

13 Appendices

13.1 Lease Agreements

13.1.1 Original Lease Agreement

DIVISION LOG # 3041

AGREEMENT NUMBER 06227

AGREEMENT ROUTING REVIEW FORM

CONTRACTOR DEP / BOT / FWC

VENDOR ID NO. _____ PROCUREMENT METHOD*/BID/RFP NO. _____

PROJECT TITLE LITTLE GATOR CREEK WEA - MANAGEMENT AGREEMENT LEASE 2391

ORIGINATOR/CONTACT D. JERMYN PHONE 488-3831 DIV./OFFICE/MAIL 10

NEW** **AMENDMENT** **RENEWS OR EXTENDS** **PURCHASING USE ONLY: POSTING - 7 DAY:** 72 HR

EXPENDITURE** **REVENUE** **AGREEMENT** **EASEMENT/DEED** **LEASE** (INCLUDES WMA OR FMA LEASES)

AGREEMENT BEGINNING DATE/EXECUTION 11/21/83 END DATE 11/20/2013 OPTION FOR YEARS

TOTAL CONTRACT AMOUNT \$ _____ PAYMENT AMOUNT \$ _____

BILLING PERIODS: **MONTHLY** **QUARTERLY** **ANNUALLY** **OTHER** _____

BUILDING INSURANCE TO BE INCURRED BY THE COMMISSION(LEASES) **NO** **YES** (Notify Property Administrator)

****NEW EXPENDITURE:** (1) Attach a copy of the State Project checklist or, for Existing State Projects, show the CSFA No. _____
CONTRACTS (2) Vendor/Recipient Checklist: Attached? **Yes** **No** - not a State Project per (1) Checklist

ORG. CODE	E.O.	OBJECT CODE	CATEGORY	AMOUNT	PROJECT ID	FY

Certified Minority: **Yes** **No** **Not Available** **Not Appl.** Minority Category _____ (See reverse side for options)

Commodity Code _____ Federal Funds: Agcy _____ CFDA _____

Routing Order for Approval	Approval (Signature)	Date	Comments
1. Project Leader		12/30/17	Budget Sheet is available upon request by external sources. <input type="checkbox"/> Yes <input type="checkbox"/> No
2. Budget Director (Expenditure Only)			Budget Authority: <input type="checkbox"/> Existing <input type="checkbox"/> New
3. Div./Reg./Inst./Off. Dir./Section Leader			
4. Contracts Administrator			
5. Legal			
6. Accounting			Funds Availability: <input type="checkbox"/> Yes <input type="checkbox"/> No
7. Exec./Div./Reg./Inst./Off. Dir. review (check below).			
<input type="checkbox"/> Expenditure Contracts: Return to Originator for Contractor signature. <input type="checkbox"/> Other documents: Send to (circle) Exec./Div./Reg./Inst./Off. Dir. for signature.			Expenditure Contracts: After Contractor signs, send to Exec./Div./Reg./Inst./Off. Director for signature and dating.
8. Exec./Div./Reg./Inst. Dir. execute			
Originator Copy to Accounting*			Send a complete copy of the Contract & Routing Form
Originator to Contracts Administrator*			Send executed Original Contract & Original Routing Form
Originator to OIG FSAA Originals			Send to OIG: Mail Code 1E

FWC 167/rev. 01/08 SHARE\FORMS\CONROUTE.167

*See reverse for Codes/Definitions/Distribution

1/07/10

**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
DIVISION OF HABITAT AND SPECIES CONSERVATION**

MEMORANDUM

Date: March 5, 2007

To: Contract Reviewers

From: Rich Mospens
HSC/THCR

RE: Amendment No. 1 to Lease No. 3291 between the Board of Trustees of the Internal Improvement Trust Fund and the Florida Fish and Wildlife Conservation Commission for the Little Gator Creek Bird Rookery, Pasco County, Florida

Included herewith are two originals of the referenced amendment for your review and execution.

The amendment extends the lease for ten years, exercising the one 10-year renewal option, commencing November 21, 2003 and terminating November 20, 2013. All parties involved had overlooked the fact the original term of the lease had expired.

Please contact me should there be any questions or concerns. Upon each party completing its review, please promptly forward the package to the next party in line as shown on the Contract Routing Review Form. If more expeditious, please contact me at 488-3831, ext. 17289 or by my cell phone at 443-2514 so I may pick up the package and hand deliver it to the next party.

When executing each original of the contract, please remember to have the authorized signature witnessed by two parties and notarized by a notary public, authorized to serve in the State of Florida.

Your prompt attention to this matter would be greatly appreciated. Thank you.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
 RECEIPTS SECTION
 POST OFFICE BOX 3070
 TALLAHASSEE, FL 32315-3070

RECEIVED

Invoice

Date	Invoice #
7/15/2003	9850

BUREAU OF WILDLIFE MANAGEMENT

Bill To MR SCOTT SANDERS FFWCC 620 SOUTH MERIDIAN TALLAHASSEE, FL 32399-1600

Lease #	Due Date
3291	8/14/2003

Description	Rate	Amount
ANNUAL LEASE FEE - UPLANDS 2003/2004 (001015) AGENCY FEE	300.00	300.00
	BWM	
	Date Goods Received _____	
	Date Inspected & Approved _____	
	Date Invoice Received <u>7/24/03</u>	
	773020 <u>10/00</u> • EO <u>80</u>	
	Object <u>499060</u> Equip # _____	
	<u>9200</u> - <u>200</u> - <u>7209</u>	
	(Species) (Act.) (Prj.)	
	Cert. Minority Vendor <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Avail <input checked="" type="checkbox"/> N/A	
	Subtotal	\$300.00
	Sales Tax (6.0%)	\$0.00
	Total	\$300.00
	Balance Due	\$300.00

Journal Transfer Instructions:

SAMAS CODE:
 372024080013710030000

BF OBJ: BF CAT:
 001000 000100

OBJECT CODE:
 001015

F&A USE ONLY:
 37101000000 K4

Michael B. Brooks
 7-25-03
WBS/11/03
 2-25-03

BRING COPY WITH PAYMENT

DEPARTMENT OF ENVIRONMENTAL PROTECTION
 RECEIPTS SECTION
 POST OFFICE BOX 3070
 TALLAHASSEE, FL 32315-3070

REMIT COPY
 WITH PAYMENT

Invoice

Date	Invoice #
7/5/2002	4850

Lease #
3291

Due Date
8/4/2002

Bill To
MR SCOTT SANDERS FFWCC 620 SOUTH MERIDIAN TALLAHASSEE, FLORIDA 32399-1600

*Scott Sanders 7/16/02
 Mr. W. J. [unclear]*

Description	Rate	Amount
AGENCY FEES-UPLANDS (001015) BWM	300.00	300.00
Date Goods Received _____ Date Inspected & Approved _____ Date Invoice Received <u>7/16/02</u> 773020 <u>10100</u> • EO <u>80</u> Object <u>499060</u> Equip # _____ <u>9200</u> - <u>104</u> - <u>7209</u> (Species) (Act.) (Proj.) Cert. Minority Vendor <u>Yes</u> <u>No</u> <u>Not Avail</u> <u>N/A</u>		
Subtotal		\$300.00

Journal Transfer Instructions:
 SAMAS CODE:
 372024080013710030000

BF OBJ: BF CAT:
 001000 000100

OBJECT CODE:
 001015

F&A USE ONLY:
 37101000000 K4

Sales Tax (6.0%)	\$0.00
Total	\$300.00

Balance Due	\$300.00
--------------------	----------

INVOICE

DEPARTMENT OF ENVIRONMENTAL PROTECTION
 RECEIPT SECTION
 POST OFFICE 3070
 TALLAHASSEE, FLORIDA 32315-3070
 Telephone (904) 488-2291

INVOICE NO. 98 0412
 INVOICE DATE 07/01/98
 LEASE NO. 3291

TO: MR SCOTT SANDERS
 FGFWFC
 620 SOUTH MERIDIAN
 TALLAHASSEE, FLORIDA 32399-1600

DUE DATE	DESCRIPTION	97/98 FEE	98/99 FEE	AMOUNT
07/01/98	LITTLE GATOR CREEK BIRD	0.00	300.00	300.00

TO INSURE PROPER CREDIT FOR PAYMENT

1. DEP Divisions- Please send copy of payment request to attention of:

Bonnie Roberts, Bureau of Finance and Accounting, MS 75.

State agencies other than DEP- Please send voucher schedule to attention of:

Bonnie Roberts, Department of Environmental Protection, Bureau of Finance and Accounting, MS 75, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

Non-State agencies- Please return one copy of this invoice with your payment.

2. If you submit an amount different than requested, you must attach a letter of explanation with payment.

3. If you have any questions or comments, please call Tracy Peters at 488-2291.

DIVISION OF STATE LANDS
 BUREAU OF LAND MANAGEMENT SERVICES
 Organization Code 3710-1000-000/D1
 Object Code 001015
 Samas Code 37 20 2 408001 37100000 00 000100 00

BWM
 DATE GOODS RECEIVED 6/24/98
 DATE INSPECTED & APPROVED 11
 DATE INVOICE RECEIVED _____
 DIV 30 RCC 452000 EO 20
 OBJECT 3000 - EQUIP # _____
 PROJECT# 3000 - 113 - 7209
PROG(4) ACT(3) PROJ(4)
 Cert. Minority Vendor Yes No Not Avail. N/A

J. Scott Sanders 7/10/98
Mike Willey 7/14/98

INVOICE

DEPARTMENT OF ENVIRONMENTAL PROTECTION
RECEIPT SECTION
POST OFFICE 3070
TALLAHASSEE, FLORIDA 32315-3070
Telephone (904) 488-2291

INVOICE NO. 96 0412
INVOICE DATE 07/01/96
LEASE NO. 3291

TO: MR FRANK SMITH
FGFWFC
620 SOUTH MERIDIAN
TALLAHASSEE, FLORIDA 32399-1600

DUE DATE	DESCRIPTION	95/96 FEE	96/97 FEE	AMOUNT DUE
07/01/96	LITTLE GATOR CREEK BIRD	0.00	300.00	300.00

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DIVISION OF STATE LANDS
BUREAU OF LAND MANAGEMENT SERVICES
Organization Code 3710-1000-000/D1
Object Code 001015
Samas Code 37 20 2 408001 37100000 00 000100 00

*RCC: 4712
Project: 7209
Object: 432000
J. DeW. Sanders 6/14/96
Frank R. Smith Jr. 6/17/96*

INVOICE

DEPARTMENT OF ENVIRONMENTAL PROTECTION
RECEIPT SECTION
POST OFFICE BOX 3070
TALLAHASSEE, FLORIDA 32315-3070

INVOICE NO. 950412
INVOICE DATE 07/01/95
LEASE NO. 3291 ✓

Telephone (904) 488-2291

TO: MR FRANK SMITH
FGFWFC
620 SOUTH MERIDIAN
TALLAHASSEE, FLORIDA 32399-1600

RECEIVED
SEP 5 1995

BUREAU OF
WILDLIFE MANAGEMENT

DUE DATE	DESCRIPTION	94/95 FEE	95/96 FEE	AMOUNT DUE
07/01/95	LITTLE GATOR CREEK BIRD	0.00	300.00	300.00

TO INSURE PROPER CREDIT FOR PAYMENT

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DIVISION OF STATE LANDS
BUREAU OF LAND MANAGEMENT SERVICES
Organization Code 3710-1000-000/D1
Object Code 001015
Samas Code 37 20 2 408001 37100000 00 000100 00

*RCC: 4712
Project: 7209
Object: 432000
J. Scott Sanders
Frank Smith*

ck

INVOICE

DEPARTMENT OF ENVIRONMENTAL PROTECTION
RECEIPT SECTION
POST OFFICE BOX 3070
TALLAHASSEE, FLORIDA 32315-3070

RECEIVED
FISCAL OFFICE

INVOICE NO. 940412

INVOICE DATE 07/01/94

'94 SEP 23 AM 8 50

Telephone (904) 488-2291

LEASE NO. 3291

TO: MR FRANK SMITH
FGFWFC
620 SOUTH MERIDIAN
TALLAHASSEE, FLORIDA 32399-1600

765
ACC Proj Act
4712 7209 0271
Pay by Journal Transfer
\$300
Frank Smith
Scott Sanders

DUE DATE	DESCRIPTION	93/94 FEE	94/95 FEE	AMOUNT DUE
07/01/94	LITTLE GATOR CREEK BIRD	0.00	300.00	300.00

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BUREAU OF LAND MANAGEMENT SERVICES
Organization Code 3710-1000-000/D1
Object Code 001015
Samas Code 37 20 2 408001 37100000 00 000100 00

FLORIDA GAME AND FRESH WATER FISH COMMISSION

THOMAS L. HIRES, SR.
Chairman, Lake Wales

MRS. GILBERT W. HUMPHREY
Vice-Chairman, Miccosukee

WILLIAM G. BOSTICK, JR.
Winter Haven

C. TOM RAINEY, D.V.M.
Miami

DON WRIGHT
Orlando

ROBERT M. BRANTLY, Executive Director
ALLAN L. EOBERT, Ph.D., Assistant Executive Director



SOUTH REGION
3900 Drane Field Road
Lakeland, Florida 33811
(813) 644-9269
1-800-282-8002

FHS
File
WLO 8-7-5
Little Gator Creek
WEA

7 November 1988

Mr. Gary Kuhl, Executive Director
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 33512-9712

Dear Mr. Kuhl:

The following report is submitted in compliance with the conditions of permit application #401365, and details activities during October at Little Gator Creek Wildlife and Environmental Area.

Progress on the rookery project was slow this month due to the process of verifying additional survey costs. Despite delays, Florida Land Design & Engineering should be submitting the 40% plans this month.

Please feel free to contact me if you have any questions.

Respectfully,

Steven A. Martin
Biological Administrator

SJR

cc: F. Smith
Col. J.O. Brown
M. Luchte
C. Ryan

FLORIDA GAME AND FRESH WATER FISH COMMISSION

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SOUTH REGION
3900 Drane Field Road
Lakeland, Florida 33811
(813) 644-9269
1-800-282-8002

7 November 1988

Mr. Bob Stetler, Dredge & Fill Supervisor
State of Florida Department of Environmental Regulation
7001 Highway 301 North
Tampa, FL 33610

Dear Mr. Stetler:

The following inspection report is submitted in compliance with the special conditions of file number: 511284673.

Water from the mine continues to flow through the area and be discharged at the structures. Levels are low enough to allow work within the boundaries of the weed barrier. Consequently some vegetation was manually removed. Commission personnel continued routine monitoring of the water levels throughout the month.

DATE	TIME	ELEVATION (FT MSL)		RAINFALL (inches)
		Water level staff	Control structure weir	
10/5/88	0900	85.48	84.19	1.10
10/8/88	1230	85.46	84.19	0.00
10/13/88	1600	85.38	84.19	0.00
10/18/88	0830	85.32	84.19	0.00
10/22/88	1400	85.28	84.19	0.00
10/26/88	1200	85.26	84.19	0.00
10/29/88	0900	85.22	84.19	0.00

Mr. Bob Stetler
7 November 1988
Page two

Please feel free to contact me if you have any questions on the above information.

Respectfully,

Steven A. Martin
Biological Administrator

CJR

cc: F. Smith
Col. J.O. Brown
C. Ryan
P. Elliott

MEMORANDUM

June 8, 1987

TO: Steve Martin, Regional Wildlife Management Biologist

FROM: Les J. Rybak ^{QR} Land Management Specialist, Division of Wildlife

SUBJECT: Little Gator Creek Wildlife and Environmental Area

I am working on supplying missing or inadequate information concerning the Little Gator Creek conceptual management plan. Please answer the following statements:

1. The proximity of the property to other significant state, local or federal land or water resources.
2. The location and description of known and reasonably identifiable renewable and non-renewable resources on the property.
3. List water resources including the water quality classification of each water body.
4. Are there any unique natural features such as natural springs, caverns, large sinkholes, virgin timber stands, scenic vistas, natural rivers and streams located in the area?

W451/dr
 WLD 8-5-8

file

FLORIDA GAME AND FRESH WATER FISH COMMISSION

THOMAS L. HIRES, SR. WILLIAM G. BOSTICK, JR. C. TOM RAINEY, D.V.M. J.H. BAROCO MRS. GILBERT W. HUMPHREY
Chairman, Lake Wales Vice-Chairman, Winter Haven Miami Pensacola Miccosukee

ROBERT M. BRANTLY, Executive Director
F.G. BANKS, Assistant Executive Director



FARRIS BRYANT BUILDING
620 South Meridian Street
Tallahassee, Florida 32301
(904) 488-1960

May 9, 1986

The Honorable Curtis Peterson
252 Senate Office Building
Tallahassee, FL 32301

Dear Senator Peterson:

Mr. Jeff Poole of your office recently inquired within the Division of Wildlife regarding management of Little Gator Creek Wildlife and Environmental Area. You may be aware that the situation on this tract is a delicate one in many respects, and that it continues to involve negotiations among International Mineral and Chemicals Corporation (IMC), the Department of Environmental Regulation (DER), Game and Fresh Water Fish Commission and the Southwest Florida Water Management District (SWFWMD). At the time of sale to the state of the Little Gator Creek property by Mr. C. M. Overstreet, an unpermitted IMC dewatering project was in operation. Water from active limerock mines adjacent to the property was being pumped into a slough on Mr. Overstreet's property. In effect, the unpermitted operation was and is supporting an active wading bird breeding area. The avian residents include a colony of endangered wood storks, plus a variety of herons and egrets. Under these circumstances, the land was purchased by the state with Mr. Overstreet responsible, through the purchase agreement, for providing water control in the rookery for a period of five years. No funding for manpower or management has ever been provided to the Commission for operations on Little Gator Creek.

Biologists from the Commission's South Region in Lakeland have worked with Mr. Overstreet, IMC, DER, SWFWMD and others to assist IMC in securing permits, to obtain assurances that water would continue to be supplied to the rookery, and to obtain physical and financial assistance for management from IMC. IMC has agreed to assure the quantity of waters necessary to maintain the health of the rookery. Additionally, the Commission is attempting to negotiate participation in the construction of a shunt ditch and water control structure for the rookery site. Of course, IMC is under no legal obligation to provide the work and materials involved. In light of the Commission's lack of funds and manpower, this agency considers the state's best option to be negotiation with IMC.

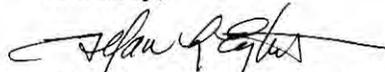
In conversation with Hugh Boyter of my staff, Mr. Poole indicated that Mr. Overstreet has become impatient with the pace of the negotiations, and lack

The Honorable Curtis Peterson
May 9, 1986
Page 2

of management activity on the tract, and he is particularly concerned about the death of hardwoods and pines in the impounded area. All pines and most hardwood species were placed under stress at the time IMC first began pumping water into the slough. Further stress was applied when Mr. Overstreet constructed an earthen dam to impound water in the rookery. A water control structure installed in the dam would allow drawdown, periodically reducing stress on some species. However, even if a structure were currently in place, certain trees would continue to be stressed. This is primarily because the Commission does not intend to dewater the impoundment until all birds have ceased using the rookery each year. That time is always well into the growing season for vegetation. As we view the situation, the Little Gator Creek site will gradually experience a transition from upland species to more aquatic species such as bald cypress, red maple, buttonbush and others. We do not see this as a negative trend, but one that will be beneficial to maintenance of the rookery over the long term. Of course, everyone should recognize that the birds, for reasons unknown, may decide to relocate at any time, regardless of management manipulations. However, a water control structure will allow our land management biologists to better manage the trees and other vegetation by facilitating regeneration of cypress, red maple and other aquatics.

I hope this letter will clarify some of the issues surrounding this very complicated management situation. Particularly because of inadequate staffing and funding, and because of our dependence on IMC for the water source, we are coping with difficult human and wildlife situations. If you have questions, please feel free to contact me or Mr. Hugh Boyter. We may be reached at 904/488-3831.

Sincerely,



Allan L. Egbert, Ph.D., Director
Division of Wildlife

W215/dr
WLD 8-7-5



DEC 8 1983

State of Florida DEPARTMENT OF NATURAL RESOURCES

DR. ELTON J. GISSENDANNER
Executive Director
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, Tallahassee, Florida 32303

BOB GRAHAM
Governor
GEORGE FIRESTONE
Secretary of State
JIM SMITH
Attorney General
GERALD A. LEWIS
Comptroller
BILL GUNTER
Treasurer
DOYLE CONNER
Commissioner of Agriculture
RALPH D. TURLINGTON
Commissioner of Education

November 30, 1983

15
7928
101

Colonel Robert M. Brantly
Executive Director
Florida Game and Fresh Water
Fish Commission
620 South Meridian Street
Tallahassee, Florida 32301

Dear Colonel Brantly:

Enclosed is the executed Lease No. 3291 for Little Gator
Creek Bird Rookery, located in Pasco County. This will
allow for the specified activities which you requested.

Thank you for your continued cooperation regarding the use
of state-owned lands.

