement parcel, typical monitoring methods will not be required to document vegetative and hydrological success. Success criteria for the bank will therefore be evaluated as "events." These events include recording the conservation easement to restrict use and access, funding the management trust fund, fencing and signage along the bank perimeter, eradication of inappropriate plant species to below 5% total coverage, eradication of exotic plant species to 1% coverage or less, and completion of the initial shrub reduction/fire event in uplands.

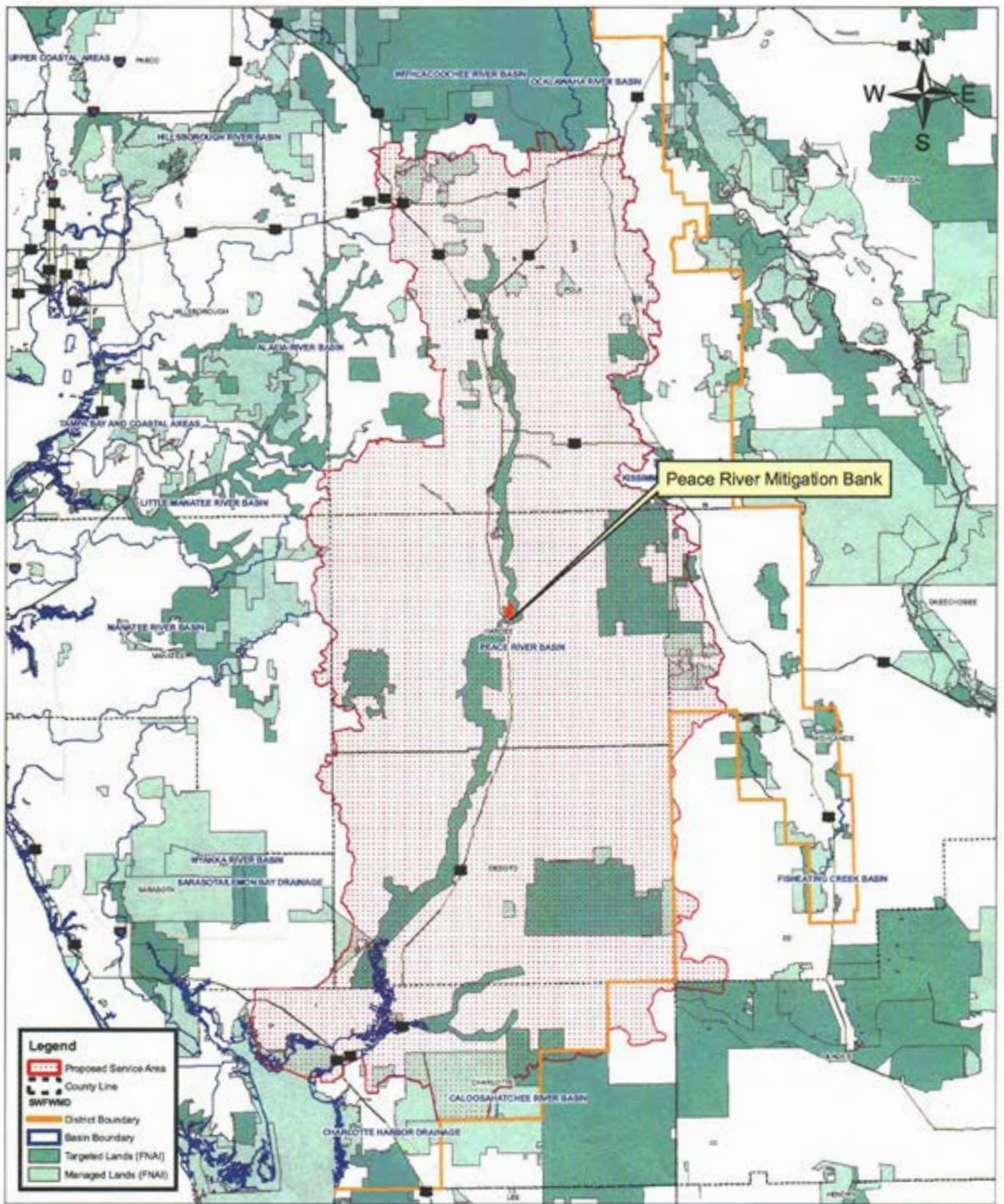
X_6. Long term maintenance plan. A long-term management plan that addresses vegetative maintenance, fire management, site security, access, and approved activities will be recorded with the conservation easement.



DATE: 09-14-09
 FILE: PR-BRMB Service-MT Lands
 Map 09-14-09
 PROJECT NO: Mitigation Banking
 AERIAL: N/A
 SCALE: N.T.S.

**PEACE RIVER AND BORAN RANCH
 MITIGATION BANKS
 SERVICE AREA AND
 MANAGED/TARGETED LANDS MAP**

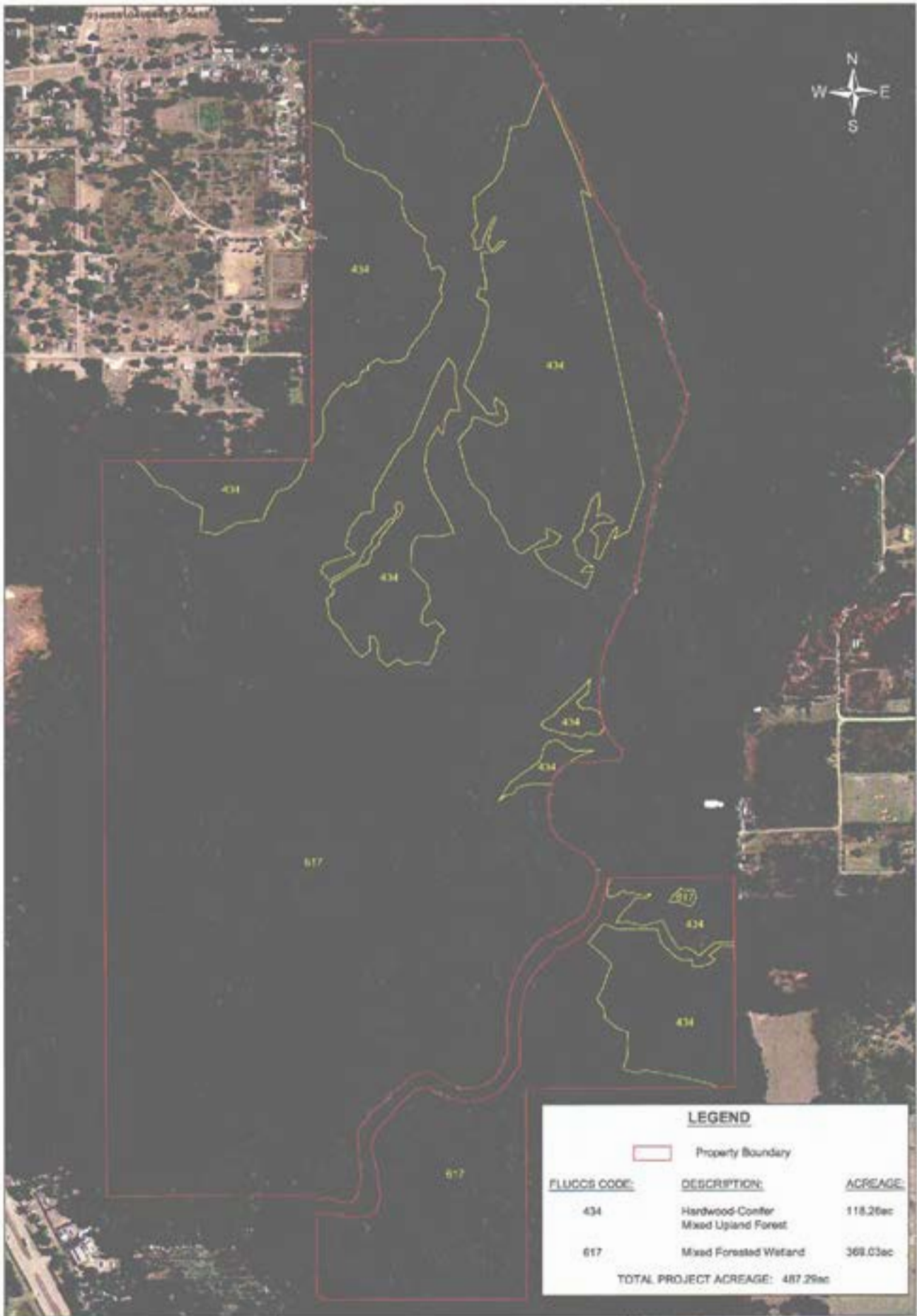
EarthBalance[®]
 2579 North Toledo Blade Blvd
 North Fort, FL 34209
 Tel (941) 426-7876
 Fax (941) 426-8776
 www.earthbalance.com



DATE: 7-27-06
 FILE: fig5_targeted.mxd
 PROJECT NO: 04458.1
 AERIAL: n/a
 SCALE: 1" = 60,000'

**PEACE RIVER MITIGATION BANK
 BASIN BOUNDARY AND TARGETED LANDS
 HARDEE COUNTY, FLORIDA
 SEC 14,15,22,23 TWN 34S, RGE 25E**

**FIGURE A – LOCATION MAP
 SW 85 – PEACE RIVER
 MITIGATION BANK**



LEGEND

Property Boundary

<u>FLUCCS CODE:</u>	<u>DESCRIPTION:</u>	<u>ACREAGE:</u>
434	Hardwood-Conifer Mixed Upland Forest	118.26ac
617	Mixed Forested Wetland	369.03ac
TOTAL PROJECT ACREAGE: 487.29ac		

DATE: 7-27-06
 FILE: Fig3FLUCCS_Map.dwg
 PROJECT NO: 04458.1
 AERIAL: TC 2004 step1.tif
 SCALE: 1"=550'

PEACE RIVER MITIGATION BANK
 VEGETATION ASSOCIATIONS/FLUCCS MAP
 HARDEE COUNTY, FLORIDA
 SEC. 14, 15, 22, 23 TWN 34S, RGE 25E

**FIGURE B – HABITAT MAP
 SW 85 – PEACE RIVER
 MITIGATION BANK**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Mobbly Bayou Wilderness Preserve**
 Project Sponsor: Pinellas County Environmental Management
 County: Pinellas County

Project Number: **SW 86**
 Location: Sec. 24, 25, 36, T28S, R16E

IMPACT INFORMATION (Proposed Construction Date)

1 - <u>FM 4152345 – Dale Mabry-Northdale to Northgreen (Sidewalk) (2011)</u>	ERP #: <u>4152345.000</u>	COE #: <u>NPR – Isolated Wet.</u>
2 - <u>FM 2568811 – US 19 (SR 55) – Whitney Rd. to Seville Dr.</u>	ERP #: <u>44025287.003</u>	COE #: <u>2006-2199 (IP-JPF)</u>
3 - <u>FM 2569981 – SR 686 (Roosevelt) – I-275 to 9th Street (2014)</u>	ERP #: _____	COE #: _____
4 - <u>FM 2584151 – I-4 (SR 400) @ Selmon Expressway</u>	ERP #: <u>43020690.009</u>	COE #: <u>2008-1606 (IP-JPF)</u>
5 - <u>FM 2569951 – SR 686 (Roosevelt) – Ulmerton Rd. to 40th St. (2015)</u>	ERP #: _____	COE #: _____
6 - <u>FM 2569961 – SR 686 (Roosevelt) and 49th Street (2014)</u>	ERP #: _____	COE #: _____
7 - <u>FM 4153481 – Tampa Bay Intermodal Centers - Gateway Site (Undeter.)</u>	ERP #: _____	COE #: _____
8 - <u>FM 4125311 – SR 60 – I-75 to Spruce St. (2018)</u>	ERP #: _____	COE #: _____
9 - <u>FM 2569971 – SR 686 (Roosevelt) - 49th St. Bridge to Ulmerton (2018)</u>	ERP #: _____	COE #: _____
10 - <u>FM 4091551 – SR 688 (Ulmerton) – Lake Seminole to Wild Acres (2014)</u>	ERP #: _____	COE #: _____
11 - <u>FM 4055252 – SR 60 (Adamo Dr) – US 301 to Falkenburg (2018)</u>	ERP #: _____	COE #: _____
12 - <u>FM 4168381 – US 92 (SR 600) – Pelican Sound to Gandy Bridge (2010)</u>	ERP #: <u>43011339.006</u>	COE #: <u>2009-03493 (IP-JPF)</u>
13 - <u>FM 4136222 – CR 296 - US 19 to Roosevelt / CR 296 (2018)</u>	ERP #: _____	COE #: _____
14 - <u>FM 4125313 – I-275 @ I-275 NB Off-Ramp to SR 60 Airport Flyover (2009)</u>	ERP #: <u>44002958.009</u>	COE #: <u>2008-2506 (IP-JPF)</u>
15 - <u>FM 2569312 – Gandy Blvd. (SR 694) – 9th St. to 4th St. (2017)</u>	ERP #: _____	COE #: _____
16 - <u>FM 4161611 – Dale Mabry-Fletcher to Bearss (Sidewalk) (2010)</u>	ERP #: _____	COE #: _____
17 - <u>FM 4245611 – SR 60 – Pinellas/Hills. C.L. to Rocky Point Dr. (2010)</u>	ERP #: _____	COE #: _____
18 - <u>FM 4245571 – SR 590 (Busch) – Marelynn Lane to Armenia (2012)</u>	ERP #: _____	COE #: _____
19 - <u>FM 2571471 – SR 688 (Ulmerton Rd.) – 38th Street to I-275 (2012)</u>	ERP #: _____	COE #: _____

Drainage Basin(s): Tampa Bay Drainage Basin Water Body(s): Tampa Bypass Canal, Bullfrog Ck., Little Bullfrog Ck.
 SWIM water body? No

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 4152341	0.1 ac. (619)
	0.1 ac. (641)
	<u>TOTAL 0.2 acre</u>
(2) FM 2568811	0.5 ac. (612)
	<u>TOTAL 0.5 acre</u>
(3) FM 2569981	2.1 ac. (619)
	0.7 ac. (631)
	<u>TOTAL 2.8 acres</u>
(4) FM 2584151	5.40 ac. (612)
	0.15 ac. (631)
	0.12 ac. (641)
	<u>TOTAL 5.67 acres</u>
(5) FM 2569951	0.5 ac. (510x)
	0.3 ac. (534)
	0.4 ac. (618)
	0.1 ac. (619)
	0.6 ac. (641)
	0.2 ac. (641x)
	<u>TOTAL 2.1 acres</u>
(6) FM 2569961	1.4 ac. (510)
	1.6 ac. (530)
	<u>TOTAL 3.0 acres</u>

(7) FM 4153481 0.2 ac. (618)

TOTAL 0.2 acre

(8) FM 4125311 1.0 ac. (612)

TOTAL 1.0 acre

(9) FM 2569971 0.1 ac. (621)

0.2 ac. (641)

TOTAL 0.3 acre

(10) FM 4091551 0.1 ac. (510)

TOTAL 0.1 acre

(11) FM 4055252 1.0 ac. (618)

1.0 ac. (630)

TOTAL 2.0 acres

(12) FM 4168381 1.5 ac. (612)

TOTAL 1.5 acres

(13) FM 4136222 2.8 ac. (618)

1.3 ac. (641x)

TOTAL 4.1 acres

(14) FM 4125313 0.9 ac. (612)

TOTAL 0.9 acre

(15) FM 4134041 0.3 ac. (612)

3.0 ac. (619)

TOTAL 3.3 acres

(16) FM 4161611 0.2 ac. (631)

TOTAL 0.2 acre

(17) FM 4245611 0.1 ac. (540)

0.1 ac. (612)

TOTAL 0.2 acre

(18) FM 4245571 0.1 ac. (641x)

TOTAL 0.1 acre

(19) FM 2571471 1.4 ac. (641x)

TOTAL 1.4 acres

TOTAL 29.57 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation X Restoration X Enhancement ___ Preservation Mitigation Area: **133 acres**
SWIM project? Y Aquatic Plant Control project? N Exotic Plant Control Project? Y
Mitigation Bank? N Drainage Basin(s): Tampa Bay Drainage Basin Water Body(s): Mobbly Bayou, Tampa Bay
SWIM water body? Y

Project Description

A. Overall project goal: Mobbly Bayou Wilderness Preserve is a 383-acre preserve within one of the few undeveloped tracts adjacent to Tampa Bay (Figure A). The Preserve has diverse upland and wetland habitats critical for a wide variety of wildlife species. However, these habitats have been impacted by the construction of mosquito ditches.

ponds and adjacent development. The project goal includes conducting wetland habitat restoration and enhancement by filling ditches to restore appropriate hydrologic regimes, creation of vital oligohaline habitat to provide the salinity transition between freshwater and estuarine wetlands, and the eradication of exotic species. Additional habitat enhancement will be conducted by eradicating Brazilian pepper within the upland habitat area adjacent to the wetlands.

B. Brief description of current condition: The Preserve's habitats include a dominance of mangrove forests and salt-marsh, with additional coverage provided by saltern, pine flatwoods, cabbage palm flatwoods, coastal hammock, and freshwater marsh (refer to Figures B & C). Much of the mangrove forest, salt marsh, and saltern habitat have been hydrologically altered by the construction of mosquito ditches. The ditches limit appropriate and adequate tidal range and fluctuation within the estuarine wetlands. In addition, because of diverted storm and surface water from adjacent developed areas, there is less frequency and consistency of contributing freshwater components critical for maintaining appropriate oligohaline and estuarine habitats. The combination of less estuarine habitat receiving and retaining tidal flow from the south and inconsistent contribution of freshwater from the north has resulted in fewer wetlands having appropriate hydrology, hydroperiods and salinity levels. This is particularly evident within the slightly higher elevations of salt-marsh habitat and adjacent upland habitats, which has had substantial natural recruitment and establishment of Brazilian pepper.

C. Brief description of proposed work: Pinellas County has proposed a combination of restoring wetland hydrology and eradication of exotic species, subsequently resulting in less opportunity for exotic species regeneration and fewer problems with perpetual land management and maintenance activities. The proposed plan includes a combination of activities to improve wetlands ranging from freshwater to estuarine systems (refer to Figures C-E). The existing freshwater ponds (SP on Figure C) will have two internal berms graded to create littoral zone habitat (Figures D & E). The pond water will outfall into an existing oval oligohaline pond (OP). The outer pond berms will be graded to create intertidal marsh habitat and the southeastern portion of the pond will be filled and graded as part of an objective to create six acres of oligohaline marsh and creek habitat. This marsh will provide habitat and water quality improvements before restoring flow to the main channel of Mobbly Creek. A large ditch through the central marsh (CM) and a ditched portion of Mobbly Creek will be backfilled and contoured to restore historic salt-marsh grade elevations. A combination of bulldozers and hydro-blast activities will be used to remove spoil mounds associated with the mosquito ditches. Partial filling of mosquito ditches will be conducted to restore tidal sheet-flow connectivity and appropriate fluctuations of the salt-marsh and mangrove habitats in the areas delineated as Northern SW Ditch (NSD), Central Marsh (CM), and Southern Ditches (SD) (Figures C-E). With the combination of restoring grade elevations from the ditches and spoil mounds, restoring appropriate tidal fluctuations, and B. pepper eradication, there will be natural recruitment and generation of species such as salt grass, black needlerush, smooth cordgrass and saltwort. There will be follow-up herbicide treatment of generated B. pepper treatment and supplemental planting of appropriate herb species. The upland pine flatwoods and oak hammocks bordering the proposed marsh enhancement areas have low to moderate coverage of B. pepper that will also be eradicated and controlled through implementation of a land management plan. Additional details are included in Attachment A.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The majority of the roadway projects proposed for mitigation at the Preserve have anticipated minor impacts to low quality wetlands and surface waters in the Tampa Bay drainage basin. The roadway projects typically have a decrease of proposed wetland impacts as they proceed through design phase, and several of these minor impacts are anticipated to have

permits issued without requiring mitigation. As a result of decreasing impacts, additional roadway projects with minor impacts may replace the decreasing impacts. The proposed roadway with by far the most sizeable wetland encroachment is the 5.4 acres of mangrove impact associated with the construction of the Interstate connector of the Crosstown Expressway to Interstate-4. The Mobbly Bayou restoration project will result in a minimum of 21 acres of mangrove enhancement that will provide appropriate compensation for the unavoidable mangrove impacts. In addition, the hydrologic improvements will result in the natural recruitment and generation of mangrove habitat within portions of the enhanced and restored salt-marsh habitat (total – 63-acres).

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of selecting mitigation, the only existing or proposed mitigation bank in the basin is the Tampa Bay Mitigation Bank. The mitigation bank was under construction and did not have credits available for purchase.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The proposed habitat improvements activities are associated with a SWIM-designated project.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private Contractor selected by Pinellas County through competitive bid process.

Contact Name: Stephen Raymond, Pinellas County Senior Environmental Scientist Phone Number: 727 – 453 - 6925
Entity responsible for monitoring and maintenance: Private Contractor selected by Pinellas County.

Proposed timeframe for implementation: Commence: Design & Permitting: 2005-2010 Complete: Construction, 2011–2012, followed by minimum 5 years of maintenance & monitoring

Project cost: \$2.1 million (total estimate);

Design & Permitting	<u>\$160,000</u>
Initial B. Pepper Eradication	<u>\$130,000</u>
Construction	<u>\$1,600,000</u>
Maintenance & Monitoring	<u>\$250,000</u>

Attachments

X 1. Description of existing site and proposed work. Refer to Attachment A.

X 2. Aerial photographs. Refer to Figures C-E, 2005 aerials.

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A (location map), Figure B (existing habitat conditions), and Figures C-E (proposed conditions). Construction plan details are available from Pinellas County and FDOT Mitigation Program Manager.

X 4. Schedule for work implementation, including any and all phases. Refer to previous implementation discussion.

X 5. Success criteria and associated maintenance & monitoring plan. Refer to Attachment B.

Mobbly Bayou - Attachment A – Background, Site Conditions & Proposed Activities

The Mobbly Bayou Wilderness Preserve is located along the northern portion of Tampa Bay, a designated Surface Water Improvement and Management (SWIM) priority waterbody. The Preserve covers approximately 383-acres in northeastern Pinellas County and borders the northwestern boundary of Hillsborough County. The Preserve is managed jointly by the City of Oldsmar and Pinellas County, with the County managing 307 acres of ecosystem benefits, and approximately 76 acres in the northern portion managed by the City of Oldsmar as recreational areas. The Preserve is also located within the Pinellas County Aquatic Preserve, and approximately 200 acres has been targeted for restoration, enhancement, and/or creation of habitats that will benefit the Preserve, Mobbly Bayou, and Tampa Bay.

The project planning, evaluation and design included many years of discussions between various entities including but not limited to Pinellas County, SWFWMD – SWIM, FDEP, FDEP Aquatic Preserve Program, U.S. Geological Survey, and various members of the public. Consensus was reached that major elements of ecosystem restoration and management of Mobbly Bayou are in need of attention. Therefore, the objectives of this effort include:

- Ecosystem restoration of the bayou, inclusive of subtidal, intertidal, transitional, and upland habitats, should be accomplished where possible, using a "habitat mosaic" ecosystem restoration approach. In the case of the Preserve, habitat mosaics are defined as assemblages of habitats normally found in coastal/estuarine ecosystems, encompassing upland transitional, intertidal, subtidal, and freshwater habitats.
- Restoration/enhancement of intertidal habitat, including an investigation of the historic and existing hydrological impacts resulting from large-scale ditching for mosquito control on salt-marsh and saltern habitat within the Preserve with a strategic examination of likely targets for mosquito ditch filling/blocking to achieve the greatest ecological benefit.

A habitat map was created by Pinellas County (Figure B) for use in the Mobbly Bayou Wilderness Preserve Management Plan (Figure C). Currently, approximately 73% of the Preserve is comprised of estuarine or tidal habitats. This includes mangrove forest, salt-marsh, and saltern habitats along with oligohaline and mesohaline tidal creeks and open water features. Adjacent habitats include pine flatwoods, cabbage palm/pine flatwoods, and mesic hardwood hammock. Much of the estuarine mangrove forest and saltern habitats have been hydrologically altered by construction of mosquito ditches in the 1950's and 60's. Upland areas within the south end of the Preserve experienced a wildfire as recently as 2000, however fire has generally been excluded from the upland ecosystems of the Preserve.

Upland, intertidal and subtidal areas of the bayou have suffered significant environmental degradation due to urban development, inclusive of dredge and fill activities and clearing of native vegetation and habitats. Upland and wetland areas are disturbed and suffer from invasion of nuisance and exotic species, primarily Brazilian pepper (*Schinus terebinthifolius*). A portion of the bayou was historically excavated for fill, creating a series of separate ponds that now function in part for storm and surface water treatment and attenuation. The two largest ponds as well as two smaller ponds in the Progress Energy corridor have a permanent tidal connection and are oligohaline in nature.