Sincerely,

Ted Forsgren, Chief
Bureau of State Lands Management

TF/erc

Enclosure

File Copy

*Distribution made
CO: J.O. BROWN
STEVES MARTIN
Pete Biner
Carleen Thigpen
Dec 12/13/83*

<input checked="" type="checkbox"/>	WILDLIFE
	DEC 12 '83
<input checked="" type="checkbox"/>	DIRECTOR
<input checked="" type="checkbox"/>	ASSISTANT
<input checked="" type="checkbox"/>	ADM. ASSISTANT
<input checked="" type="checkbox"/>	U. CH. LAND MGT.
<input type="checkbox"/>	ASST. LAND MGT.
<input type="checkbox"/>	PLANNING
<input type="checkbox"/>	CURTIS
<input type="checkbox"/>	WILDLIFE
<input type="checkbox"/>	FISH & RECREATION
<input type="checkbox"/>	C. B. BROWN
<input type="checkbox"/>	STATE LANDS
<input checked="" type="checkbox"/>	SECRETARY

12/13/83

DIVISIONS / ADMINISTRATION BEACHES AND SHORES LAW ENFORCEMENT MARINE RESOURCES
RECREATION AND PARKS RESOURCE MANAGEMENT STATE LANDS

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

LEASE AGREEMENT

FOR

LITTLE GATOR CREEK BIRD ROOKERY

No. 3291

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida holds title to certain lands and property being utilized by the State of Florida for public purposes, and

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida is authorized in Section 253.03, Florida Statutes, to enter into leases for the use, benefit and possession of public lands by State agencies which may properly use and possess them for the benefit of the State;

NOW, THEREFORE, this agreement made between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, as LESSOR, and the STATE OF FLORIDA GAME AND FRESH WATER FISH COMMISSION, as LESSEE

WITNESSETH:

The parties, for and in consideration of mutual covenants and agreements hereinafter contained, hereby covenant and agree as follows:

1. The Lessor does hereby lease to the Lessee the following described area in the County of Pasco, State of Florida, together with the improvements thereon, as applicable, and subject to all existing encumbrances, viz:

(Exhibit A - Attached)

TO HAVE AND TO HOLD the above described land for a period of twenty (20) years, with one ten (10) year renewal option, to provide for the following environmental protection and compatible recreation purposes in accordance with Chapter 259, Florida Statutes:

Protect and manage the wood stork rookery and associated endangered species. In addition, preserve the existing fresh-water wetlands which, together with the rookery identify this parcel as a unique and outstanding natural area.

2. It is understood and agreed that the Lessee will prepare a management plan for the area in accordance with the environmental protection and recreation purposes described in paragraph 1 and Section 253.034, Florida Statutes. The management plan will be prepared and presented to the Lessor for approval within twelve (12) months of the date of this lease.

3. Lessee shall not clear, plant, build or alter the property or engage in any activity except as provided for in the approved management plan without the advance written approval of the Executive Director of the Department of Natural Resources as agent for the Lessor.

4. It is understood and agreed that the Lessee shall have responsibility for the protection of the property, and shall through its agents and employees take all reasonable measures to provide security against damage, property degradation and unauthorized uses.

5. The Lessee shall have the right to enter upon said land for all purposes necessary to the full enjoyment by said Lessee of the rights herein conveyed to it.

6. This lease shall terminate at the sole option of the Lessor, when and if said premises, including lands and improvements, shall cease to be used for the environmental protection and compatible recreation purposes described in paragraph 1, and the Lessee shall upon termination surrender up the premises to the Lessor. Any costs arising out of the enforcement of the terms of this lease agreement shall be the exclusive obligation of the Lessee, payable upon demand of the Lessor.

7. The Lessor warrants that it has the right to lease the hereinabove described property, however this lease does not convey a fee simple title.

8. The Lessor or its duly authorized agents shall have the right at any time to inspect the said land and the works and operations thereon of the Lessee in any matter pertaining to this agreement.

9. The managing agency agrees to assist in the investigation of injury or damage claims either for or against the State or the Board pertaining to its respective area of responsibility, or arising out of its respective management programs and activities, and to contact the Board regarding whatever legal action it deems appropriate to remedy same.

10. The Lessee is hereby authorized to grant utility easements which will be necessary to service authorized facilities located within the leased premises. Copies of any such easements granted shall be filed timely with the Lessor.

11. This agreement is for the purposes specified herein, and subleases of any nature, excepting utility easements incident to authorized facilities, (Provision 10), are prohibited, unless previously authorized by the Lessor.

12. The lease may be terminated by mutual agreement of the Lessor and Lessee.

13. Upon termination of lease or cessation of occupation of said property, the Lessee agrees to leave all fixed improvements for the use of the Lessor and to put no claim upon said fixed improvements or at the option of the Lessor, the Lessee agrees to remove any or all improvements on the property at the Lessee's expense.

14. Execution of the agreement in no way affects the Lessee's obligation pursuant to Chapter 267, Florida Statutes.

15. Any inequities that may subsequently arise as a result of this lease shall be subject to negotiation upon written request of either party hereto, and the parties agree to negotiate in good faith. In case of failure by the respective staffs to resolve conflict(s), the matter shall be referred to the Lessor for final resolution.

IN TESTIMONY WHEREOF, the legally designated agent of the Board of Trustees of the Internal Improvement Trust Fund has hereunto subscribed his name and has caused the official seal of the Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed, in the City of Tallahassee, Florida, on this the 21st day of November, A.D. 19 83.



BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA

BY Joseph M. Kala
Division Director, Department of Natural Resources, Agent for the Board of Trustees of the Internal Improvement Trust Fund authorized to execute this instrument for and on its behalf pursuant to Section 253.431, Florida Statutes, and resolution recorded in its minutes of April 15, 1980.

State of Florida Game and Fresh Water Fish Commission

BY Robert M. Beatty

APPROVED AS TO
AND LEGAL SUFFICIENCY
[Signature]
Commission Attorney.

APPROVED AS FISCALLY
AND BUDGETARILY SOUND
William C. Sumner
DIRECTOR
DIVISION OF ADMINISTRATIVE SERVICES

APPROVED AS TO
FORM & CONTENT
[Signature]
DEPARTMENT ATTORNEY

No. 3291

EXHIBIT "A"

✓ ✓ ✓
All Section 24, Township 25 South, Range 22 East,
except NW $\frac{1}{4}$ of the ~~SW $\frac{1}{4}$~~ and the NW $\frac{1}{4}$ of the ~~SW $\frac{1}{4}$~~ , all
in Pasco County, encompassing ~~560~~ ⁵⁶⁶ acres, more or
less.

NE $\frac{1}{4}$

NW $\frac{1}{4}$

thereof and less and except that portion
lying within the right of way of SR 471.

October 14, 1983

Mrs. Elaine Runkle
Bureau of State Lands Management
Department of Natural Resources
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, FL 32303

Dear Mrs. Runkle:

Enclosed are two copies of the lease for Little Gator Creek Bird Rookery which has been executed by the Game and Fresh Water Fish Commission.

Please execute, date, and return one copy of the lease to my attention at your earliest convenience.

Thank you again for your interest in this project.

Sincerely,

TJW 10/16/83

Thomas J. Wright
Administrative Assistant
to the Director
Division of Wildlife

W207ds52
WLD 4-4-1
Enclosure

OCT 17 1983

GAME AND FRESH WATER FISH COMMISSION
CONTRACT REVIEW ROUTING

Brief Title Lease Agreement for Little Gator Creek Bird Rookery

- I. Originator/Contact Person Frank Smith
1. Parties: GFC & Board of Trustees of the Internal Improvement Trust Fund
 2. Region/Office/Division South / Regional / Wildlife
 3. Contract Period Begin/End date of execution to extend 20 yrs with additional 10 yrs renewal option
 4. Type Contract: New Expenditure Renewal Revenue Agreement
 5. Billing Periods: Monthly Quarterly Annually
Other (Specify) None
 6. Appropriation: O.P.S. Expense
 7. Fund: General Revenue State Game Trust Fund
Grants & Donations Trust Fund Other
 8. Indirect Costs: Yes No

Fund	Control	Amount	Object	RCC	FPC
				4033	

- II. Routing For Approval
- | | <u>Concur/Initials</u> | <u>Date</u> |
|--------------------------|------------------------|-----------------|
| 9. Project Leader | <u>Frank Smith</u> | <u>9/30/83</u> |
| 10. Director/Manager | <u>[Signature]</u> | <u>10-3-83</u> |
| 11. Purchasing | <u>WES</u> | <u>10/8/83</u> |
| 12. Finance & Accounting | <u>OK [Signature]</u> | <u>10/5/83</u> |
| 13. Div. Adm. Services | <u>OK WES</u> | <u>10/5/83</u> |
| 14. Legal | <u>[Signature]</u> | <u>10-10-83</u> |
| 15. Executive Director | | |

UPON FINAL EXECUTION - RETURN ALL COPIES TO PURCHASING

Distribution Was Made By Purchasing As Follows:

- Original to Contracts - Central Files Copy to Federal Contract
- Original and Copy to Originator Copy to Accounting
- Other

must return to DNR for final execution.



State of Florida
DEPARTMENT OF NATURAL RESOURCES

DR. ELTON J. GISSENDANNER
Executive Director
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, Tallahassee, Florida 32303

BOB GRAHAM
Governor
GEORGE FIRESTONE
Secretary of State
JIM SMITH
Attorney General
GERALD A. LEWIS
Comptroller
BILL GUNTER
Treasurer
DOYLE CONNER
Commissioner of Agriculture
RALPH D. TURLINGTON
Commissioner of Education

September 26, 1983

Mr. Frank H. Smith, Jr., Chief
Bureau of Wildlife Land Management
Florida Game and Fresh Water
Fish Commission
620 South Meridian Street
Tallahassee, Florida 32301

WILDLIFE	
SEP 30 '83	
___	DIRECTOR
___	ASSISTANT
___	ADM. ASSISTANT
___	CU. CH. LAND MGT.
___	ASST. LAND MGT.
___	PLANNER
___	QUOTA DIRECTOR
___	CU. CH. RESEARCH
___	CU. CH. RESOURCES
___	E. S. COORDINATOR
___	E. S. BIOLOGIST
___	SECRETARY
___	FILE

Dear Frank:

Thank you for your letter of September 9, 1983, indicating a problem in the lease for Little Gator Creek Bird Rookery.

Provision No. 7 has been deleted and provision No. 10 (now No. 9) has been revised to reflect the wording recently agreed to by the "multi-agency managers". Provision No. 9 is now identical to the Tosohatchee agreement.

I apologize for the oversight as it was a word-processing error and assure you all future documents will reflect the "agreed to" clause.

Thank you for calling it to our attention. I have enclosed two (2) copies of the lease to be executed by your department and returned to us for final execution.

Sincerely,

Elaine Runkle
Bureau of State Lands Management

ER/mc

Enclosures

DIVISIONS / ADMINISTRATION BEACHES AND SHORES LAW ENFORCEMENT MARINE RESOURCES
RECREATION AND PARKS RESOURCE MANAGEMENT STATE LANDS

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

LEASE AGREEMENT

FOR

LITTLE GATOR CREEK BIRD ROOKERY

No. 3291

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida holds title to certain lands and property being utilized by the State of Florida for public purposes, and

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida is authorized in Section 253.03, Florida Statutes, to enter into leases for the use, benefit and possession of public lands by State agencies which may properly use and possess them for the benefit of the State;

NOW, THEREFORE, this agreement made between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, as LESSOR, and the STATE OF FLORIDA GAME AND FRESH WATER FISH COMMISSION, as LESSEE

WITNESSETH:

The parties, for and in consideration of mutual covenants and agreements hereinafter contained, hereby covenant and agree as follows:

1. The Lessor does hereby lease to the Lessee the following described area in the County of Pasco, State of Florida, together with the improvements thereon, as applicable, and subject to all existing encumbrances, viz:

(Exhibit A - Attached)

TO HAVE AND TO HOLD the above described land for a period of twenty (20) years, with one ten (10) year renewal option, to provide for the following environmental protection and compatible recreation purposes in accordance with Chapter 259, Florida Statutes:

Protect and manage the wood stork rookery and associated endangered species. In addition, preserve the existing fresh-water wetlands which, together with the rookery identify this parcel as a unique and outstanding natural area.

2. It is understood and agreed that the Lessee will prepare a management plan for the area in accordance with the environmental protection and recreation purposes described in paragraph 1 and Section 253.034, Florida Statutes. The management plan will be prepared and presented to the Lessor for approval within twelve (12) months of the date of this lease.

3. Lessee shall not clear, plant, build or alter the property or engage in any activity except as provided for in the approved management plan without the advance written approval of the Executive Director of the Department of Natural Resources as agent for the Lessor.

4. It is understood and agreed that the Lessee shall have responsibility for the protection of the property, and shall through its agents and employees take all reasonable measures to provide security against damage, property degradation and unauthorized uses.

5. The Lessee shall have the right to enter upon said land for all purposes necessary to the full enjoyment by said Lessee of the rights herein conveyed to it.

6. This lease shall terminate at the sole option of the Lessor, when and if said premises, including lands and improvements, shall cease to be used for the environmental protection and compatible recreation purposes described in paragraph 1, and the Lessee shall upon termination surrender up the premises to the Lessor. Any costs arising out of the enforcement of the terms of this lease agreement shall be the exclusive obligation of the Lessee, payable upon demand of the Lessor.

7. The Lessor warrants that it has the right to lease the hereinabove described property, however this lease does not convey a fee simple title.

8. The Lessor or its duly authorized agents shall have the right at any time to inspect the said land and the works and operations thereon of the Lessee in any matter pertaining to this agreement.

9. The managing agency agrees to assist in the investigation of injury or damage claims either for or against the State or the Board pertaining to its respective area of responsibility, or arising out of its respective management programs and activities, and to contact the Board regarding whatever legal action it deems appropriate to remedy same.

10. The Lessee is hereby authorized to grant utility easements which will be necessary to service authorized facilities located within the leased premises. Copies of any such easements granted shall be filed timely with the Lessor.

11. This agreement is for the purposes specified herein, and subleases of any nature, excepting utility easements incident to authorized facilities, (Provision 10), are prohibited, unless previously authorized by the Lessor.

12. The lease may be terminated by mutual agreement of the Lessor and Lessee.

13. Upon termination of lease or cessation of occupation of said property, the Lessee agrees to leave all fixed improvements for the use of the Lessor and to put no claim upon said fixed improvements or at the option of the Lessor, the Lessee agrees to remove any or all improvements on the property at the Lessee's expense.

14. Execution of the agreement in no way affects the Lessee's obligation pursuant to Chapter 267, Florida Statutes.

15. Any inequities that may subsequently arise as a result of this lease shall be subject to negotiation upon written request of either party hereto, and the parties agree to negotiate in good faith. In case of failure by the respective staffs to resolve conflict(s), the matter shall be referred to the Lessor for final resolution.

IN TESTIMONY WHEREOF, the legally designated agent of the Board of Trustees of the Internal Improvement Trust Fund has hereunto subscribed his name and has caused the official seal of the Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed, in the City of Tallahassee, Florida, on this the _____ day of _____, A.D. 19_____.

(SEAL)
BOARD OF TRUSTEES OF THE
INTERNAL IMPROVEMENT
TRUST FUND

BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND OF THE
STATE OF FLORIDA

BY
Division Director, Department of
Natural Resources, Agent for the
Board of Trustees of the Internal
Improvement Trust Fund authorized
to execute this instrument for
and on its behalf pursuant to
Section 253.431, Florida Statutes,
and resolution recorded in its
minutes of April 15, 1980.

State of Florida Game and Fresh
Water Fish Commission

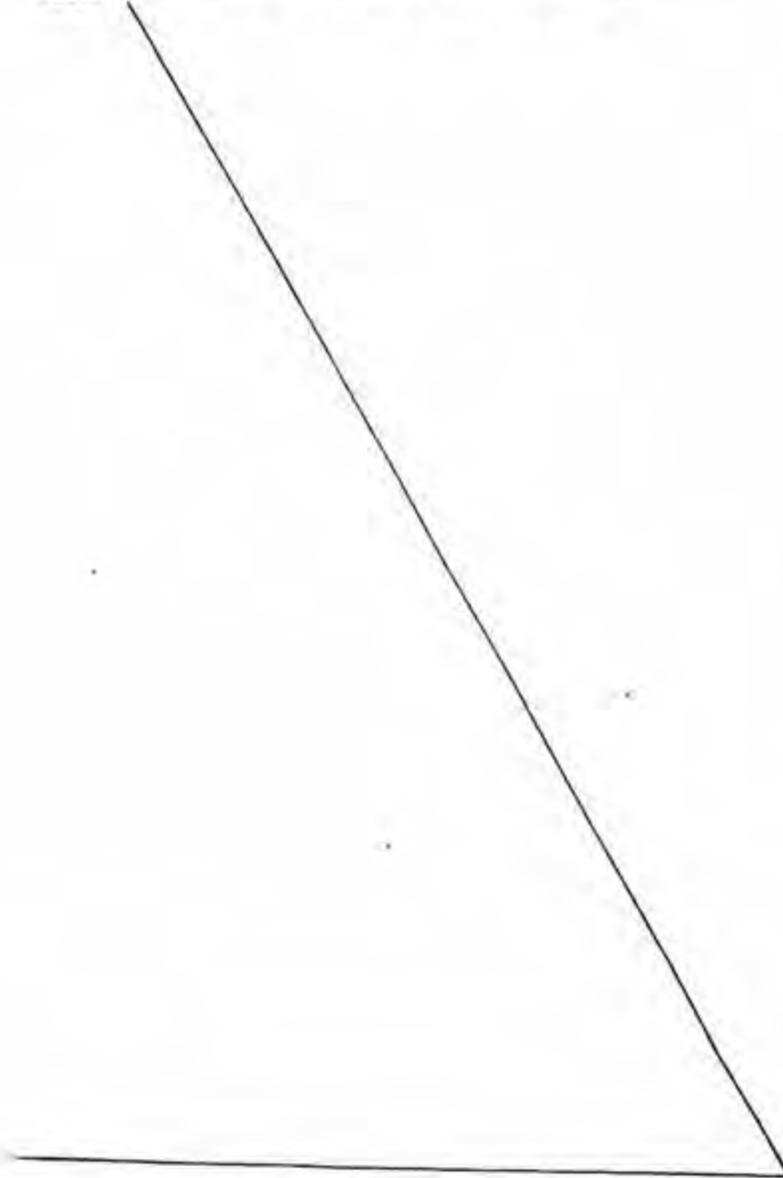
BY Robert M. Beatty

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY
[Signature]
Commission Attorney

APPROVED AS FISCALLY
AND BUDGETARILY SOUND
William C. Sumner
DIRECTOR
DIVISION OF GAME AND FISH COMMISSION

EXHIBIT "A"

All Section 24, Township 25 South, Range 22 East,
except NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ and the NW $\frac{1}{4}$ of the NE $\frac{1}{4}$, all
in Pasco County, encompassing 560 acres, more or
less.





AUG 23 1983

State of Florida DEPARTMENT OF NATURAL RESOURCES

DR. ELTON J. GISSENDANNER
Executive Director
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, Tallahassee, Florida 32303

BOB GRAHAM
Governor
GEORGE FIRESTONE
Secretary of State
JIM SMITH
Attorney General
GERALD A. LEWIS
Comptroller
BILL GUNTER
Treasurer
DOYLE CONNER
Commissioner of Agriculture
RALPH D. TURLINGTON
Commissioner of Education

August 22, 1983

Col. Robert M. Brantly
Game and Fresh Water Fish Commission
Bryant Building
Tallahassee, Florida 32301

Dear Col. Brantly:

Lease Agreement No. 3291
Pasco County - Little Gator Creek
Bird Rookery

<input checked="" type="checkbox"/>	WILDLIFE
	AUG 24 1983
	<i>718</i>
	DIRECTOR
	ASSISTANT
1. <input checked="" type="checkbox"/>	ADM. ASSISTANT
2. <input checked="" type="checkbox"/>	CU. CH. LAND MG.
	ASST. LAND MGT.
	PLANNER
	QUOTA DIRECTOR
	CU. CH. RESEARCH
	CU. CH. RESOURCES
	F. S. COORDINATOR
	F. S. BIOLOGIST
	SECRETARY
	CLERK

200 8/24/83
205

Enclosed, in duplicate, for signature approval of the Game and Fresh Water Fish Commission is the above-referenced lease agreement.

Upon execution of both copies of this document by your office, please return them to us for further processing.

Sincerely,

Elaine G. Runkle
Land Planner
Bureau of State Lands Management

ER/mc

Enclosures

DIVISIONS / ADMINISTRATION LAW ENFORCEMENT MARINE RESOURCES
RECREATION AND PARKS RESOURCE MANAGEMENT STATE LANDS

**LARGE FOLD OUT MAPS
FOR THIS FILE ARE
LOCATED WITH DALE
JERMYN AND HIS FILES
WITHIN THE OFFICE OF
HABITAT AND SPECIES
OFFICE AT SOUTH END
OF 3RD FLOOR.**

A handwritten signature or set of initials, possibly 'R', enclosed within a hand-drawn circle.

13.1.2 Establishment Order

Establishment Order No.: WE 84-1 Little Gator Creek
Wildlife and Environmental
Area

The Game and Fresh Water Fish Commission of the State of Florida, under and by virtue of the power and authority granted under Section 9, Article IV of the Florida Constitution, and Rules and Regulations of the Commission hereby establishes the Little Gator Creek Wildlife and Environmental Area in Pasco County by the following legal description:

Township 25 North, Range 22 East, Section 20 less the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ and the NW $\frac{1}{4}$ of the NE $\frac{1}{4}$.

Authority: Section 9, Article IV, Fla. Const.
Effective Date:

GIVEN UNDER MY HAND AND SEAL OF THE
GAME AND FRESH WATER FISH COMMISSION
OF THE STATE OF FLORIDA, THIS 11/20
DAY OF May, 1984.