The conceptual restoration plan was based on substantial site evaluation and discussion of various alternatives. With all the adjacent land use changes, it was necessary to evaluate on-site hydrologic restoration opportunities that could not negatively impact adjacent residential areas. It was also necessary to evaluate the effects the mosquito ditching has had on the site, and determine where such restoration efforts would most benefit the site. A major component of the mosquito ditch evaluation included a USGS study of fish populations and their associated migration into and through the site. The fish study determined that the smaller mosquito ditches north of Mobbly Creek appear to have lesser abundance and lower species richness of fish than the natural creek and larger linear ditches to the south closest to Tampa Bay. As a result, it became evident that the ecological disturbance and long-term benefits from attempting to

remove the spoil mounds and fill the larger ditches in the southern portion of the Preserve would not off-set the ecological benefits provided by these ditches. Therefore, it was determined the hydrologic restoration activities would focus on the areas associated with the northern smaller ditches. The following information characterizes just the habitat areas and associated activities proposed for FDOT mitigation credit.

Mangrove Enhancement (21 acres) – Overall, mangrove ecosystems dominate the Preserve, including within the majority of the extensive mosquito ditches that extend through the salt marsh habitat. Mangrove species dominate these habitats, including red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), and white mangrove (*Laguncularia racemosa*). With B. pepper eradication within the historic salt marsh areas, access to some of the mosquito ditch spoil mounds will be conducted with traditional construction equipment such as a bulldozer. For areas that have limited equipment access due to mangrove coverage, the hydro-blast method will be utilized to remove the spoil mounds. Hydro-blast includes pumps and fire hoses to spray water at high-pressure, thus displacing the spoil material to below high tide elevations. This method was successfully incorporated in 2004 to displace mosquito ditch spoil material at another Pinellas County / SWIM restoration project funded through the FDOT mitigation program (Gateway Tract, SW 45).

With the hydroblast method, some of the displaced spoil material will be spread under the mangroves and into the ditches. There is very minimal temporary impact associated with this effort since the dense mangroves typically have minimal ground coverage. The mangroves along the ditches still receive appropriate hydrology, however it will be primarily associated with tidal sheet flow versus contained ditch flow. Mangroves and desirable herb species naturally generate within the footprint of the displaced spoil mounds. When the grade elevations are sufficiently below high tide elevations, the B. pepper cannot re-establish.

As for the Preserve, the anticipated mangrove enhancement from the proposed activities will exceed the 21 acres designated for mitigation credit. However, the mangroves bordering the north side of Mobbly Creek (Areas #1 & #2 on Figure E) will benefit the most from grading the spoil & ditch matrix and restoration of the adjacent salt-marsh habitats. One of the larger ditches conveying water to Mangrove Enhancement #2 cannot be filled because of potential off-site drainage alterations.

Salt Marsh Restoration & Enhancement (63 acres) – The salt-marsh habitat dominate the central area of the Preserve, is protected from tidal wave action, and transitions into the mangrove swamps. The typical vegetation of this habitat includes black needlerush (*Juncus roemeriananus*), smooth cordgrass (*Spartina alterniflora*), seashore dropseed grass (*Sporobolus virginicus*), salt grass (*Distichlis spicata*), glasswort (*Salicornia virginica*), sea purslane (*Sesuvium portulacastrum*), key grass (*Monanthochloe littoralis*), and saltwort (*Batis maritima*). However due to altered drainage conditions, large expanses of salt marsh are dominated by Brazilian pepper, particularly associated with the spoil mounds and areas of high marsh. Also within the salt marsh habitat, there are a couple acres of ecologically valuable saltern habitat.

One of the main restoration objectives at the Preserve is to restore natural flow patterns and channel geomorphology to the upper reaches of Mobbly Creek. The creation of the main north/south linear ditch redirected the water flow away from the natural creek system, and into the oval oligohaline pond. Hydrologic and vegetative restoration within this area will include backfilling this main ditch with fill obtained from the creation of the oligohaline creek and adjacent marsh system (Figures D & E), and from grading the adjacent spoil mounds to restore elevations consistent with the surrounding salt marsh. In addition, a combination of using bulldozers and hydro-blasting will displace the mounds along the southern ditch located perpendicular to the north/south linear ditch, thus allowing the ditch to naturally silt in with the displaced spoil material.

After the salt marsh areas will have the B. pepper eradicated, spoil mounds removed, and partial filling of mosquito ditches, where necessary, there will be supplemental planting of the same native herb species found in the salt marsh. As with the designated mangrove enhancement, there will be additional salt marsh enhancement than the 63 acres designated for mitigation credit (Figure E). However, the mitigation areas were delineated within the locations that will receive the most ecological benefit from the construction-related restoration activities associated with removing spoil and filling ditches. With the hydrologic

improvements associated with the spoil & ditch revisions, mangrove species will also naturally recruit and generate within portions of the salt-marsh habitat restoration and enhancement.

Freshwater & Oval Oligohaline Ponds (3 acres) – Restoration within the oligohaline pond will focus on opportunities to restore historic natural flow patterns and channel geomorphology, therefore a channel will be opened up within the pond's western berm. This will allow for increased water flow within the upper reaches of the creek system on the flood and ebb tides. Currently a majority of the ebb and flood tide enters the pond via the north/south linear ditch into the southern opening of the pond, reducing the quantity of water available for flow through the upper reaches of the creek. To further direct flow back through the natural system, the southern opening of the pond will be closed through the construction of a shallow mangrove lined berm. The eastern and western banks will be graded to create a littoral shelf and the exotic species and hard debris will be removed. There will be a few additional littoral zones constructed in the northern freshwater ponds. All these littoral areas will be planted with appropriate species. Depending on the salinity of each pond, these species could include bulrush (*Scirpus californicus*), saw-grass (*Cladium jamaicense*), and cordgrass (*Spartina patens*, *S. bakerii*). To enhance fisheries habitat, the hard debris excavated from the project area will be placed in the pond to create an artificial reef.

Oligohaline Creek & Marsh Creation (6 acres) – There is an existing ditch parallel to the northeastern boundary of the oval oligohaline pond. Bordered by a dominance of B. pepper, it was determined this location and the two smaller borrow ponds southeast of the oligohaline pond would be a good location to construct a meandering oligohaline creek and adjacent marsh habitat (Figure D & E). The cut material from constructing the northern portion of the creek and marsh system will be used to fill and raise the grade of the two existing ponds southeast of the oval oligohaline pond. Once constructed, the graded area will be planted with appropriate species such as black needlerush, saw-grass, and cordgrass.

This habitat will provide additional water quality treatment and attenuation of water discharging from the oligohaline pond before discharging into Mobbly Creek. Along with the littoral zone creation in the ponds, this creek and marsh creation will provide the opportunity for fish migration between the pond and Mobbly Creek. In turn, the increase in fish and aquatic species will attract other wildlife species that frequent the area such as various wading birds and small mammals.

Upland Habitat Enhancement (39 acres) – Enhancement is proposed for two separate upland habitat communities bordering the northern high marsh habitats. As depicted on Figure E, a long and narrow area of the upland enhancement area #1 is technically not within the portion of the Preserve's boundary owned by Pinellas County. Except for a 1.3-acre area in the middle of Upland Enhancement Area #1 (refer to Figure E), this segment is owned and preserved by the City of Oldsmar. But as part of an agreement between the County and the City, the upland will be enhanced as part of the County's enhancement and management of the adjacent upland habitat. Dominant canopy is provided by longleaf pine (*Pinus palustris*) with scattered live oak (*Quercus virginiana*) and cabbage palm (*Sabal palmetto*). Understory includes moderate to dense coverage of saw palmetto (*Serenova repens*). However, there is also moderate coverage of Brazilian pepper that will only continue to recruit and generate without eradication, which will be conducted with herbicide (Garlon) by a licensed applicator. The County will also evaluate the use of either mechanical roller-chopping and/or cool weather prescribed burns to minimize some of the dense palmetto coverage. The remaining 1.3-acre parcel is privately-owned but is being pursued for acquisition by the City. Unless acquired by the City, enhancement of this parcel will not be proposed for FDOT mitigation credit.

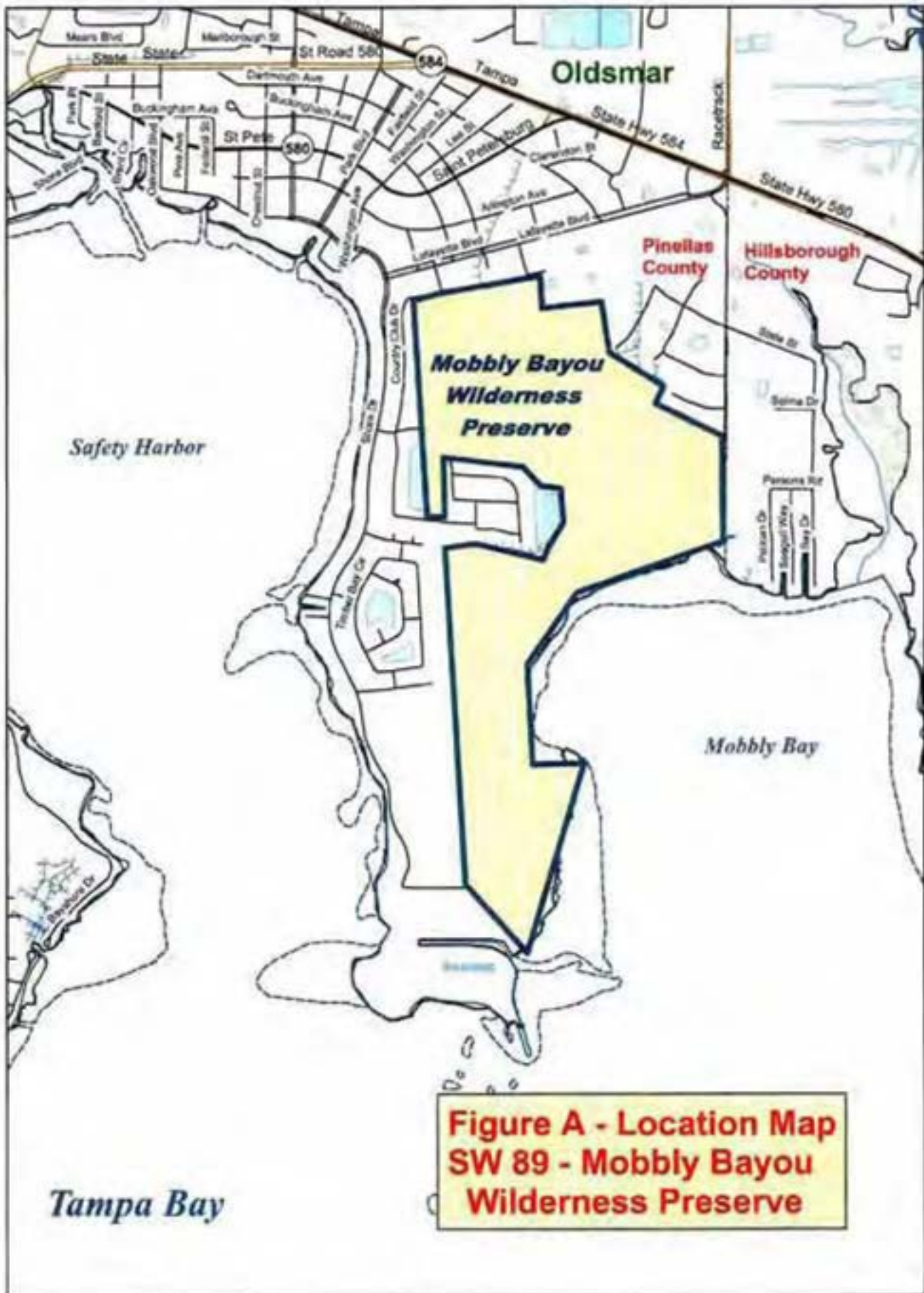
ATTACHMENT B – Maintenance & Monitoring Plan, Success Criteria

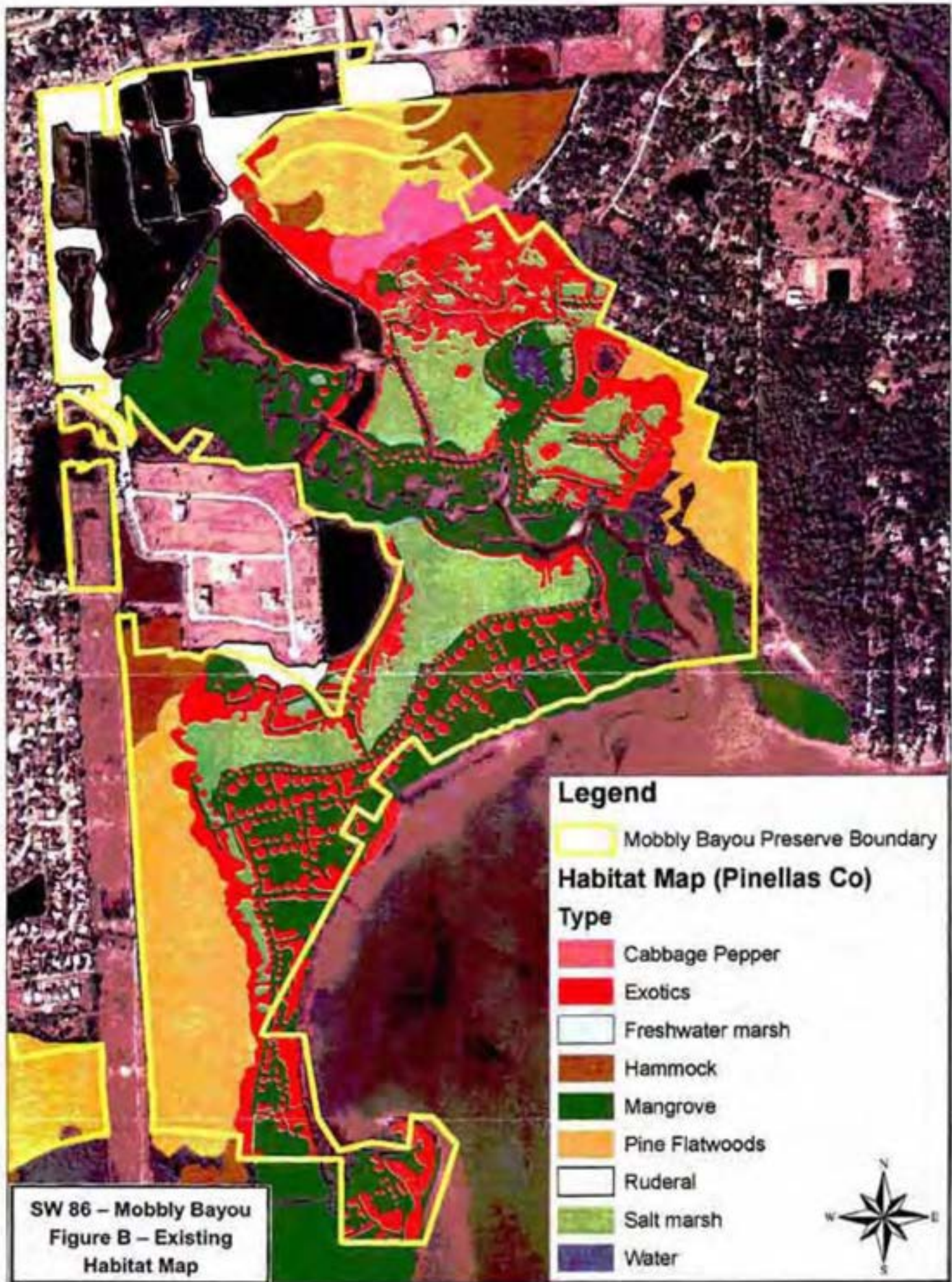
For estuarine restoration and enhancement projects, with proper construction of appropriate wetland grade elevations to allow for sufficient tidal connectivity and appropriate fluctuations, maintenance-associated activities are typically associated with erosion control of sediment, removing debris, and conducting supplemental planting when and where necessary. Salt water limits the re-establishment of exotic vegetation, particularly B. pepper. The eradication and control of nuisance/exotic vegetation within the project area will be conducted by a licensed herbicide applicator. Maintenance will be conducted as needed, expected to be quarterly for the first three years after construction activities, and at least semi-annually

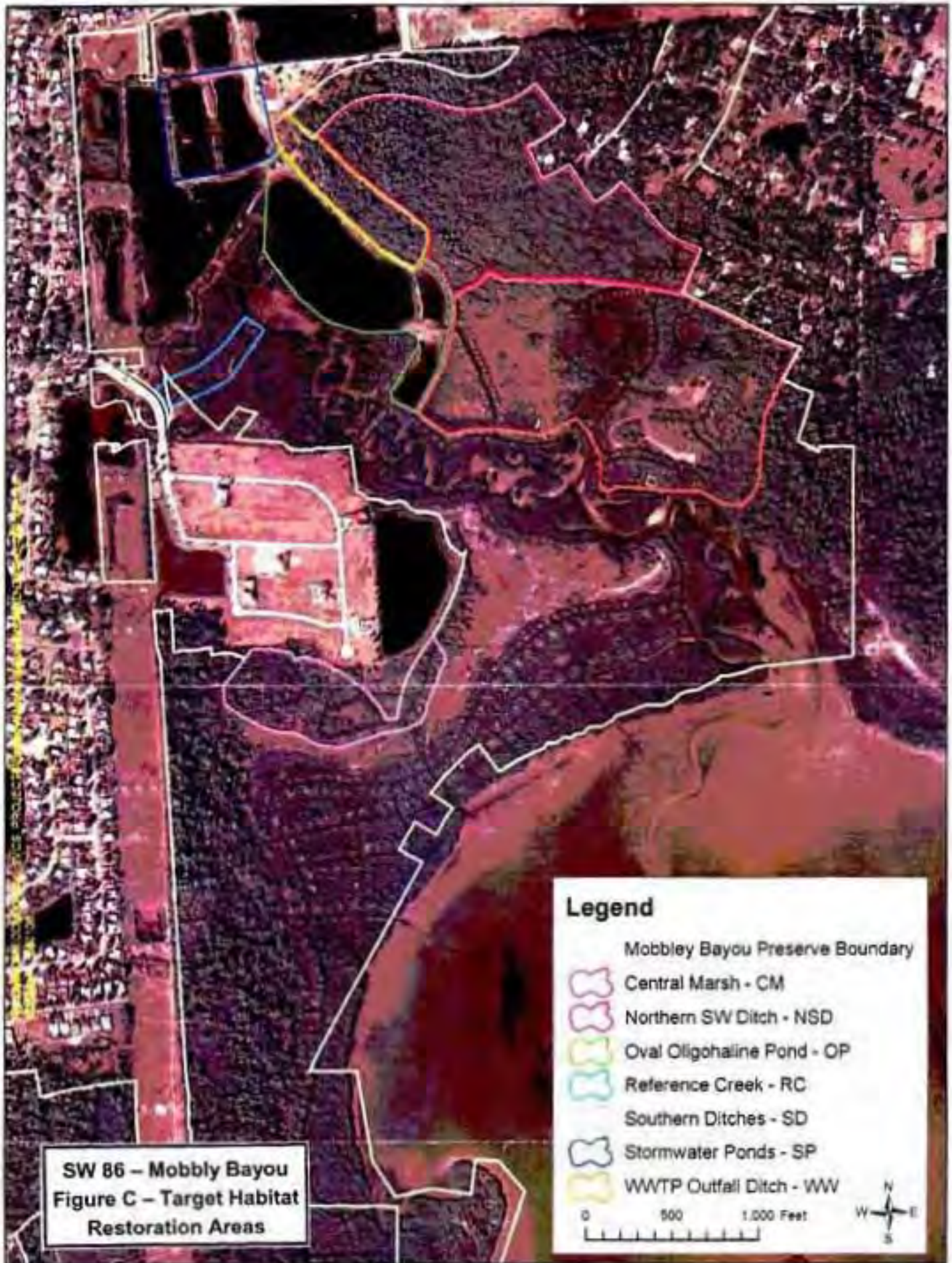
thereafter for a minimum of two additional years and until success criteria are met. Afterward, maintenance activities will be conducted as part of the perpetual management of the tract to maintain success.

Monitoring for FDOT mitigation credit will be conducted semi-annually for a minimum five years post-construction. The monitoring evaluations will include vegetative and habitat conditions, water level relative to flow regimes and inundation, wildlife use, and coverage of nuisance and exotic vegetation. Annual monitoring reports will be prepared to document conditions and various activities implemented during the previous year. The same designated monitoring stations will be designated throughout the monitoring period for photo references. However habitat conditions will be annually documented for the entire site, not just at the monitoring stations.

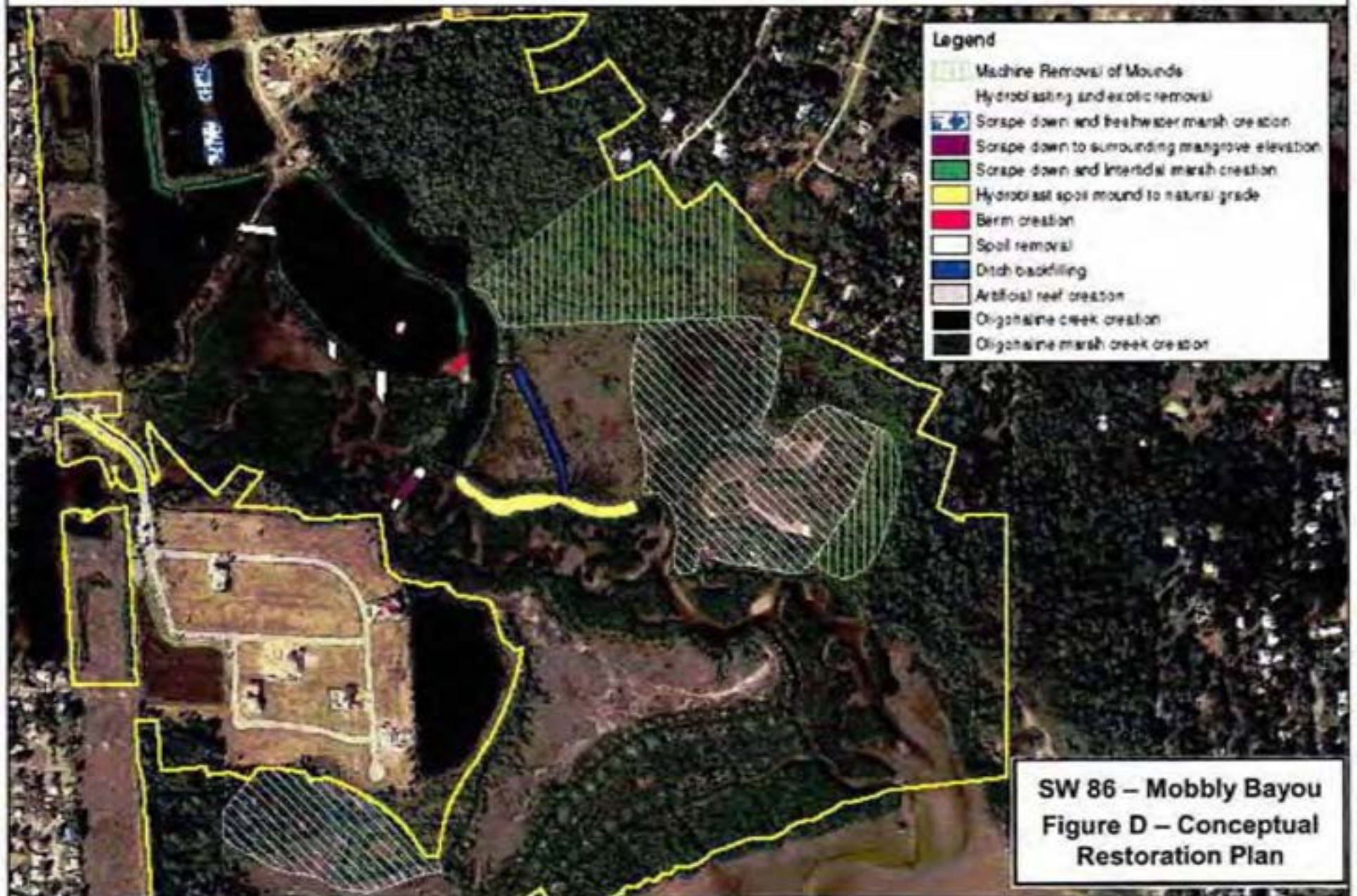
Success criteria includes a minimum of 90% survivorship of planted material for a year after planting, and a total 85% coverage of recruited and desirable species. Planted material is proposed for the new pond littoral zones and the created oligohaline creek & marsh. If necessary, within a year post-construction, supplemental plantings within the salt marsh and removed spoil mounds will be conducted if there is not 85% coverage of generated species. Exotic and nuisance species will be limited to less than 5% coverage within the designated mitigation areas. Areas where spoil mounds will not be removed are not designated for mitigation credits.







Conceptual Restoration Plan







Mobbly Creek meanders through the Preserve from the ponds in the northern portion of the tract to Tampa Bay. The creek is predominately bordered by mangrove habitat.



Filling mosquito ditches will restore and enhance appropriate tidal connectivity, fluctuation and duration to enhance existing salt marsh habitat. Dominant marsh habitat conditions include vegetative cover of salt grass, glasswort, black rush, saltwort, and mangrove saplings.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**MOBBLY BAYOU
WILDERNESS PRESERVE
(SW 86)**



One of the mosquito ditches proposed for filling by the adjacent spoil mounds. Brazilian pepper has been eradicated to provide construction equipment access to grade the spoil mounds. The remaining cabbage palm on the mounds will be relocated on-site to improve habitat conditions within the Preserve.



An area in the Central Marsh where Brazilian pepper was eradicated in 2006 to provide access to the spoil mounds with dozers and hydroblast equipment. Some salt grass has naturally generated, supplemental planting will be conducted where necessary to provide additional ground cover.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**MOBBLY BAYOU
WILDERNESS PRESERVE
(SW 86)**



The ditch (left) and cleared area (right) will be graded to create an oligohaline creek and marsh habitat that will provide treatment and attenuation of water discharging from the ponds before flowing into Mobbly Creek. The marsh habitat will be planted with appropriate species such as black needlerush, saw-grass and cordgrass.



The upland habitat of pine flatwoods has areas with moderate sub-canopy coverage of Brazilian pepper that will be eradicated to further enhance the overall habitat conditions of the Preserve.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**MOBBLY BAYOU
WILDERNESS PRESERVE
(SW 86)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Alligator Lake Management Area**
Project Sponsor: Pinellas County Environmental Management
County: Pinellas

Project Number: **SW 87**
Location: Sec. 3, 4, 9,10, T29S, R16E

IMPACT INFORMATION (Proposed Construction Date)

(1) FM 2569311 – Gandy Blvd. (SR 694) – US 19 to 4th Street (Undetermined) ERP #: _____ COE #: _____
(2) FM 4209331 – Dale Mabry Ave. – Veteran's Expressway to US 41 (2021) ERP #: _____ COE #: _____

Drainage Basin(s): Tampa Bay Drainage Basin Water Body(s): Bullfrog Ck., Little Bullfrog Ck. SWIM water body? No

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 2569311 0.5 ac. (530)
 0.1 ac. (641x)
 TOTAL 0.6 acre

(2) FM 4209331 0.3 ac. (621)
 0.3 ac. (630)
 0.3 ac. (641)
 TOTAL 0.9 acre

TOTAL – 1.5 acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement ___ Preservation Mitigation Area: **32 acres**
SWIM project? Aquatic Plant Control project? Exotic Plant Control Project?
Mitigation Bank? Drainage Basin(s): Tampa Bay Drainage Basin Water Body(s): Alligator Lake, Tampa Bay
SWIM water body? Tampa Bay

Project Description

A. Overall project goal: The Alligator Lake Management Area is a 53-acre preserve owned and managed by Pinellas County (Figure A – Location Map). The preserve includes two parcels bordering the 70-acre Alligator Lake. The project goal includes the substantial enhancement, restoration and creation of appropriate wetland and upland habitats within a 31-acre portion of the preserve. This is a particularly valuable and important opportunity to provide ecological benefits for wildlife since the habitat value has been degraded by extensive coverage of exotic and nuisance species, and the majority of surrounding property is dominated by residential land use. The habitat improvements will provide more opportunities for wildlife use within the Preserve as well as Alligator Lake, and provide water quality treatment and attenuation of contributing basin runoff before discharging into Alligator Lake and Tampa Bay.

B. Brief description of pre-construction condition: The project includes proposed improvements to habitats within the eastern half (22.7 acres) of the "North Parcel" and the entire "South Parcel" (8.7 acres) that border Alligator Lake (refer to Figure B). Habitats include upland shrub, live oak hammock, mixed wetland hardwoods, willow shrub wetlands, cabbage palm, exotic wetland forest, and marsh habitat (Figure B – Existing Land Use). Within the upland shrub habitats (total 8.7 acres), the County conducted an initial eradication of some dense Brazilian pepper in 2004; resulting in the generation and establishment of predominantly invasive nuisance species such as ragweed, saltbush, and euthamia (refer to photos). The largest and least disturbed habitat in the project area includes live oak hammocks (total 9.3 acres) within the north parcel. The hammock borders mixed forested wetlands (total 3.9 acres) that have dominant

cover provided by water oak with scattered swamp bay and slash pine. Of particular note within the north parcel is a low quality shrub marsh (2.2 acres) that generated vegetation within a borrow pit. Primrose willow and Carolina willow provide dense and dominant cover of the shrub system, with elderberry, buttonbush and wax myrtle along the perimeter. A portion of the channelized Alligator Creek is located through the North Parcel and connects to Alligator Lake. In general, the extensive exotic and nuisance vegetation at the preserve has degraded the ability and opportunity for the habitats to support and sustain many wildlife species. Additional habitat information is provided in Attachment A.

C. Brief description of proposed work: Pinellas County has a proposed habitat restoration plan (Figure C) that focuses on improving the existing upland and wetland habitats that provide some ecological value, while replacing the majority of the low quality upland ruderal, wetland shrub, and exotic hardwood habitat by creating an additional 6.5 acres of marsh and 2.4 acres of mixed forested wetlands. Since there are three documented rookeries adjacent to the project area (Figures B & C), establishing additional marsh habitat provides foraging opportunities for wading birds. By enhancing and creating forested wetland that will buffer the marshes, there will also be more roosting and nesting opportunities. For the low quality willow marsh in the North Parcel, floating tussock and underlying sediments will be dredged and removed, followed by planting of appropriate herb species. To provide additional rookery and resting opportunities for wading birds, clean fill obtained from constructing Wetland #3 will be used to create four small temperate hardwood islands in the constructed marsh (Figure C). Additional temperate hardwoods will be created on both parcels to displace the remaining upland shrub and buffer the adjacent constructed wetlands. To provide additional habitat diversity, the cabbage palm habitat in the south parcel and pine-mesic oak habitat in the north parcel will be enhanced to provide 2.9 acres of appropriate pine flatwood habitat. Additional details on the proposed activities are provided in Attachment A.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): Since Alligator Lake habitat activities include a high percentage of wetland creation to be constructed in 2011, the project was selected to the FDOT program to primarily provide appropriate mitigation credits for long-range, low-quality FDOT wetland impacts that will not occur in the Tampa Bay basin until after 2021. This provides more time for the proposed habitat conditions to mature and provide high quality ecological benefits well in advance of mitigating for future wetland impacts.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The only mitigation bank in the basin is the Tampa Bay Mitigation Bank. The TBMB did not have freshwater mitigation credits available during the time of selecting mitigation for the wetland impacts.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The proposed habitat improvements associated with this project is a designated SWIM designated project.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private Contractor selected by Pinellas County through competitive bid process.
Contact Name: Pam Leasure, Pinellas County Senior Environmental Scientist Phone Number: 727 – 453 - 6925
Entity responsible for monitoring and maintenance: Private contractor selected by Pinellas County and SWFWMD,

Proposed timeframe for implementation: Commence: Design & Permitting, 2005-2010 Complete: Construction, 2011,
followed by minimum 5 years maintenance & monitoring, perpetual land management

Project cost: \$2.0 million (total)

Design & Permitting	\$146,000
Initial Exotics Eradication	\$45,000
Site Survey	\$41,000
Construction & Planting	\$1,500,000
Maintenance & Monitoring	\$250,000

Attachments

X 1. Detailed description of existing site and proposed work. Refer to Attachment A.

X 2. Recent aerial photograph with date and scale. Refer to Figures B & C (2005 aerials).

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A (location map), Figure B (existing condition), and Figure C (proposed condition).

X 4. Schedule for work implementation, including any and all phases. Refer to previous schedule.

X 5. Success criteria and associated maintenance & monitoring plan. Refer to Attachment B.

Attachment A – Background, Site Conditions & Proposed Activities

The Alligator Lake Management Area covers approximately 53 acres adjacent to the City of Safety Harbor in northeastern Pinellas County. There are two parcels associated with the management area, both bordering the 70-acre, man-made freshwater Alligator Lake. Alligator Lake outfalls into Tampa Bay, a state-designated Surface Water and Improvement and Management (SWIM) priority waterbody.

The project planning, evaluation and design discussions between various entities included but not limited to Pinellas County, SWFWMD – SWIM, the design consultant and various members of the public. Consensus was reached that major elements of ecosystem restoration and management of the Alligator Lake Management Area should include:

- Enhancement, restoration and/or creation of wetland and upland habitats surrounding Alligator Lake.
- Identify key target biotic groups – avifauna, flora, macro-invertebrates, herpetofauna – and prepare a detailed restoration and management plan focused on proposed biotic benefits of the restoration project.
- Creation of a public access park that will include the development of detailed construction plans and specifications. The park may include a boardwalk, observation platform and asphalt parking area accessed from Arlie Avenue (south parcel – refer to Figure C).
- As feasible, improvement of the area's water quality via polishing of storm water draining to Alligator Lake at various locations.

The following information summarizes the various existing and proposed habitat features of the two portions of the property included in this restoration project. This information can be cross-referenced with Figures B and C, as well as the site photographs.

FLUCCS #329 – Other Shrubs & Brush – prior to roller-chopping in 2004, the upland shrub areas (total 8.7 acres) were previously dominated by Brazilian pepper (*Schinus terebinthifolius*). The combination of dense pepper mulch and the removal of the canopy opened the area for extensive recruitment and establishment of invasive and nuisance species. Ragweed (*Ambrosia artemesiifolia*) has become very dense and dominant. Other common species include herbs such yellow nutgrass (*Cyperus esculentus*), hairy indigo

(*Indigofera hirsuta*), and guineagrass (*Panicum maximum*); and shrubs such as elderberry (*Sambucus Canadensis*), salt-bush (*Baccharis halimifolia*), lantana (*Lantana camara*) and wax myrtle (*Myrica cerifera*).

The habitat value is very low quality for the shrub areas. With the nuisance species seed source already present in the soil, attempting to restore all these areas into appropriate upland habitat would not provide the ecological benefits for wildlife habitat that can be achieved by constructing and creating wetland habitat, and buffering those habitats with some appropriate upland habitat.

As a result, the creation of Marsh Areas #1 (1.1 acres), #2 (0.6 acre) and #3 (1.5 acres) will displace the majority of the ruderal shrub habitat. The marshes (FLUCCS #641) will have gradual slopes of 8:1 to 10:1, providing zonation for establishing diverse marsh habitat suitable for a variety of wading bird species. Steeper slopes (4:1) are proposed near the center of the marshes in order to provide small open-water components. This will provide both a refuge for fish and concentrated foraging opportunities for wading birds during the dry season. Marshes #1, #3, and #4 will be hydrologically connected to Alligator Lake. Marsh #2 has a smaller contributing watershed and will have a higher upland overflow elevation to the lake, providing the opportunity to establish a slightly more obligate marsh condition. Common herb species proposed for planting include spikerush (*Eleocharis interstincta*), soft rush (*Juncus effusus*), maidencane (*Panicum hemitomom*), pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria lancifolia*), giant bulrush (*Scirpus californicus*), sand cordgrass (*Spartina bakeri*), and fireflag (*Thalia geniculata*).

The remaining upland shrub areas will be restored as temperate hardwood habitat (FLUCCS #425 - 4.3 acres) and the creation of mixed wetland hardwoods (FLUCCS #617 - 1.3 acres). The temperate hardwood habitat will be primarily buffering the marsh and forested wetland creation areas on both parcels. Proposed hardwood habitat plantings include red-cedar (*Juniperus virginiana*), live oak (*Quercus virginiana*), beauty-berry (*Callicarpa americana*), seagrape (*Coccoloba uvifera*), Florida swamp privet (*Forestiera segregate*), firebush (*Hamelia patens*), yaupon (*Ilex vomitoria*), wax-myrtle (*Myrica cerifera*), chickasaw plum (*Prunus angustifolia*), tough buckthorn (*Sideroxylon tenax*), bluestems (*Andropogon* spp.), chaffhead (*Carphephorus* spp.), Florida tickseed (*Coreopsis floridana*), Elliott's lovegrass (*Eragrostis elliottii*), blanket flower (*Gaillardia pulchella*), beach sunflower (*Helianthus debilis*), blazing star (*Liatris* spp.), spotted bee-balm (*Monarda punctata*), hairawn muhly (*Muhlenbergia capillaries*), seaside goldenrod (*Solidago sempervirens*), climbing aster (*Symphotrichum carolinianum*), and gamagrass (*Tripsacum dactyloides*).

FLUCCS #617 - Mixed Wetland Hardwoods – This habitat is delineated within four separate areas of the project area (total 4 acres of enhancement). Dominant canopy coverage is provided by water oak (*Quercus nigra*), laurel oak (*Quercus laurifolia*) and swamp bay (*Persea palustris*); with scattered slash pine (*Pinus elliottii*), cabbage palm (*Sabal palmetto*), and live oak (*Quercus virginiana*). There is some variation of subcanopy and understory vegetation within the various wetland hardwood locations. Oak and bay saplings are common, along with wax myrtle, smaller cabbage palm and scattered buttonbush (*Cephalanthus occidentalis*). However, nuisance/exotic canopy-forming species such as Brazilian pepper, Carolina willow, and carrotwood (*Cupaniopsis anacardiodes*) are frequently interspersed. The hardwood habitat in the southwest corner of the North Parcel has the highest quality of the four delineated areas, with a groundcover dominated by Virginia chain fern (*Woodwardia virginica*) and cinnamon fern (*Osmunda cinnamomea*). The remaining wetland hardwood areas have a mixture of coverage provided by swamp fern (*Blechnum serrulatum*) and various vine species.

The proposed enhancement of the forested wetlands will be primarily associated with eradication of B. pepper and improving the conditions of the adjacent upland and wetland habitats. As previously noted, there will also be additional forested wetland habitat created (total 1.3 acres of creation) within the North Parcel that will displace some of the existing upland ruderal shrub habitat. Common tree species proposed for planting in the mixed wetland hardwoods include red maple (*Acer rubrum*), pop ash (*Fraxinus caroliniana*), dahoon holly (*Ilex cassine*), sweetgum (*Liquidambar styraciflua*), sweet bay (*Magnolia virginiana*), swamp bay (*Persea palustris*), laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*) and bald cypress (*Taxodium distichum*). Understory vegetation will include the same herb species proposed for the marsh creation areas. This created forested wetland will form a buffer along the northern and eastern edge of Marsh #4, providing a habitat transition between the upland and marsh habitat.

FLUCCS #414 – Pine – Mesic Oak – The habitat is located within one area of the North Parcel (total 1.3 acres of enhancement). Several large longleaf pine (*Pinus palustris*) provide canopy over a sub-canopy dominated by water oak and camphor (*Cinnamomum camhora*). Other sub-canopy species include cabbage palm, swamp bay and Chinaberry (*Melia azedarach*). The dominant groundcover species is saw palmetto (*Serenoa repens*) which provides approximately 30% coverage. Air potato (*Dioscorea bulbifera*) and grave vine (*Vitis munsoniana*) are abundant in all vegetative strata. Severe fire suppression of this community is evident by the remnant saw palmetto cover, and dense accumulations of needle litter surrounding the longleaf pine. The smaller-diameter water oaks and camphor trees have become well-established since fire exclusion.

Enhancement of this habitat will be conducted by eradication of nuisance and exotic vegetation, followed by cool-season prescribed burn to minimize some of the pine needle and bark litter. Supplemental plantings will be provided by longleaf pine and saw palmetto.

FLUCCS #618 – Willow and Elderberry (Shrub Marsh) – The shrub marsh on the north parcel (Figure B) is a borrow pit with complete coverage of primrose willow (*Ludwigia peruviana*) and some Carolina willow (*Salix caroliniana*). This low quality habitat (2.2 acres of enhancement) will be substantially improved by removing the vegetation and underlying muck sediments, regrading and planting with desirable vegetation. Marsh #4 habitat will be established with the same plant species referenced under the previously discussed marsh creation areas. Clean fill resulting from constructing Marsh #3 will be used to construct four hummocks of temperate hardwood habitat.

An existing ditched Alligator Creek meanders through the site and discharges directly into Alligator Lake. The ditch banks are extensively covered with dense B. pepper that will be eradicated. The water flow from the ditch will be diverted by a weir to equally discharge into Marshes #3 and #4 (Figure C). This will provide water quality treatment before both marshes discharge into Alligator Lake.

FLUCCS #427 – Live Oak – At 10.0 acres, the live oak hammocks account for the largest proportion of land area in the north parcel. Though composition and habitat quality vary considerably, all areas mapped as this habitat are dominated by live oak, occupy the highest elevations of the parcel, and exhibit varying amounts of fire suppression. Other canopy species include laurel oak, water oak, longleaf pine and southern magnolia (*Magnolia grandiflora*). Saw palmetto and live oak saplings co-dominate the subcanopy/shrub layer, with additional coverage provided by cabbage palm and American beautyberry (*Callicarpa americana*).

There are exotic and nuisance species such camphor tree (*Cinnamomun camphora*) and various vine species have become a problem in the oak hammocks, so occasional thinning and possible burning will open up some of the canopy and understory to provide more opportunity to establish more ground cover vegetation. This will be valuable for the gopher tortoise (*Gopherus polyphemus*) located in the north parcel. Their foraging opportunities are primarily limited to the bahia grass lawn surrounding the on-site residence.

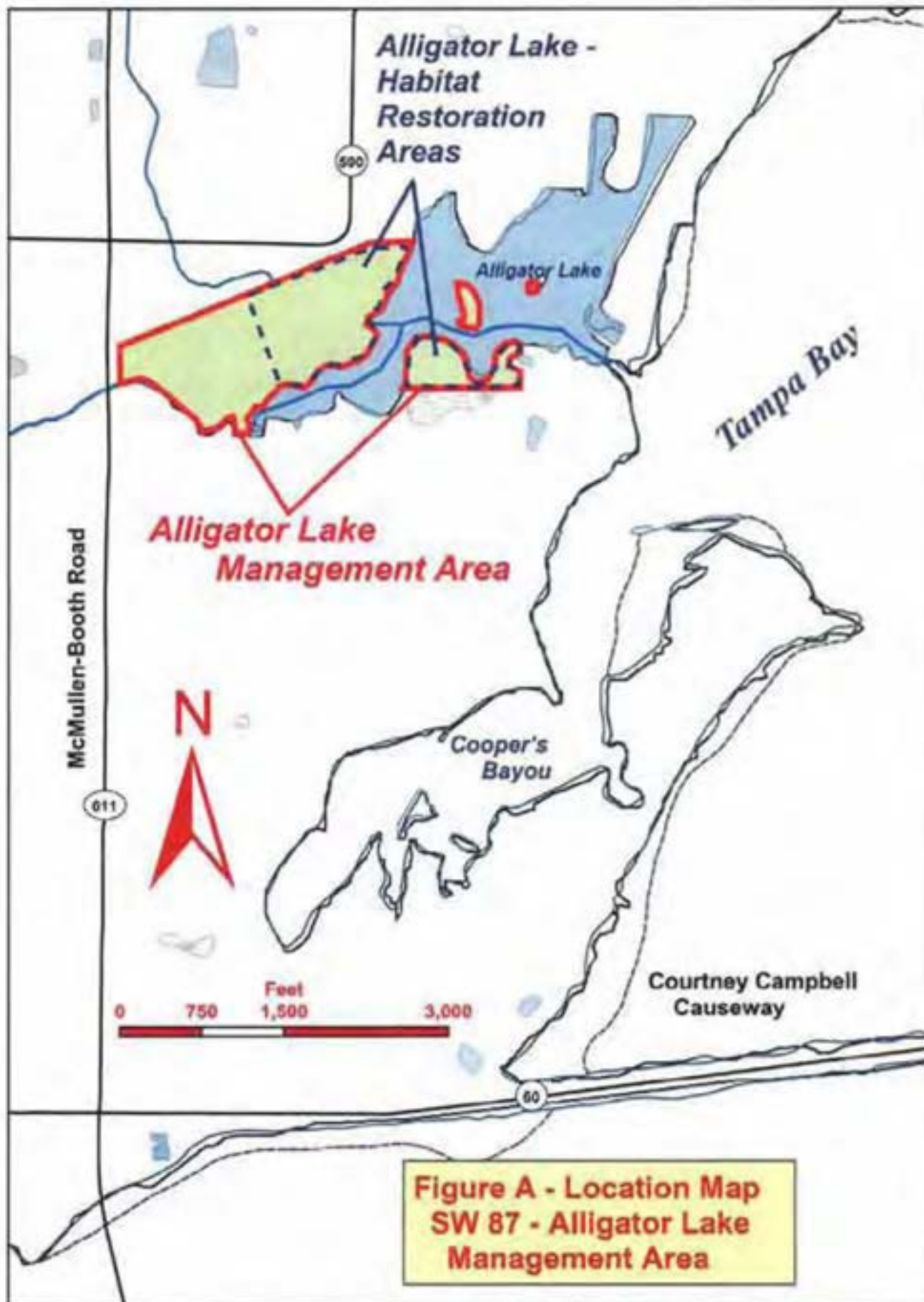
Attachment B – Maintenance & Monitoring, Success Criteria

The eradication and control of nuisance/exotic vegetation within the project area will be conducted by a licensed herbicide applicator. Maintenance will be conducted as needed, scheduled for at least quarterly during the first five years after construction and until success criteria are met. Afterward, maintenance activities will be conducted as part of the perpetual management of the tract to maintain success.

Monitoring for FDOT mitigation credit will be conducted semi-annually for a minimum five years post-construction. The monitoring evaluations will include vegetative and habitat conditions, water level relative to flow regimes and inundation, wildlife use, and coverage of nuisance and exotic vegetation. Annual monitoring reports will be prepared to document conditions and various activities implemented during the previous year. The same designated monitoring stations will be designated throughout the monitoring period

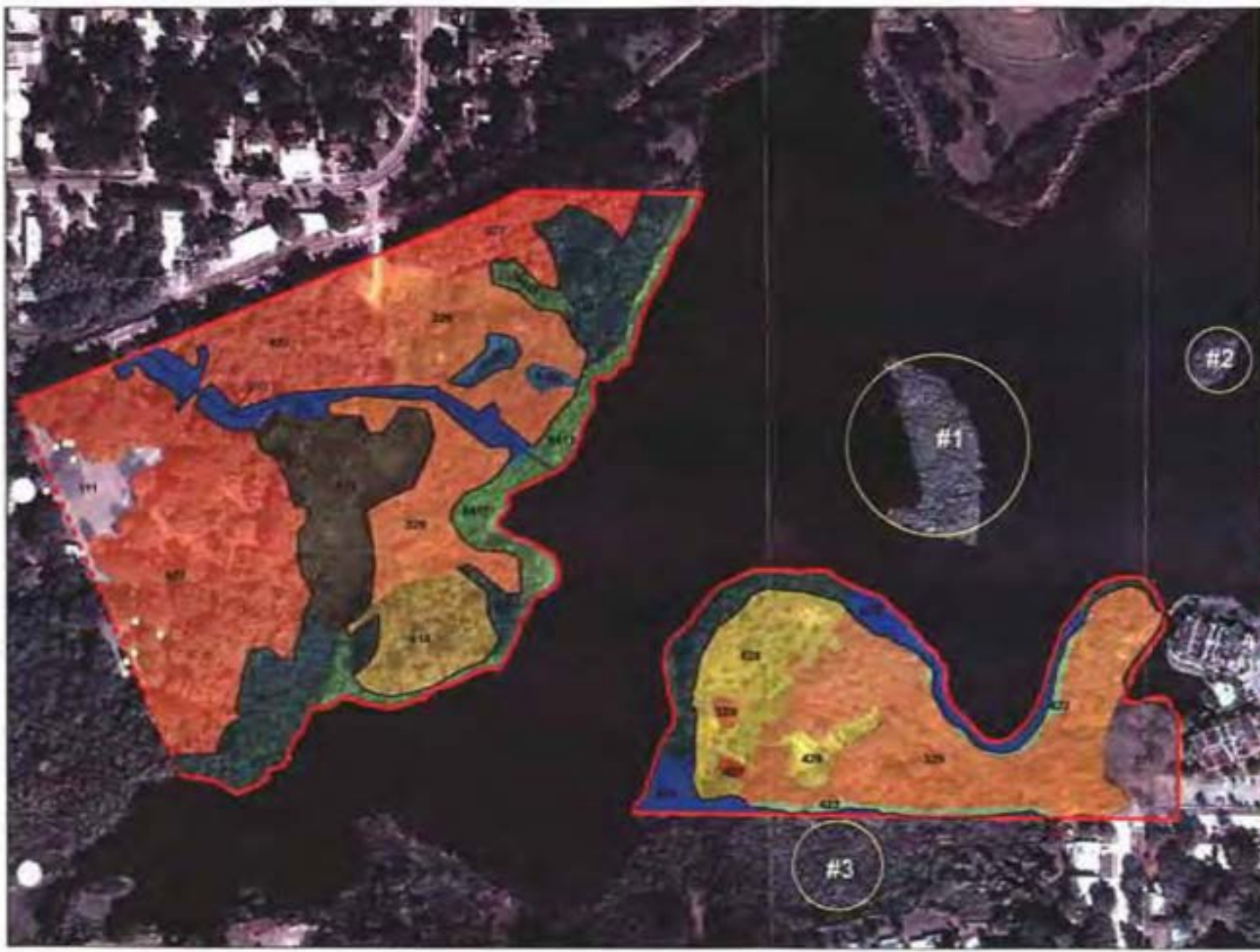
for photo references. However habitat conditions will be annually documented for the entire site, not just at the monitoring stations.