Robert M. Brantly
Colonel Robert M. Brantly
Executive Director

FILED
MAY 17 4 20 PM '84

ORD2L-1

13.1.3 Amendments Extending the Original Lease

DIVISION LOG # 1707

CONTRACT NUMBER 06227
(no previous number on file)

CONTRACT ROUTING REVIEW FORM

CONTRACTOR BOT OF IITF AND FWC

VENDOR ID NO. _____ PROCUREMENT METHOD*/BID/RFP NO. _____

PROJECT TITLE AMENDMENT 1 TO LEASE 3291, EXTEND LEASE TO 11/20/2013 FOR LITTLE GATOR CREEK BIRD ROOKERY

ORIGINATOR/CONTACT RICH MOSPENS PHONE 488-3831, EXT 17289 DIV./OFFICE/MAIL HSC/IHCR

NEW** AMENDMENT RENEWS OR EXTENDS **BOO USE ONLY: REQUIRED POSTING 7 DAY:** 72 HR

EXPENDITURE** REVENUE AGREEMENT EASEMENT/DEED LEASE (INCLUDES WMA OR FMA LEASES)

CONTRACT BEGINS: DATE EXECUTED OR _____ END DATE 11/20/2013 OPTION FOR _____ YEARS

TOTAL CONTRACT AMOUNT \$ _____ PAYMENT AMOUNT \$ _____

BILLING PERIODS: MONTHLY QUARTERLY ANNUALLY OTHER _____

BUILDING INSURANCE TO BE INCURRED BY THE COMMISSION (LEASES) NO YES (Notify Property Administrator)

****NEW EXPENDITURE:** (1) Attach a copy of the State Project checklist or, for Existing State Projects, show the CSFA No. N/A
CONTRACTS (2) Vendor/Recipient Checklist: Attached? Yes No - not a State Project per (1) Checklist

ORG. CODE	E.O.	OBJECT CODE	AMOUNT	PROJECT ID	FY

Certified Minority: Yes No Not Available Not Appl. Minority Category _____ (See reverse side for options)

Commodity Code _____ FLAIR: Yes No Federal Funds: Agency _____ CFDA _____

Routing Order for Approval	Approval (signature)	Date	Comments
1. Project Leader	<i>M. Brooks</i>	3/5/07	
2. Bur. of Office Operations	<i>D. S. [Signature]</i>	3/8/07	
3. Legal	<i>[Signature]</i>	3/21/07	
4. Dir. of Auditing Signature for Receipt Not Approval	<i>[Signature]</i>	3/28/07	<i>for Trevor Phillips</i>
5. Division Director execute	<i>Eileen J. Meyer</i>	3/26/07	
Originator to Bur. of Office Ops.			Send executed Original Contract and Routing Slip to BOO
Bur. of Office Ops. to Central Files	<i>A. Small</i>	1/25/08	

BWM/patti/contracts/dsl amendment rtg sheet revised

**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
DIVISION OF HABITAT AND SPECIES CONSERVATION**

MEMORANDUM

Date: December 10, 2007

To: Brent Panuicki, Records

CC: Jeff McGrady, w/ amendment
David Alden, w/ cover memo only
Rosa Torres, w, cover memo only

From: Rich Mospens 
HSC/THCR

RE: Amendment No. 1 to Lease No. 3291 between the Board of Trustees of the Internal Improvement Trust Fund and the Florida Fish and Wildlife Conservation Commission for the Little Gator Creek Bird Rookery, Pasco County, Florida

Included herewith please find a fully executed original of the referenced amendment, which extends the lease for ten years, exercising the one 10-year renewal option, commencing November 21, 2003 and terminating November 20, 2013. All parties involved had overlooked the fact the original term of the lease had expired. Also included is a contract routing form.

Let me know if there are any questions pertaining to this matter.

ATL1

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT
TRUST FUND OF THE STATE OF FLORIDA

AMENDMENT NUMBER 1 TO LEASE NUMBER 3291

THIS LEASE AMENDMENT is entered into this 3rd day of April,
2007, by and between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST
FUND OF THE STATE OF FLORIDA, hereinafter referred to as "LESSOR" and FLORIDA
FISH AND WILDLIFE CONSERVATION COMMISSION, successor in interest to State of
Florida Game and Fresh Water Fish Commission, hereinafter referred to as
"LESSEE";

W I T N E S S E T H

WHEREAS, LESSOR, by virtue of Section 253.03, Florida Statutes, holds
title to certain lands and property for the use and benefit of the State of
Florida; and

WHEREAS, on November 21, 1983, LESSOR and LESSEE entered into Lease
Number 3291; and

WHEREAS, LESSOR and LESSEE desire to amend the lease to renew this lease
for an additional ten (10) years.

NOW THEREFORE, in consideration of the mutual covenants and agreements
contained herein, the parties hereto agree as follows:

1. The term of the leased premises set forth in Paragraph 1 of Lease Number
3291 is hereby amended to renew this lease an additional ten (10) years from
November 21, 2003, to November 20, 2013.
2. It is understood and agreed by LESSOR and LESSEE that in each and every
respect the terms of the Lease Number 3291, except as amended, shall remain
unchanged and in full force and effect and the same are hereby ratified,
approved and confirmed by LESSOR and LESSEE.

IN WITNESS WHEREOF, the parties have caused this Lease
Amendment to be executed on the day and year first above written.

BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND OF THE
STATE OF FLORIDA

Judy Woodard
Witness
Judy Woodard
Print/Type Witness Name

By: Gloria C. Barber (SEAL)
GLORIA C. BARBER, OPERATIONS
AND MANAGEMENT CONSULTANT
MANAGER, BUREAU OF PUBLIC LAND
ADMINISTRATION, DIVISION OF
STATE LANDS, STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

[Signature]
Witness
Alexandra Alexandre
Print/Type Witness Name

"LESSOR"

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 3rd day of April, 2007, by Gloria C. Barber, Operations and Management Consultant Manager, Bureau of Public Land Administration, Division of State Lands, State of Florida Department of Environmental Protection, as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. She is personally known to me.

[Signature]
Notary Public, State of Florida

Print/Type Notary Name: Diane C Rogowski
Commission # DD539673
Expires May 24 2010
Commission Number: [Seal]
Bonded Troy Farm Insurance, Inc. 800-365-7019

Commission Expires:

Approved as to Form and Legality
By: [Signature]
DEP Attorney

FLORIDA FISH AND WILDLIFE CONSERVATION
COMMISSION

[Signature]
Witness

RICHARD C MOSPENS
Print/Type Witness Name

Magda Saliman
Witness

Magda Soliman
Print/Type Witness Name

By: Edwin J Mayer (SEAL)

Edwin J Mayer
Print/Type Name

Title: Dep Dir, HSC

"LESSEE"

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY

[Signature]
Commission Attorney

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 26th day of March, 20 07, by Edwin J Mayer as Dep Dir, HSC, on behalf of Florida Fish and Wildlife Conservation Commission. He is personally known to me.

[Signature]
Notary Public, State of Florida

Print/Type Notary Name

Commission Number:

Commission Expires:



P S McChesney
Commission # DD524435
Expires April 28, 2010
Barnett Trust/First Insurance, Inc. 900-385-7999

13.2 Public input

13.2.1 Management Advisory Group Meeting Results

**Florida Fish and Wildlife Conservation Commission
Little Gator Creek Wildlife and Environmental Area
Management Advisory Group
Meeting Results**

February 22, 2012

The intent of convening a consensus meeting is to involve a diverse group of stakeholders in assisting the Florida Fish and Wildlife Conservation Commission (FWC) in development of a rational management concept for **lands within the agency's managed area system**. FWC accomplishes this by asking spokespersons for these stakeholder groups to participate in a half-day meeting to provide ideas about how FWC-managed lands should be protected and managed.

The Little Gator Creek Wildlife and Environmental Area (LGCWEA) management advisory group (MAG) consensus-building meeting was held on the morning of February 22, 2012 at the Florida Bass Conservation Center, in Webster, Florida. The priority ranked ideas found below were provided by stakeholders for consideration in the development of the 2013 - 2023 LGCWEA management plan. These ideas represent a valuable source of information to be used by FWC biologists, planners, administrators and others during the development of the management plan. Upon approval by FWC, the Acquisition and Restoration Council (ARC) and the Board of Trustees of the Internal Improvement Trust Fund (Governor and Cabinet), the LGCWEA management plan will guide the management activities of FWC personnel over the ten-year duration of the plan, and will help meet agency, state, and federal planning requirements.

Numbers listed below to the left of **bold-faced ideas** generated by the MAG participants represent the rank, total number of votes, and priority score for each idea. In building and accepting a consensus, rank is first determined by the total number of votes (vote cards received) for each idea, and then by priority score. Priority score is only considered in breaking ties where two or more ideas have the same number of votes. A lower priority **score indicates higher importance because each voter's most important idea (recorded as priority #1 on the voting card) received a score of 1; a fifth most important idea (recorded as priority #5 on the voting card) received a score of 5**. Ideas not receiving any votes are listed, and were considered during the development of the management plan, but carry no judgment by the MAG with regard to priority.

Statements following the bold-faced ideas represent a synopsis of the clarifying discussion of ideas as transcribed and interpreted by the FWC recorder at the meeting. As indicated above, the ideas below are presented in the MAG's priority order:

RESULTS

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
1.	[8]	[9]	8. Manage the area for the purpose of acquisition; develop a hydrological plan; manage appropriate water level for the wood stork rookery between February 15th and May 1st. Maintain and enhance the rookery; reestablish native fisheries within the rookery swamp. Clarification: Enhance and maintain the rookery; the rookery must have water for it to function properly during nesting season. The birds start looking for nesting sites in early February. It will take two to three years to build the Rookery up again. The Rookery helps sustain the Withlacoochee River.
2.	[7]	[25]	11. Promote the area to the general public for the purpose the property was acquired. Potential education and recreational opportunities exist; include appropriate by permit only public access for educational purposes; provide guided tours of rookery: Clarification: Need to get the information out to the public why we acquired the property. Need to implement a outreach program to the public.
<i>Two items of equal rank:</i>			
3.	[6]	[22]	2. Control invasive and exotic plant and animal species. Clarification: Control invasive exotic plants (e.g. cogon grass, water lettuce, etc.) and animal (e.g. wild hog, coyote) species.
3.	[6]	[22]	16. Properly post the property and develop regulation pamphlet and web page information; coordinate with Law Enforcement for management and develop Law Enforcement management objectives; identify sovereign submerged lands. Clarification: Properly fence and post the area. Posting and fencing would help Law Enforcement in their duties.
5.	[5]	[13]	1. Promote prescribed fire. Clarification: Continue to use prescribed fire as a management tool. Develop and implement an updated prescribed fire plan.

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
6.	[2]	[5]	3. Restore native ground cover; restore long leaf pine to appropriate sites. Clarification: Restore native ground cover; control native invasive plant species (e.g. saw palmetto and hardwoods) by mechanical means (e.g. roller chopping) and prescribed fire.

Two items of equal rank:

7.	[2]	[8]	9. Development and implement a Wildlife Conservation Prioritization and Recovery (WCPR) strategy for focal and imperiled species. Clarification: FWC's WCPR program develops specific management objectives and monitoring protocols for select imperiled and focal wildlife species.
----	-----	-----	--

7.	[2]	[8]	14. Implement limited entry and supervised mobility impaired hunting opportunities. Clarification: Implement an annual limited entry drawing; charge a small fee to hunt deer, turkey, hogs, etc. The area should not be open to everyone. Consider wounded warrior program, mobility impaired and possible youth hunts.
----	-----	-----	---

Two items of equal rank:

9.	[1]	[4]	7. Assure compatible adjacent land use. Clarification: Assure adjacent lands have a compatible land use. Majority is in State ownership, but may need to use conservation easements or land stewardship programs on nearby property to make sure they remain compatible with State ownership.
----	-----	-----	--

9.	[1]	[4]	15. Protect preserve and maintain cultural resources. Clarification: Locate and monitor cultural resources. Protect the cultural resources through law enforcement and proper management practices.
----	-----	-----	--

The following item received no votes:

11.	[0]	[0]	13. Identify potential revenue generation. Clarification: Identify opportunities to generate revenue (any potential for timber harvest, etc.).
-----	-----	-----	---

**Little Gator Creek Wildlife and Environmental Area
MAG Meeting Participants**

Name

Affiliation

Active Participants

Josh Agee	FWC Area Biologist
Joe Wolff	FWC Law Enforcement
Butch Mallett	Florida Forest Service
Will Miller	Southwest Florida Water Management District
Scott Spaulding	Florida Department of Environmental Protection - Colt Creek State Park
Wendel Martinkoir	Florida Native Plant Society
Mark Overstreet	Adjacent Land Owner
Freddy Jenkins	Adjacent Land Owner

Supportive Participants

Jeff McGrady	FWC Regional Biologist
Victor Echaves	FWC District Biologist
Jennifer Myers	FWC Conservation Biologist
Tom M. Matthews	FWC Office of Public Access and Wildlife Viewing
Kenneth Duke	FWC Wildlife Technician

Invited but Unable to Attend

Ted Schrader	Pasco County Commissioners
Linda Vanderveen	President Hernando County Audubon Society
Richard Gehrig	Pasco County Planning Department
Mary Glowacki	Florida's Department of State's Division of Historical Resources
Sine A. Murray	Florida Department of Environmental Protection - Planning Manager, Office of Park Planning
Greg Hendricks	Soil and Water Conservation District
Dan Hipes	Florida Natural Areas Inventory

FWC Conservation Planning Staff

David Alden	Facilitator
Tom Houston	Recorder
Gary Cochran	Conservation Acquisition and Planning Administrator

13.2.2 Public Hearing Notice, Advertisements, and Press Release

NOTICE

The Florida Fish and Wildlife Conservation Commission
Announces a

PUBLIC HEARING

For the

Little Gator Creek

Wildlife and Environmental Area

Management Plan

Pasco County, Florida

7:00 P.M. Tuesday, March 27, 2012

West Pasco Government Center
8731 Citizens Drive, Suite 150
New Port Richey, FL 34654

PURPOSE: To receive public comment regarding considerations for the FWC ten-year Management Plan for the Little Gator Creek Wildlife and Environmental Area (WEA). This hearing is being held exclusively for discussion of the *DRAFT* Little Gator Creek WEA Management Plan.

A Management Prospectus for the Little Gator Creek WEA is available upon request. For a copy, please contact David Alden, Florida Fish and Wildlife Conservation Commission, Conservation Acquisition and Planning, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Telephone: (850) 487-9588.

Pasco Times

Published Daily

Port Richey, Pasco County, Florida

STATE OF FLORIDA }
COUNTY OF Pasco } S.S.

Before the undersigned authority personally appeared **L. Phillips** who on oath says that he/she is **Legal Clerk** of the **Pasco Times**, an edition of the **Tampa Bay Times** a daily newspaper published at Port Richey, in Pasco County, Florida; that the attached copy of advertisement, being a **Legal Notice** in the matter **RE: Public Hearing LGCWEA** was published in said newspaper in the issues of **Classified Pasco**, **3/24/2012** and **3/25/2012**.

Affiant further says the said **Pasco Times**, an edition of the **Tampa Bay Times** is a newspaper published at Port Richey, in said Pasco County, Florida; and that the said newspaper has heretofore been continuously published in said Pasco County, Florida; each day and has been entered as second class mail matter at the post office in Port Richey, in said Pasco County, Florida; for a period of one year next preceding the first publication of the attached copy of advertisement, and affiant further says that he /she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

[Handwritten Signature: L. Phillips]

Signature of Affiant

Sworn to and subscribed before me
this **27th** day of **March** A.D. **2012**



[Handwritten Signature: Jessica Attard]
Signature of Notary Public

Personally known or produced identification _____

Type of identification produced _____

NOTICE:
The Florida Fish and Wildlife Conservation Commission announces a **PUBLIC HEARING** for the Little Gator Creek Wildlife and Environmental Area located in Pasco County, Florida.
7:05 P.M. Tuesday, March 27, 2012
West Pasco Government Center
8731 Citizens Drive, Suite 108
New Port Richey, FL 34684
PURPOSE: To receive public comment regarding considerations for FWC's ten-year Management Plan for the Little Gator Creek Wildlife and Environmental Area (LGCWEA).
This hearing is designed exclusively for discussion of the draft management plan. A Management Prospectus for Little Gator Creek WEA is available upon request from the Florida Fish and Wildlife Conservation Commission, Conservation Planning Group, 626 South Meridian Street, Tallahassee, Florida 32399-1600. Telephone: (904) 487-9982 or (800) 487-9588 or by e-mail at Rebecca.Shelton@myFWC.com. 1003713658 3/24/12, 3/25/12

A copy of the agenda may be obtained by contacting: Kat Diersen, Florida Fish and Wildlife Conservation Commission, Species Conservation Planning Section, 620 South Meridian Street, MS #2A, Tallahassee, FL 32399-1600, (850)921-1023, katherine.diersen@myfwc.com.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 5 days before the workshop/meeting by contacting: The ADA Coordinator at (850)488-6411. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For more information, you may contact: Kat Diersen, Florida Fish and Wildlife Conservation Commission, Species Conservation Planning Section, 620 South Meridian Street, MS #2A, Tallahassee, Florida 32399-1600, (850)921-1023, katherine.diersen@myfwc.com.

The **Fish and Wildlife Conservation Commission** announces a hearing to which all persons are invited.

DATE AND TIME: Tuesday, March 27, 2012, 7:00 p.m.

PLACE: Pasco County City Commission Chambers, West Pasco Government Center, 8731 Citizens Drive, Suite 150, New Port Richey, FL 34654

GENERAL SUBJECT MATTER TO BE CONSIDERED: The purpose of this hearing is to receive public comment on a draft of a 10-year management plan the FWC is developing for the Little Gator Creek WEA, in Pasco County. Components of the draft management plan will be presented to the public, followed by a question-and-answer session and public testimony.

For more information, you may contact: A management prospectus for the Little Gator Creek WEA is available upon request from the FWC's Conservation Acquisition and Planning group. Call Rebecca Shelton at (850)487-9982 or David Alden: (850)487-9588 or e-mail: Rebecca.Shelton@MyFWC.com for the prospectus.

FINANCIAL SERVICES COMMISSION

The **Office of Insurance Regulation** announces a hearing to which all persons are invited.

DATE AND TIME: March 29, 2012, 9:00 a.m.

PLACE: Room 116, Larson Building, 200 East Gaines Street, Tallahassee, Florida

GENERAL SUBJECT MATTER TO BE CONSIDERED: Amica Mutual Insurance Company has requested a 24.4% overall rate increase for its homeowners line of coverage. The

proposed rate increase would be effective May 1, 2012 for new business and renewal business. The requested rate increase is not uniform. Some areas are subject to a higher rate increase.

Florida law allows the Office of Insurance Regulation to hold a public hearing for any purpose within the scope of the Insurance Code deemed to be necessary. Input from the insurers as well as interested parties will be received at this public hearing. If you are unable to attend this public hearing, please forward your comments to the Office of Insurance Regulation at ratehearings@foir.com; the subject line of your e-mail should read "Amica Mutual."

A copy of the agenda may be obtained by contacting: Bruce Culpepper, Assistant General Counsel, (850)413-4139 and Cindy Walden (850)413-2616.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Cindy Walden, (850)413-2616 or e-mail her at: cindy.walden@foir.com. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For more information, you may contact: Bruce Culpepper, Assistant General Counsel, (850)413-4139 and Cindy Walden, (850)413-2616.

DEPARTMENT OF MILITARY AFFAIRS

The **Department of Military Affairs** announces a public meeting to which all persons are invited.

DATE AND TIME: March 17, 2012, 7:15 a.m.

PLACE: St. Francis Barracks, 82 Marine Street, State Quartermaster Finance & Accounting Conference Room, St. Augustine, Florida 32084

GENERAL SUBJECT MATTER TO BE CONSIDERED: Armory Board Meeting. The Armory Board will consider action on contracts, leases, agreements and other business relative to real property and facility management issues under its control.

A copy of the agenda may be obtained by contacting: Sondra Vaughn, (904)823-0201.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 3 days before the workshop/meeting by contacting: Sondra Vaughn, (904)823-0201. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

For immediate release: February 27, 2012
SW Contact: Gary Morse, 863-678-3852
NC Contact: Karen Parker, 386-758-0525

Public hearing for Little Gator Creek WEA plan is March 27, 2012

The Florida Fish and Wildlife Conservation Commission (FWC) will hold a public hearing for the Little Gator Creek Wildlife and Environmental Area (WEA) Management Plan on Tuesday, March 27, 2012. The meeting will be at 7 p.m. at the West Pasco Government Center, 8731 Citizens Drive, Suite 150, New Port Richey, FL, 34654.

The purpose of this hearing is to receive public comment on a draft of a 10-year management plan the FWC is developing for the Little Gator Creek WEA, in Pasco County. Components of the draft management plan will be presented to the public, followed by a question-and-answer session and public testimony.

A management prospectus for the Little Gator Creek WEA is available upon request from the FWC's Conservation Acquisition and Planning group. Call Rebecca Shelton at 850-487-9982, or David Alden at 850-487-9588, or e-mail

Rebecca.Shelton@MyFWC.com for the prospectus.

For [more information](#), go to MyFwc.com/conservation/terrestrial/management-plans/.

13.2.3 Public Hearing Report

PUBLIC HEARING REPORT

FOR THE

**LITTLE GATOR CREEK WILDLIFE AND ENVIRONMENTAL AREA
MANAGEMENT PLAN**

HELD BY THE

**LITTLE GATOR CREEK WEA MANAGEMENT ADVISORY GROUP
AND THE
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION**

MARCH 27, 2012 – PASCO COUNTY, FLORIDA

The following report documents the public input that was received at the LGCWEA Management Advisory Group's (MAG) Public Hearing for the update to the Management Plan for LGCWEA that was held at 7:00-9:00 PM, on March 27, 2012, at the Pasco County West Pasco Government Center in New Port Richey, Florida.

LGCWEA Management Advisory Group Introduction:

The meeting was introduced by Mr. Mark Overstreet, a LGCWEA MAG participant, who was the former landowner of LGCWEA. Mr. Overstreet indicated that he was one of eight stakeholders that attended the Florida Fish and Wildlife Conservation Commission (FWC) facilitated MAG meeting held on February 22, 2012. Mr. Overstreet stated that the draft Management Plan was being presented tonight by FWC staff, and that hardcopies of the draft plan and the MAG meeting report were available at the front door for the public's review. Mr. Overstreet thanked everyone for attending and then introduced FWC staff Mr. David Alden, Senior Land Conservation Coordinator, FWC, to facilitate and coordinate the presentation of an overview of LGCWEA, FWC's planning process, and the draft components of the Management Plan.