Success criteria includes a minimum of 90% survivorship of planted material for a year after planting, and a total 85% coverage of naturally recruited and planted desirable species. Exotic and nuisance species will be limited to less than 5% coverage within both the enhanced, restored and created habitat.



**FIGURE B
EXISTING LAND USE
SW 87 - ALLIGATOR LAKE
LAKE MANAGEMENT
AREA**

**Alligator Lake:
EXISTING
LAND USE**



Project Boundary	Existing Subdiv Boundaries
Existing Subdiv Boundaries	Traps Station
All Lines	Utility

South Parcel FUMOS Codes

- 601 - Woodland (Less than 100 Acres) (20 acres)
- 602 - Other Woods and Shrub (10 acres)
- 603 - Shrub/Trees (20 acres)
- 604 - Low Use (20 acres)
- 605 - Cabbage Palm (20 acres)
- 606 - Mixed Wetland Forest (20 acres)
- 607 - Mixed Wetland Forest (20 acres)
- 608 - Shrub/Trees (20 acres)

North Parcel FUMOS Codes

- 601 - Woodland (Less than 100 Acres) (20 acres)
- 602 - Other Woods and Shrub (20 acres)
- 603 - Shrub/Trees (20 acres)
- 604 - Low Use (20 acres)
- 605 - Shrub/Trees Wetland (20 acres)
- 606 - Mixed Wetland Forest (20 acres)
- 607 - Mixed Wetland Forest (20 acres)
- 608 - Shrub/Trees (20 acres)
- 609 - Wetland Forest with Shrub/Trees (20 acres)
- 610 - Shrub/Trees (20 acres)

This map was prepared by the Florida Department of Environmental Protection, Bureau of Land Management, on behalf of the Florida Department of Environmental Protection. The map is for informational purposes only and does not constitute a contract or warranty of any kind. The map is subject to change without notice. The map is not to be used for any other purpose. The map is not to be used for any other purpose. The map is not to be used for any other purpose.



FIGURE C – PROPOSED HABITAT CONDITIONS SW 87 – ALLIGATOR LAKE

**Figure 1.2
CONCEPTUAL RESTORATION DESIGN
(60% DESIGN)**
Alligator Lake Habitat Restoration Project
Pinellas County, Florida

1	Digitel Trenches Burrows	Healthy Wet Vegetation	North Parcel FLUESS Codes	South Parcel FLUESS Codes
2	Flap Station	Microcosm Canal	111 - Fresh Shrub / Turf (100 to 150 acres)	101 - Woodland (10 acres)
3	Canal	Woodbank	112 - Pine / Palm (100 to 150 acres)	102 - Pine / Palm (10 acres)
4	Canal / Island / Trench	Channel / Wetland	113 - Turf / Shrub / Turf (100 to 150 acres)	103 - Turf / Shrub / Turf (10 acres)
5	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	114 - Turf / Shrub / Turf (100 to 150 acres)	104 - Turf / Shrub / Turf (10 acres)
6	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	115 - Turf / Shrub / Turf (100 to 150 acres)	105 - Turf / Shrub / Turf (10 acres)
7	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	116 - Turf / Shrub / Turf (100 to 150 acres)	106 - Turf / Shrub / Turf (10 acres)
8	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	117 - Turf / Shrub / Turf (100 to 150 acres)	107 - Turf / Shrub / Turf (10 acres)
9	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	118 - Turf / Shrub / Turf (100 to 150 acres)	108 - Turf / Shrub / Turf (10 acres)
10	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	119 - Turf / Shrub / Turf (100 to 150 acres)	109 - Turf / Shrub / Turf (10 acres)
11	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	120 - Turf / Shrub / Turf (100 to 150 acres)	110 - Turf / Shrub / Turf (10 acres)
12	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	121 - Turf / Shrub / Turf (100 to 150 acres)	111 - Turf / Shrub / Turf (10 acres)
13	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	122 - Turf / Shrub / Turf (100 to 150 acres)	112 - Turf / Shrub / Turf (10 acres)
14	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	123 - Turf / Shrub / Turf (100 to 150 acres)	113 - Turf / Shrub / Turf (10 acres)
15	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	124 - Turf / Shrub / Turf (100 to 150 acres)	114 - Turf / Shrub / Turf (10 acres)
16	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	125 - Turf / Shrub / Turf (100 to 150 acres)	115 - Turf / Shrub / Turf (10 acres)
17	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	126 - Turf / Shrub / Turf (100 to 150 acres)	116 - Turf / Shrub / Turf (10 acres)
18	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	127 - Turf / Shrub / Turf (100 to 150 acres)	117 - Turf / Shrub / Turf (10 acres)
19	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	128 - Turf / Shrub / Turf (100 to 150 acres)	118 - Turf / Shrub / Turf (10 acres)
20	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	129 - Turf / Shrub / Turf (100 to 150 acres)	119 - Turf / Shrub / Turf (10 acres)
21	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	130 - Turf / Shrub / Turf (100 to 150 acres)	120 - Turf / Shrub / Turf (10 acres)
22	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	131 - Turf / Shrub / Turf (100 to 150 acres)	121 - Turf / Shrub / Turf (10 acres)
23	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	132 - Turf / Shrub / Turf (100 to 150 acres)	122 - Turf / Shrub / Turf (10 acres)
24	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	133 - Turf / Shrub / Turf (100 to 150 acres)	123 - Turf / Shrub / Turf (10 acres)
25	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	134 - Turf / Shrub / Turf (100 to 150 acres)	124 - Turf / Shrub / Turf (10 acres)
26	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	135 - Turf / Shrub / Turf (100 to 150 acres)	125 - Turf / Shrub / Turf (10 acres)
27	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	136 - Turf / Shrub / Turf (100 to 150 acres)	126 - Turf / Shrub / Turf (10 acres)
28	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	137 - Turf / Shrub / Turf (100 to 150 acres)	127 - Turf / Shrub / Turf (10 acres)
29	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	138 - Turf / Shrub / Turf (100 to 150 acres)	128 - Turf / Shrub / Turf (10 acres)
30	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	139 - Turf / Shrub / Turf (100 to 150 acres)	129 - Turf / Shrub / Turf (10 acres)
31	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	140 - Turf / Shrub / Turf (100 to 150 acres)	130 - Turf / Shrub / Turf (10 acres)
32	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	141 - Turf / Shrub / Turf (100 to 150 acres)	131 - Turf / Shrub / Turf (10 acres)
33	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	142 - Turf / Shrub / Turf (100 to 150 acres)	132 - Turf / Shrub / Turf (10 acres)
34	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	143 - Turf / Shrub / Turf (100 to 150 acres)	133 - Turf / Shrub / Turf (10 acres)
35	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	144 - Turf / Shrub / Turf (100 to 150 acres)	134 - Turf / Shrub / Turf (10 acres)
36	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	145 - Turf / Shrub / Turf (100 to 150 acres)	135 - Turf / Shrub / Turf (10 acres)
37	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	146 - Turf / Shrub / Turf (100 to 150 acres)	136 - Turf / Shrub / Turf (10 acres)
38	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	147 - Turf / Shrub / Turf (100 to 150 acres)	137 - Turf / Shrub / Turf (10 acres)
39	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	148 - Turf / Shrub / Turf (100 to 150 acres)	138 - Turf / Shrub / Turf (10 acres)
40	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	149 - Turf / Shrub / Turf (100 to 150 acres)	139 - Turf / Shrub / Turf (10 acres)
41	2' Low	Wetland / Turf / Shrub / Turf / Turf / Turf	150 - Turf / Shrub / Turf (100 to 150 acres)	140 - Turf / Shrub / Turf (10 acres)



View of the 70-acre Alligator Lake and Rookery #1 from the South Parcel.



The eradicated Brazilian pepper on the South Parcel has been replaced with extensive generated coverage of nuisance species such as ragweed, dog fennel, saltbush and euthamia.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**ALLIGATOR LAKE
MANAGEMENT AREA
(SW 87)**



*Alligator Creek meanders through the North Parcel.
Dominant cover is provided by extensive and dense Brazilian pepper.*



*The least disturbed habitats include the live oak hammocks in the North Parcel.
Enhancement will primarily include eradication of Brazilian pepper
and other exotic and nuisance species;
as well as adopting appropriate land management activities.*

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**ALLIGATOR LAKE
MANAGEMENT AREA
(SW 87)**



The area of the proposed creation of Marsh #3 is low quality conditions of exotic and nuisance species, including cut Brazilian pepper and mimosa trees. Proposed conditions will remove vegetation and lower the grade elevations to create high quality marsh habitat.



The shrub wetland within the North Parcel has low quality habitat with extensive coverage of primrose willow and Carolina willow that generated within an historic borrow pit. The proposed conditions will include dredging this area to create Marsh #4 and bordered by forested wetlands. Fill material from constructing Marsh #3 will create hammock islands in the marsh.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**ALLIGATOR LAKE
MANAGEMENT AREA
(SW 87)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Curry Creek Regional Off-Site Mitigation Area (ROMA)

Project Number: SW 88

Project Sponsor: Sarasota County – Public Works

County: Sarasota

Location: Sec. 5, T39S, R19E

IMPACT INFORMATION

1 – <u>FM 1979421 – SR 789-Ringling Causeway Bridge</u>	ERP #: <u>4418555.01</u>	COE #: <u>199500210 (IP-TF)</u>
2 – <u>FM 1980051 – US 41–Venice Ave. to US 41 Bypass</u>	ERP #: <u>4402099.02</u>	COE #: <u>199905145 (IP-PB)</u>
3 – <u>FM 4063143 – Interstate – 75, North River Rd. to SR 681*</u>	ERP #: <u>43034226.000</u>	COE #: <u>2006-02298 (IP-JPF)</u>

Drainage Basin(s): Lower Coastal Water Body(s): Sarasota Bay SWIM water body? Yes

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 1979421	<u>0.07</u> ac. (911) (seagrass – fill impacts)	(3) FM 4063143	<u>0.77</u> ac. (615)
	<u>0.20</u> ac. (911) (seagrass – shade impacts)		TOTAL 0.77 acre
	TOTAL 0.27 acre		
(2) FM 1980051	<u>0.32</u> ac. (612)		
	TOTAL 0.32 acre		TOTAL 1.36 acres

* Note – the freshwater wetland impacts for this I-75 segment are mitigated at Sarasota's Fox Creek ROMA (SW 79).

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: X Creation X Restoration X Enhancement Preservation Mitigation: **1.08 credits**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? Y Mitigation Bank? N
ROMA? Y WMD ERP# 44027089 ACOE # SAJ-2004-5565-MEP Drainage Basin(s): Lower Coastal Water Body(s):
Curry Creek SWIM water body? N

Project Description

A. Overall project goal: The Curry Creek ROMA is located within an ecologically significant 95-acre tract known as the Curry Creek Preserve (Figures A & B). Since the property was one of the largest remaining areas of native habitat in the basin, Sarasota County purchased the property to preserve and enhance for wildlife habitat. Within the Preserve, the County designated and permitted a 19-acre portion to provide a regional mitigation opportunity to compensate for proposed wetland impacts associated with public infrastructure projects. Due in large part to the impacts associated with canal dredging, the western half of the ROMA represented the most disturbed habitat on the Preserve (Figures C & D). The primary goal of this portion of the ROMA includes the enhancement, restoration and creation of saltwater wetland habitat. Upland habitat enhancement is the primary objective for the eastern half of the ROMA.

B. Brief description of pre-construction conditions: The Preserve is located along the north side of the City of Venice. The tract includes various habitats, including one of the largest areas (36 acres) of remaining intact longleaf pine habitats in western Sarasota County. Other dominant habitats within the Preserve include xeric oak (16 acres), stream swamp (12 acres), streams and waterways (9 acres), saltwater marsh (6 acres), and minor acreages of other habitats such as mangrove, mixed hardwood wetland, and cabbage palm. The actual Curry Creek was historically dredged into a canal to provide regional drainage improvements. This east-west canal follows along the southern boundary of the Preserve, with a hydrologic connection to Roberts Bay approximately one mile west of the Preserve. Three additional north-south canals within the Preserve connect to the Curry Creek canal (Figure C). Two of the canals

are within the limits of the ROMA. The western portion of the ROMA also has a mangrove pocket (Polygon 6 on Figure E) and leather fern marsh (Polygon 12); both habitats are preserved and enhanced as part of the ROMA plan. A couple small areas of upland habitat in the ROMA border the north side of the Curry Creek canal, with dominant vegetation provided by slash pine, saw palmetto and cabbage palm. The remaining area of the ROMA's western portion was primarily exotic vegetation such as Australian pine and Brazilian pepper. The eastern portion of the ROMA is dominated by pine flatwoods, with a meandering creek that outfalls into the Curry Creek canal.

C. Brief description of activities and current habitat conditions: The general plan of the western portion of the ROMA includes preserving and enhancing the native habitat, while grading the exotic vegetated area to create saltwater wetland habitat. These plans are depicted on Figure D, and with the earthwork finished in early 2006, the post-construction aerial view is evident on Figures B&C and the initial monitoring photos. The two north-south canals were modified to create a meandering creek that provides tidal connectivity to the Curry Creek canal. This creek provides appropriate hydrology for the preserved mangrove and leatherfern wetlands, as well as the created mangrove and salt marsh habitat. An extensive planting effort included a dominance of red mangrove (*Rhizophora mangle*), white mangrove (*Laguncularia racemosa*), black mangrove (*Avicennia germinans*), buttonwood (*Conocarpus erectus*), needle rush (*Juncus roemerianus*), leather fern (*Acrostichum aureum*), cordgrass (*Spartina alterniflora*, *Spartina patens*, *Spartina bakeri*), needle rush (*Juncus roemerianus*), and bulrush (*Scirpus robustus*). The eastern half of the ROMA includes upland enhancement activities, primarily eradication of exotic and nuisance vegetation and implementation of appropriate prescribed burning program. The combination of habitat improvements within the ROMA as well as appropriate land management activities within the remaining Preserve provides a mosaic of inter-related upland and wetland habitats that benefit a wide diversity of wildlife species. Even though the created habitat is in the early stages of establishment, extensive quantity and diversity of wildlife documented at the ROMA includes over 20 bird species, bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), otter (*Lontra canadensis*), alligator (*Alligator mississippiensis*), black racer (*Coluber constrictor priapus*), cottonmouth (*Agkistrodon piscivorus*), mullet (*Mugil cephalus*), and blue crab (*Callinectes sapidus*).

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The current mitigation credits available at Curry Creek include tidal creek, salt-marsh, and mangrove. The minor saltwater wetland impacts can be adequately and appropriately compensated by the creation and enhancement of these habitats at the Curry Creek ROMA. The following information indicates the wetland impact, habitat type (FLUCFCS), and mitigation habitats & credits debited at Curry Creek:

- (1) FM 1979421 – Impact 0.27 ac. (911) – Mitigation 0.27 credit of tidal creek habitat
- (2) FM 1980051 – Impact 0.32 ac. (612) – Mitigation 0.32 credit of mangrove habitat
- (3) FM 4063143 – Impact 0.77 ac. (615 – tidal creek, open water) – Mitigation 0.49 credit of tidal creek habitat

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: At the time of mitigation selection, there was no existing or proposed mitigation banks in the Lower Coastal watershed basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: At the time of mitigation selection, there were no SWIM-sponsored projects proposed in the Lower Coastal basin that could provide appropriate mitigation for the proposed wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Construction completed in 2006.

Contact Name: Kris Fehlberg, Environmental Specialist III
Sarasota County

Phone: 941 – 426 - 7878

Entity responsible for monitoring and maintenance: Sarasota County or designee

Proposed timeframe for implementation: Commence: Construction & Planting, 2006 Complete: Mitigation Maintenance & Monitoring (2006-2011, minimum 5 years), followed by perpetual maintenance & land management activities.

Cost for FDOT credits through 2010: \$256,688

- (1) FM 1979421 – 0.27 credit x \$236,841 per credit = \$63,947 (purchased September, 2007)
- (2) FM 1980051 – 0.32 credit x \$236,841 per credit = \$75,789 (purchased September, 2007)
- (3) FM 4063143 – 0.48 credit x \$236,841 per credit = \$116,952 (purchased April, 2010)

Note: Additional roadway project wetland impacts may be proposed for mitigation in the future at Curry Creek.

Attachments

X 1. Description of existing site and proposed work. Refer previous discussion, SWFWMD ERP #44027089, ACOE #SAJ-2004-5757-MEP, attached site photos.

X 2. Aerial photograph. Refer to Figures B & C., 2006 aerial.

X 3. Location map and design drawings. Refer to Figure A (location map), Figure C (pre- and post- construction aerial), Figure D (proposed habitat).

X 4. Schedule for work implementation. Refer to previous implementation discussion.

X 5. Success criteria and associated monitoring plan. Monitoring and success criteria for habitat enhancement are specified in the issued permits; refer to Figure E for the monitoring photo stations and the photos taken during the initial monitoring inspection.

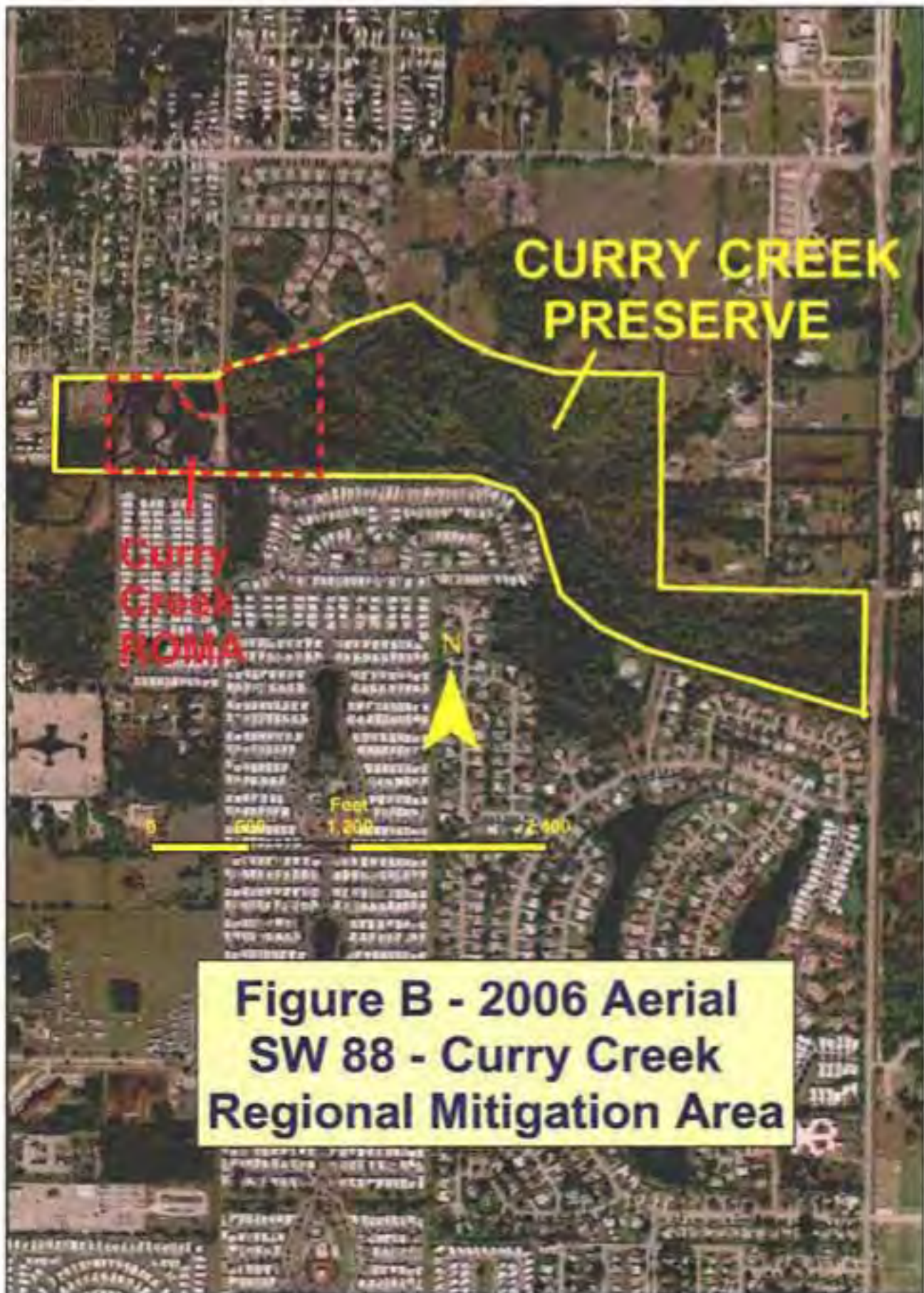
X 6. Long term maintenance plan. A perpetual maintenance and land management plan has been prepared that addresses vegetative maintenance and prescribed fire management at the Preserve.



**Curry Creek
ROMA**

**Curry Creek
Preserve**

**Figure A - Location Map
SW 88 - Curry Creek
Regional Mitigation Area**





Curry Creek Monitoring Points and Transects

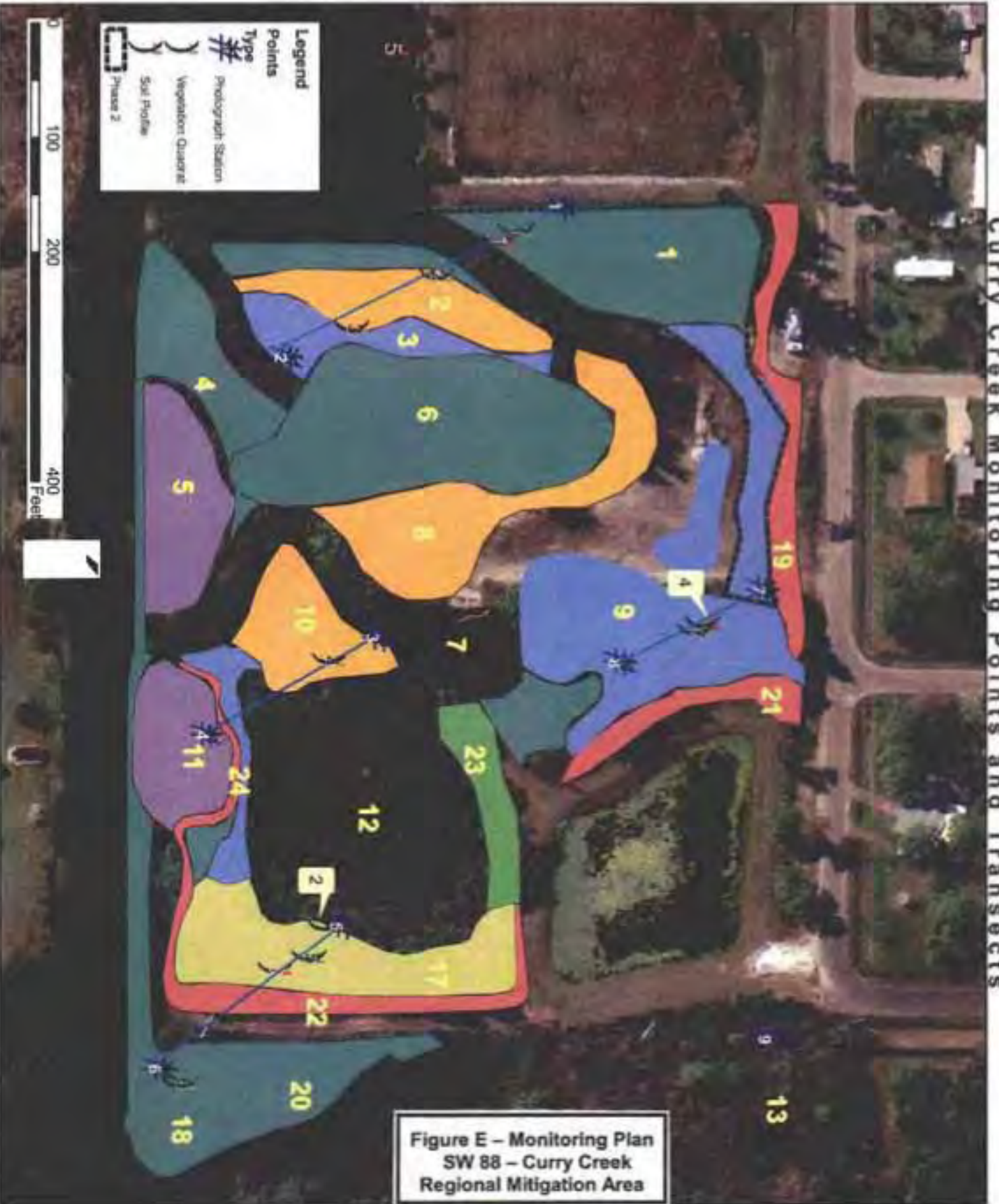




Photo Station 5- Southeast (150 degrees)



Photo Station 6- North Northeast (65 degrees)



Photo Station 7- Southeast (160 degrees)



Photo Station 8- North Northwest (270 degrees)

**Time Zero Baseline
Monitoring Photos
SW 88 – Curry Creek
Regional Mitigation Area**

APPENDIX A Photo Stations



Photo Station 1- South Southeast (150 degrees)



Photo Station 2- Due North



Photo Station 3- South (195 degrees)



Photo Station 4- West (265 degrees)

Time Zero Baseline
Monitoring Photos
SW 88 – Curry Creek
Regional Mitigation Area

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Myakka Mitigation Bank**

Project Number: **SW 89**

Project Manager: Wade Waltmyer, Senior Biologist
EarthBalance, Corporation

Phone No: 941- 426 - 7878

County: Sarasota

Location: Sec. 33, T38S, R22E

IMPACT INFORMATION

Myakka Mitigation Bank was selected to provide mitigation for anticipated minor wetland impacts (0.3 acre) associated with expansion of an Interstate – 75 segment that crossed into the Myakka River watershed. During final roadway design, it was determined there would not be any associated wetland impacts within the basin. The bank will be evaluated to provide mitigation for wetland impacts associated with future FDOT submittals.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration Enhancement Preservation Mitigation Area: **To be determined when future roadway wetland impacts are submitted for the program.**

SWIM project? Aquatic Plant Control project? Exotic Plant Control Project? Mitigation Bank? Mitigation Bank Permits, WMD ERP# 43003997.005 ACOE # SAJ-2003-75594-IP-MGH Drainage Basin: Myakka River Basin
Water Body(s): None SWIM water body?

Project Description

A. Overall project goal: The location of the Myakka Mitigation Bank (MMB) is regionally significant because it provides tributary flow to the Myakka River, adds to an extensive habitat corridor effort to connect Myakka River State Park to the Peace River, and the various habitats proposed for enhancement and restoration provide rare ecosystem diversity in the basin. The primary goal of the MMB includes the restoration, enhancement and preservation of historic herbaceous and forested wetland habitat, as well as the associated uplands, throughout the site's 380 acres.

B. Brief description of current condition: The MMB is situated within the core of a 3,800-acre conservation area on the Longino Ranch, a +/- 8,000-acre mixed-use ranch (Figure B). The tract has high diversity of both wetland and upland habitats. Prior to restoration construction in 2006, the upland vegetative communities (total 224-acres) consisted of improved pasture, pine flatwoods, pine-mesic oak, laurel oak-palm mesic hammock, live oak hammock, and live oak forest/improved pasture. Wetland communities (156 acres) included ditches, willow heads, hydric pasture, and herbaceous marsh. A high percentage of the marsh habitat was historically drained by agricultural ditching, resulting in improved pasture for cattle operations. Subsequently, some exotic and nuisance species coverage established over the years. In particular, along with bahia grass, limpograss (*Hemarthria altissima*) was introduced and generated primarily within the historic outer zones of drained marshes to convert into wet pastures.

C. Brief description of proposed work: The general strategy of the MMB includes a three stage approach to (1) preserve and protect the property through placing the property into a conservation easement, (2) restore the natural habitat conditions and process, and (3) manage the habitat recovery until desired changes have occurred and are stabilized. Stage 1 is complete, and Stage 2 earthwork activities were conducted in 2006 to reverse the hydrological degradation of past management practices, and the restored wetland hydroperiod has lead to the eradication of exotic and nuisance plant species that were enabled by the altered drainage patterns. The earthwork included four main components: (1) the elimination of the adverse effects of the agricultural ditch system by the strategic placement of fill to bring the ditches up to the historic wetland elevation, (2) the restoration of a raised trail and adjacent borrow area to

wetland grade; (3) the construction of a berm/weir system along the southern boundary of the project area to restore historic wetland hydroperiods (refer to photos); and (4) the construction of a narrow ditch to maintain current hydrologic conditions in an adjacent off-site wetland that has been ditched through the site. Just prior to the hydrological restoration, exotic and nuisance species eradication were conducted by sod stripping the pasture grasses and selective herbicide application. With the completion of the initial eradication efforts and hydrologic restoration, follow-up herbicide treatments is being intensively conducted to provide the maximum stress possible to inappropriate plants. This is particularly critical to minimize the opportunity for limpgrass regeneration since this species has demonstrated the ability to survive if the plant material can achieve and maintain heights above surface water elevations. Stage 3 includes a monitoring and maintenance program to correct any problems, and follow-up eradication of exotic and nuisance species. These on-going activities are expected to be frequent after the initial infrastructure improvements, and adjusted to an as-needed basis as the natural recruitment of desirable species progresses. Specific provisions in the perpetual maintenance and management plan include regularly scheduled maintenance to include remove of exotic and nuisance species, assessment of vegetative health, diversity and zonation in each habitat, and prescribed fire management.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The MMB provides appropriate and adequate habitat conditions to compensate for wetland impacts in the Myakka basin, and will be evaluated for potential selection to provide mitigation for wetland impacts associated with future roadway projects.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The MMB is a mitigation bank in the Myakka River watershed basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: There are currently no SWIM projects planned in the Myakka River basin that can appropriately compensate for the proposed wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Myakka River Mitigation Bank

Contact Name: Wade Waltmyer, EarthBalance, Corporation

Phone Number: 941 – 426 - 7878

Entity responsible for monitoring and maintenance: EarthBalance, Corporation

Proposed timeframe for implementation: Commence: Stage 1 – 2005, Stage 2 – 2005 –2006, Stage 3 – 2005 – 2008.
Complete: Perpetual maintenance & land management plan.

Project cost: None proposed through 2010. Credit estimate will be based on the UMAM assessment of the wetland impact areas proposed for future roadway projects submitted to the FDOT program.

Attachments

X 1. Description of existing site and proposed work. Refer previous discussion, SWFWMD ERP #43003997.005, ACOE #SAJ-2003-7594-IP-MGH, attached site photos.

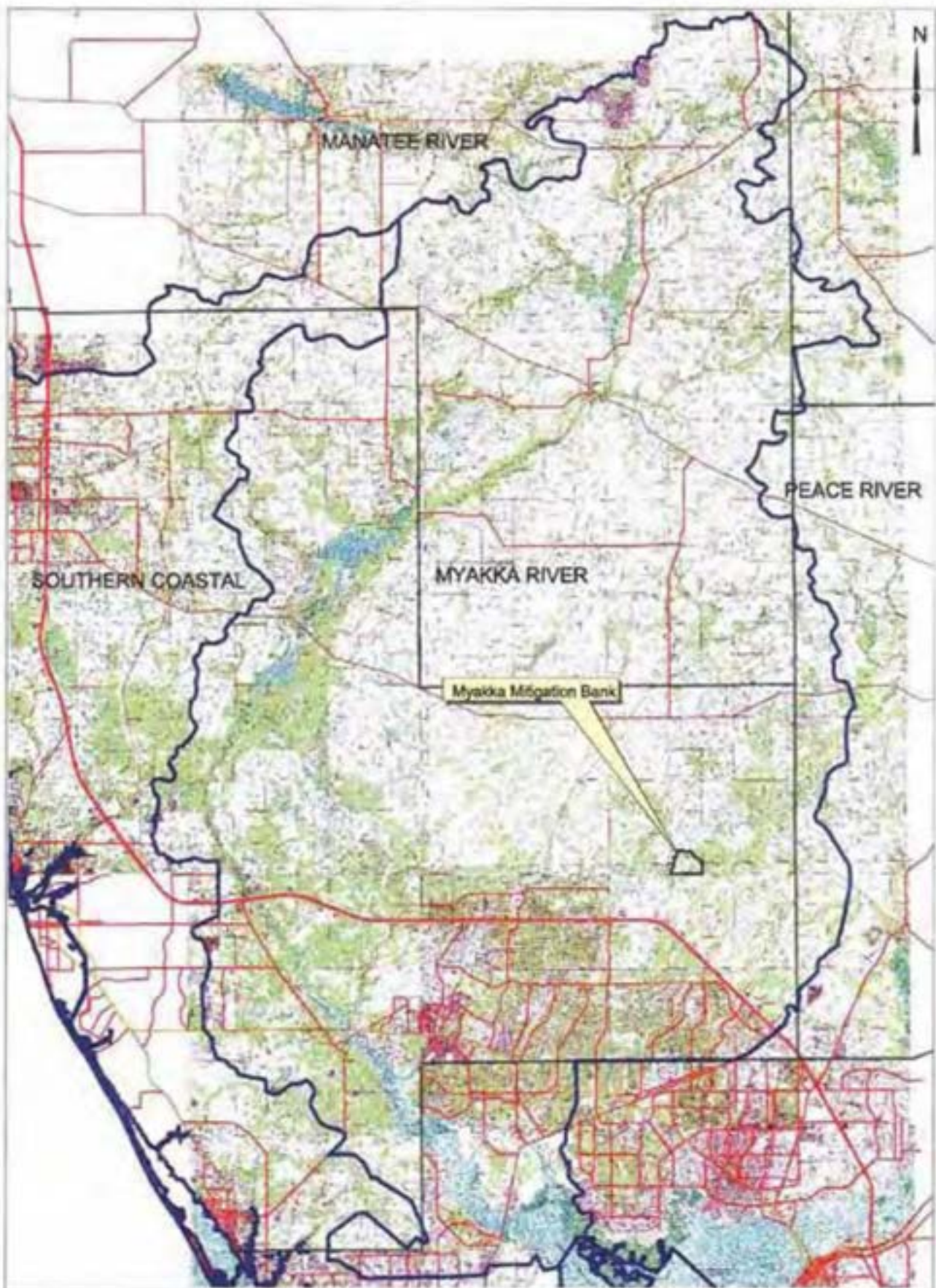
X 2. Recent aerial photograph. Refer to Figures B & C.

X 3. Location map and design drawings. Refer to Figure A (location map), Figure B (existing conditions), and Figure C (proposed habitat).

X 4. Schedule for work implementation, including any and all phases. Refer to previous implementation discussion.

X 5. Success criteria and associated monitoring plan. Monitoring and success criteria for habitat enhancement are specified in the issued permits for the mitigation bank.

X 6. Long term maintenance plan. A perpetual maintenance and land management plan has been prepared (reference Figure D) that addresses vegetative maintenance and fire management.



DATE: 6-17-03
FILE: researchmyakka.apr
SCALE: 1" = 15,000'
PROJECT NO: 00019
AERIAL: USGS Quad

Myakka Mitigation Bank
Regional Watershed Map

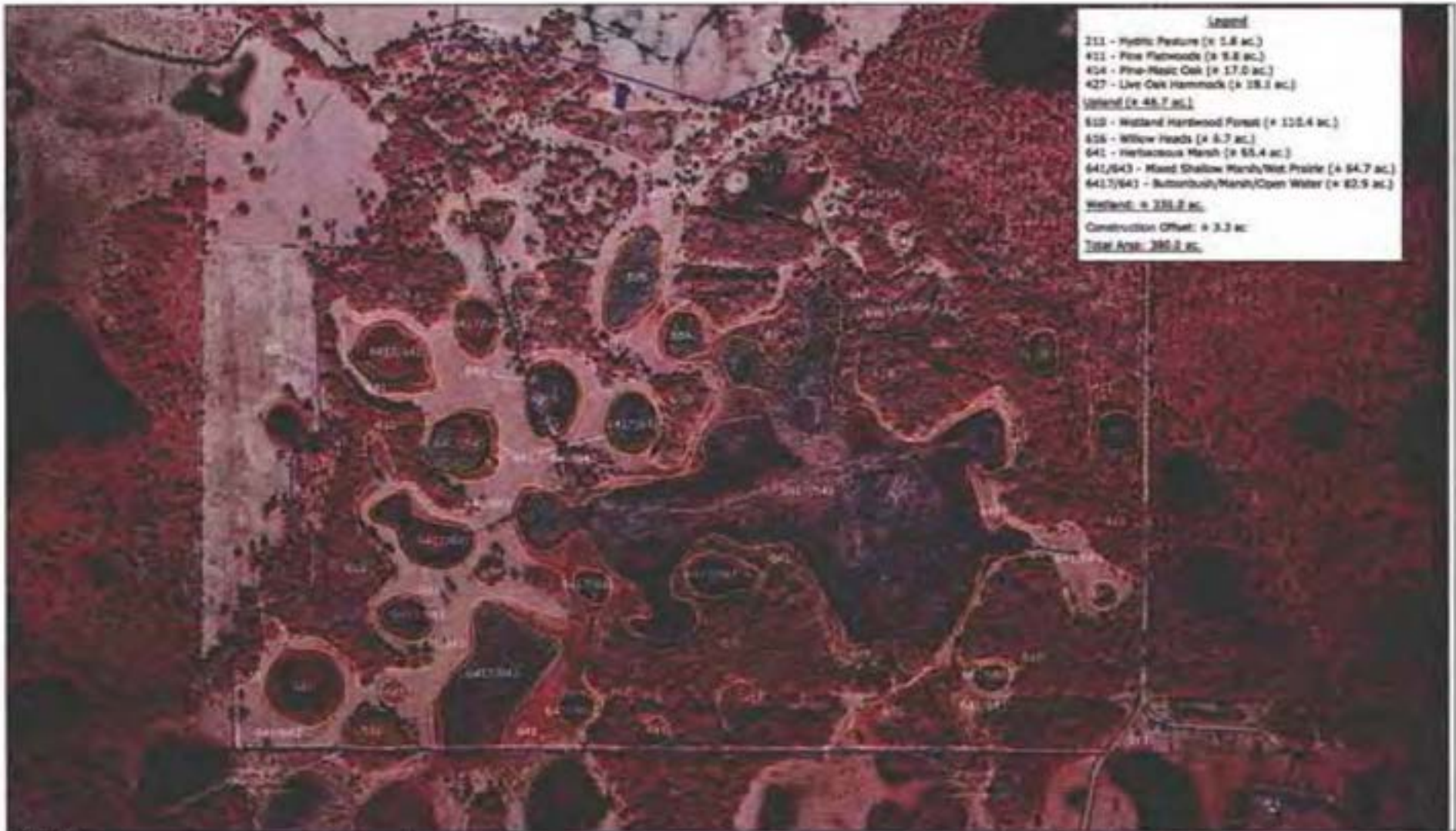
FIGURE A – LOCATION MAP
SW 89 – MYAKKA
MITIGATION BANK



DATE: 1-6-04
 FILE: sw2002b.mxd (Fig B) (Fig 7) (x)
 SCALE: 1"=100'
 SERIAL: 2002 OR
 PROJECT NO: 0016

Myakka Mitigation Bank
Vegetative (FLUCCS) Map - Existing Conditions

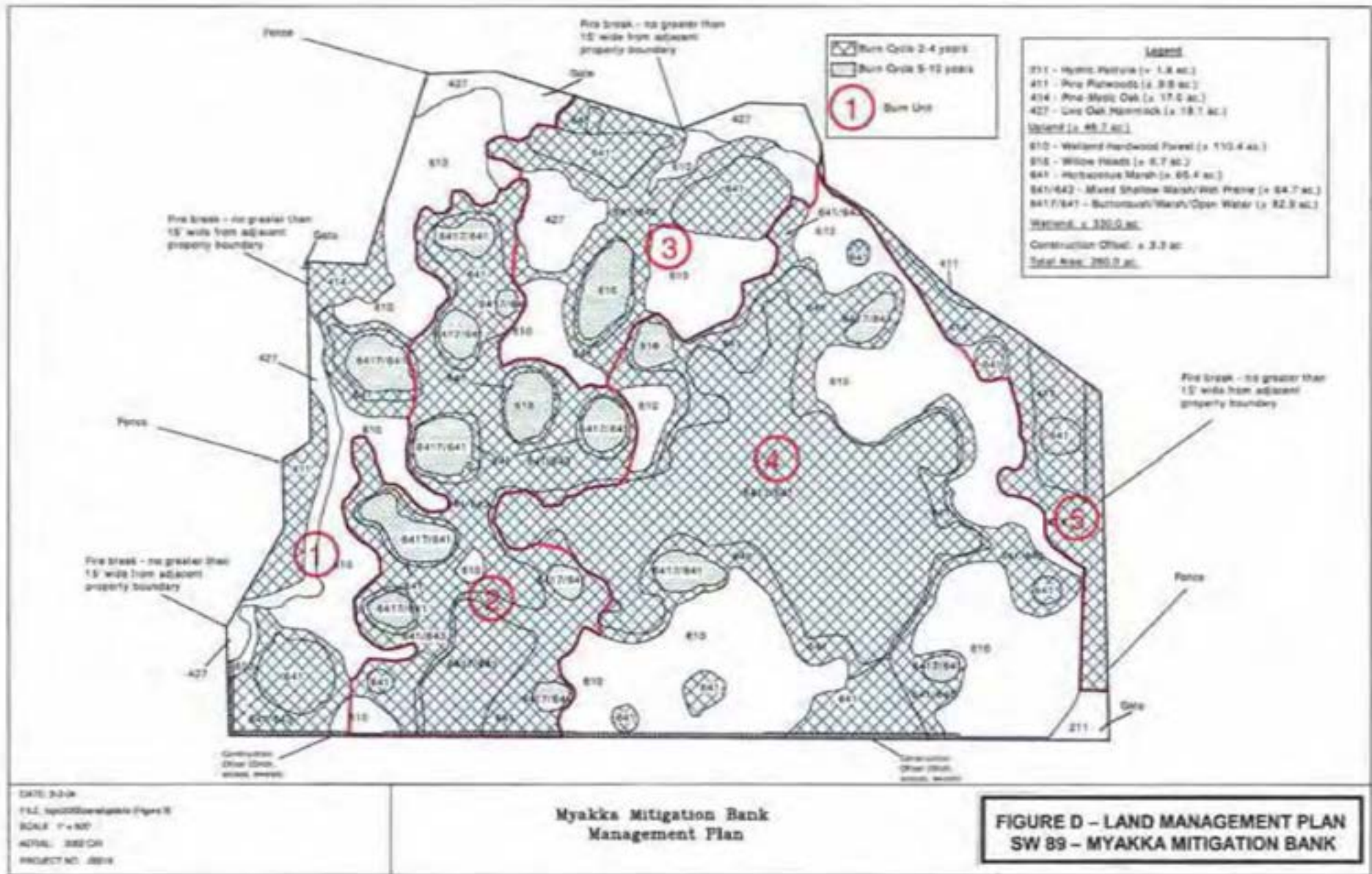
FIGURE B - EXISTING SITE CONDITIONS
SW 89 - MYAKKA MITIGATION BANK



DATE: 8/2/14
 FILE: Isp0000aermitable (Plan F-01)
 SCALE: 1" = 50'
 AERIAL: 2007 OR
 PROJECT NO: 00014

**Myakka Mitigation Bank
 Vegetative (FLUCCS) Map - Proposed Conditions**

**FIGURE C - PROPOSED SITE CONDITIONS
 SW 89 - MYAKKA MITIGATION BANK**





As the rainy season progresses, surface water rises and flows over the widest portions of the weir. Wetland vegetation such as fireflag (above) naturally regenerated and recruits through the slough.



As appropriate wetland hydrology restores within the sloughs, mortality of pasture grasses occur (foreground), and replaced with regeneration and recruitment of hydrophytic vegetation..

FDOT Mitigation Site
(Myakka River Basin)

MYAKKA MITIGATION BANK
(SW 89)



An 810-ft. long discharge weir was constructed to detain surface water, thus restoring the natural hydroperiod of a large slough wetland.



The discharge weir has a combination of two lower discharge elevations constructed with concrete, as seen above at the water overflow in the center of the weir. The broad "overflow" portion of the weir has limerock anchored within 6-inch geoweb containment system. A geotextile liner was placed under the rock to provide additional stability.

FDOT Mitigation Site
(Myakka River Basin)

MYAKKA MITIGATION BANK
(SW 89)



Achieving appropriate wetland hydroperiod has not only resulted in the natural generation of desirable vegetation, but has also minimized the ability of the limpoglass to regenerate.



The restored surface water has not only extended to the outer facultative zones to eradicate the pasture grasses and restore marsh habitat (center), but also restores appropriate hydrology for the mixed wetland hardwood systems (left).

**FDOT Mitigation Site
(Myakka River Basin)**

**MYAKKA MITIGATION BANK
(SW 89)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: **Brooker Creek Buffer Preserve**
 Project Sponsor: Hillsborough County Conservation
 County: Hillsborough County

Project Number: **SW 90**
 Location: Sec. 18, 19, T27S, R17E

IMPACT INFORMATION (Proposed Construction Date)

1 – <u>FM 2558935 – SR 574 (MLK Blvd.) at Interstate – 75</u>	ERP#: <u>44033776.000</u>	COE #: <u>NPR- Isolated</u>
2 – <u>FM 4143481 – Tampa Airport, North Terminal Site Develop. (2011)</u>	ERP #: <u>43008387.054</u>	COE #: <u>Under Review</u>
3 – <u>FM 4143481 – Tampa Airport, North Terminal Airside 2 (2025)</u>	ERP #: _____	COE #: _____
4 – <u>FM 4143481 – Tampa Airport, North Terminal Airside 3 (Post- 2025)</u>	ERP #: _____	COE #: _____
5 – <u>FM 4143481 – Tampa Airport, North Terminal Airside 4 (Post- 2025)</u>	ERP #: _____	COE #: _____
6 – <u>FM 4143481 – Tampa Airport, Runway 18L Extension (Post- 2025)</u>	ERP #: _____	COE #: _____
7 – <u>FM 4143481 – Tampa Airport, Taxiway "A" Extension (Post- 2025)</u>	ERP #: _____	COE #: _____

Drainage Basin: Tampa Bay Drainage Water Body(s): None SWIM water body? No

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 2558935	0.1 ac. (615)				
	<u>0.1 ac. (641)</u>				
TOTAL	0.2 acre				
(2) North Terminal	1.88 ac. (621)				
	1.10 ac. (630)				
	<u>0.35 ac. (641)</u>				
TOTAL	3.33 acres				
(3) Airside 2	3.223 ac. (617)				
	1.032 ac. (621)				
	<u>1.047 ac. (630)</u>				
TOTAL	5.302 acres				
(4) Airside 3	0.078 ac. (610)				
	<u>4.210 ac. (630)</u>				
TOTAL	4.288 acres				
(5) Airside 4	0.005 ac. (617)				
	0.728 ac. (619)				
	<u>2.933 ac. (630)</u>				
TOTAL	3.666 acres				
(6) Runway 18L	0.002 ac. (617)				
(7) Taxiway "A"	1.269 ac. (610)				
				TOTAL – 18.497 Acres	

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration X Enhancement X Preservation Mitigation Area: **193 acres**
 SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
 Drainage Basin: Tampa Bay Water Body(s): Brooker Creek SWIM water body? N

Project Description

A. Overall project goal: The Brooker Creek Buffer Preserve (Preserve) is a 489-acre tract located in northwest Hillsborough County, along the Pinellas County boundary (Figure A). The Preserve was purchased through Hillsborough County's Environmental Lands Acquisition and Protection Program (ELAPP) to preserve, restore, connect and "buffer" the on-site habitat resources with the adjacent 7,500-acre Brooker Creek Preserve in Pinellas County. Approximately half of the Preserve is comprised of wetland habitat, with much of this habitat altered by a combination of large upland-cut rim ditches constructed along the perimeter of the wetlands and surface water impoundment caused by the construction of an elevated driveway access berm (Figure B and photos). Construction activities include minor earthwork grading of sufficient upland spoil material to construct strategically placed ditch blocks, and the installation of a culvert under the driveway to restore hydrologic connections to on-site wetlands (Figure C). These activities will aid in restoring appropriate hydrologic functions of the wetlands. The graded upland spoil material and the ditch blocks will be stabilized with appropriate herb seeding and planting of trees and shrubs. The blocks will also provide wide crossing and corridor connections for wildlife utilizing the wetland and upland areas. In early 2009, Hillsborough County acquired an additional 66.5 acres of upland and wetland habitat adjacent to both the Buffer Preserve and Brooker Creek Preserve (Figure D). The associated preservation and some wetland hydrologic enhancement mitigation credits for this area was incorporated into the mitigation project and the FDOT mitigation program reimbursed the ELAP program for the land acquisition costs (\$1.23 million).