Presentation on an Overview of LGCWEA and the FWC Planning Process: Mr. Alden, FWC, welcomed everyone and thanked the public for their attendance. Mr. Alden then went over an orientation of the material and explained that the purpose of the public hearing was to solicit public input regarding the draft Management Plan for LGCWEA, and not hunting and fishing regulations, indicating there is a separate public input process for FWC rule and regulation development. Mr. Alden then described the materials that were available at the door for public review, including the draft Management Plan and the LGCWEA MAG Meeting Report and Accomplishment Report. Mr. Alden then presented the agenda for the public hearing and facilitated the introduction of all FWC staff in attendance to the audience. Mr. Alden then presented an overview and orientation of LGCWEA, including a description of the natural communities, data about park visitors, money generated for the state by the park, wildlife species, recreational opportunities found on the area, surrounding conservation lands, surrounding Florida Forever lands, acquisition history, etc. Mr. Alden also explained FWC's planning process and asked if there were any questions regarding that process.

Questions, Answers and Discussion on the LGCWEA Overview and FWC's

Planning Process: Mr. Alden facilitated an informal question and answers session where members of the public in attendance, without necessarily identifying themselves, could ask questions of the FWC staff, and discuss the answers. Mr. Alden again emphasized that the exclusive purpose for the public hearing was to collect public input regarding the draft Management Plan for LGCWEA, and not to discuss area hunting, fishing and use regulations since, as was noted earlier, FWC has a separate process for input on hunting and fishing regulations.

Presentation of the LGCWEA Draft Management Plan

At this point, Mr. Josh Agee, the LGCWEA Area Biologist provided the presentation of the draft management plan. Mr. Agee, the Area Biologist then completed and concluded the presentation of the LGCWEA Draft Management Plan.

Questions and Comments on the LGCWEA Draft Management Plan Presentation

Mr. Alden encouraged everyone to fill out a speaker card for public testimony. He informed them that all cards will be considered equally.

Public Testimony on the LGCWEA Draft Management Plan: One member of the public audience submitted a speaker card indicating their intention to provide formal public testimony. Mr. Alden again emphasized that the public hearing was for taking input regarding the LGCWEA Draft Management Plan, and called Mr. Overstreet to the podium.

Public Testimony Comment: Mr. Mark Overstreet informed the public that he is the son of Mr. C.M. Overstreet (former landowner of LGCWEA). Mr. Overstreet gave an overview of the acquisition of the property: in 1970 Mr. Overstreet was shot in the back and his father, Mr. C.M. Overstreet, decided to sell the land and donate the money to a University to begin spinal cord research (in the mid 1970s), for his son. Mr. C.M. Overstreet donated a million dollars to the University of Florida, and the state matched that so the University could found two chairs with this money (one million dollars per chair). Mr. Overstreet explained that the main thing that should be done is to keep the wood stork rookery alive and the water in there at the right time so the birds can come in and nest. Mr. Overstreet informed FWC that he would help install culverts, so the water drains adequately during the wetter seasons. Mr. Overstreet also indicated that he would like to see the land opened and regulated for handicapped hunting opportunities instead of it being open to the general public.

Mr. Overstreet also made a comment on behalf of an adjacent landowner, Mr. Jenkins. Mr. Overstreet informed the public that a group of young kids came through the rookery on a four wheeler and destroyed Mr. Jenkins' fence and allowing all his cattle to escape. Mr. Overstreet informed the public that these issues need to be eliminated.

Adjournment: Mr. Alden asked if there were any other members of the public that wished to give public testimony. No further comments and questions were provided. Mr. Alden then declared the public hearing adjourned.

13.2.4 Management Prospectus

**Management Prospectus
Little Gator Creek Wildlife and Environmental Area
February 2012**



Florida Fish and Wildlife Conservation Commission

Introduction

Nestled within a rural landscape mosaic of cypress swamps, pine forests and pastures, the Little Gator Creek Wildlife and Environmental Area's (LGCWEA) cypress swamps and forested wetlands provide vital habitat to the imperiled wood stork. Situated on the area is one of the largest wood stork nesting sites outside of south Florida. Wood storks have been nesting intermittently in the area for at least the past 70 years. For the protection of the wood stork and other wading birds, public access is limited.

A nature trail and observatory boardwalk have been constructed for people to view the rookery from a safe distance and to enjoy the flora and fauna on the rest of the area. LGCWEA conserves habitat important for rare and imperiled species that occur on the site such as the wood stork and rare wading birds, gopher tortoise, eastern indigo snake and Sherman's fox squirrel and provides opportunities for research and environmental education on the importance of their ecology. LGCWEA is managed by the Florida Fish and Wildlife Conservation Commission (FWC) for the conservation, protection and management of the endangered wood stork and associated habitat along with other native wildlife species in conformance with the original purposes for acquisition of the area.

The LGCWEA is 566 acres in size. As shown in Figure 1, the WEA property lies within in Section 24, Township 25 South, and Range 22 East, in Pasco County, Florida.

LGCWEA is located in the southeast corner of Pasco County, nine miles northeast of Zephyrhills, 4.1 miles north of the State Road 98/471 intersection or 2.6 miles south of the Withlacoochee River on State Road 471. The interior of LGCWEA is only accessible by foot at one entry point located on the west side of the WEA directly off of SR471.

The Green Swamp Area of Critical State Concern is located immediately east and north of SR 471 from the LGCWEA. The northeast and southern boundaries adjoin privately owned forest land.

In order to protect the wood stork rookery, public access to LGCWEA is allowed through issuance of a permit from the FWC office in Lakeland, Florida, and is limited to recreational hiking, wildlife observation, guided nature tours or environmental education/study. The area is closed to visitors during the wading bird nesting season between mid-February and early June when the young prepare to fledge. This resource and management prospectus has been developed in conformance with the requirements of Section 259.032, Florida Statutes, to provide the Management Advisory Group stakeholders and the general public with a general understanding of and purpose for the LGCWEA, prior to required public hearing to solicit public input on the LGCWEA management plan.

Acquisition History and the Purpose for Acquisition

The LGCWEA was purchased from Mr. C. M. Overstreet, a local cattleman and rancher in 1982. The LGCWEA was purchased under the Conservation and Recreation Lands (CARL) program. The CARL Trust Fund was approved in 1979 and relies on funds generated principally from the documentary stamp tax and severance taxes on phosphate rock. The CARL program was established for the purpose of purchasing environmentally endangered lands and those which have potential for public recreation.

The area was purchased in 1982 as a single use property for the preservation of a significant wading bird rookery containing a large number of nests of the endangered wood stork and associated species. As a condition of the purchase, Mr. Overstreet, the former owner, agreed to provide the equipment and structures needed to regulate the water flow and levels within the wood stork rookery for a period of five years after state purchase. Subsequent to the purchase of the property, the Land Acquisition Advisory Council recommended the FWC as the lead managing agency for the area.

LGCWEA is owned by the State of Florida. The fee-simple title to LGCWEA is vested with Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Board of Trustees). FWC manages the lands within LGCWEA under the authority within Lease Number 2391 from the Board of Trustees, administered by the Department of Environmental Protection, Division of State Lands (DEP). No liens, encumbrances or outstanding title interest are known to exist on the property at this time. If any are discovered during development of the management plan they will be duly noted.

Natural Resources

Over 90 percent of the land cover on LGCWEA consists of swamp/floodplain and bottomland forest, and pine flatwoods. The northern boundary of the property encompasses two short segments of the Withlacoochee River. Gator Creek flows through the northeast corner of the property.

The FWC has completed historic and natural community mapping of LGCWEA through the work of the Florida Natural Areas Inventory (FNAI). Through this work FNAI has indentified and mapped a total of seven historic and current plant communities, one rare plant and two exotic invasive plants within the LGCWEA. Following are tables listing natural, rare and exotic invasive plant species known to occur on LGCWEA. Descriptions of the plant communities located on LGCWEA are provided immediately after the plant species tables presented below in Tables 1, 2 and 3 respectively.

Table 1. Plant Species Observed at LGCWEA

Common Name	Scientific Name
American beautyberry	<i>Callicarpa americana</i>
Arrowhead	<i>Sagittaria</i> sp.
Bald cypress	<i>Taxodium distichum</i>
Beakrush	<i>Rhynchospora</i> sp.

Blackberry	<i>Rubus</i> sp.
Blue curls	<i>Trichostema dichotomum</i>
Blueberry	<i>Vaccinium</i> sp.
Bogbutton	<i>Lachnocaulon</i> sp.
Bracken fern	<i>Pteridium aquilinum</i>
Bristleleaf chaffhead	<i>Carphephorus pseudoliatris</i>
Broomsedge	<i>Andropogon virginicus</i>
Cabbage palm	<i>Sabal palmetto</i>
Catbrier	<i>Smilax</i> sp. <i>glauca</i>
Celestial lily	<i>Nemastylis floridana</i>
Duckweed	<i>Lemna</i> sp.
Dwarf blueberry	<i>Vaccinium myrsinites</i>
Dwarf live oak	<i>Quercus minima</i>
Elephant's foot	<i>Elephantopus elatus</i>
Fingergrass	<i>Digitaria</i> sp.
Fringed nutrush	<i>Scleria ciliata</i>
Gallberry	<i>Ilex glabra</i>
Goldenrod	<i>Solidago</i> sp.
Grass-leaved blazing star	<i>Liatris graminifolia</i>
Greenbrier	<i>Smilax bona-nox</i>
Laurel oak	<i>Quercus hemisphaerica laurifolia</i>
Live oak	<i>Quercus virginiana</i>
Lizard tail	<i>Saururus cernuus</i>
Maiden cane	<i>Panicum hemitomon</i>
Meadow-beauty	<i>Rhexia</i> spp.
Muscadine	<i>Vitis rotundifolia</i>
Panic-grass	<i>Panicum</i> sp.
Paspalum	<i>Paspalum</i> sp.
Peppervine	<i>Ampelopsis arborea</i>
Persimmon	<i>Diospyros virginiana</i>
Poison ivy	<i>Toxicodendron radicans</i>
Pond cypress	<i>Taxodium ascendens</i>
Red maple	<i>Acer rubrum</i>
Rose-gentian	<i>Sabatia</i> sp.
Royal fern	<i>Osmunda regalis</i>
Rush	<i>Juncus</i> sp.
Saw grass	<i>Cladium jamaicense</i>

Saw palmetto	<i>Serenoa repens</i>
Sedge	<i>Carex</i> sp.
Shiny fetterbush	<i>Lyonia lucida</i>
Slash pine	<i>Pinus elliottii</i>
Spanish moss	<i>Tillandsia usneoides</i>
St. John's-wort	<i>Hypericum</i> sp.
Staggerbush	<i>Lyonia fruticosa</i>
Sunflower	<i>Helianthus</i> sp.
Laurel oak	<i>Quercus laurifolia</i>
Sweet goldenrod	<i>Solidago odora</i>
Sweet gum	<i>Liquidambar styraciflua</i>
Thistle	<i>Cirsium</i> sp.
Thoroughwort	<i>Eupatorium</i> sp.
Tupelo gum	<i>Nyssa biflora</i>
Virginia chain fern	<i>Woodwardia virginica</i>
Water oak	<i>Quercus nigra</i>
Wax myrtle	<i>Myrica cerifera</i>
Wire grass	<i>Aristida stricta</i>
Wood oats	<i>Chasmanthium</i> sp.
Yaupon	<i>Ilex vomitoria</i>
Yellow jessamine	<i>Gelsemium sempervirens</i>
Yellow-eyed grass	<i>Xyris</i> sp.

Table 2. Rare Plant Species Observed at LGCWEA

Common Name	Scientific Name
Celestial Lily	<i>Nemastylis floridana</i>

Table 3. Exotic Invasive Plant Species Observed at LGCWEA

Common Name	Scientific Name
Cogon grass	<i>Imperata cylindrica</i>
Water lettuce	<i>Pistia stratiotes</i>

Basin Swamp

Basin swamps are typically large, irregularly shaped wetlands occupying a shallow, closed basin and are dominated by a mix of conifer and hardwood species. Two basin swamps (approximately 120 acres and 67 acres, respectively) occur on LGCWEA, occupying depressions that were probably once oxbows or swales within the Withlacoochee River

floodplain. Both were inundated at the time of the FNAI's survey. The canopy and subcanopy are dominated by pond cypress, red maple, and swamp laurel oak. According to the LGCWEA Management Plan (FWC 2001), cypress trees were harvested from the site in 1949 and 1955, suggesting that the canopy trees in the basin swamp are approximately 50 years old. The shrub layer is fairly open, with scattered cabbage palm, wax myrtle, shiny fetterbush, and blueberry. Herbs are generally sparse in basin swamps due to high water levels and low light; on LGCWEA, the most common herbaceous species are maiden-cane and Virginia chain fern.

Blackwater Stream

Blackwater streams are perennial streams originating in sandy lowlands, and deeply colored with tannins and other organic compounds. The Withlacoochee River crosses the LGCWEA twice on the northwestern side of the WEA, for a total of approximately 0.2 mile; Gator Creek crosses the northeastern corner of the site for 0.1 mile. Both are dark, tannin-stained streams bordered by hydric hammock and floodplain swamp.

Depression Marsh

This particular marsh type is a shallow, rounded depression in sandy soils dominated by herbaceous and, occasionally, shrub species that often occur in distinct concentric bands. Four depression marshes occur on LGCWEA, three are smaller than 1 acre and one is over 2 acres in size. The smaller marshes are surrounded by mesic flatwoods with slash pine growing in the edge of the marshes. Concentric zones of maiden-cane and rush surround the deeper center of arrowhead.

The larger marsh resembles a dome swamp around the edges, with an encircling band of pond cypress, sweet gum, red maple, and oaks, shrubs and vines such as wax myrtle and muscadine and the center is open and herbaceous, dominated by sedges and grasses.

Dome Swamp

A dome swamp is a shallow, usually more or less circular isolated wetland, forested with a mix of conifers and hardwoods that are typically taller toward the center of the swamp, creating a domed profile. Nine dome swamps, ranging in size from 1 to 12 acres, occur on LGCWEA. Most are dominated by pond cypress with a large hardwood component of red maple, sweet gum, and swamp laurel oak. According to the LGCWEA Management Plan (FWC 2001), cypress were harvested from the site in 1949 and 1955, suggesting that the cypress trees in the dome swamps are approximately 50 years old. (One dome swamp completely lacks cypress, although numerous cypress stumps are present, and is dominated entirely by hardwoods. No cypress seedlings or saplings were observed in the understory so it appears that this community is not returning to its pre-logging condition.) Wax myrtle and persimmon occur in the understory. Due to high water levels and low light, the herbaceous layer in dome swamps is usually sparse, which is the case on LGCWEA, with maiden cane, sedges, and duckweed being the most common herbs. Saw grass forms the herbaceous layer in one small dome swamp on the edge of the Withlacoochee River floodplain forest.

Hydric Hammock

The hydric hammock ecotype is a closed-canopy of evergreen hardwood and/or palm forest and a variable understory typically dominated by palms and ferns occurring on moist soils, often with limestone very near the surface. On LGCWEA, Little Gator Creek is located in the confluence of Gator Creek and the Withlacoochee River, and hydric hammocks are found in the floodplains of both. The canopy and subcanopy of these forests are dominated by laurel oak, live oak, and water oak, with red maple, tupelo gum, and cabbage palm also common. Common shrubs include cabbage palm and yaupon. Due to inundation and low light levels, the herbaceous layer is sparse, but usually includes beak-rushes, finger-grass, and other grasses.

The hydric hammock on LGCWEA contains two small patches of pond cypress-dominated floodplain swamp in a low area closer to the Withlacoochee River. The vegetation resembles hydric hammock except bald cypress is a canopy dominant.

Mesic Flatwoods

Mesic flatwoods are a fire-maintained forest ecotype of widely spaced pines on a flat, moderately to poorly drained soils, usually with species-rich shrub and herbaceous layers. At approximately 291 acres, mesic flatwoods are the most extensive natural community on LGCWEA, forming a matrix to the numerous wetland inclusions on site. In 2009 and 2010, a slash pine harvest was conducted on LGCWEA and the density of slash pine was significantly thinned. Prior to that harvest, slash pine formed the canopy in most areas though older, flat-topped longleaf pine dominated one centrally located flatwoods area. A turpentine operation was operated at the site from 1928 to 1934. Virgin longleaf pines were harvested in 1903-04, and a second tree harvest took place in 1939, suggesting that most of the pines on site are younger than 75 years old. Saw palmetto is the most common shrub although other shrubs such as dwarf live oak, staggerbush, and dwarf blueberry are also common. Wiregrass is the dominant species in the ground cover, but a variety of other herbaceous species and vines are also present.

Mesic flatwoods must be burned regularly, every 2-3 years, to maintain the open, grassy character of the ground layer and promote wiregrass flowering. The 2001 LGCWEA Management Plan states that regular burning was conducted on site until 1970 in support of cattle grazing operations. Fire scars on trees indicate that recent fires have occurred, which undoubtedly contributed to the high quality of most of the flatwoods on LGCWEA. Two prescribed burns have taken place on the area in the past four years.

Cogon grass was found at five locations in mesic flatwoods.

A population of approximately 50 plants of celestial lily was observed in a mesic flatwoods in the central portion of LGCWEA. Celestial lily was also collected in a mesic flatwoods in the northeastern portion of the site in 1991 but was not observed during this survey. This fall-flowering Florida endemic is ranked as imperiled by FNAI. It is dependent on frequent fire to promote flowering and limit competition from woody species.

Floodplain swamp

Floodplain swamp is a closed-canopy forest of hydrophytic trees occurring on frequently or permanently flooded hydric soils adjacent to stream and river channels and in depressions and oxbows within floodplains. Trees are often buttressed, and the understory and groundcover are sparse. Two patches of floodplain swamp, each approximately one acre in size, occur within the hydric hammock on LGCWEA, within the floodplain of the Withlacoochee River. The canopy of these floodplain swamps is dominated by bald cypress.

Ruderal

Lands that have experienced heavy anthropogenic disturbances are referred to as ruderal. On LGCWEA, ruderal areas total approximately seven acres and are divided into two categories. The first category is clearing/regeneration, which on LGCWEA consists of over six acres of historic clearings in which the groundcover and overstory of the original natural community has been significantly altered. Cogon grass is commonly found in these areas. These historic clearings are in the process of being converted back to a natural community type. The second ruderal category found on LGCWEA is canal/ditch, which is an area where the historic natural community has been altered by an artificial drainage way. Less than one acre of LGCWEA falls into this category, due to the presence of a ditch on the southern portion of the area.

Fish and Wildlife

Rare and Imperiled Species

A diversity of wildlife species is found on LGCWEA. The FNAI element occurrence records include several threatened or endangered species and species of special concern. Known locations of FWC wildlife occurrences and FNAI element occurrences from the most recent GIS databases of the respective agencies are displayed in Figure 4 and Table 6. As defined by FNAI, an “element” is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. An element occurrence is a single extant habitat which sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element.

Table 4 Florida Natural Areas Inventory Data Element Occurrences

Common Name	Scientific Name	Status
American alligator	<i>Alligator mississippiensis</i>	FT (S/A)
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	NT
Celestial lily	<i>Nemastylis floridana</i>	LE
Gopher tortoise	<i>Gopherus polyphemus</i>	ST
Eastern indigo snake	<i>Drymarchon corais couperi</i>	FT
Great egret	<i>Ardea alba</i>	NT
Limpkin	<i>Aramus guarauna</i>	SSC
Little blue heron	<i>Egretta caerulea</i>	SSC
Peninsular floater	<i>Utterbackia peninsularis</i>	NT
Snowy egret	<i>Egretta thula</i>	SSC
Sherman’s fox squirrel	<i>Sciurus niger shermani</i>	SSC
Tricolored heron	<i>E. tricolor</i>	SSC
White ibis	<i>Eudocimus albus</i>	SSC
Wood stork	<i>Mycteria americana</i>	FE
ZZ	Bird Rookery	NT

An inventory of amphibian and reptile species occurring on LGCWEA is not yet available. An inventory of bird species occurring on LGCWEA is not yet available. However, a list of bird species breeding within Pasco County is taken from the Florida Breeding Bird Atlas. Opportunities for bird watching abound at Little Gator Creek. Most of the area is forested and supports breeding populations of summer tanagers, Carolina chickadees, yellow-throated warblers, and blue gray gnat-catchers. More detailed fauna descriptions and management prescriptions are available on the FWC website:
<http://www.myfwc.com/wildlifehabitats/profiles/>.