B. Brief description of current condition: In addition to the wetland habitat, the majority of the remaining portion of the Preserve is comprised of upland fallow fields and ruderal pasture (Figure B, photos). The soil characteristics and topography indicate the upland fields adjacent to the wetlands were historically flatwood habitat, transitioning into higher grade elevations historically comprised of sandhill and scrub ecosystems. A remnant scrub oak community is present within the eastern portion of the tract. The majority of historic upland habitats were converted to citrus groves, with all but one small grove area removed prior to acquisition by the County. These fallow fields are dominated by bahia grass, however ruderal and nuisance herb species are common (e.g. dog fennel, ragweed, goldenrod, lantana). The majority of wetlands include mixed forested habitat; dominated by bald cypress, red maple, black gum, and bay species. Common sub-canopy vegetation include the same hardwood species, buttonbush and wax myrtle, with groundcover dominated by Virginia chain fern and swamp fern. Marsh habitat is not as prevalent in the Preserve; the majority located within the interior of the large wetland in the southeast portion of the Preserve (NFWE – 4, Figure C). Maidencane and sedges are dominant within the marsh habitat. The rim ditches were constructed along the upland perimeters adjacent to the wetlands. The ditches are typically 20 feet wide at the top-of-bank, depth ranging 4-6 feet, with most of the sideslopes steeper than a 1:1 gradient. The sideslopes and bottom grade of the ditches typically have minimal vegetative coverage in areas where there is dense shade from trees along the upland top-of-banks. Ditch segments with minimal canopy shade typically have moderate to dense coverage of peppervine along the banks (photos). The large ditch dimensions reduce the quantity and rate of ground and surface water contributing from the uplands to the wetlands; retaining and diverting flow around the wetland perimeter that historically seeped into the wetlands. The large eastern wetland was bisected by construction of an elevated access roadway to a residence. The one culvert connection under the driveway has collapsed, so the southern portion of the wetland has had altered hydroperiods not only from the rim ditches during low rainfall conditions, but impounded surface water during flood events. This has resulted in more unstable and variable fluctuations in the depth and duration of surface water, resulting in a sequence of

vegetative generation during drier periods and tree mortality during the major rainfall periods. To provide mitigation credit for wetland impacts associated with a transmission line relocation project, Tampa Electric (TECO) filled a portion of one ditch at the Preserve in 1998 (Figures B & C). Overall, the site's wetlands represent moderate quality however the ditching and driveway berm have resulted in altered and variable hydraulic and hydrologic conditions, and changes of the vegetative components and habitat conditions. The ditch dimensions also hinder wildlife use, access and mobility between the upland and wetland habitats. The additional 66.5 acres includes preservation and enhancement of an inter-related mosaic of 30.1 acres of upland habitat buffering 36.4 acres of wetland habitat. The associated uplands were cleared and converted to improved pasture through the 1970's. Then slash pine was planted, and presently the majority of the pines are large and provide moderate canopy coverage (photo). Scattered oaks, maples, wax myrtle, and various herbs have naturally recruited; which has greatly increased the overall habitat value and benefits. The wetlands in the acquired area also represent good quality habitat, with similar vegetative characteristics of the Brooker Creek wetland floodplain east and west of the acquisition area. The combination of wetland and upland habitat on this additional tract provides good cover and foraging opportunities for wildlife use; including easy corridor access to the adjacent Brooker Creek Preserve.

C. Brief description of proposed work: The proposed activities primarily include constructing wide ditch blocks at appropriate locations by grading the adjacent upland spoil material, and replacing the crushed culvert. This will provide the opportunity to conduct hydrological restoration, resulting in enhancing 99 acres of existing forested wetland habitat (FWE #1-9) and 36 acres of non-forested wetland habitat (NFWE #1-4). Specific hydrologic and topographic data of the wetlands have been incorporated into a surface water model conducted for the Brooker Creek watershed. There are many trees along the upland top-of-slope bordering the ditches; primarily live oak, laurel oak, slash pine and red maple. By constructing ditch blocks at specific locations, earthwork grading will be able to minimize impacts to the larger trees. Quick temporary vegetative cover of the blocks will be provided by seeding with winter rye or brown-top millet seed, as well as myrtle, maple and oak species. This vegetative coverage will encourage more use and easier access for wildlife that utilize the habitats associated with the public lands in the vicinity. Along with proposed activities associated with the FDOT mitigation effort, Hillsborough County's land management plan for the Preserve propose restoration of the remaining upland fallow areas into sandhill and flatwood habitat. The acquisition of the additional 66.5-acre tract filled a critical and valuable gap of public lands along the Brooker Creek floodplain from Tarpon Springs Road to the adjacent for Brooker Creek Preserve. As Hillsborough County conducted on a similar designated FDOT mitigation project that included land acquisition for preservation mitigation credits (SW 61 – Cypress Creek Preserve, Jennings Tract), the additional area has been protected by conveying a conservation easement to the District in September, 2009. When the conservation easement was recorded, the District's FDOT mitigation program reimbursed the \$1,235,000 acquisition costs with the agreed-upon requirement that the reimbursed funds will be utilized for additional Hills. County ELAPP acquisitions. The combination of the additional tract and wetland enhancement activities for mitigation credit, and future restoration activities planned within the ruderal fields of the tract will result in a variety of inter-dependent ecosystems that will benefit wildlife that utilize the Buffer Preserve as well as the adjacent Brooker Creek Preserve. For total mitigation credit, the plan includes the preservation and enhancement of the 66.5 acres addition (includes 30.1 acres of upland habitat buffering 36.4 acres of wetland habitat), hydrologic restoration and enhancement of 90 acres of existing forested wetland habitat (FWE #4-9) and 36 acres of non-forested wetland habitat (NFWE #1-4).

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The mitigation activities at the Preserve are proposed to primarily provide compensation for proposed wetland impacts associated with the long-term expansion at Tampa International Airport (TIA). The proposed TIA wetland impacts areas are low-quality habitats located within 10 miles from the proposed mitigation activities. Since the acquisition was conducted for preservation credits in 2009 and wetland enhancement construction planned for 2012, the mitigation activities years in advance of the proposed TIA wetland impacts scheduled for construction after 2025. Wetland impacts associated with other future roadway projects in the Tampa Bay watershed will be evaluated for possible mitigation at the Preserve.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the mitigation selection for the proposed wetland impacts, the Tampa Bay Mitigation Bank (TBMB) was the only existing or proposed mitigation bank within the Tampa Bay Drainage Basin; however freshwater mitigation credits at the TBMB were not available for purchase.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The Brooker Creek Buffer Preserve is a SWIM / County co-sponsored project since Brooker Creek flows into Lake Tarpon and Tampa Bay; both designated SWIM water bodies.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private contractor working for Hillsborough County or WMD Operations Dept.
Contact Name: Mark Brown, SWFWMD Phone Number: 352-796-7211 (ext. 4488)
Entity responsible for monitoring and maintenance: Monitoring and maintenance activities will be conducted as part of general site review by Hills. Co. & WMD staff to ensure the ditch blocks are properly operating as designed and there are no erosion or sedimentation problems.
Proposed timeframe for implementation: Commence: Design & Permitting: 2008-2011, Land Acquisition, 2009
Complete: Construction anticipated in 2012, followed by periodic review to ensure the ditch blocks are properly functioning.

Project cost: estimates - \$1,677,500 - \$1,977,500
Land Acquisition - \$1,235,000
Design & Permitting - \$112,500
Construction & Planting - \$300,000 - \$400,000
Maintenance - \$30,000

Attachments

- X 1. Description of existing site and proposed work. Refer to previous discussion, additional details will be provided in the annual updates of the FDOT mitigation plan.
- X 2. Recent aerial and site photographs. Refer to Figures B-D, 2007 aeriels, site photographs.
- X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A for location map, Figure B for existing habitats, and Figure C for proposed habitat improvements, and Figure D of the existing habitat for the additional acquisition area.
- X 4. Schedule for work implementation. Refer to previous implementation discussion. Additional details will be provided in the annual updates of the FDOT mitigation plan as the project proceeds through various phases and activities.
- X 5. Success criteria and associated monitoring plan. Monitoring will include periodic review of the ditch blocks and observe hydrologic & vegetative shifts of the associated wetlands; for a minimum of three years. Success criteria will include demonstrating the blocks are properly functioning as designed with no erosion problems, good vegetative cover of the blocks, and the desired hydrologic improvements are being achieved within the associated wetlands.
- X 6. Long term maintenance plan. Maintenance activities will be conducted as necessary to ensure and maintain proper ditch block functions without problems of erosion, scouring, undermining, etc.

Attachments

X 1. Description of existing site and proposed work. Refer to previous discussion, additional details will be provided in the annual updates of the FDOT mitigation plan.

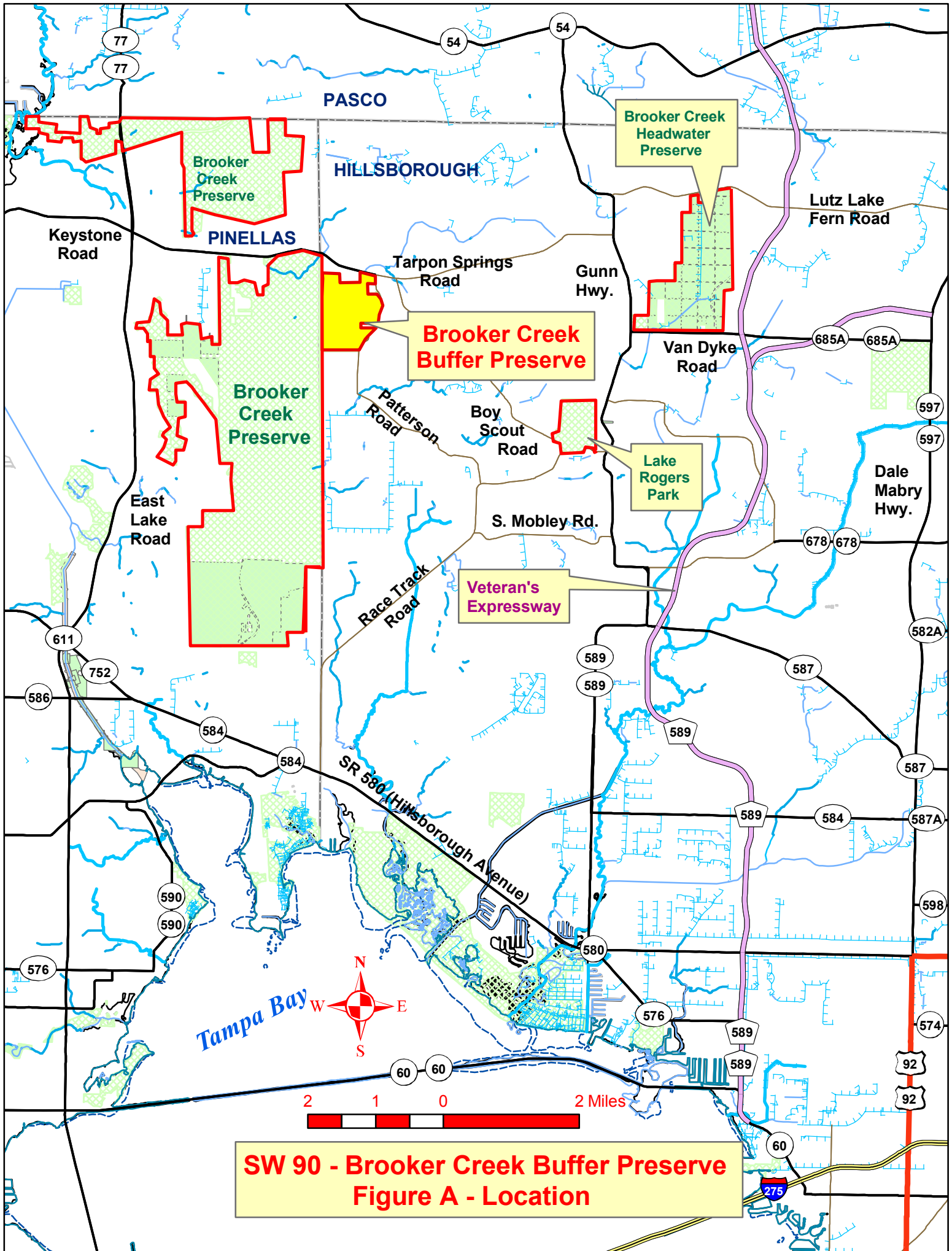
X 2. Recent aerial and site photographs. Refer to Figures B-D, 2007 aeriels, site photographs.

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figure A for location map, Figure B for existing habitats, and Figure C for proposed habitat improvements, and Figure D of the existing habitat for the additional acquisition area.

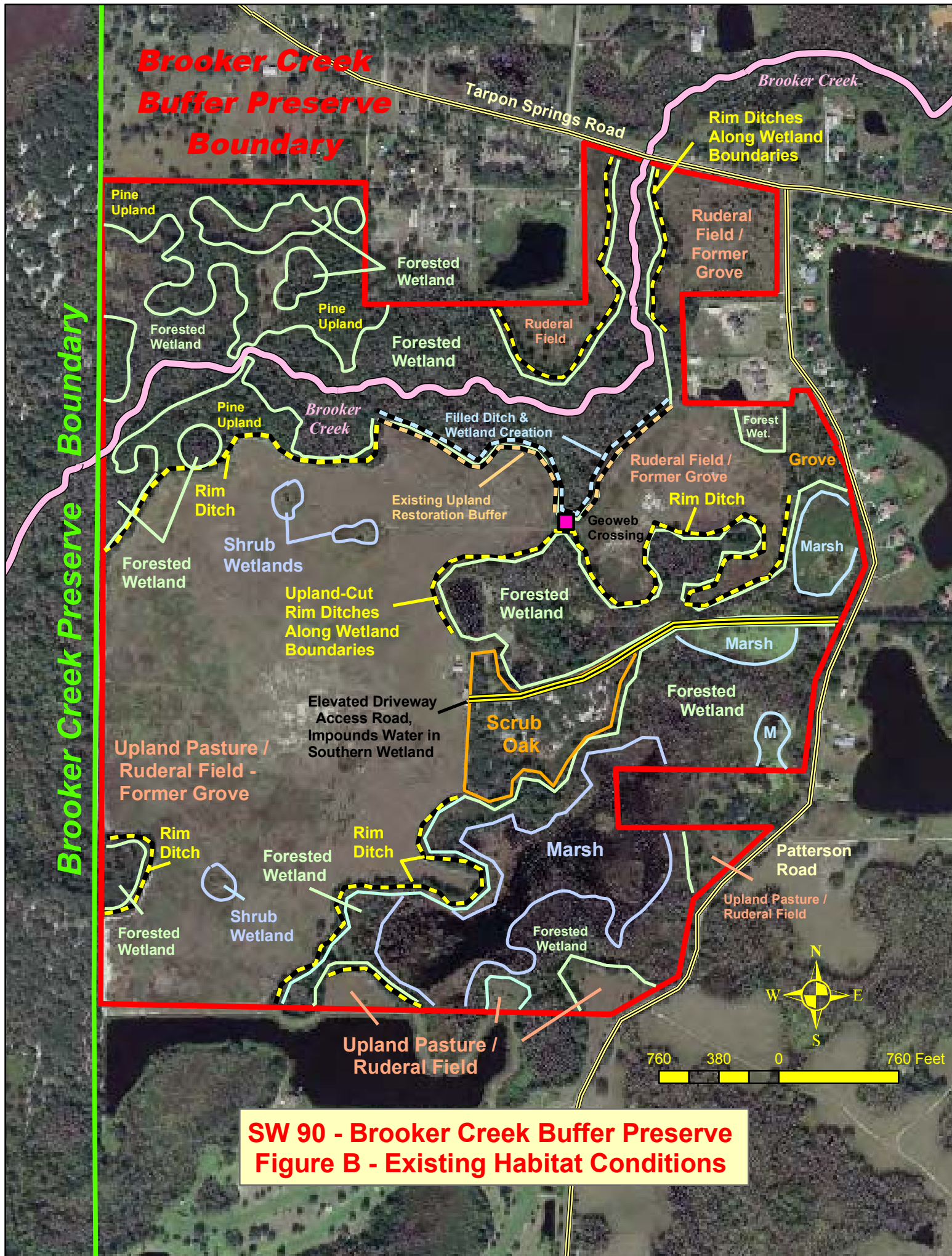
X 4. Schedule for work implementation. Refer to previous implementation discussion. Additional details will be provided in the annual updates of the FDOT mitigation plan as the project proceeds through various phases and activities.

X 5. Success criteria and associated monitoring plan. Monitoring will include periodic review of the ditch blocks and observed hydrologic & vegetative shifts of the associated wetlands. Success criteria will include demonstrating the blocks are properly functioning as designed with no erosion problems, good vegetative cover of the blocks, and the desired hydrologic improvements are being achieved within the associated wetlands.

X 6. Long term maintenance plan. Maintenance activities will be conducted as necessary to ensure and maintain proper ditch block functions without problems of erosion, scouring, undermining, etc.



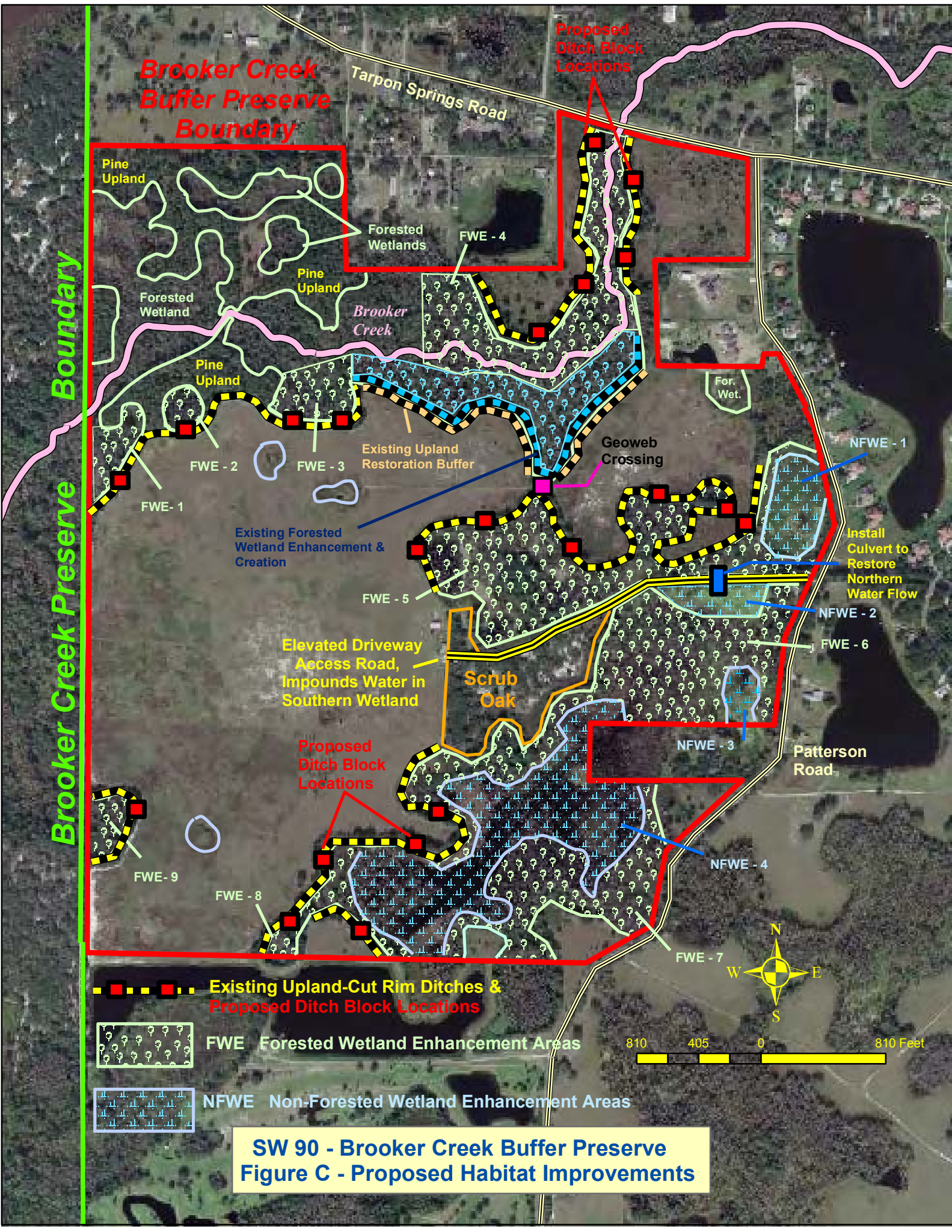
**SW 90 - Brooker Creek Buffer Preserve
Figure A - Location**



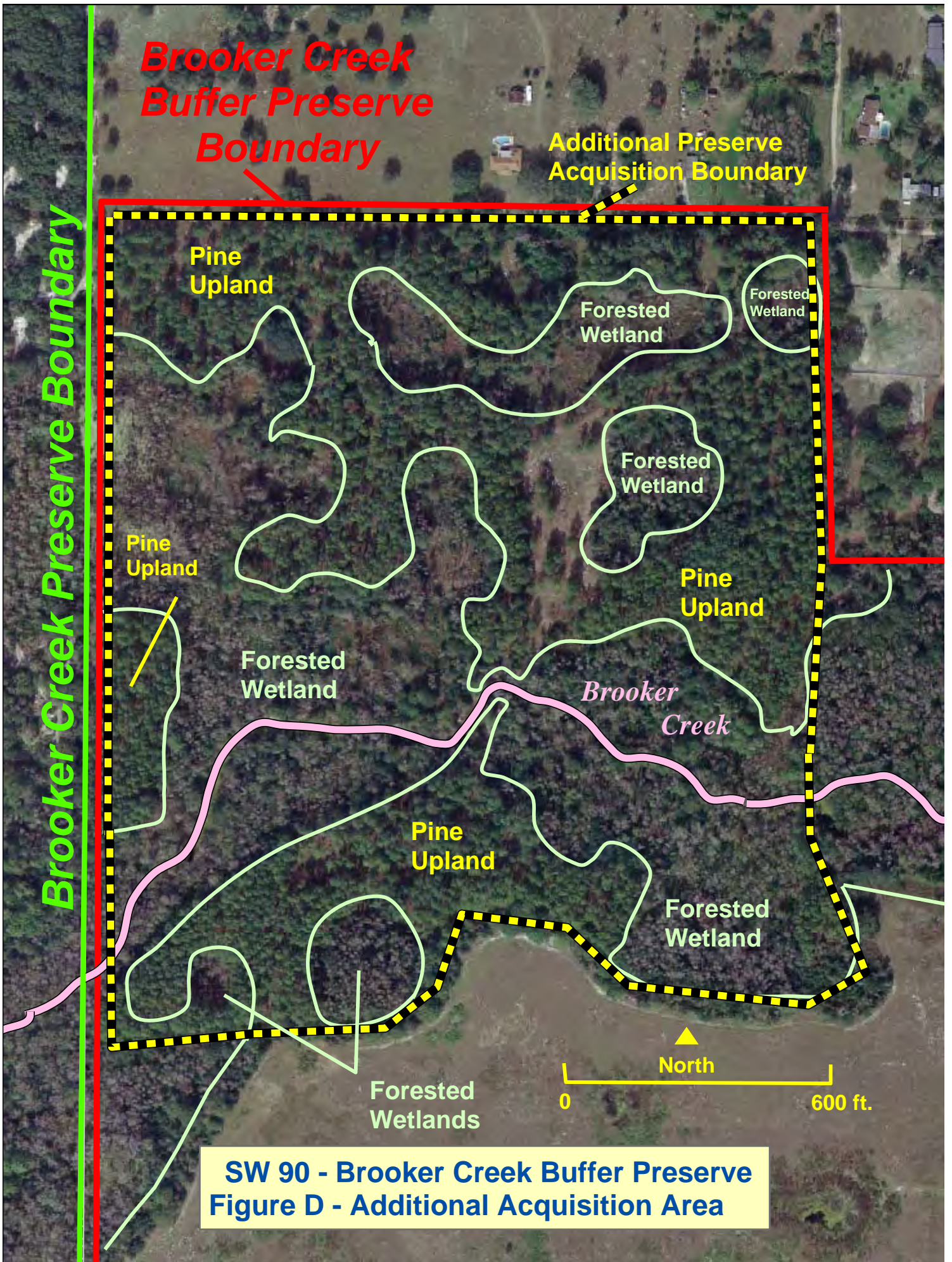
**Brooker Creek
Buffer Preserve
Boundary**

Brooker Creek Preserve Boundary

**SW 90 - Brooker Creek Buffer Preserve
Figure B - Existing Habitat Conditions**



**SW 90 - Brooker Creek Buffer Preserve
Figure C - Proposed Habitat Improvements**



**SW 90 - Brooker Creek Buffer Preserve
Figure D - Additional Acquisition Area**



The majority of the upland acreage at the Buffer Preserve includes fallow fields dominated by bahia and scattered dog fennel. Hillsborough County Conservation plans to restore these upland areas into pine flatwood and sandhill habitat; improving conditions for additional wildlife activity and corridor connectivity for the Buffer Preserve and adjacent Brooker Creek Preserve.



The forested wetland floodplain (FWE – 4) bordering Brooker Creek is dominated by cypress, tupelo, bays and maple over ferns. The rim ditch along the west perimeter of the floodplain diverts and transports a large percentage of the base flow away from the creek. The historic flow pattern will be restored to the creekbed following ditch block construction.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**BROOKER CREEK BUFFER PRESERVE
(SW 90)**



The majority of the upland-cut rim ditches are 4-6 feet deep and 15-20 feet wide between top-of-banks. Ditches under tree canopy typically have minimal ground cover vegetation. These ditches divert contributing upland groundwater flow that historically seeped into the adjacent wetlands. The ditch blocks will stop the flow diversion, and retain water so that seepage can be restored to the wetlands.



Vine coverage is more common along the banks of the rim ditches without canopy cover, resulting in more difficult and restrictive conditions for wildlife access between the upland and wetland habitat. Along with the hydrologic improvements, construction and planting of wide earthen ditch blocks will provide better upland & wetland connectivity for wildlife access.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**BROOKER CREEK BUFFER PRESERVE
(SW 90)**



The interior of the forested wetland (FWE – 5) bordering the north side of the elevated driveway; the historic contributing water from south of the driveway has been blocked by the driveway berm; resulting in minimal wetland hydroperiod, organic soil oxidation, and subsequently unstable and toppling of cypress. The canopy becomes more open to expose the understory; allowing nuisance vegetation and facultative hardwood species to recruit and generate.



The marsh interior (NFWE – 4) of the wetland south of the driveway. Without positive outfall of drainage, this wetland's unstable hydroperiod from surface water impoundment has resulted in tree and herb generation during droughts, followed by more plant mortality during frequent rain events; note open water where herbs were present and tree snags. The proposed drainage improvements from culvert installation will help restore more stable and appropriate hydroperiods for the wetland habitat south and north of the driveway.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**BROOKER CREEK BUFFER PRESERVE
(SW 90)**



The additional 66 acres acquired along the northwest corner of the Buffer Preserve (Fig. D) provide a wonderful habitat buffer, and wildlife corridor connections to and from the adjacent Brooker Creek Preserve. During the 1970's, all the uplands on this additional tract were comprised of improved pastures. Large planted pine, along with natural recruitment generation of scattered oaks, maples, wax myrtle and herb ground cover provide good habitat mosaic with the adjacent wetlands.



Half of the additional acreage is comprised of forested wetlands with moderate to dense canopy of cypress, maple, tupelo and bays; and ground cover dominated by fern species; much of this wetland habitat borders Brooker Creek.

**FDOT Mitigation Site
(Tampa Bay Drainage Basin)**

**BROOKER CREEK BUFFER PRESERVE
(SW 90)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Upper Coastal Mitigation Bank

Project Number: SW 91

Project Manager: Wade Waltmyer, Senior Biologist
EarthBalance, Corporation

Phone No: 941- 426 - 7878

County: Citrus County

Location: Sec. 28, 33, T19S, R17E

IMPACT INFORMATION

The UCMB will be evaluated to provide compensation for future FDOT wetland impacts in the basin.

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: Creation Restoration X Enhancement X Preservation

SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? Y

Mitigation Bank Permits WMD ERP# 44031543, ACOE # not issued yet Drainage Basin: Upper Coastal

Water Body: None SWIM water body? N

Project Description

A. Overall project goal: The Upper Coastal Mitigation Bank (UCMB) is a 148.8-acre tract located in northwest Citrus County (Figure A). The UCMB is located within a regionally significant and critical habitat and wildlife corridor; representing a key parcel in the only remaining habitat that can provide a terrestrial connection between the expansive Chassahowitzka National Wildlife Refuge/Withlacoochee State Forest to the south, and the Crystal River State Buffer Preserve system to the north (Figure B). Due to the high value and functions of habitat and water resources, the tract was previously targeted for public land acquisition through the State's Florida Forever program. The primary goals of the UCMB include the preservation and enhancement of ecologically significant forested wetland and upland habitat, and provide protection of the on-site spring that discharges to the Homosassa River. Protection and enhancement of this tract benefits the expansive and valuable preserved public lands to the north and south by providing improved connectivity of habitat.

B. Brief description of current condition: The UCMB has a mosaic of upland and wetland habitat (Figure C). The dominant wetland community includes 83.6 acres of mixed hardwood forest wetlands (FLUCFCS #617). The swamp habitat is primarily within the eastern and northwestern portion of the property, and includes a diverse mix of hydrologic regimes and associated vegetative communities. The diverse canopy coverage includes American elm, pignut hickory, red maple, sweet bay, popash, sweet gum, black gum, water oak, laurel oak, and cabbage palm. The subcanopy contains numerous seedlings of the same tree species as well as wax myrtle and saw palmetto. Sparse groundcover in the wetland includes a dominance of various fern species. A unique feature within this wetland includes a pristine spring that emerges from a deep, rocky pool that discharges through a spring run for 600 feet before disappearing into another deep pool at the northern end of the property (photo). Mixed hardwood upland habitat (FLUCFCS #438, 36.5 acres) provides a buffer transition between the hardwood swamp and the mixed hardwood-conifer upland habitat. The canopy is comprised of a mix of upland and transitional hardwood species including red cedar, magnolia, cabbage palm, sweet gum, various oak species, and occasional slash pine. The understory is comprised of immature cabbage palm, wax myrtle, viburnum, beautyberry, coontie, Virginia chain fern, and occasional saw palmetto. The hardwood-conifer mixed

habitat (24.3 acres) is dominated by slash pine and live oak, with additional coverage provided by transitional species such as cabbage palm, cedar, and magnolia. In many areas of this upland community, there is also a xeric subcanopy of coastal plain staggerbush, myrtle oak, and sand live oak. The understory is dominated by dense saw palmetto, while subdominant coverage is provided by fetterbush, wax myrtle, and bracken fern. It appears that some damage occurred to the tree canopy across the site as a result of recent active hurricane seasons. The reduced canopy has allowed the opportunity for invasion by nuisance and exotic species, particularly vines. Overall, exotic coverage is low and patchy except along the north and south edges of the site. The habitat functions of the site, provided by mature hardwood swamp, diverse upland habitat, and a unique spring run, include food, cover, denning, and water sources for wildlife using the area as well as a corridor connection to adjacent public lands.

C. Brief description of proposed work: The primary goals of the UCMB mitigation plan are: 1) to preserve 148.8 acres of intact wetland and upland ecosystems to establish a corridor link for Florida black bears and other wildlife species; 2) to enhance natural community functions; and 3) to protect the integrity of the on-site spring system and headwaters of the Homosassa River. The plan includes restricting site access, eliminating nuisance and exotic species, restoring the upland communities by selectively reducing shrub coverage, and preserving the site in perpetuity by conveying a conservation easement to the SWFWMD. Establishment of a management trust fund will ensure ecological values and benefits are maintained in the long term.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The UCMB will be evaluated in the future to possibly provide mitigation for FDOT wetland impacts in the basin.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: The UCMB is a mitigation bank in the Upper Coastal basin.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: At the time of mitigation selection, there were no SWIM-sponsored restoration projects in the Upper Coastal basin that could appropriately compensate for the anticipated wetland impacts.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for implementation: Upper Coastal Mitigation Bank

Contact Name: Wade Waltmyer, EarthBalance, Corporation

Phone Number: 941 – 426 - 7878

Entity responsible for monitoring and maintenance: EarthBalance, Corporation

Proposed timeframe for implementation: Commence: Design & Permitting: 2006 Complete: No construction required, routine land management, maintenance & monitoring

Project cost: To be determined upon designating wetland impacts for mitigation at the bank.

Attachments

X 1. Description of existing site and proposed work. Refer previous discussion, SWFWMD ERP #44029983 is available for review, attached site photos.

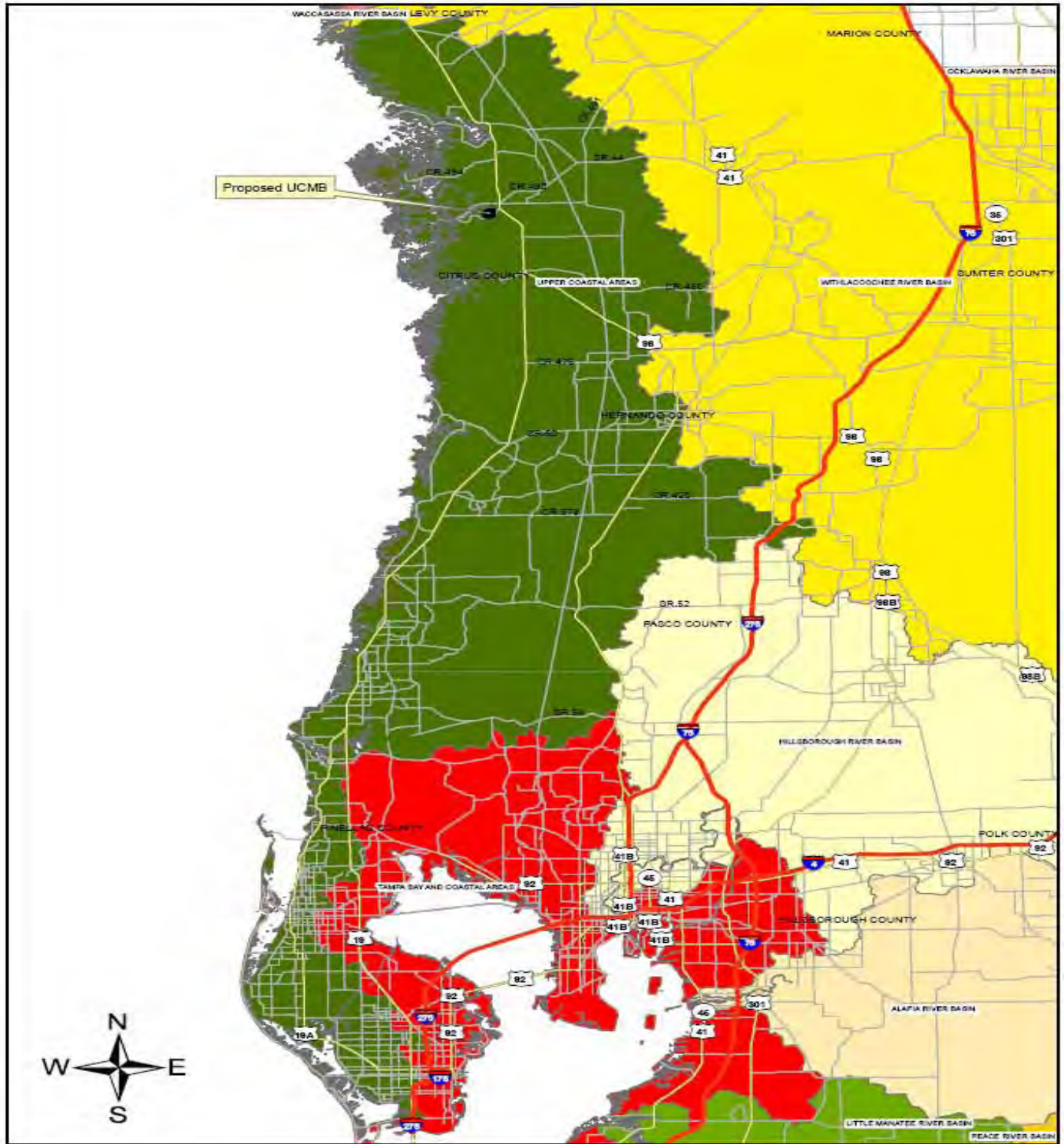
X 2. Aerial photograph with date and scale. Refer to Figure C, 1999 infrared aerial.

X_3. Location map and design drawings of existing and proposed conditions. Refer to Figure A (location map), Figure C (existing & proposed habitat).

X_4. Schedule for work implementation, including any and all phases. Refer to previous implementation discussion. No construction activities required, currently within the land management, maintenance & monitoring activities.

X_5. Success criteria and associated monitoring plan. Monitoring and success criteria for habitat enhancement are specified in the ERP. Since the site is proposed as a mature preservation and enhancement parcel, typical monitoring methods will not be required to document vegetative and hydrological success. Success criteria for the bank will therefore be evaluated as "events." These events include recording the conservation easement to restrict use and access, funding the management trust fund, strategic fencing and signage along the bank perimeter, eradication of inappropriate plant species to less than 5% total coverage, eradication of exotic plant species to 1% coverage or less, and completion of the initial shrub reduction event in uplands.

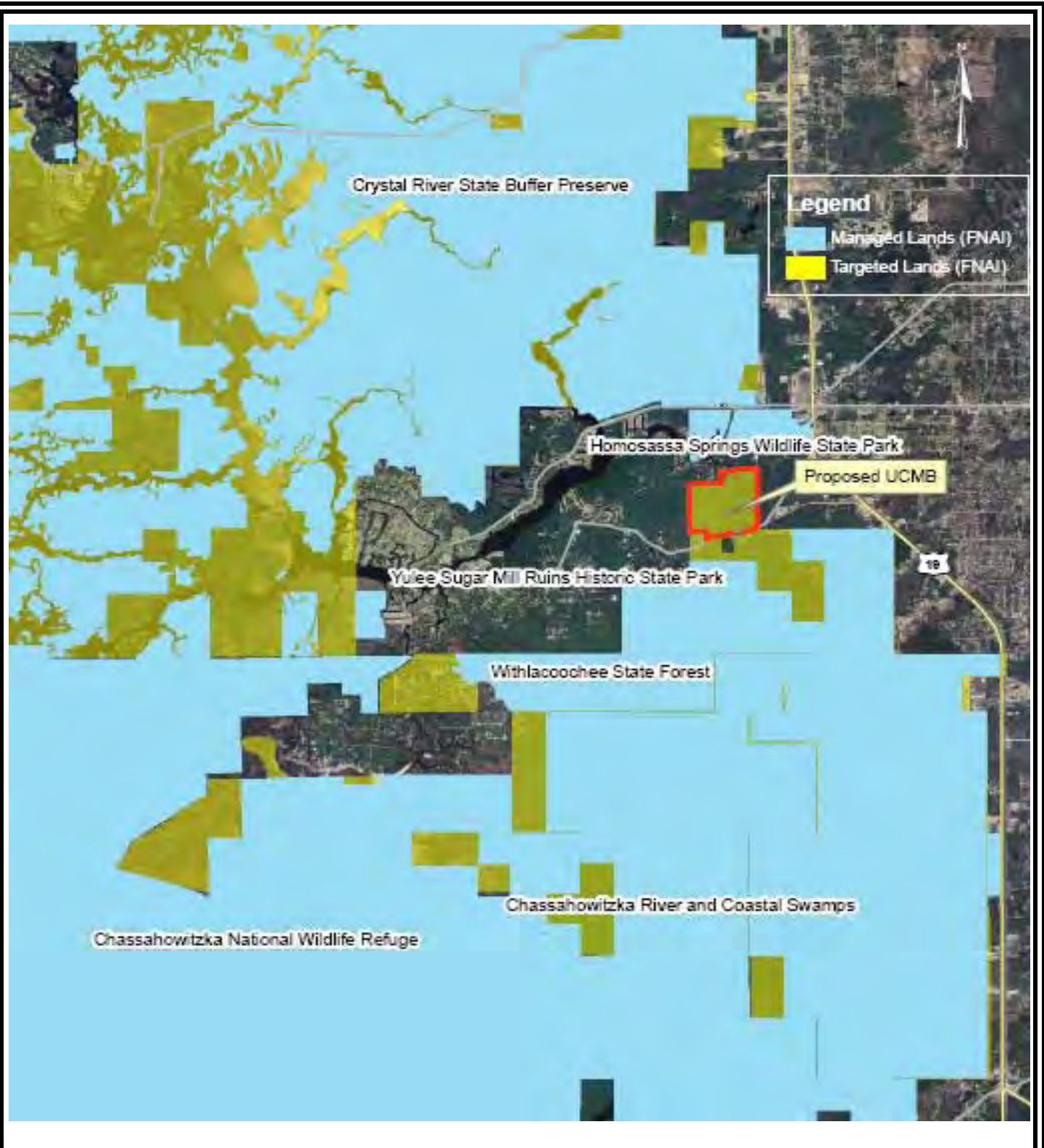
X_6. Long term maintenance plan. The long-term management plan addresses vegetative maintenance, fire management, site security, access, and approved activities are recorded with the conservation easement. The location of these planned activities are depicted on Figure C. The mitigation banker will remain the responsible entity for site management and plans to retain fee-simple ownership of the parcel. At some point, the land may be transferred to an appropriate public agency or private owner who will be responsible to maintain the habitat conditions.



**FDOT
MITIGATION SITE
(Upper Coastal Basin)**

**UPPER COASTAL
MITIGATION BANK
(SW 91)**

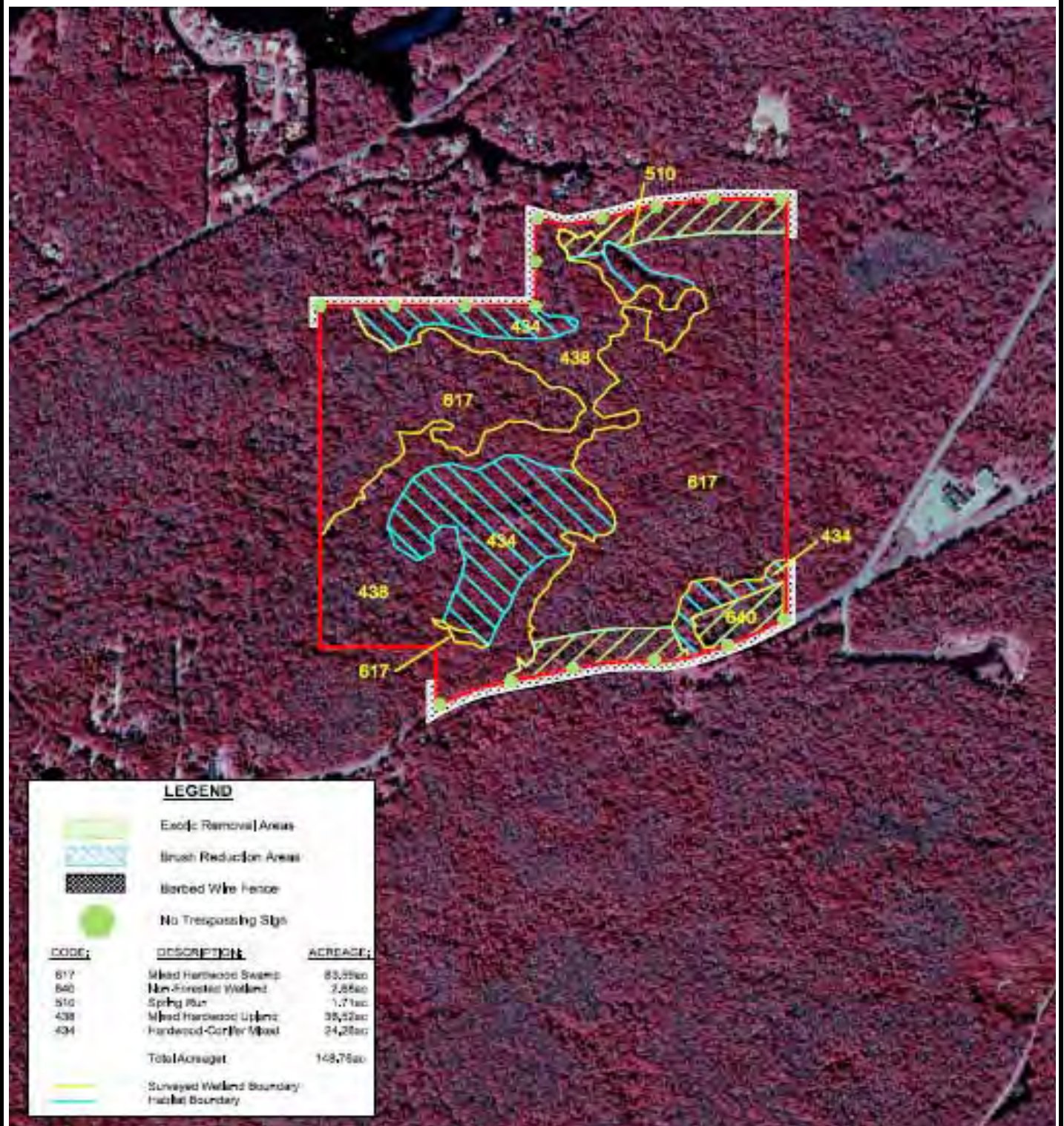
**FIGURE A
PROJECT LOCATION,
WATERSHED MAP &
MITIG. SERVICE AREA**



**FDOT
MITIGATION SITE
(Upper Coastal Basin)**

**UPPER COASTAL
MITIGATION BANK
(SW 91)**

**FIGURE B
PROJECT LOCATION,
ADJACENT EXISTING &
PROPOSED PUBLIC LANDS**



**FDOT
MITIGATION SITE
(Upper Coastal Basin)**

**UPPER COASTAL
MITIGATION BANK
(SW 91)**

**FIGURE C
EXISTING HABITAT,
ENHANCEMENT &
MANAGEMENT PLAN**



View of the spring surrounded by mixed hardwood wetland habitat. The forested wetland has diverse coverage of many tree species including red maple, sweet bay, American elm, popash, sweet gum, black gum, water oak, laurel oak and cabbage palm.



The hardwood-conifer mixed habitat is dominated by live oak and slash pine, with transitional species such as cabbage palm, cedar and magnolia. The understory has dense coverage of saw palmetto, with additional coverage provided by fetterbush, wax myrtle, and bracken fern.

**FDOT Mitigation Site
(Upper Coastal Drainage Basin)**

**UPPER COASTAL MITIGATION BANK
(SW 91)**

REGIONAL MITIGATION PLAN

BACKGROUND INFORMATION

Mitigation Project: Halpata Tastanaki Preserve
Project Sponsor: SWFWMD – Land Resources

Project Number: SW 92
Phone No: 352-796-7211

County: Marion County

Location: Sec. 13, 24, T17S, R19E

IMPACT INFORMATION (Proposed Construction Date)

(1) FM 2571882 – SR 200 - US 41 to Marion County Line (2018)
(2) FM 2571651 – US 41 (SR 45) – SR 44 to SR 200 (2018)

ERP #: _____ COE #: _____
ERP #: _____ COE #: _____

Drainage Basin: Withlacoochee River Water Body(s): Withlacoochee River SWIM water body? No

Impact Acres / Habitat Types (FLUCFCS):

(1) FM 2571882	2.0 ac. (641)	(2) FM 2571651	0.5 ac. (617)
	0.5 ac. (643)		<u>0.2 ac. (618)</u>
	<u>0.3 ac. (644/641)</u>		0.7 acre
TOAL	3.1 acres		

TOTAL – 3.8 Acres

MITIGATION ENVIRONMENTAL INFORMATION

Mitigation Type: ___ Creation ___ Restoration X Enhancement ___ Preservation Mitigation Area: **103 acres**
SWIM project? N Aquatic Plant Control project? N Exotic Plant Control Project? N Mitigation Bank? N
Drainage Basin: Withlacoochee River Water Body(s): Withlacoochee River SWIM water body? N

Project Description

A. Overall project goal: The Halpata Tastanaki Preserve (Halpata) is an 8,090-acre tract located adjacent to the Withlacoochee River, along the boundary between Marion and Citrus Counties (Figures A & B). The tract is owned and managed by the SWFWMD (District), and adjacent to and within the vicinity of thousand of acres of other public lands comprised of native habitat. Halpata has a variety of upland and wetland ecosystems, including mixed forested wetland floodplain habitat extending from the banks of the Withlacoochee River (Figure B). To provide vehicular access, an elevated berm was historically constructed through the floodplain wetland. The berm dimensions and culverts have altered the historic surface water drainage patterns and contributing flow to the adjacent wetland habitat upstream and downstream of the berm. An access road is still necessary for the public and District land management staff, and the berm is primarily used by wildlife as a corridor connection. However, portions of the berm and the majority of the culverts could be removed and replaced with wet road crossing facilities. Removal of some fill material will retain necessary and important access through the wetland, however still result in the desired goal of restoring surface water hydrology to enhance the ecological value and benefits of the adjacent wetland habitat.