Table 5. Breeding Bird Atlas – Confirmed Breeding – Pasco County

Common Name	Scientific Name	Status
American crow	<i>Corvus brachyrhynchos</i>	NL
American kestrel	<i>Falco sparverius</i>	NL
American oystercatcher	<i>Haematopus palliatus</i>	SSC
Anhinga	<i>Anhinga anhinga</i>	NL
Bachman's sparrow	<i>Aimophila aestivalis</i>	NL
Bald eagle	<i>Haliaeetus leucocephalus</i>	NL
Barn owl	<i>Tyto alba</i>	NL
Barn swallow	<i>Hirundo rustica</i>	NL
Barred owl	<i>Strix varia</i>	NL
Belted kingfisher	<i>Ceryle alcyon</i>	NL
Black vulture	<i>Coragyps atratus</i>	NL
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	NL
Black-necked stilt	<i>Himantopus mexicanus</i>	NL
Blue grosbeak	<i>Guiraca caerulea</i>	NL
Blue jay	<i>Cyanocitta cristata</i>	NL
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>	NL
Boat-tailed grackle	<i>Quiscalus major</i>	NL
Brown pelican	<i>Pelecanus occidentalis</i>	SSC
Brown thrasher	<i>Toxostoma rufum</i>	NL
Brown-headed cowbird	<i>Molothrus ater</i>	NL
Brown-headed nuthatch	<i>Sitta pusilla</i>	NL
Budgerigar	<i>Melopsittacus undulatus</i>	NL
Burrowing owl	<i>Speotyto cunicularia</i>	SSC
Canada goose	<i>Branta canadensis</i>	NL
Carolina chickadee	<i>Parus carolinensis</i>	NL
Carolina wren	<i>Thryothorus ludovicianus</i>	NL
Cattle egret	<i>Bubulcus ibis</i>	NL
Chimney swift	<i>Chaetura pelagica</i>	NL
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	NL
Clapper rail	<i>Rallus longirostris</i>	NL
Common grackle	<i>Quiscalus quiscula</i>	NL
Common ground dove	<i>Columbina passerina</i>	NL
Common moorhen	<i>Gallinula chloropus</i>	NL
Common nighthawk	<i>Chordeiles minor</i>	NL
Common peafowl	<i>Pavo cristatus</i>	NL
Common yellowthroat	<i>Geothlypis trichas</i>	NL
Cooper's hawk	<i>Accipiter cooperii</i>	NL
Double-crested cormorant	<i>Phalacrocorax auritus</i>	NL
Downy woodpecker	<i>Picoides pubescens</i>	NL

Common Name	Scientific Name	Status
Eastern bluebird	<i>Sialia sialis</i>	NL
Eastern kingbird	<i>Tyrannus tyrannus</i>	NL
Eastern meadowlark	<i>Sturnella magna</i>	NL
Eastern screech-owl	<i>Otus asio</i>	NL
Eastern towhee	<i>Pipilo erythrophthalmus</i>	NL
Eurasian collared-dove	<i>Streptopelia decaocto</i>	NL
European starling	<i>Sturnus vulgaris</i>	NL
Fish crow	<i>Corvus ossifragus</i>	NL
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	FT
Gray catbird	<i>Dumetella carolinensis</i>	NL
Gray kingbird	<i>Tyrannus dominicensis</i>	NL
Graylag goose	<i>Anser anser</i>	NL
Great blue heron	<i>Ardea herodias</i>	NL
Great crested flycatcher	<i>Myiarchus crinitus</i>	NL
Great egret	<i>Casmerodius albus</i>	NL
Great horned owl	<i>Bubo virginianus</i>	NL
Green heron	<i>Butorides striatus</i>	NL
Hairy woodpecker	<i>Picoides villosus</i>	NL
House sparrow	<i>Passer domesticus</i>	NL
Indigo bunting	<i>Passerina cyanea</i>	NL
Killdeer	<i>Charadrius vociferus</i>	NL
King rail	<i>Rallus elegans</i>	NL
Least bittern	<i>Ixobrychus exilis</i>	NL
Least tern	<i>Sterna antillarum</i>	ST
Limpkin	<i>Aramus guarauna</i>	SSC
Little blue heron	<i>Egretta caerulea</i>	SSC
Loggerhead shrike	<i>Lanius ludovicianus</i>	SSC
Mallard	<i>Anas platyrhynchos</i>	NL
Marsh wren	<i>Cistothorus palustris</i>	SSC
Monk parakeet	<i>Myiopsitta monachus</i>	NL
Mottled duck	<i>Anas fulvigula</i>	NL
Mourning dove	<i>Zenaida macroura</i>	NL
Muscovy duck	<i>Cairina moschata</i>	NL
Northern bobwhite	<i>Colinus virginianus</i>	NL
Northern cardinal	<i>Cardinalis cardinalis</i>	SSC
Northern flicker	<i>Colaptes auratus</i>	NL
Northern mockingbird	<i>Mimus polyglottos</i>	NL
Northern parula	<i>Setophaga americana</i>	NL
Northern rough-winged	<i>Stelgidopteryx serripennis</i>	NL

Common Name	Scientific Name	Status
swallow		
Osprey	<i>Pandion haliaetus</i>	SSC
Pied-billed grebe	<i>Podilymbus podiceps</i>	NL
Pileated woodpecker	<i>Dryocopus pileatus</i>	NL
Pine warbler	<i>Setophaga pinus</i>	NL
Prairie warbler	<i>Setophaga discolor</i>	NL
Prothonotary warbler	<i>Protonotaria citrea</i>	NL
Purple gallinule	<i>Porphyryula martinica</i>	NL
Purple martin	<i>Progne subis</i>	NL
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	NL
Red-eyed vireo	<i>Vireo olivaceus</i>	NL
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	NL
Red-shouldered hawk	<i>Buteo lineatus</i>	NL
Red-tailed hawk	<i>Buteo jamaicensis</i>	NL
Red-winged blackbird	<i>Agelaius phoeniceus</i>	NL
Rock dove	<i>Columba livia</i>	NL
Ruby-throated hummingbird	<i>Archilochus colubris</i>	NL
Ruddy duck	<i>Oxyura jamaicensis</i>	NL
Sandhill crane	<i>Grus canadensis</i>	NL

Abbreviation	Status
SSC	State Species of Special Concern
ST	State Threatened
NL	Not Listed

All abbreviations and status determinations were derived from *Florida's Endangered and Threatened Species List* published by FWC in May 2011. The FWC maintains the state list of animals designated as Federally-designated endangered or threatened, State-designated threatened, or State-designated species of special concern, in accordance with Rules 68A-27.003, and 68A-27.005, respectively, Florida Administrative Code (F.A.C.), <https://www.flrules.org/Default.asp>.

On November 8, 2010 new threatened species rules approved by the Commission went into effect. The list of wildlife presented here reflects those changes to the rules. All federally listed species that occur in Florida are now included on Florida's list as Federally-designated endangered or Federally-designated threatened species. In addition, the state has a listing process to identify species that are not federally listed but at risk of extinction. These species will be called State-designated Threatened. All State-designated species that have recently undergone status reviews were presented and approved at the June 2011 Commission meeting. FWC will continue to maintain a separate Species of Special Concern category until all the species have been reviewed and those species are either designated as State-threatened or given a management plan and removed from the list.

Management Intent

Management of wildlife on LGCWEA includes efforts designed to perpetuate all species of wildlife native to the area. The primary management emphasis is placed on providing nesting substrate and feeding habitat for wood storks, as well as a variety of other wading birds that cohabit with them during the nesting season.

The FWC uses a comprehensive resource management approach to managing FWC-managed areas. Restoring the form and function of Florida's natural communities is the foundation of this management philosophy. FWC uses Objective-based Vegetative Management (OBVM) to monitor how specific vegetative parameters are responding to FWC management. OBVM includes the delineation of management units and quantification of the desired future condition for the natural community. In addition, FWC uses the Wildlife Conservation Prioritization and Recovery (WCPR) program to ensure management is having the desired effect on wildlife as another important component of FWC's comprehensive resource management approach to managing FWC-managed areas. The goal of WCPR is to provide assessment, recovery, and planning support for the FWC-managed areas to enhance management of focal species and recovery of imperiled species. The WCPR program objectives include the following: prioritize what FWC does for imperiled and focal species on FWC-managed areas; ensure the actions taken on these areas are part of statewide conservation programs/priorities; and, inform others about the work accomplished on lands FWC manages.

Conditions Affecting Intensity of Management

Resources described in this management prospectus indicate conditions affecting intensity of management. These include natural community types, topography and soils, surface and ground water conditions, extent of historic disturbance, and already existing improvements. Environmentally sensitive areas, such as erosion-prone sites, important habitats, and outstanding natural areas and wetlands shall be identified, appropriately managed, and protected.

The FWC conducts analysis of historic vegetation of natural community types when necessary to determine appropriate desired future conditions. Upland wildlife management concentrates on appropriate vegetative manipulations, primarily the application of prescribed fire, to achieve conditions acceptable to a broad range of wildlife species. Areas sometimes require ecological restoration of ground cover, control of invasive species, and reforestation. Such resource management projects may be necessary to accomplish restoration objectives to attain the desired future condition. This is especially important for conservation of habitats and populations of imperiled or rare species. Landscape ecology is also important. Land use changes in the vicinity of a managed area may affect attainment of resource conservation goals for the area, and effectiveness of necessary resource management projects.

Timetable for Implementing Management Provisions

During the first year after acquisition, emphasis was placed on site security, posting boundaries, public access, fire management, resource inventory, exotic species control, and removal of refuse. A management plan was developed by FWC describing the management goals and objectives necessary to implement future resource management. The management plan also established future roles of cooperating entities including governmental agencies and other stakeholders.

Long-range plans will stress ecosystem management, and the protection and management of focal, species of special concern, rare and imperiled species. Historic analysis of natural communities and vegetation types may be conducted if deemed necessary. Quantified vegetation management objectives shall then be developed. The FWC shall assess the condition of wildlife resources and provide planning support to enhance management of focal species and recovery of imperiled species on LGCWEA. Use of prescribed fire and other resource management activities shall maintain and restore natural communities and vegetation types to benefit native wildlife resources if deemed appropriate for the area.

Estimate of Revenue-Generating Potential

The revenue generating potential of LGCWEA is expected to be minimal and will depend upon future uses to be approved in the management plan. Although revenue from such environmental lands might normally include sales of various permits and recreational user fees and ecotourism activities, this source of revenue is limited at LGCWEA due to the restrictions noted above that limit public access to the property only through a permit issued by FWC for wildlife viewing, environmental education and research that FWC. However, the long-term values of ecosystem services to local and regional land and water resources, and to human health, are expected to be significant. The Legislature appropriates funds for land management.

Recommendations as to Other Governmental Agency Involvement

FWC should cooperate with other state and local governmental agencies including the DEP, the Florida Department of Agriculture and Consumer Services, the Southwest Florida Water Management District, the Florida Park Service, and Pasco County in management of the property.

Estimate of Costs

Management of LGCWEA requires one full-time employee (FTE) position to optimally manage the area. Salary requirements for this FTE position, as well as those of other needed FWC staff, and costs to operate and manage LGCWEA are reflected in the cost estimate on the following page.

These are projected estimates necessary to fully implement the LGCWEA Management Plan and reflect the actual annual operating budget necessary for the optimal management of LGCWEA. All land management funding is dependent upon annual legislative appropriations.

Little Gator Creek WEA Management Plan Cost Estimate

Maximum expected one year expenditure

Resource Management

Exotic Species Control	\$2,666
Prescribed Burning	\$3,164
Cultural Resource Management	\$0
Timber Management	\$0
Hydrological Management	\$2,417
Other	\$1,515
Subtotal	\$9,762

Priority schedule:

Immediate (annual)

Intermediate (3-4 years)

Other (5+ years)

Administration

General administration	\$1,150
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Support

Land Management Planning	\$4,890
Land Management Reviews	\$0
Training/Staff Development	\$0
Vehicle Purchase	\$0
Vehicle Operation and Maintenance	\$3,031
Other	\$0
Subtotal	\$7,920

Capital Improvements

New Facility Construction	\$0
Facility Maintenance	\$11,740
Subtotal	\$11,740

Visitor Services/Recreation

Info./Education/Operations	\$0
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Law Enforcement

Resource protection	\$517
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Total **\$31,089 ***

* Based on the characteristics and requirements of this area, 1 FTE position would be optimal to fully manage the area covered by this prospectus. All land management funding is dependent upon annual legislative appropriations. The cost estimate will be updated in the development of the LGCWEA management plan.

Figure 1. LGCWEA Proximity Map with Section, Township, and Range

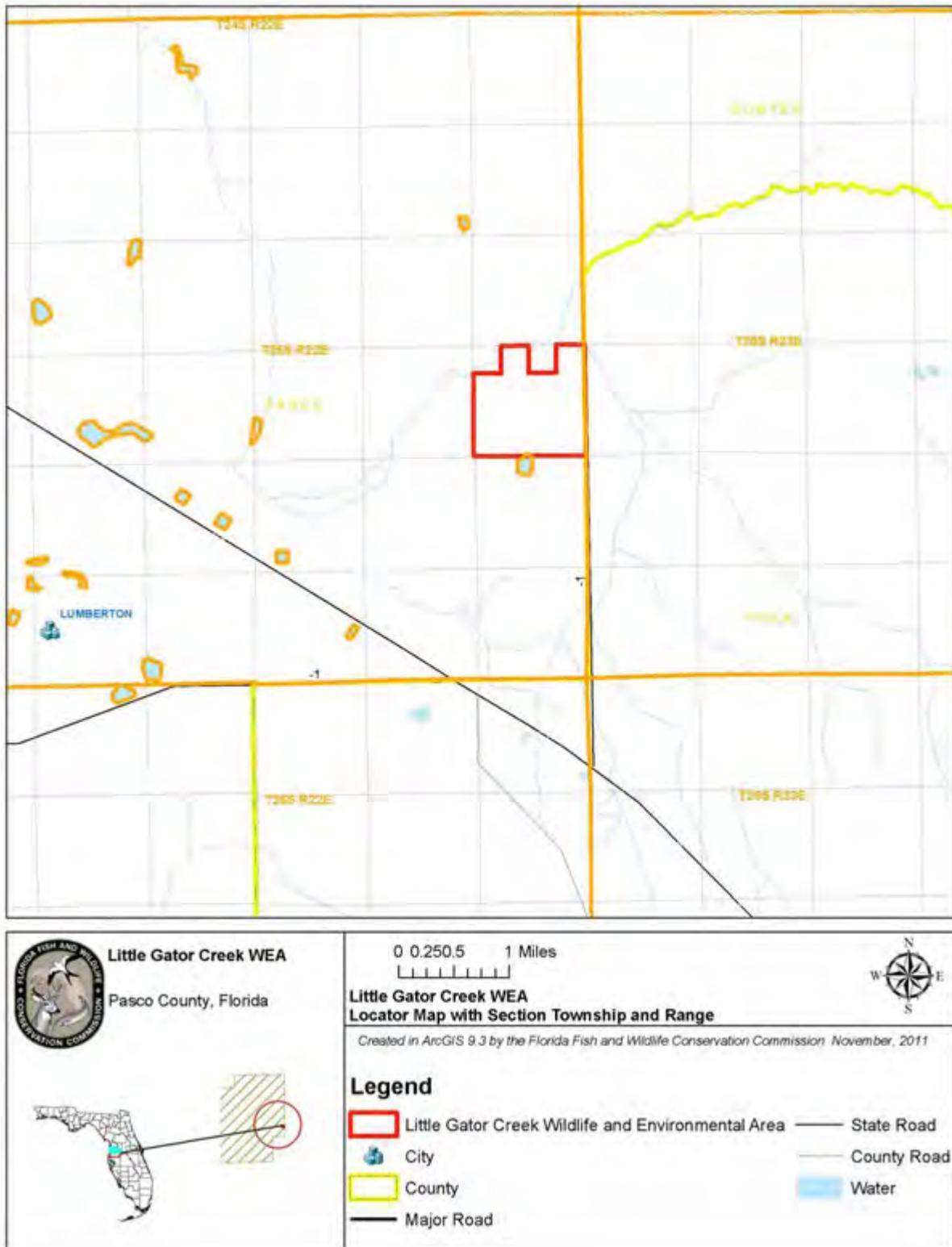


Figure 2. LGCWEA Proximity Map with Conservation Land and Florida Forever Projects