B. Brief description of current condition: The delineated project area within Halpata is dominated by mixed forested wetland habitat (Figures B & C). Portions of the Withlacoochee River have substantial surface water fluctuation ranging several feet between base flow and flood elevations, and this directly correlates to the adjacent upland and wetland habitat characteristics and functions. There are variable grade elevations, resulting in a variety of hydroperiod and associated vegetative species in the wetland habitat (refer to site photos). The lower elevations have more obligate species; an overstory dominated by bald cypress with scattered tupelo, red maple and pop ash. The subcanopy includes the same tree species along with scattered buttonbush, however the dense canopy shade and high flood elevations

(ranging 4-6 ft. above grade) associated with this portion of the wetland have substantially limited the coverage of understory and ground vegetation. The infrared aerial photograph (Figure C) depicts the locations where the cypress (gray tone) is more prevalent. The wetland grade elevations are predominantly higher and more variable adjacent and east of the access road; resulting in more facultative hardwoods and less cypress. Red maple, sweet gum, water hickory, water oak, laurel oak and cabbage palm are common. With shorter frequency, depth and duration of surface water inundation of this habitat, there is more ground cover vegetation including dwarf palmetto (*Sabal minor*), and various low panicums and sedges where the canopy shade is not as prevalent. The highest grade elevations are within a hardwood hammock located in the southeast portion of the wetland. This transitional habitat has dominant overstory coverage provided by laurel oak, water oak, scattered large live oak, loblolly pine, cabbage palm, and dwarf palmetto provides minor to moderate ground coverage. There is minimal coverage of non-forested wetland habitat within the project area, primarily limited to five borrow pits (each covering less than 0.5 acre) dredged to provide the necessary fill material for the original berm construction. These ponds have predominant coverage of spatterdock, duckweed, and floating pennywort, and they provide a valuable dry season water source for wildlife in the vicinity. The depth of berm fill material for the roadway portion crossing the hardwood hammock averages 1-2 feet above natural grade, compared to the lower elevation obligate zone where the berm material ranges 2-4 feet above grade (photos). Six of the 10 culverts were installed within a 500 ft. long segment of the road that crosses the obligate zone. The berm diverts and concentrates the contributing upstream flow from the east to the lower elevation obligate zone. Then four culverts located within a 50 ft. length of the berm (photo) concentrate the outfall into a meandering creek that discharges into the Withlacoochee River. Historically the contributing basin flow from east of the berm would include more ground water seepage and wider sheet flow characteristics to the wetland floodplain west of the berm, versus the concentrated creek channel. This same but reverse groundwater and sheet flow condition existed when the river would overflow the banks and contribute flow to the wetlands east of the berm. Now that the flood waters are blocked by the berm and concentrated through the four main culverts, it limits important and valuable flood waters from reaching and attenuating in the wetland area east of berm.

C. Brief description of proposed work: Prior to nominating Halpata to the FDOT mitigation program in 2007, an extensive hydraulic and hydrologic analysis was necessary to determine if a restoration project could be constructed to benefit the wetland floodplain and confirm no potential of any off-site drainage alterations. This analysis was conducted in 2006-2007 to evaluate the degree of wetland hydrologic impacts caused by the berm and culverts, and alternatives to restore flow conditions to benefit the wetland habitat while still maintaining a modified access road. The results of the modeling effort found that wetlands could hydrologically benefit from removing at least portions of the berm and the majority of culverts. The final design includes removing 2,600 cubic yards of berm material at three separate locations to match adjacent natural grade for a total distance of 1,000 feet (Figure D). After berm removal, an additional 4-6 inches of material will be excavated below grade, followed by installation of Geoweb fabric and 6-8 inches limerock base material. The Geoweb and rock will provide a stable access road while allowing water to sheet flow over the road; thus restoring hydrologic connectivity to slightly higher wetland elevations during normal seasonal high water levels as well as flood events. This includes an isolated cypress dome within the northwest portion of the project area that doesn't receive the historic flood waters due to the berm. A segment of berm material will be retained through the obligate zone however the associated six culverts will be replaced with three wedge-shaped breaches lined with geotextile fabric and filled with rip-rap rubble to match the original berm height. Replacing the culverts with rubble rip-rap will slow the rate of surface water discharging from the east side of the berm to the creek channel. This will result in extending the hydroperiod for the wetland east of the berm, thus enhancing the habitat and provide more water for wildlife use. The

remaining 4 culverts will have sumps and riprap placed at each end to reduce water velocity and minimize scouring. Seeding of winter rye or brown-top millet will be placed on exposed soil after grading, followed by any necessary supplemental herb plantings such as maidencane. Figure D depicts the 103 acres of wetland habitat that are anticipated to receive enhancement by the proposed construction activities. An additional 110-150 acres of the same wetland will also receive secondary enhancement by the project. However the degree of enhancement for the hardwood hammock and the obligate zone closer to the river are considered minor and not included in the total mitigation acreage.

D. Brief explanation of how this work serves to offset the impacts of the specified DOT project(s): The activities at Halpata are proposed to provide mitigation for a conservative few acres of wetland impacts associated with widening a SR 200 segment from US 41 that terminates close the southeast boundary of Halpata, and less than an acre of impact associated with the connecting US 41 segment from Inverness to SR 200. Figure A depicts the US 41 and SR 200 segments. The Halpata construction activities are scheduled for completion at the end of 2009, as opposed to the SR 200 US 41 segments that are not scheduled to commence construction until 2017. Therefore the Halpata project will provide appropriate mitigation years in advance of when the anticipated wetland impacts.

E. Brief explanation of why a mitigation bank was/was not chosen, in whole or in part, including a discussion of cost: During the 2007 nomination and selection of mitigation options for wetland impacts, there were no existing or proposed private mitigation banks in the Withlacoochee River watershed.

F. Brief explanation of why a SWIM project was/was not chosen as mitigation, in whole or in part, including a discussion of cost, if the anticipated impacts are located within a SWIM water body: The Withlacoochee River is classified an Outstanding Florida Waters and not a SWIM-designated water body. The only SWIM-sponsored project in the Withlacoochee River watershed involves sediment removal from Lake Panasoffkee; a project that has previously received mitigation funding to compensate for FDOT wetland impacts associated with expanding the I-75 bridge over Lake Panasoffkee.

MITIGATION PROJECT IMPLEMENTATION

Entity responsible for construction: Private contractor working for the SWFWMD

Contact Name: Randy Smith, SWFWMD

Phone Number: 352-796-7211 (ext. 4205)

Entity responsible for monitoring and maintenance: Monitoring activities will be conducted as part of general site review by the SWFWMD Land Resource staff, maintenance will be initially conducted by the private contractor responsible for construction, then the SWFWMD Operations Dept. will be responsible for any necessary post-construction maintenance activities.

Timeframe for implementation: Commence: Design & Permitting: 2006-2008 Complete: Construction scheduled for completion in 2009, followed by periodic review to ensure structures are properly functioning, and maintenance on any problem areas such as erosion control and rock stabilization.

Project cost: Estimates - \$376,000
Design & Permitting - \$166,000
Construction & Planting - \$180,000
Maintenance - \$30,000

Attachments

X 1. Description of existing site and proposed work. Refer to previous discussion; additional details and the associated surface water modeling available for review at the SWFWMD or FDOT Mitigation Program Manager.

X 2. Aerial & site photographs. Refer to Figures A & B, 2006 aeriels; and 1994 infrared photograph (Figures C & D), pre-construction site photos.

X 3. Location map and design drawings of existing and proposed conditions. Refer to Figures A & B for location map, Figure C for existing conditions, and Figure D for proposed conditions.

X 4. Schedule for work implementation, including any and all phases. Refer to previous implementation discussion. Additional details will be provided in the annual updates of the FDOT mitigation plan as the project proceeds through various phases and activities. The following is a tentative schedule:

Site Evaluation, Surface Water Modeling, Design & Permitting – 2006 - 2008

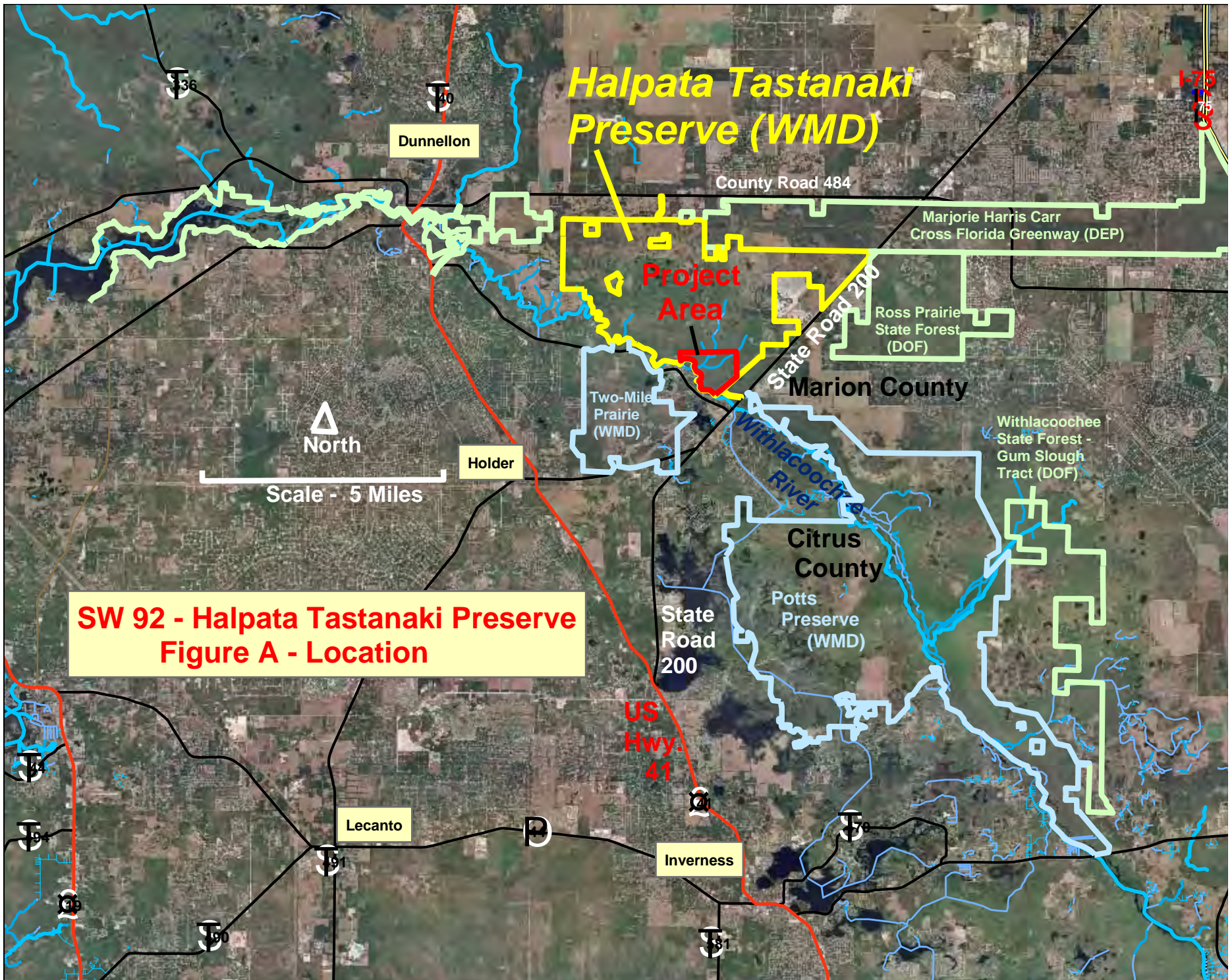
Construction & Planting – 2009

Maintenance – 2010-2012-Semi-annual reviews and routine maintenance to ensure structures are properly functioning with no erosion. Additional reviews will be conducted as necessary when floodwaters are flowing over the wet crossings of the access road.

Management – 2-3 annual evaluations conducted by WMD Land Management Specialist assigned to the site as part of normal land management activities, to ensure the structures are functioning as proposed and no erosion or problems with structural integrity.

X 5. Success criteria and associated monitoring plan. After two years of semi-annual monitoring, the 2-3 annual evaluations will be conducted concurrently with review and associated maintenance of the access road. This monitoring activity and associated success criteria will be conducted to ensure that the wet crossing and rubble rip-rap allows desired flow conditions. The WMD maintains a water level monitoring station where SR 200 crosses the Withlacoochee River, so it will be known in advance of when flood waters breach over the river and banks and the wet crossings. Success includes ensuring the structures are functioning as proposed and any maintenance activities conducted as quickly as possible.

X 6. Long term maintenance plan. The road is periodically used by SWFWMD Land Resource staff to access the site. Any activities to maintain the flow connectivity will be conducted when necessary.



County Road 484

**SW 92 - Halpata Tastanaki Preserve
Figure B - Project Area**

Property
Boundary

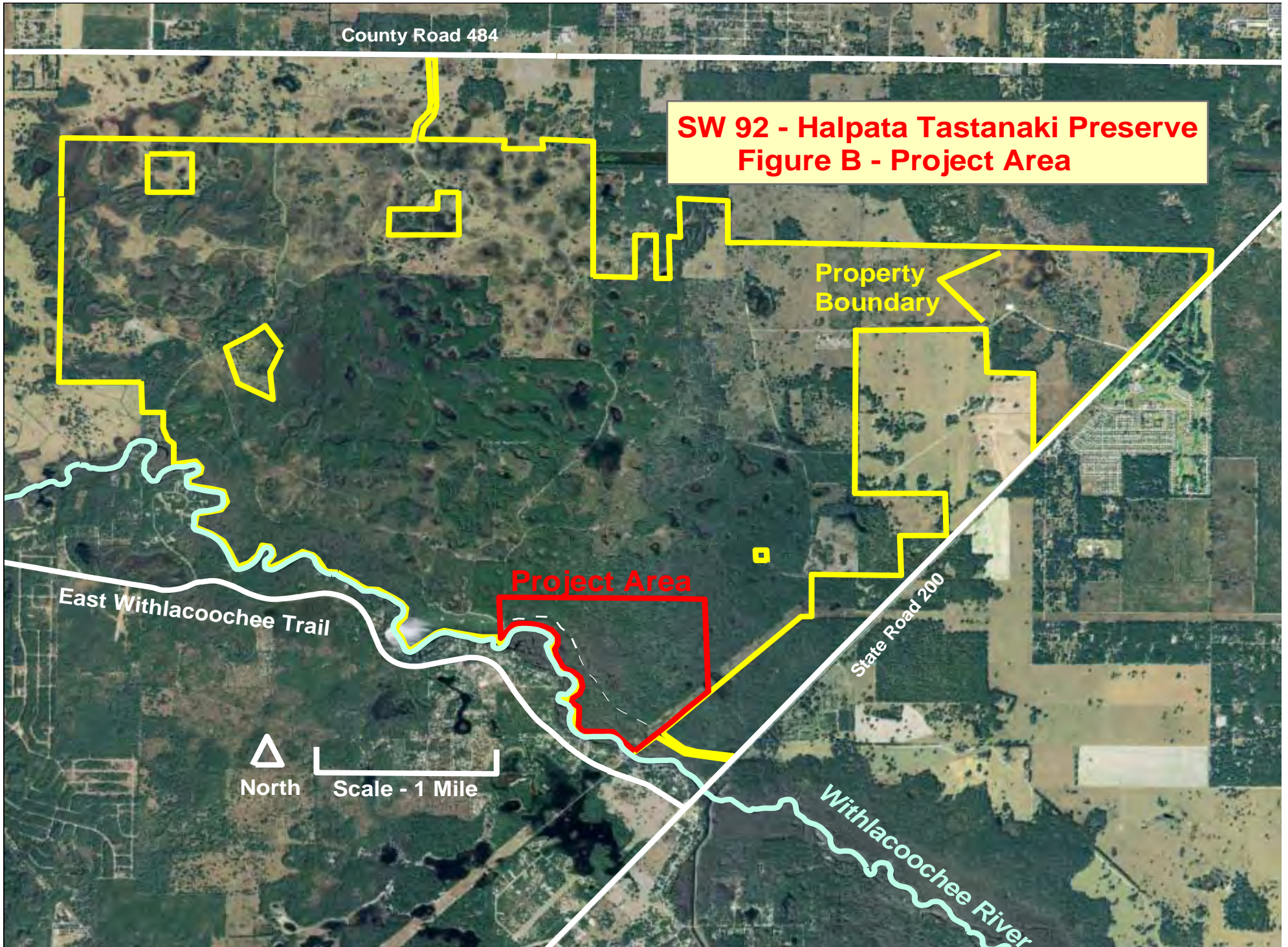
Project Area

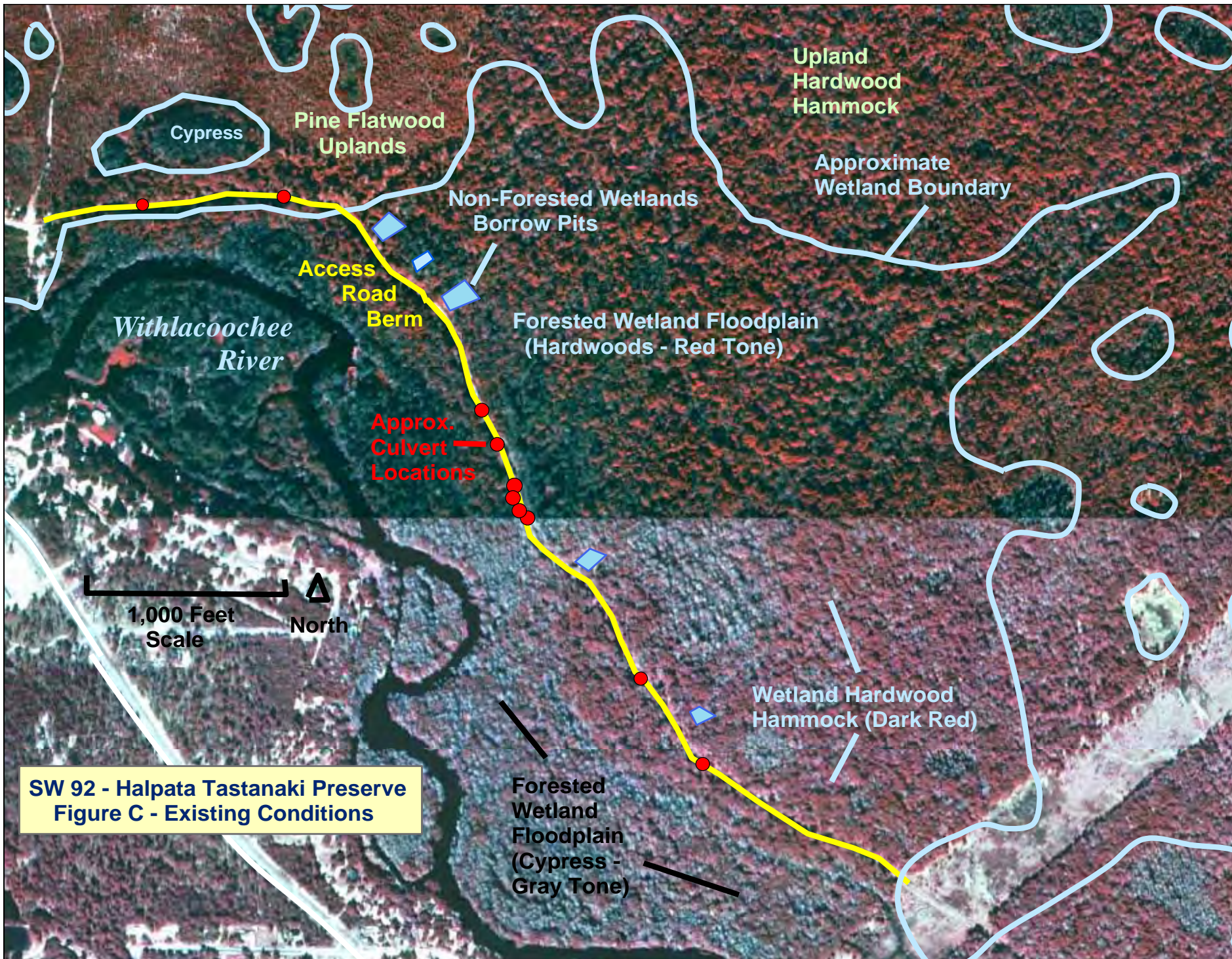
East Withlacoochee Trail

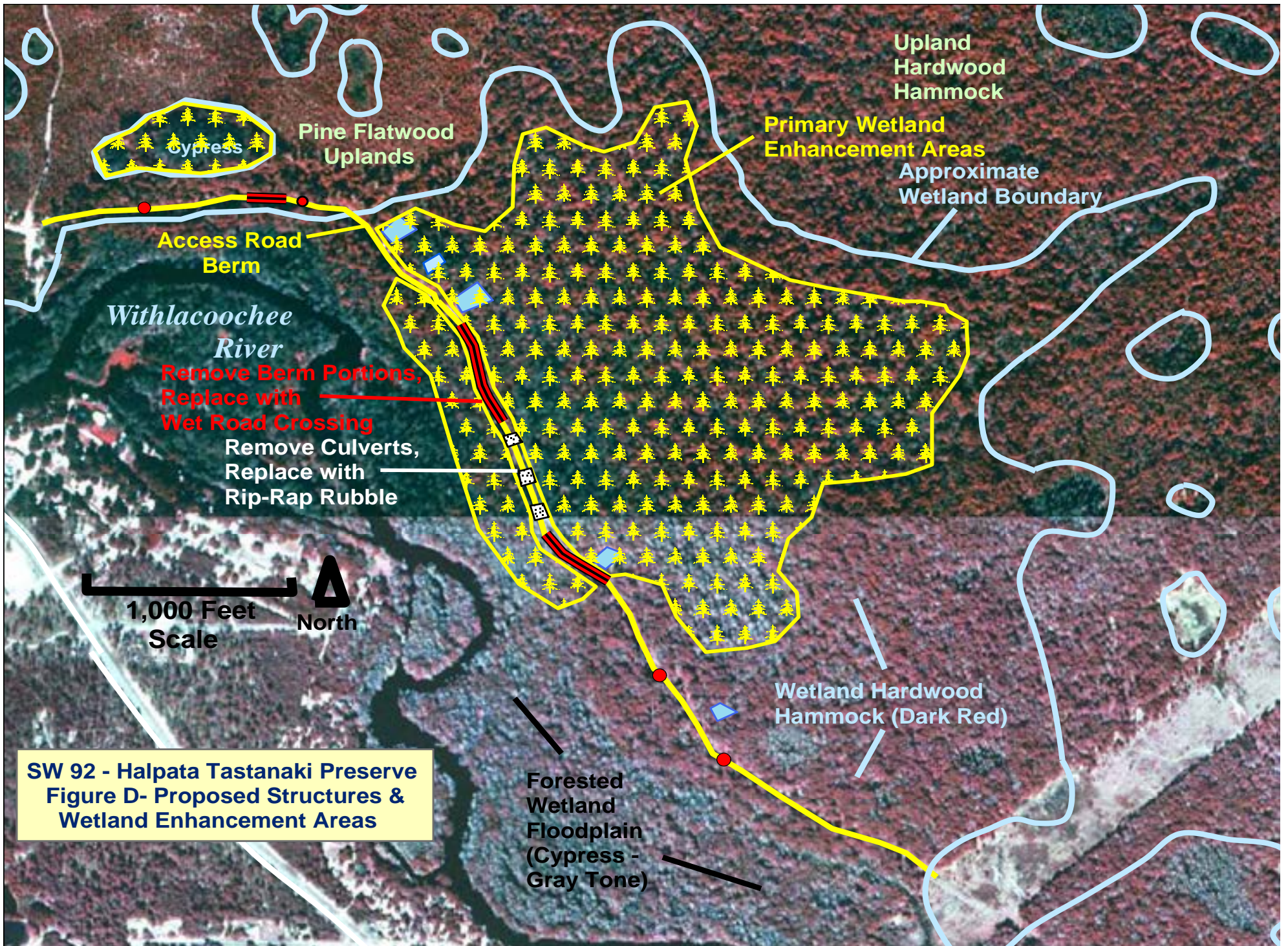
State Road 200

North
Scale - 1 Mile

Withlacoochee River









The Withlacoochee River meanders along the southern boundary of the Halpata Tasthanaki Preserve.



The obligate areas of the wetland floodplain have dominant coverage provided by bald cypress and hardwood species such as tupelo, pop ash, water hickory and red maple. The dark stains of the lower 6 ft. on the trees represent a flood water elevation from the river.

**FDOT Mitigation Site
(Withlacoochee River Basin)**

**HALPATA TASTANAKI PRESERVE
(SW 92)**



The wetland floodplain grade elevation rises and habitat conditions transition to include less cypress and more facultative species such as laurel oak, red maple, sweet gum, and American elm; as well as more ground coverage of low panicums and sedges where the canopy is more open than the obligate zone.



The highest grade elevations are within the southeast portion of the wetland; a hardwood hammock with water oak, cabbage palm, laurel oak, live oak, American elm, and ground coverage of dwarf palmetto and sedges. Flood water elevation indicators are evident within two feet of the surface grade.

**FDOT Mitigation Site
(Withlacoochee River Basin)**

**HALPATA TASTANAKI PRESERVE
(SW 92)**



Downstream end of two culverts that discharge water into a creek channel. The culverts will be removed and replaced with rip-rap rubble that will allow gradual seepage into the channel; extending the hydroperiod and attenuation of surface water in the wetland portion on the upstream side of the berm.



Four of the culverts will remain, however sumps and rip-rap will be placed at the culvert ends to aid in maintaining flow and minimize scouring and undermining of the culverts.

**FDOT Mitigation Site
(Withlacoochee River Basin)**

**HALPATA TASTANAKI PRESERVE
(SW 92)**



Portions of the access road berm will be removed and replaced with Geoweb material and small limerock to maintain a wet road crossing for vehicle access. The cleared path will also continue to provide a beneficial wildlife corridor connector through the forested wetland.



Small borrow ponds exist adjacent to the road; with dominant coverage of spatterdock and duckweed. The ponds provide a valuable water source for wildlife, particularly during the dry season. The proposed berm modifications will allow contributing flood waters to reach, recharge and flush the ponds more often than the current conditions.

**FDOT Mitigation Site
(Withlacoochee River Basin)**

**HALPATA TASTANAKI PRESERVE
(SW 92)**