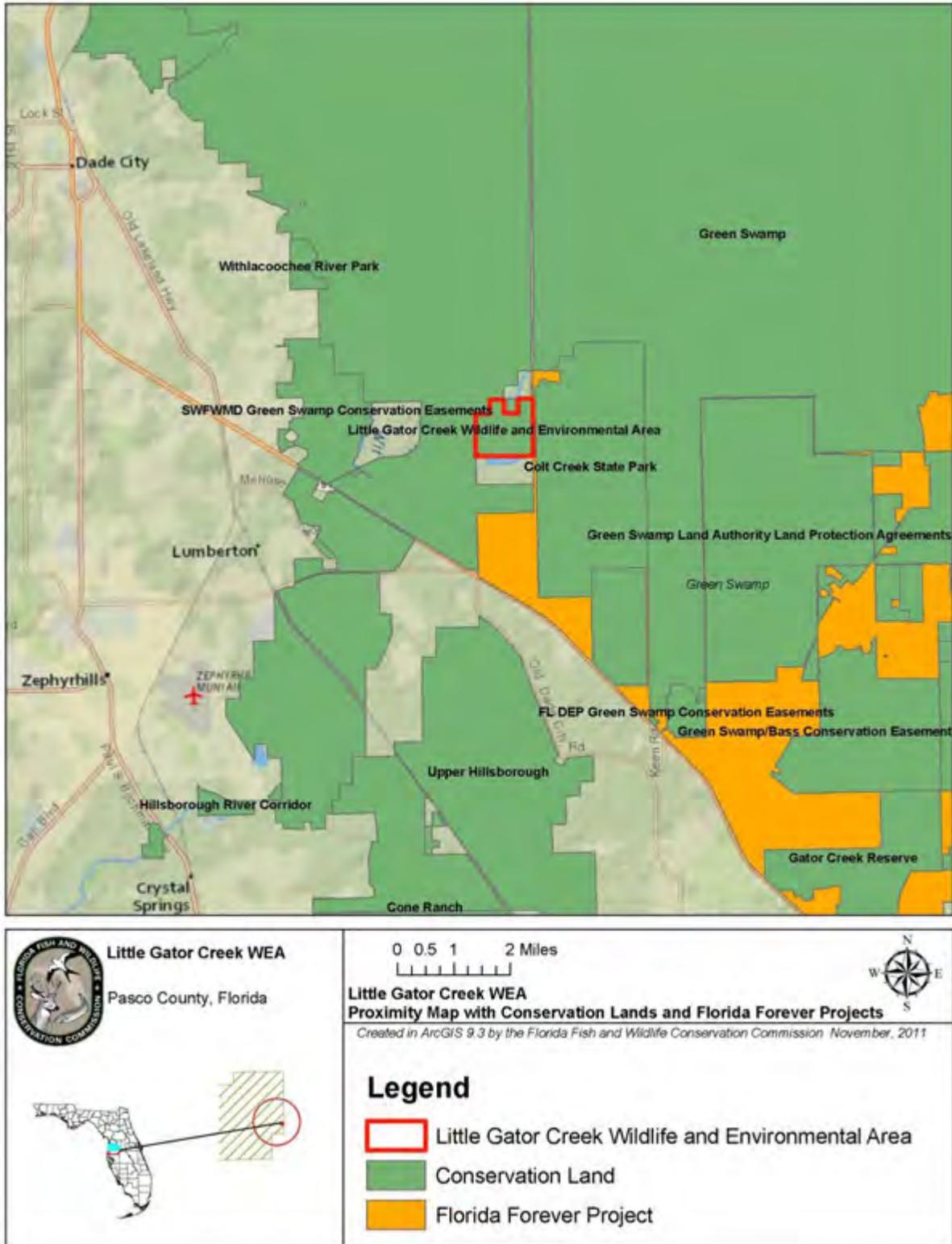


Figure 3. FNAI Natural Communities Vegetative Cover Map

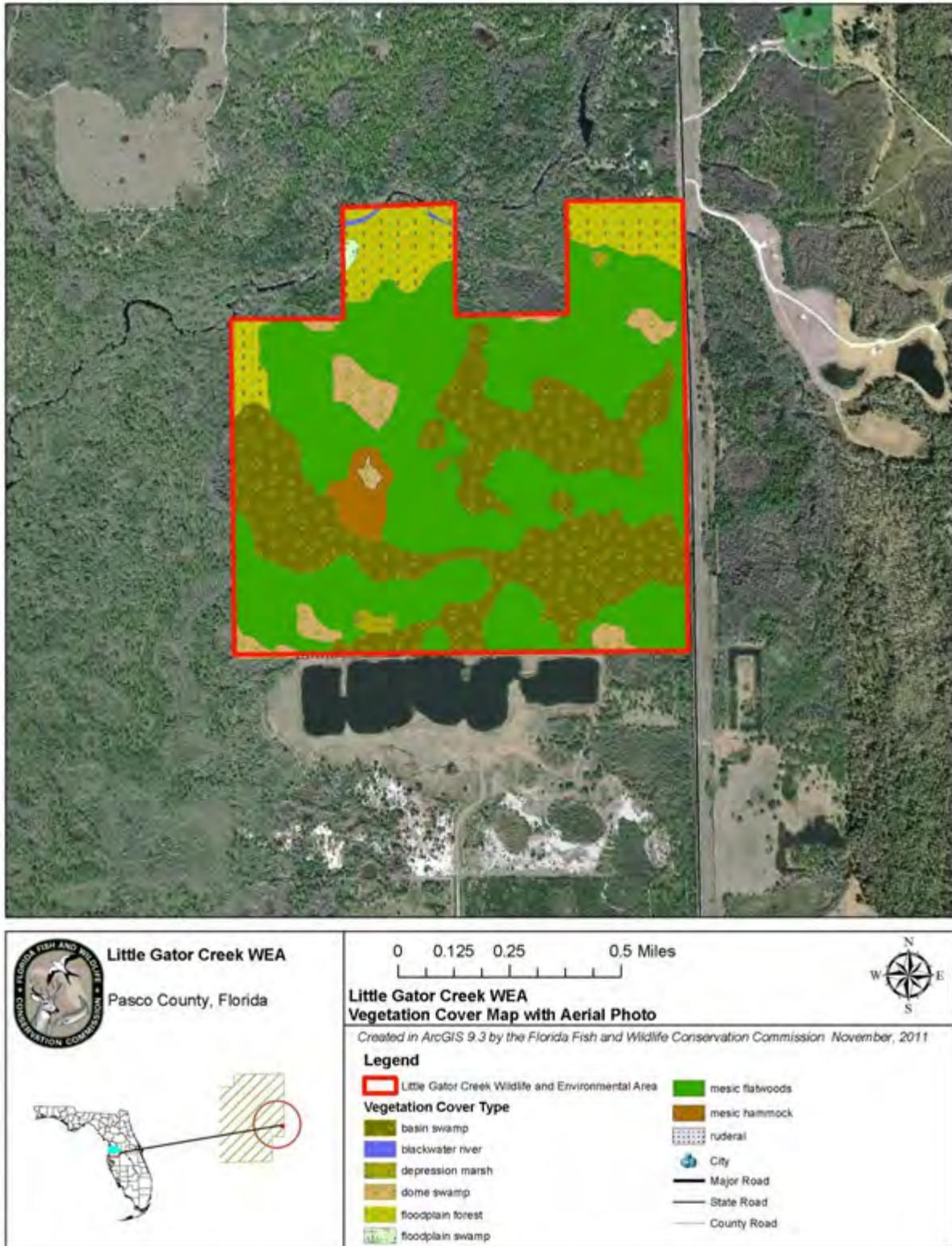
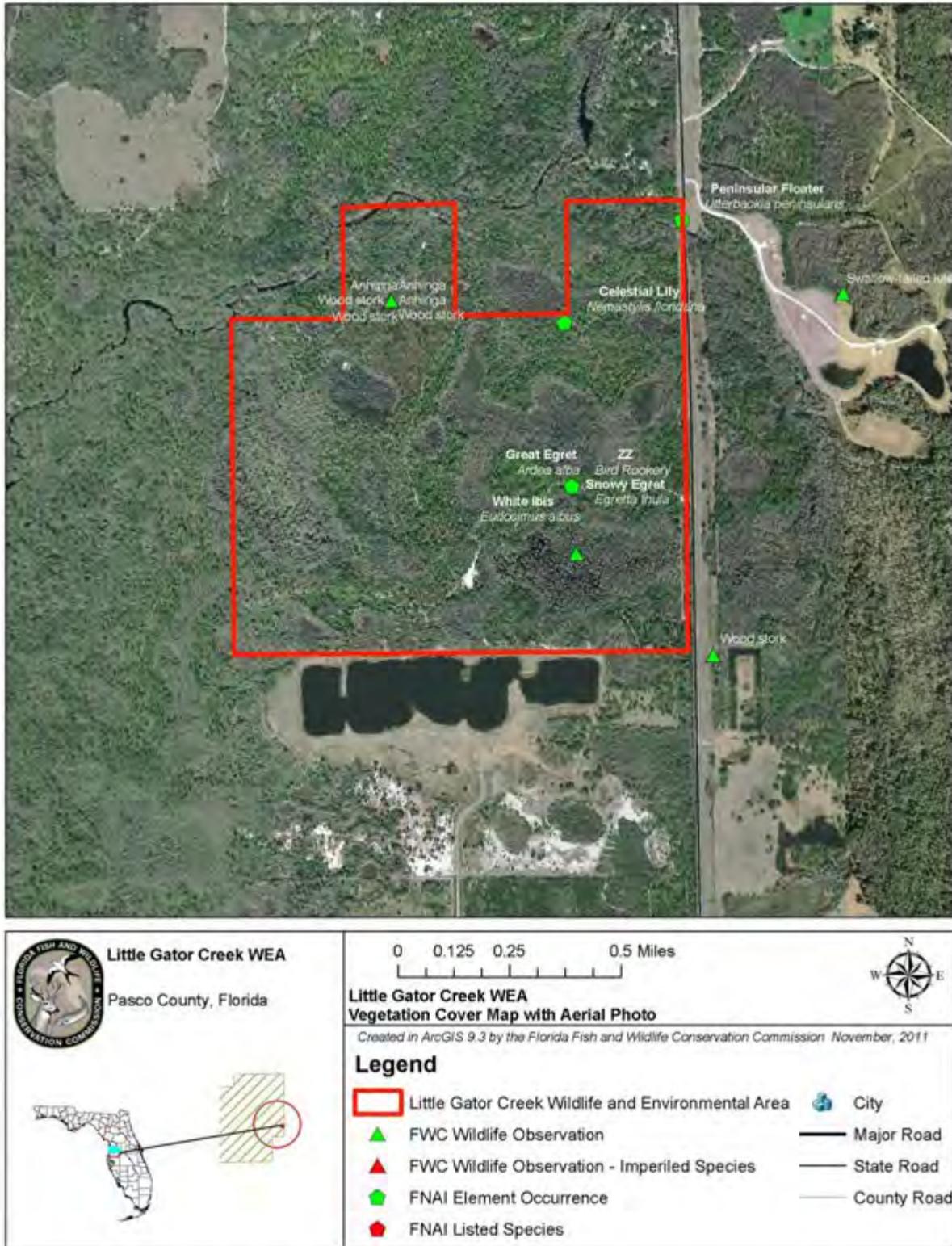


Figure 4. FWC Wildlife Observations and FNAI Element Occurrences



13.3 Land Management Review

**Land Management Review of Little Gator Creek WEA,
Pasco County (Lease No. 3291): April 28, 2000**

Prepared by Division of State Lands Staff

Delmas Barber, OMC Manager
David Petti, Environmental Specialist
Alphonso Craig, Staff

*For
The Little Gator Creek Management Review Team*

Final Report June 26, 2000

Land Manager:	<u>Mr. Victor Eschaves, Fish and Wildlife Conservation Commission</u>
Area:	<u>560 Acres</u>
County:	<u>Pasco County</u>
Mngt. Plan Approved:	<u>04/28/1997</u>
Mngt. Plan Update Due:	<u>04/28/2002</u>

Management Review Team Members

Agency Represented	Team member Appointed	Team member in attendance
DEP/DRP	Ms. Sallie Brim	Ms. Sallie Brim
DEP District	Ms. Dianne McCommons-Beck	Ms. Dianne McCommons-Beck
DACS/DOF	Mr. Butch Mallet	Mr. Butch Mallet
FWCC	Mr. Jimmy Conner	Mr. Jimmy Conner
Pasco County Commission	Ms. Catherine Burbridge	Ms. Catherine Burbridge
Private Land manager	Mr. John Hozaepfel	
Private Conservation	Mr. Mary-Slater Linn	Mr. Mary-Slater Linn

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review findings are given to the managing agency under review, the Acquisition and Restoration Council (ARC), and to the Division of State Lands. Also, DEP shall report the annual review findings of its land management review teams to the Board no later than the second board meeting in October of each year.

Review Site

The management review of the Little Gator Creek WEA considered approximately 560 acres in Pasco County that are managed by the Florida Fish and Wildlife Conservation Commission. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The Division of State Lands approved the management plan on April 28, 1997 and the management plan update is due April 28, 2002.

Review Team Determination

Is the land being managed for the purpose for which it was acquired?

After completing the checklist, team members were asked to answer "yes" or "no" to this question. All team members agreed that Little Gator Creek is being managed for the purpose for which it was acquired.

Are actual management practices, including public access, in compliance with the management plan?

After completing the checklist, team members were asked to answer "yes" or "no" to this question. All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.

Commendations to the managing agency

The following commendation resulted from a discussion and vote of review team members.

1. The team commends WEA staff for their innovative and effective use of ground water augmentation and surface water control structures to maintain the water level in the rookery (6 for/0 against)
2. The team commends WEA staff for outstanding protection of the WEA resources from overuse. (6 for/0 against)

Exceptional management actions

The following items received high scores on the review team checklist (see Attachment 1), which indicates that management actions exceeded expectations.

- Protection and maintenance of the cypress/hardwood
 - Protection and preservation of the animals
 - Cultural resources (survey and protection and preservation)
 - Hydrological/ geological function : rookery water alteration
-

Recommendations and checklist findings

The management plan must include responses to the recommendations and checklist items that are identified below.

Recommendations

The following recommendations resulted from a discussion and vote of review team members.

No recommendations presented

Checklist findings

The following items received low scores on the review team checklist (see Attachment 1), which indicates that management actions were insufficient (*f*) or that the issue was not sufficiently addressed in the management plan (*p*). These items need to be addressed in the management plan update.

1. Prescribed fire: Area Being Burned (No. of Acres) and Quality (*p*)

Manager's Response:

We will address this finding in our management plan update.

2. Non native invasive and problem species: animals (*p*)

Manager's Response:

We will address this finding in our management plan update.

3. Groundwater monitoring quantity (*p*)

Manager's Response:

We will address this finding in our management plan update.

The management review checklist was analyzed as follows: The checklist consisted of two parts: a plan review section that answered whether or not the management plan sufficiently addressed protection/ restoration/ management needs for a series of items; and a field review section that scored to what extent sufficient management actions were being taken for a series of items. For each item in each section the scores for all team members were averaged. Some items received high scores (≥ 4.0) in the field review, which indicates that exceptional management actions are being taken. Some items received low scores (≤ 0.5 for plan review; ≤ 2.0 for field review), which indicates that they were not sufficiently addressed in the plan, or that management practices did not meet expectations. These items must be addressed in the management plan update.

PLAN REVIEW		A	B	C	D	E	F	
Cypress/hardwood	I.A.1	1	1	1	1	1	1	1
Oak/pine	I.A.2		1	0	0	1	1	0.6
Cypress swamps	I.A.3	1	1	0	0	1	1	0.7
Pine Flatwoods	I.A.4	1	1	0	0	1	1	0.7
Bottomland Hardwoods	I.A.5	1	1	0	0	1	1	0.7
Animals	I.B.1	1	1	1	1	1	1	1
Plants	I.B.2	1	1		0	1	1	0.8
Survey	II.A	1	1	1	0	1	1	0.8
Protection and Preservation	II.B	1	0	1	0	1	1	0.7
Area Being Burned(no. acres)	III.A.1	0	0	0	0	0	1	0.2
Frequency	III.A.2	0	0	0	0	0	0	0
Quality	III.A.3	0	0	0	0	0	1	0.2
Animals	III.D.1	0	0		0	1	0	0.2
Plants	III.D.2	1	0	1	0	1	1	0.7
Rookery Water Alteration	III.E.1.	1	0	1	1	1	1	0.8
Quantity	III.E.2.	0	0	0	0	1	1	0.3
Boundary Survey	III.F.1	1	0		0	1	1	0.6
Gates & Fencing	III.F.2	1	0	1	0	1	1	0.7
Signage	III.F.3	1	1	1	0	1	1	0.8
Law Enforcement Presence	III.F.4		0		0	1	1	0.5
Inholdings and additions	III.G.2	1		1	0	1	1	0.8
Roads	IV.1.a	1	0		0	1	1	0.6
Parking	IV.1.b	1	0		0	1	1	0.6
Water Access	IV.1.c	1	0	1	0	1	1	0.7
Recreational Opportunities	IV.2	1	1	1	1	1	1	1
Interpretive Facilities and signs	IV.3	1	1		0	1	1	0.8
Environmental Education/outreach	IV.4	1	1	1	0	1	1	0.8
FIELD REVIEW		A	B	C	D	E	F	
Cypress/hardwood	I.A.1	5	5	5	5	4	4	4.7
Oak/pine	I.A.2	3	4	3	4	5	3	3.7
Cypress swamps	I.A.3	3	5	3	4	3	3	3.5
Pine Flatwoods	I.A.4	4	5	3	4	4	3	3.8
Bottomland Hardwoods	I.A.5	3	5	3	3	3	3	3.3

Animals	I.B.1	5	4	4	5	4	4	4.3
Plants	I.B.2	4	4	5	3	4	4	4
Survey	II.A	4	5	4	5	5	4	4.5
Protection and Preservation	II.B	4	4	4	5	5	5	4.5
Area Being Burned(no. acres)	III.A.1.	3	5	3	4	3	2	3.3
Frequency	III.A.2	4	4	3	4	3	2	3.3
Quality	III.A.3	4	5	4	4	3	3	3.8
Animals	III.D.1	3	5	3	3	5	3	3.7
Plants	III.D.2	4	4	3	3	5	3	3.7
Rockery Water Alteration	III.E.1.	5	4	4	5	5	4	4.5
Quantity	III.E.2. a	4	5	4	5	5	4	4.5
Boundary Survey	III.F.1	4	5	3	5	5	4	4.3
Gates & Fencing	III.F.2	4	5	4	5	3	4	4.2
Signage	III.F.3	4	5	5	4	3	4	4.2
Law Enforcement Presence	III.F.4	3	4	4	3	3	4	3.5
Inholdings and additions	III.G.2	3		4	3	3	3	3.2
Roads	IV.1.a	3	5	3	4	3	3	3.5
Parking	IV.1.b	3	5	3	4	3	3	3.5
Water Access	IV.1.c	3	5	3	4	3	3	3.5
Recreational Opportunities	IV.2	3	5	4	4	3	3	3.7
Interpretive Facilities and signs	IV.3	3	5	4	3	3	3	3.5
Environmental Education/outreach	IV.4	3	5	3	3	3	3	3.3
Buildings	V.2.a	3	5	3	3	4	3	3.5
Equipment	V.2.b	3	5	3	3	4	3	3.5
Staff	V.3	3	5	3	3	4	4	3.7
Funding	V.4	3	5	3	3	4	4	3.7

13.4 Soil Series Descriptions

Map Unit Description

Pasco County, Florida

[Minor map unit components are excluded from this report]

Map Unit: 10 - Wabasso fine sand

Component: Wabasso, non-hydric (70%)

The Wabasso, non-hydric component makes up 70 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during June, July, August, September. Organic matter content in the surface horizon is about 6 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Wabasso, hydric (10%)

The Wabasso, hydric component makes up 10 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September. Organic matter content in the surface horizon is about 6 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 16 - Zephyr muck

Component: Zephyr (80%)

The Zephyr component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of organic material over sandy and loamy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 55 percent. This component is in the R154XY010FL Freshwater Marshes And Ponds ecological site. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 39- Chobee soils, frequently flooded

Component: Chobee (75%)

The Chobee component makes up 75 percent of the map unit. Slopes are 0 to 2 percent. This component is on depressions on flood plains on marine terraces on coastal plains. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 15 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 40- Paisley fine sand

Component: Paisley, non-hydric (60%)

The Paisley, non-hydric component makes up 60 percent of the map unit. Slopes are 0 to 1 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root

Map unit: 40- Paisley fine sand

Component: Paisley, non-hydric (60%)

restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Paisley, hydric (30%)

The Paisley, hydric component makes up 30 percent of the map unit. Slopes are 0 to 1 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 3 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 41- Pits-Dumps complex

Component: Dumps (45%)

Generated brief soil descriptions are created for major soil components. The Dumps is a miscellaneous area.

Component: Pits (45%)

Generated brief soil descriptions are created for major soil components. The Pits is a miscellaneous area.

Map unit: 99 - Water

Component: Water (fresh) (100%)

Generated brief soil descriptions are created for major soil components. The Water (fresh) is a miscellaneous area.

Map unit: 78 - Paisley fine sand, stony subsurface

Component: Paisley, non-hydric (60%)

The Paisley, non-hydric component makes up 60 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 60 to 80 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 15 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Component: Paisley, hydric (20%)

The Paisley, hydric component makes up 20 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces on coastal plains. The parent material consists of clayey marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 60 to 80 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is high. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 3 percent. This component is in the R154XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

Map unit: 80 - Chobee fine sandy loam, frequently flooded

Component: Chobee (90%)

The Chobee component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains on marine terraces on coastal plains. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 5 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

13.5 FNAI Data Usage Permission Letter



1018 Thomsville Road
Suite 200-C
Tallahassee, FL 32303
t/904.224.6207
fax 904.681.9364
www.fnai.org

April 11, 2014

David Alden
Land Conservation & Planning
Florida Fish and Wildlife Conservation Commission
Tallahassee, FL

Dear David,

By virtue of this letter we are updating and continuing our agreement that it is unnecessary for your office to request FNAI element occurrence data for each land management plan you prepare, under the following conditions:

- FNAI will continue to provide our Florida Element Occurrence GIS database to FWC on a quarterly update basis;
- The FNAI GIS data will be available to FWC staff for reference and incorporation as required in management plan review and preparation.

Our database manager, Frank Price, currently provides this update via ftp to FWC staff on a quarterly basis. Current FWC contacts for the quarterly update are Beth Stys and Ted Hoehn. We are pleased to continue this beneficial collaboration with the Florida Fish and Wildlife Conservation Commission.

Sincerely,

Gary Knight
Director
Florida Natural Areas Inventory



Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

Tracking Florida's Biodiversity

13.6 FWC Agency Strategic Plan

Florida Fish and Wildlife Conservation Commission
Agency Strategic Plan
2014 – 2019

Theme One – Florida’s Fish and Wildlife Populations and Their Habitats

Goal 1: Ensure the sustainability of Florida’s fish and wildlife populations.

Strategies:

1. Manage listed species so they no longer meet Florida’s endangered and threatened listing criteria.
2. Manage species to keep them from meeting Florida’s endangered and threatened listing criteria.
3. Anticipate and address fish and wildlife species’ conservation needs in light of adaptation to long-term environmental changes.
4. Develop, acquire and apply the appropriate biological and sociological science to inform fish and wildlife conservation decisions.
5. Inform and guide partners regarding how their regulations, policies, procedures and other actions affect fish and wildlife conservation.
6. Protect fish and wildlife species through effective outreach and enforcement.

Goal 2: Ensure sufficient habitats exist to support healthy and diverse fish and wildlife populations.

Strategies:

1. Use science to determine quantity, quality and location of the habitats most critical to sustain healthy and diverse fish and wildlife populations.
2. Protect lands and waters critical to sustaining healthy and diverse fish and wildlife populations through diverse incentive programs.
3. Manage habitats to sustain healthy and diverse fish and wildlife populations.

Theme Two – Interactions with Fish and Wildlife, including Fishing, Hunting, Boating and Wildlife Viewing Opportunities

Goal 1: Provide residents and visitors with quality fishing, hunting, boating and wildlife viewing opportunities that meet their needs and expectations while providing for the sustainability of those natural resources.

Strategies:

1. Develop, acquire and use the appropriate biological and sociological science necessary to provide sustainable fishing, hunting, boating and wildlife viewing opportunities that meet the needs and expectations of user groups while providing for the sustainability of those resources.
2. Manage fish and wildlife populations to provide sustainable fishing, hunting, and wildlife viewing opportunities.
3. Develop and maintain widely available, diverse and accessible fishing, hunting, boating and wildlife viewing opportunities that meet the needs and expectations of residents and visitors while providing for the sustainability of those resources and emphasizing partnerships with both public and private landowners.
4. Recruit and manage sustainable levels of resident and visitor participation in fishing, hunting, boating and wildlife viewing.
5. Provide targeted fishing, hunting, boating and wildlife viewing programs for youth, the disabled and veterans.

Goal 2: Enhance the safety and outdoor experience of those who hunt, fish, boat and view wildlife.

Strategies:

1. Provide and promote opportunities for residents, and visitors to learn safety practices for fishing, hunting, boating and wildlife viewing.
2. Enhance the boating safety and waterway experience of residents and visitors through improved access, management, education and enforcement.
3. Promote Florida's outdoor environment as a safe and healthy recreational option for residents and visitors.
4. Address the growing disconnect between people and nature by marketing and providing opportunities and education for diverse age, race, gender, ethnic and other demographic sectors.

Goal 3: Use minimal regulations to manage sustainable fish and wildlife populations, manage access to fish and wildlife resources, and protect public safety.

Strategies:

1. Continually evaluate proposed and existing regulations, based on resource management benefits, public safety concerns, and economic and social impacts, to improve or eliminate regulations as warranted.
2. Coordinate with partners and stakeholders to ensure that appropriate authorities and regulations exist to maintain sustainable fish and wildlife populations.
3. Implement and enforce regulations in an informative, proactive and influential manner to enrich resident and visitors' outdoor experience while safeguarding the natural resources.

Goal 4: Minimize adverse environmental, social, economic and health and safety impacts from fish, wildlife and plants that are known, or have a potential, to cause adverse impacts.

Strategies:

1. Manage species and their habitats, as well as species and human interactions, to eliminate or reduce the adverse environmental, social, economic and health and safety impacts from native and non-native fish, wildlife and plants.
2. Effectively communicate to residents, visitors and businesses how to be safe and act responsibly when interacting with or possessing fish, wildlife and plants.
3. Manage captive and non-native wildlife movement and trade through proactive and responsive enforcement, regulation and education, with an emphasis on species that pose a high risk to our native fish and wildlife.
4. Enhance partnerships to address adverse environmental, social, economic and health and safety impacts from fish, wildlife and plants and ensure a consistent and integrated approach with FWC.

Theme Three – Sharing Responsibility for Fish and Wildlife Conservation and Management with an emphasis on developing conservation values in our youth

Goal 1: Ensure current and future generations support fish and wildlife conservation.

Strategies:

1. Expand and promote the Florida Youth Conservation Centers Network through leveraging FWC programs and staff, and developing public and private partnerships and sponsorships.
2. Develop and deliver standardized youth conservation curricula and fishing, hunting, boating and wildlife viewing outdoor activity programs, and assist with adapting programs and curricula to meet the needs of diverse communities.
3. Foster stewardship and shared responsibility for fish and wildlife conservation through conservation education programs.
4. Expand marketing and outreach to reach diverse audiences and engage all staff in priority outreach initiatives.

Goal 2: Ensure residents, visitors, stakeholders and partners are engaged in the processes of developing and implementing conservation programs.

Strategies:

1. Foster a common vision among partners and the FWC to maintain and enhance fish and wildlife populations and their habitats through interagency coordination, mutually beneficial goals and initiatives.
2. Engage residents, visitors, stakeholders and partners to understand their perspectives, develop and implement conservation programs, and implement fishing, hunting, boating and wildlife viewing management activities.
3. Use citizen science to enhance conservation programs.

Goal 3: Increase opportunities for residents and visitors, especially youth, to actively support and practice fish and wildlife conservation stewardship.

Strategies:

1. Inform residents and visitors about conservation stewardship and encourage their active involvement in achieving conservation of fish and wildlife.
2. Provide and promote opportunities for residents and visitors, especially youth, to participate in conservation stewardship activities, including FWC volunteer opportunities.

Goal 4: Encourage communities to conserve lands and waters critical to sustaining healthy and diverse fish and wildlife populations.

Strategies:

1. Provide communities with the necessary assistance to help them obtain the social and economic benefits of local conservation lands.

2. Provide residents and visitors with relevant information on the social and economic benefits of conservation, fishing, hunting, boating, and wildlife viewing.
3. Support community events and programs that promote fish and wildlife conservation.

Theme Four – Responsive Organization and Quality Operations

Goal 1: Integrate our commitment to benefit the community and enhance the economy through our conservation efforts and public service.

Strategies:

1. Identify and implement ways to support Florida businesses and job growth while managing fish and wildlife.
2. Identify and promote opportunities for staff to benefit local communities through participation in approved activities where FWC resources can be used (for example, the Florida State Employees' Charitable Campaign, the Guardian ad Litem Program, mentoring programs, FWC Disaster Response Teams, and American Red Cross Disaster Services).
3. Provide residents and visitors with reliable and current information on Florida's fish and wildlife.
4. Continue to attract visitors by providing top-quality fishing, hunting, boating and wildlife viewing opportunities.

Goal 2: Provide resources and support for the safety and protection of residents and visitors, our natural and cultural resources, and for emergency responses to critical incidents and environmental disasters.

Strategies:

1. Identify existing and emerging risks to the safety of residents and visitors and foster internal collaboration and external partnerships necessary to effectively manage, reduce or eliminate those risks.
2. Provide immediate and effective disaster response and recovery through mutual-aid efforts with local, state and federal partners.
3. Provide search, rescue, and recovery services in coordination with local, state and federal entities to ensure the safety of residents and visitors.
4. Protect natural and cultural resources through proactive and responsive enforcement efforts.

Goal 3: Ensure the FWC has highly effective and adaptive business practices.

Strategies:

1. Address emerging biological, social and economic trends, anticipate impacts and take advantage of opportunities to accomplish FWC's mission.
2. Expect each employee to be an ambassador for FWC and its mission to Florida's diverse residents and visitors.
3. Provide efficient and effective service to Florida's diverse residents, visitors, and FWC staff.
4. Foster a diverse, accountable, responsive and skilled workforce who effectively serves Florida's residents and visitors.
5. Manage existing and secure additional resources necessary to achieve fish and wildlife conservation and meet residents, visitor and stakeholder needs.
6. Create and maintain an effective business model that supports the FWC's mission by using continuous improvement approaches that foster a collaborative and professional culture.

13.7 WCPR Strategy

Little Gator Creek Wildlife and Environmental Area Species Management Strategy

December 2012

Florida Fish and Wildlife Conservation Commission
Division of Habitat and Species Conservation
Wildlife and Habitat Management Section
A product of the Wildlife Conservation,
Prioritization and Recovery Program



Executive Summary

The Florida Fish and Wildlife Conservation Commission's (FWC) Wildlife and Habitat Management section (WHM) takes a proactive, science-based approach to species management on lands in the Wildlife Management Area system (WMA/WEA). This approach uses information from statewide models, in conjunction with input from species experts and people knowledgeable about the area, to create site-specific wildlife assessments of a number of focal species. Staff combines these assessments with management considerations to develop a wildlife management strategy for the area. The FWC intends for this Strategy to: 1) Provide land managers with information on actions that should be taken provided the necessary resources are available, 2) Promote the presence of and ensure the persistence of focal wildlife species on the area, and 3) Provide measurable species objectives that can be used to evaluate the success of wildlife management on the area.

This document presents the results of a science-based process for evaluating focal species needs using an ecosystem management approach on the Little Gator Creek Wildlife and Environmental Area (LGCWEA). Natural community management focused on a set of focal species benefits a host of species reliant upon the same natural communities. Monitoring select species verifies whether natural community management is having the desired effect on wildlife. Throughout the process, the role of the area in regional and statewide conservation initiatives was considered to maximize the potential benefit.

[Section 1](#) informs the reader about the process used to generate this document.

[Section 2](#) describes the historic and ongoing management actions on the property.

[Section 3](#) provides a list of the focal and listed species on the area, and an assessment of each species' level of opportunity and need. This includes species-specific objectives for wading birds.

[Section 4](#) describes specific land management actions recommended for focal species. This section also discusses management considerations necessary to ensure continued persistence of focal species.

[Section 5](#) describes species-specific management and monitoring that is prescribed for the area, and identifies any research that would be necessary to guide future management efforts. Water level management is recommended to facilitate wading bird nesting, and the monitoring that is recommended is for the Bachman's sparrow, brown-headed nuthatch, and wading birds. Opportunistic documentation of encounters with other focal species also is recommended.

[Section 6](#) identifies coordination that will assist in conserving the area's focal species. We identify coordination with 8 other units in FWC and inter-agency coordination with 5 other entities.

[Section 7](#) describes efforts that are prescribed to occur "beyond the area's boundaries" to ensure conservation of the species on the area.

Continuation of current resource levels would be required to provide for most of the land management recommended in this document. Some of the monitoring recommendations may require additional resources, while FWC can accomplish others with continuation of existing resources. Additional resources are needed to conduct a hydrologic assessment on LGCWEA.

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Acronym List

AHREs	Aquatic Habitat Restoration/Enhancement Subsection
ARCI	Avian Research and Conservation Institute
BMU	Bear Management Unit
CNA	Core Nesting Area
CCSP	Colt Creek State Park
CPS	Conservation Planning Services (section; formerly Habitat Conservation Scientific Services)
CR	County Road
DEP	Florida Department of Environmental Protection
DFC(s)	Desired Future Condition(s)
DHGM	Division of Hunting and Game Management (section)
FDEP	Florida Department of Environmental Protection
FFS	Florida Forestry Service (formerly Division of Forestry)
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Fish and Wildlife Research Institute
LGCWEA	Little Gator Creek Wildlife and Environmental Area
MU	Management Unit (a specific piece of ground identified by a unique identifier as used in OBVM)
OBVM	Objective Based Vegetation Management
PLCP	Public Lands Conservation Planning (project)
PVA	Population Viability Analysis
SaMP	Survey and Monitoring Protocol database
SCP	Species Conservation Planning (section)
SGCN	Species of Greatest Conservation Need
SHCA	Strategic Habitat Conservation Area
SMA	Strategic Management Area
SR	State Road
SWFWMD	Southwest Florida Water Management District
WHM	Wildlife and Habitat Management (section)
USFWS	United States Fish and Wildlife Service
WCPR	Wildlife Conservation Prioritization and Recovery
WEA	Wildlife and Environmental Area
WMA	Wildlife Management Area

Statewide Species Prioritization Parameters

This table provides the values for the 6 prioritization parameters for the focal species. Parameters that are “triggered” (exceed the threshold) are in **bold**. Typically, the more parameters a species triggers, the higher the statewide prioritization.

Species Common Name	Millsap Report, 2008		Legacy Initiative		PVA ¹ on managed lands	
	Bio-logical Score ²	Supple-mental Score ³	Popu-lation Status ⁴	Popu-lation Trends ⁵	Proba-bility of a 50% decline ⁶	Proportion of Populations persisting (to 80 or 100 years) ⁷
<u>Gopher Frog</u>	24.6	12	med	decl	0	9% (to 80)
<u>Eastern Indigo Snake</u>	24.7	21	low	decl	NA	NA
<u>Gopher Tortoise</u>	27.3	17	med	decl	0	55% (to 100)
<u>American Swallow-Tailed Kite</u>	25.7	13	low	unk	20%	50% (to 100)
<u>Bachman's Sparrow</u>	16.0	12	med	decl	0	49% (to 80)
<u>Brown Headed Nuthatch</u>	17.0	13	med	decl	0	25% (to 80)
<u>Cooper's Hawk</u>	15.0	12	not a SGCN ⁸	not a SGCN	96%	100% (to 100)
<u>Northern Bobwhite</u>	11.0	14	low	decl	0	100% (to 100)
<u>Southeastern American Kestrel</u>	28.0	14	low	decl	0	67% (to 100)
<u>Southern Bald Eagle</u>	21.3	10	Med ⁹	Inc ⁹	0	100% (to 100)
<u>Wading Birds</u>	var	var	var	var	0	100% (to 100)
<u>Florida Black Bear</u>	32.7	13	med	Stbl ⁹	5%	100% to (100)

Species Common Name	Millsap Report, 2008		Legacy Initiative		PVA ¹ on managed lands	
	Bio- logical Score ²	Supple- mental Score ³	Popu- lation Status ⁴	Popu- lation Trends ⁵	Proba- bility of a 50% decline ⁶	Proportion of Populations persisting (to 80 or 100 years) ⁷
<u>Sherman's Fox Squirrel</u>	24.0	17	low	decl	0	28% (to 80)
<u>Florida Mottled Duck</u>	17.3	18	med	decl	1%	100% (to 100)
<u>Florida Sandhill Crane</u>	27.0	16	med	decl	0	33 % (to 80)
<u>Limpkin</u>	24.3	14	med	unk	0	100% (to 100)

¹ PVA = Population Viability Analysis

² Species trigger this parameter if the score is ≥ 25.9

³ Species trigger this parameter if the score is ≥ 15

⁴ Species trigger this parameter if the score is \geq low or unknown (unk)

⁵ Species trigger this parameter if the score is \geq declining (decl) or unknown (unk)

⁶ Species trigger this parameter if the score is > 0

⁷ Species trigger this parameter if the score is $\leq 75\%$

⁸ SGCN = species of greatest conservation need

⁹ med = medium; inc = increasing; stbl = stable

Section 1: Introduction

The FWC manages the lands in the Wildlife Management Area system using a proactive approach, which includes an understanding of natural communities of plants and animals. As applied by FWC, natural community management starts by classifying lands into distinct natural communities that we then manage in a way that maintains or enhances the communities' unique structure and function. This ecological management of natural communities improves and restores the habitats upon which wildlife depends. Natural community management that has a positive influence on the natural community condition benefits the wildlife living in these habitats.

Another important aspect of FWC's management approach is ensuring that it is science-informed and meets the needs of Florida's wildlife. The agency's Wildlife Conservation, Prioritization, and Recovery Program (WPCR) created this Species Management Strategy for LGCWEA to inform and guide management on the area, and to verify that area management is meeting the needs of wildlife. The FWC intends for this Strategy to: 1) provide land managers with information on management actions that should be taken provided the necessary resources are available; 2) promote the presence and facilitate the persistence of wildlife species on the area; and 3) provide measurable objectives that can be used to evaluate the success of wildlife management on the area.

When developing a Strategy, WPCR staff utilizes concepts that facilitate the analysis and evaluation of an area's opportunities to manage for wildlife. The focal species concept is an approach to identify the needs of wildlife collectively by strategically focusing on a subset of wildlife species. The subset of species FWC selected as focal species includes umbrella species, keystone species, habitat specialist species, and indicator species. Other concepts in a Strategy include Objective Based Vegetation Management and Strategic Management Areas. [Objective Based Vegetation Management](#) (OBVM) is a method used to assess if vegetation management within natural communities is achieving the desired conditions. A [Strategic Management Area](#) (SMA) is a specially designated piece of land where additional management actions are required to address a particular species' needs.

In addition to the concepts discussed above, we use specific definitions in a Strategy. *Goals* are broad statements of a condition or accomplishment to be achieved; goals may be unattainable, but provide direction and inspiration. *Objectives* are a measurable, time-specific statement of results responding to pre-established goals. *Imperiled Species* refers to any plant or animal federally listed under the Endangered Species Act, or state-listed by the Florida Fish and Wildlife Conservation Commission or the Department of Agriculture and Consumer Services.

Creating the LGCWEA Strategy involved a number of steps. First, staff assessed the results of species-specific habitat models and statewide potential habitat maps for focal species to determine which focal species had potential habitat on LGCWEA. We then used staff knowledge, species-expert opinions, and area-specific natural community maps, to

modify the statewide models to create area-specific potential habitat maps for each focal species on the area. Next, we conducted a workshop at which local staff, species experts, and section leaders discussed and evaluated LGCWEA's potential role in the conservation of focal species. For each species, workshop participants determined the status of the species on the area; evaluated the opportunities for management on the area; specified appropriate monitoring and research actions; and identified beneficial coordination and 'beyond the boundary' considerations. Using the information from the workshop, staff drafted the Strategy document and sent it to species experts and other professionals for review. Following the review, the Strategy was finalized and staff initiated implementation of actions in the Strategy.

Staff considered the goals and objectives in LGCWEA's Management Plan (formerly known as Conceptual Management Plan) when discussing and assessing the species; therefore, this Strategy supports the goals of the Management Plan. Management plans are on a 10-year revision cycle. During the next revision of the Management Plan, staff will incorporate the objectives in this Strategy into the Management Plan, and append this Strategy to the revised Management Plan.

While this Strategy focuses on LGCWEA, it considers the role of the area within the larger state or regional context. Similarly, while the Strategy has species-specific objectives and actions, it does not endorse single-species management. Natural community management is the core of FWC's ecological management approach, and by paying special attention to the needs of focal and imperiled species, we verify that our management actions are having the desired effect. By implementing the actions in the Strategy, the FWC believes our management will keep common species common, aid in the recovery of listed species, and benefit the largest suite of native wildlife.

Section 2: Current and Historic Management on Little Gator Creek Wildlife and Environmental Area

Florida purchased the 574-acre Little Gator Creek Wildlife and Environmental Area (LGCWEA) in Pasco County in 1982 using funds from the Conservation and Recreation Lands (CARL) program. Purchased as a single-use property for the preservation of a wading bird colony, LGCWEA is located within a large complex of conservation lands, including a number of publicly owned conservation areas within the Green Swamp Florida Forever Project. Conservation areas surrounding LGCWEA include the 5,067-acre Colt Creek State Park (CCSP) and the Green Swamp and Upper and Lower Hillsborough properties (Southwest Florida Water Management District, SWFWMD). The FWC has established WMAs on the SWFWMD properties for the purpose of managing hunting opportunities and providing technical assistance with wildlife and habitat management. These properties comprise 131,268 acres and are referred to in this Strategy as the Green Swamp complex.

The FWC is the lead managing agency on LGCWEA and a cooperator on Green Swamp WMA, Upper Hillsborough WMA, and Lower Hillsborough WMA.

Historically, Native Americans used LGCWEA for mining limestone, which they used for tools, and as a camp area during travel. As Europeans explored and settled the area, cattle grazing and agriculture were common activities. Records indicate that old growth longleaf pine (*Pinus palustris*) and slash pine (*P. elliottii*) were harvested from LGCWEA in the early 1900s. From 1928-1934, a naval stores operation was established and turpentine scars remain on trees from that time. A second pine harvest occurred in 1939 and bald cypress (*Taxodium distichum*) was harvested in 1949 and 1955. Cattle grazing was discontinued on LGCWEA in 1970, and prior to that, the landowner applied prescribed fire every 2 years. With the lack of prescribed burning or mechanical means to control vegetation, hardwood and palmetto density increased, as did pine basal area. In 1980, a wildfire occurred on LGCWEA, resulting in the loss of second-growth pine.

The northern boundary of LGCWEA encompasses 2 short segments of the Withlacoochee River, and Gator Creek flows through the northeast corner of the property. Adjacent to LGCWEA, a limerock mining operation controlled both quantity and quality of water entering the area, but this operation is no longer active and does not currently influence water resources on LGCWEA.

The Department of State, Division of Historical Resources (DHR) determined that 7 cultural sites with Lithic and artifact scatter are located on LGCWEA. As earlier accounts indicate a heavy use of LGCWEA by Native Americans, cultural resources may be extensive and staff takes precautionary measures during management activities to protect this resource. If additional sites are located in the future, staff will coordinate with DHR to document, monitor, and apply appropriate protective measures.

Staff resources on LGCWEA include 1 biologist and 1 technician; both positions also have responsibilities within the Green Swamp complex. Through in-house and contracted work, staff completed infrastructure maintenance and improvements, accomplished significant restoration and maintenance of mesic flatwoods natural communities, and continue to manage the wading bird and wood stork colony. If additional actions are recommended through the WCPR process, additional staffing, funding, and/or equipment resources will be required.

The Florida Natural Areas Inventory (FNAI) completed plant community mapping at LGCWEA as part of FWC's OBVM program ([Table 1](#)). On this WEA, FWC did not have FNAI map the historic natural communities. Through the OBVM workshop process, staff delineated management units and defined the desired future conditions (DFC) for the actively managed natural communities. Mesic flatwoods comprise approximately 291 acres on LGCWEA; the remaining acres consist of basin swamp, dome swamp, hydric hammock, or floodplain swamp (see [LGCWEA community mapping report](#)).

Table 1. Mapped acreage of current plant communities on LGCWEA, including management status and the number of focal species that use the community.

Natural Community Type	Estimated Current Acreage	# of Focal Species That Use the NC
Basin Swamp	190	6
Blackwater Stream	1	2
Depression Marsh	5	6
Dome Swamp	31	2
Floodplain Swamp	2	5
Hydric Hammock	47	4
Mesic Flatwoods ¹	291	13
Ruderal	7	6
TOTAL ACRES	574	

¹ Communities that are actively managed and monitored via the OBVM process. Other communities are managed, but not monitored via OBVM.

Historically, staff has applied fire every 2-5 years to maintain uplands on LGCWEA. This fire return interval may be too long to promote suitable habitat for maintaining the presence of Bachman’s sparrows. Staff will attempt to apply fire every 1-3 years in the future to benefit this and other species. In FY 2009-10, approximately 255 acres of slash pine were harvested in the mesic flatwoods, reducing the basal area to 10-50 sq ft/acre. Also during FY 2009-10, approximately 250 acres were mulched to reduce hardwoods and saw palmetto. Through a combination of prescribed fire, mechanical treatments, and timber harvest, the mesic flatwoods on LGCWEA are, for the most part, in good condition.

A hydrologic assessment of LGCWEA would be a valuable tool to guide management of water levels to benefit wading birds. Such an assessment has not been conducted, but the FWC plans to conduct one when funding becomes available. In the meantime, to promote wood stork nesting within a basin swamp on LGCWEA, FWC uses 3 water control structures located on Hwy 471 and a pump to manipulate water levels. These structures are aging and in need of replacement. A neighboring landowner is concerned that his land floods during high water events because of the condition of the water control structures. The hydrologic assessment will guide managers’ efforts to replace these structures in a fashion that provides for control of water levels within the basin swamp while being considerate of adjacent landowners.

At least 2 exotic plants occur on LGCWEA, cogon grass (*Imperata cylindrica*) and water lettuce (*Pistia stratiotes*). Feral hogs (*Sus scrofa*) are also present. Hunting is not allowed on LGCWEA and public access is authorized via permit process. Poaching occurs

periodically, as does illegal access; FWC addresses these issues with law enforcement as needed.

Past wildlife monitoring on LGCWEA includes wood stork colony monitoring by Audubon and FWC (prior to acquisition). Since acquisition, FWC wildlife monitoring on LGCWEA includes assessing the status of the wood stork colony and water levels within the swamp during and before the nesting season.

Section 3: Focal Species

The FWC's management approach focuses on maintaining and restoring the ecological form and function of natural communities. However, in some instances, it is important to consider the needs of specific wildlife species and to monitor the influences of natural community management on these species. To achieve a science-informed approach to species management, the FWC uses the focal species concept embraced by the [Wildlife Habitat Conservation Needs in Florida](#) project. This concept allows one to identify the needs of wildlife collectively by strategically focusing on a subset of wildlife species. The subset of species selected includes umbrella species, keystone species, habitat specialist species, and indicator species.

The FWC selected 60 focal species for the Public Lands Conservation Planning (PLCP) project, a project that used potential habitat models to create statewide potential habitat maps for each focal species. The FWC's 2003 landcover data served as the base layer for all potential habitat models, and staff selected additional layers considering the particular natural history of each species (e.g., species' range, known occurrence records); as such, each model is species specific. Once statewide potential habitat maps were completed, a Population Viability Analysis (PVA) was conducted for each focal species.

The statewide landcover-based habitat models identified 16 of the 60 focal species to have potential habitat on LGCWEA ([Section 3.1](#)). For all focal species modeled to have potential habitat on the WMA, staff created more accurate area-specific potential habitat maps by using the same statewide models but replacing the landcover data with area-specific natural community data. The resulting area-specific potential habitat maps were then refined based on the input of local managers and species experts.

The WCPR Workshop for LGCWEA held June 6-7, 2012, brought decision makers together to assess species' opportunities and needs, identify measurable objectives, outline necessary coordination efforts, and determine required actions such as monitoring. To facilitate informed discussion of the species, WCPR staff compiled a workbook that contained information on the focal species. Participants at the workshop discussed the "level of opportunity and need" for each species. This included considering the number of statewide prioritizations the species triggered (Statewide Species Prioritization Table), the species' listing status, and the long-term security of the species (i.e., examining PVA results). Other factors considered were the species' use of actively managed communities ([Table 1](#)),

species' response to management, and any local overriding factors (e.g., status of species in the region, local declines or extirpations). A brief summary of the opportunity and need assessments for each focal species is available in [Section 3.2](#).

3.1: Little Gator Creek WEA Focal Species List

Workshop participants assessed 16 species for their level of opportunity or need on LGCWEA. In the following species list, we use a ¹ to denote species for which a measurable objective is identified, a ² for species for which some level of monitoring is recommended, a ³ for species for which a SMA is recommended, and a ⁴ for species for which species management is recommended. Occasionally, statewide models indicate a species has potential habitat on the area, but the local assessment indicates there is little opportunity to manage for these species. These [limited opportunity species](#) are denoted with an *. Except for those species identified with a number, workshop participants and expert reviewers determined that ongoing management would meet the needs of the species. For species with no numerical superscripts, participants and reviewers agreed there is no need for measurable objectives, monitoring, SMAs, or species-specific management.

Gopher frog (*Lithobates capito*)

Eastern indigo snake (*Drymarchon couperi*)

Gopher tortoise (*Gopherus polyphemus*)

American swallow-tailed kite (*Elanoides forficatus*)

Bachman's sparrow (*Peucaea aestivalis*)²

Brown-headed nuthatch (*Sitta pusilla*)²

Cooper's hawk (*Accipiter cooperii*)

Florida mottled duck (*Anas fulvigula*)*

Florida sandhill crane (*Grus canadenses pratensis*)*

Limpkin (*Aramus guarauna*)*

Northern bobwhite (*Colinus virginianus*)

Southeastern American kestrel (*Falco sparverius paulus*)

Southern bald eagle (*Haliaeetus leucocephalus*)

Wading birds (Multiple species)^{1, 2}

Florida black bear (*Ursus americanus floridanus*)

Sherman's fox squirrel (*Sciurus niger shermani*)

3.2: Focal Species Opportunity/Needs Assessment

This section provides an assessment of the opportunities for management, and the needs of each of the focal species. The assessment considers a number of attributes, including the status of a species, the number of prioritization parameters it triggers, the species' response to management, and the amount and spatial arrangement of species' potential habitat available on the area. Because all federally listed wildlife are FWC-listed, we will provide only the federal listing status for federally listed species. When a species is not federally listed but is FWC-listed, we will provide the FWC listing status. The FWC is currently in the process of developing management plans for FWC-listed species. Staff will review these plans to determine if the content warrants a revision to any of these assessments and will revise this Strategy as warranted.

Unless otherwise noted, all reported acres of potential habitat are the result of using the area-specific natural community data in the species' potential habitat model. These estimates include all the area mapped in a natural community identified as potential habitat, including patches that may not be contiguous with other suitable habitat. During the workshop, participants considered the spatial arrangement and habitat patch size when assessing the potential role LGCWEA plays in the conservation of each species. For species that require larger habitat patches, we considered the continuity and condition of habitat on lands adjacent to the WEA.

3.2.1: Gopher Frog

Gopher frogs have not been documented on LGCWEA or the adjacent CCSP, but they do occur in the Green Swamp. In 2008, a gopher frog was observed in a gopher tortoise burrow in Green Swamp, approximately 1 mile north of the northern LGCWEA boundary.

Gopher frog habitat is a subset of gopher tortoise habitat that contains fishless ephemeral wetlands in which gopher frogs breed. After breeding, gopher frogs move back into surrounding upland habitat within a mile of the breeding pond. They prefer native, fire-maintained xeric habitats with intact groundcover, but can persist in areas with some habitat alteration. Gopher frogs often occupy gopher tortoise burrows, but they will use rodent and crayfish burrows, stump holes, and hollow logs.

Gopher frogs in Florida are an FWC-listed species of special concern. Considered a moderate priority statewide, this species triggers 2 of 6 prioritization parameters ([priorities table](#)). Regionally, the surrounding complex of conservation lands contains a high amount of upland habitat that could support gopher frogs and the species is known to occur in Green Swamp. While models indicate 203 acres of potential habitat within current natural communities, most of these acres consist of mesic flatwoods, basin swamp, and dome swamp. LGCWEA lacks the drier, more xeric communities this species prefers. However, there are 63,327 acres of potential habitat in the Green Swamp complex. Little is known

about gopher frog home range size or how much habitat is required to sustain a population, but it is likely that the area functions in support of a regional population. The limited amount of xeric uplands and associated lack of gopher tortoises, as well as the lack of suitable depression marshes for potential breeding ponds, indicates there is a low opportunity to influence the regional gopher frog population on LGCWEA.

Ongoing land management actions, including prescribed fire in mesic flatwoods and isolated wetlands, are compatible with the needs of gopher frogs on LGCWEA.

[Section 4.3.1](#) provides additional land management recommendations to ensure LGCWEA continues to meet the needs of gopher frogs. Monitoring should be opportunistic ([Section 5.2.3](#)).

The goal is to allow gopher frogs using LGCWEA to function as part of a regional population. Maintaining suitable upland habitat on LGCWEA will allow the area to fulfill its role in the conservation of this species. Within the complex of conservation lands surrounding LGCWEA, there is a high likelihood that gopher frogs will persist as long as beneficial land management continues.

3.2.2: Eastern Indigo Snake

Eastern indigo snakes have not been documented on LGCWEA, however, they have been observed twice in the past 2 years at CCSP. Because CCSP is adjacent to LGCWEA and this species has large home range size and is very mobile, it is likely that indigo snakes do occur on LGCWEA. Commonly associated with scrub, sandhill, and scrubby flatwoods, indigo snakes also use pine flatwoods, dry prairie, hardwood hammocks, marsh edges, and agricultural fields. Gopher tortoise burrows are important refuge sites for indigo snakes and provide protection from cold and desiccation. Indigo snakes also will use cotton rat burrows, hollowed tree stumps, ground litter, trash piles, and rock piles.

Indigo snakes have large home ranges and are vulnerable to habitat fragmentation, including the loss of travel corridors between areas of suitable habitat. In addition, the species experiences increased mortality in areas with more roads. Impediments (e.g., roads or patches of altered, unsuitable habitat) to the movement of indigo snakes between geographically separated areas can have a negative influence on the species.

Staff added the indigo snake to the focal species list for LGCWEA because it is a federally listed species and triggers 3 of 4 available prioritization parameters ([priorities table](#)). Models indicate 343 acres of potential habitat within natural communities on LGCWEA and 72,133 acres within adjacent SWFWMD properties. The body of research for indigo snakes suggests that at least 4,000 acres of habitat are required to support a viable population. Given the large amount of relatively contiguous habitat on neighboring conservation lands, it is likely that LGCWEA contributes to a regional population of indigo snakes.

Ongoing management actions that maintain or enhance habitat for this species include prescribed fire and mechanical actions that aid in restoring natural community structure and function. Stumps and other coarse woody debris should be retained during land management activities as potential refuge sites ([Section 4.3.2](#)). Habitat conditions on LGCWEA are currently suitable for use by indigo snakes, and should remain so as long as resources are available to support ongoing management.

Opportunistic monitoring is recommended ([Section 5.2.3](#)), and the results should be shared with FWRI ([Section 6.1.4](#)). While drift-fence surveys will not provide population-level information on this species, future drift-fence surveys conducted on the area should include the use of large upland snake traps to ensure adequate detection of large snakes such as the indigo or pine snake.

The goal is to allow indigo snakes using LGCWEA to function as part of a regional population. Maintaining suitable upland habitat on LGCWEA will allow the area to fulfill its role in the conservation of this species. Within the complex of conservation lands surrounding LGCWEA there is a high likelihood that indigo snakes will persist as long as beneficial land management continues.

3.2.3: Gopher Tortoise

Gopher tortoises are rarely observed on LGCWEA, but are relatively common in parts of Green Swamp. They are occasionally observed at the adjacent CCSP. The FWC has never conducted a gopher tortoise survey on LGCWEA. The gopher tortoise is a management-responsive species that can serve as an indicator of properly managed upland pine or grassland communities. It prefers xeric upland communities maintained with fire that helps perpetuate the groundcover on which it feeds. Ecologists often consider the gopher tortoise a keystone species because many other species use their burrows, including focal species such as the Florida mouse and gopher frog.

This FWC-listed threatened species triggers 4 of 6 prioritization parameters ([priorities table](#)), making it a high priority species statewide. The 2007 FWC gopher tortoise management plan placed emphasis on increasing the number of tortoises on public lands. The FWC recently approved a revised tortoise management plan (September 2012), with continued emphasis on habitat restoration on public lands.

Models indicate 296 acres of potential habitat within current natural communities on LGCWEA and 57,250 acres within adjacent Green Swamp complex. In theory, the potential habitat on LGCWEA may be enough to support a viable population of gopher tortoises. However, LGCWEA has rocky soil, as the limestone is very close to the surface. This could make it difficult for gopher tortoises to construct burrows. Further, most of the upland habitat on LGCWEA is mesic flatwoods. Typically, gopher tortoises use the drier flatwoods, or flatwoods associated with more xeric communities such as sandhill, scrub, and scrubby flatwoods. Therefore, the potential habitat on LGCWEA will continue to have a low

opportunity to support the gopher tortoise even though FWC manages it in a fashion compatible with the needs of the species. Given the large amount of potential habitat available within the surrounding complex of conservation lands, LGCWEA functions to support the regional gopher tortoise population, and gopher tortoises are a low to moderate priority on the area.

Management actions that maintain or enhance habitat for this species include the frequent use of prescribed fire. The FWC has managed much of the potential gopher tortoise habitat on LGCWEA using prescribed fire, mechanical treatment, or a combination of these treatments. Additional land management considerations can be found in [Section 4.3.3](#). Because gopher tortoises are rarely observed on LGCWEA, monitoring on LGCWEA should be opportunistic and include incidental observations of individuals or burrows ([Section 5.2.3](#)).

The goal is to allow gopher tortoises using LGCWEA to function as part of a regional population. Maintaining suitable upland habitat on LGCWEA will allow the area to fulfill its role in the conservation of this species. Within the complex of conservation lands surrounding LGCWEA, there is a high likelihood that gopher tortoises will persist, as long as beneficial land management continues.

3.2.4: American Swallow-Tailed Kite

American swallow-tailed kites are rarely observed on LGCWEA; however, they are widespread in the adjacent Green Swamp Complex. A 2008 avian survey by FNAI in Green Swamp documented several observations of family groups and one roost of 35 kites along the eastern shore of Dobe's Hole. Also in 2008, the Avian Research and Conservation Institute (ARCI), a research organization that conducts statewide research on swallow-tailed kite populations, located 2 nesting areas within Green Swamp; one approximately 7 miles northeast of LGCWEA and one approximately 15 miles north of LGCWEA.

American swallow-tailed kites are habitat generalists and utilize a variety of natural communities. Open areas are used for foraging, and trees that are dominant or taller than surrounding trees are preferred as nest trees. Shrub height and density tends to be higher around nest sites. Because this species has high nest site fidelity, maintaining suitability of nesting areas is important. Given the generalist nature of this species and its high mobility, it is not considered management dependent though it does benefit from active management to restore natural communities provided nest sites are not disturbed.

American swallow-tailed kites trigger 4 of 6 statewide prioritization parameters ([priorities table](#)), making them a moderate statewide priority. Models indicate 483 acres of potential kite habitat within natural communities on LGCWEA. Models indicate 85,647 acres of potential habitat in the Green Swamp complex. Given the relatively small amount of potential habitat on LGCWEA, the area's role is to provide a small amount of foraging opportunity for the regional population.

American swallow-tailed kites are not typically considered management-dependent and the opportunity to affect this species on LGCWEA is low. Ongoing efforts to maintain natural community structure and function, such as timber thinning and prescribed fire, will benefit kites. If nests are located on the area, recommendations described in [Section 4.3.4](#) will be used and the nest will be reported to ARCI ([Section 6.5](#)). If kite nesting activity is observed, this information should be documented and reported ([Section 5.2.3](#)).

The goal is to promote suitable foraging and nesting habitat for the American swallow-tailed kite that will allow kites using LGCWEA to function as part of a regional population. While the continued presence of this species on LGCWEA is dependent on conditions affecting the regional population, the amount of potential habitat on adjacent conservation areas increases the likelihood that American swallow-tailed kites will continue to persist within the LGCWEA area.

3.2.5: Bachman's Sparrow

Bachman's sparrows were documented on LGCWEA in late March 2012; previously their status was unknown on the area. Bachman's sparrows have an established breeding population in the adjacent Green Swamp. A 2008 avian survey by FNAI in Green Swamp documented a high number of Bachman's sparrows in Green Swamp East, and a lower number in Green Swamp West.

Bachman's sparrows prefer mature pine forests with a low basal area and healthy herbaceous vegetation or early-successional old-field habitat. The Bachman's sparrow is responsive to management and the occurrence of fire is critical to sustaining this species. Use of an area by Bachman's sparrows declines rapidly around 18 months post-fire, and sites are typically abandoned if fire is excluded for >3 years. In many areas, the optimal fire return interval necessary to achieve desired vegetative parameters for Bachman's sparrow habitat is 2-3 years.

The Bachman's sparrow triggers 2 of 6 prioritization parameters ([priorities table](#)) and is currently experiencing range-wide population declines. Breeding Bird Survey data indicate a 3.2% decline per year range-wide, with a 2.7% decline per year in Florida. Models indicate 291 acres of potential habitat within natural communities on LGCWEA, most of which is currently in a condition that could support Bachman's sparrows. Models indicate 44,762 acres of potential habitat within adjacent Green Swamp complex. Literature suggests a minimum of 520 acres of contiguous habitat is required to maintain a viable population of Bachman's sparrows.

LGCWEA alone does not contain enough potential habitat to sustain a viable population, but is within a matrix of conservation lands that supports a population of Bachman's sparrows. Prescribed fire and the recent timber harvest on LGCWEA have restored the mesic flatwoods to a more open structure with a diverse groundcover. Ongoing efforts to maintain natural community structure and function on LGCWEA will maintain or

increase suitability for Bachman's sparrows within potential habitat. Current land management is compatible with the needs of the species, as long as an emphasis is placed on frequent prescribed fire (1-3 years). Additional land management considerations are found in [Section 4.3.5](#).

Staff are encouraged to attempt to document presence of Bachman's sparrows on LGCWEA during the breeding season (April–June). Bachman's sparrows are relatively easy to detect during the breeding season and the use of call-back tapes can increase the likelihood of detection. Staff should visit the area during the breeding season to determine presence or absence of Bachman's sparrows on LGCWEA annually ([Section 5.2.1](#)).

The goal is to allow Bachman's sparrows using LGCWEA to function as part of a regional population. Maintaining suitable upland habitat on LGCWEA will allow the area to fulfill its role in the conservation of this species. The continued presence of Bachman's sparrows on LGCWEA is dependent on conditions affecting the regional population; however, the amount of potential habitat on adjacent conservation areas increases the likelihood of their persistence, as long as beneficial land management continues. As a cooperating agency in the Green Swamp complex, the FWC will encourage management activities that support regional populations of species such as the Bachman's sparrow.

3.2.6: Brown-Headed Nuthatch

Brown-headed nuthatches have not been documented on LGCWEA, though a formal survey has never been conducted. A 2008 avian survey by FNAI in Green Swamp documented a high number of brown-headed nuthatches in Green Swamp East, and a lower number in Green Swamp West. Because brown-headed nuthatches occur on the adjacent CCSP, there is a good chance they occur on LGCWEA.

The brown-headed nuthatch is dependent on open stands of mature pine interspersed with snags in which the species excavates nesting cavities. Older pine forests (≥ 35 years for longleaf and slash pine) and pine stands with basal area between 35–50 ft²/ac (8-11 m²/ha) are preferred. This species triggers 2 of 6 prioritization parameters ([priorities table](#)) and is currently experiencing range-wide declines due to habitat loss and degradation.

Models indicate 291 acres of potential habitat within natural communities on LGCWEA, most of which is suitable. Models indicate 48,333 acres within the Green Swamp complex. Literature suggests 1,000 acres of habitat is necessary to support a viable population, indicating that LGCWEA functions in support of the regional population and could not independently support a viable population of brown-headed nuthatches.

Management actions that maintain or enhance habitat for this species include prescribed fire and silvicultural management favoring open stands of mature timber. However, appropriate snags must be retained during management actions. Recent timber thinning combined with prescribed fire have greatly enhanced conditions for this species. A shorter fire return interval and the protection of snags during land management activities will

further improve habitat suitability ([Section 4.3.6](#)). Brown-headed nuthatches are relatively easy to detect during the breeding season, and the use of callback tapes can increase the likelihood of detection. Staff is encouraged to attempt to document the presence of brown-headed nuthatches on LGCWEA during the breeding season (February – June) annually ([Section 5.2.1](#)).

The goal is to provide the opportunity for occupation by this species and allow individuals to function as part of the regional population. Maintaining suitable upland habitat on LGCWEA will allow the area to fulfill its role in the conservation of this species. The presence of brown-headed nuthatches on LGCWEA is dependent on conditions affecting the regional population; however, the amount of potential habitat on adjacent conservation areas increases the likelihood of their persistence, as long as beneficial land management continues. As a cooperating agency in the Green Swamp complex, the FWC will encourage management activities that support regional populations of species such as the brown-headed nuthatch.

3.2.7: Cooper's Hawk

Cooper's hawks have not been documented using LGCWEA, but they are often observed in the adjacent Green Swamp complex. A 2008 avian survey by FNAI in Green Swamp documented 4 individuals during 63 field days of surveying. Cooper's hawks also have been observed at CCSP, and therefore, are probable on LGCWEA.

Cooper's hawks are commonly associated with woodlands and nest in a variety of habitats, including swamps, floodplain and bottomland forests, sand pine scrub, and baygalls. Nests usually are placed near the crown of a tree close to an edge in dense stands of oaks or pine. Cooper's hawks primarily feed on other birds, so nests are located in proximity to suitable hunting areas.

The Cooper's hawk triggers 1 of 6 prioritization parameters ([priorities table](#)). From a regional perspective, the complex of conservation lands surrounding LGCWEA likely supports a regional population of Cooper's hawks. Models indicate 489 acres of potential Cooper's hawk habitat within natural communities on LGCWEA and 85,647 acres of potential habitat in the Green Swamp complex.

Cooper's hawks are not considered management dependent and the opportunity to affect this species on these areas is low. However, ongoing ecological restoration and maintenance of tracts where the species is modeled to occur will benefit the Cooper's hawk. Management actions that maintain or enhance habitat for this species include prescribed fire and mechanical actions that aid in restoring natural community structure.

During the nesting season (April-July), the Cooper's hawk is secretive and sensitive to disturbance near the nest site. No attempt will be made to actively search for nests, but incidental observations of Cooper's hawks will be noted ([Section 5.2.3](#)) and nesting areas will be protected from disturbance ([Section 4.3.7](#)).

The goal is to provide suitable foraging and nesting habitat for the Cooper's hawk that will allow individuals using LGCWEA to function as part of the regional population. While the continued presence of this species on LGCWEA is dependent on conditions affecting the regional population, the amount of potential habitat on adjacent conservation areas increases the likelihood that Cooper's hawks will continue to persist within the LGCWEA area.

3.2.8: Northern Bobwhite

Northern bobwhite are occasionally observed on LGCWEA, and are commonly observed in the Green Swamp complex and CCSP. Northern bobwhite are associated with open canopy forests and grassland communities dominated by warm-season grasses, legumes, and patchy bare ground. Weedy areas are used for raising broods and foraging; shrubs or other thickets are useful as roosting habitat or escape cover. The frequent application of prescribed fire can be used to create the mosaic of vegetation conditions this species requires to meet its life history needs.

One of 2 game species addressed by the WCPR program, northern bobwhite triggers 2 of 6 prioritization parameters ([priorities table](#)). Northern bobwhite have experienced significant range-wide population declines since the 1960s and are currently a major focus of many initiatives including the Upland Ecosystem Restoration Project. Models indicate 297 acres of potential habitat within natural communities on LGCWEA and 61,813 acres within the Green Swamp complex. Literature suggests this species needs 2,000–4,000 acres to support a viable population. The amount of potential habitat on LGCWEA is not enough to support an independent population; rather, LGCWEA contributes to the regional population.

Mesic flatwoods is the dominant upland habitat type on LGCWEA. Recent timber harvest and prescribed fire on LGCWEA have restored the mesic flatwoods to a more open structure with a diverse groundcover. Because LGCWEA has a relatively small amount of potential habitat, the area has a limited role in reversing the statewide decline of this species. However, ongoing management is compatible with the needs of this species ([Section 4.3.8](#)) and this management will allow LGCWEA to fulfill its role in supporting the regional population.

The goal is to continue to support the regional population. By continuing to apply prescribed fire and maintaining suitable habitat conditions, LGCWEA will fulfill its role for this species. The continued presence of northern bobwhite on LGCWEA is dependent on conditions affecting the regional population; however, the amount of potential habitat on adjacent conservation areas increases the likelihood of their persistence, as long as beneficial land management continues.

3.2.9: Southeastern American Kestrel

Southeastern American kestrels have not been documented using LGCWEA. A 2008 avian survey by FNAI in Green Swamp documented 2 confirmed occurrences of southeastern American kestrels. Southeastern American kestrels utilize upland habitats including sandhills, longleaf savannas, pastures, sand pine scrub, and prairies. As a secondary cavity nester, southeastern American kestrels use previously excavated cavities in large snags. They will utilize artificial cavities in areas of suitable habitat. Kestrels require adequate perch sites within foraging areas, and habitat with low ground cover (<1 ft) and an open canopy (<20% cover) are ideal for this species. The average kestrel breeding territory size is 125 acres, though more area may be necessary if the habitat quality is marginal.

Southeastern American kestrels are listed by the FWC as a threatened species and trigger 4 of 6 prioritization parameters ([priorities table](#)). Models indicate 302 acres of potential habitat within natural communities on LGCWEA, all of which is mesic flatwoods. Mesic flatwoods is not a primary habitat type used by southeastern American kestrels, unless it is within a mosaic of sandhills or prairies. Models indicate 51,157 acres of potential habitat within adjacent Green Swamp complex, but only 6,320 acres could be considered primary habitat (sandhill, pasture, scrub, and scrubby flatwoods). Habitat on Green Swamp immediately adjacent to LGCWEA is mesic flatwoods. As such, it is unlikely breeding kestrels would use LGCWEA. However, occasional foraging may occur, and the habitat is suitable for that purpose.

Management actions that maintain or enhance habitat for this species include managing for mature, open stands of longleaf pine maintained with prescribed fire. Mechanical actions that aid in restoring natural community structure also can be beneficial, provided snags are protected. Additional land management considerations can be found in [Section 4.3.9](#). Monitoring for southeastern American kestrels on LGCWEA should be opportunistic ([Section 5.2.3](#)).

The goal is to allow southeastern American kestrels using LGCWEA to function as part of a regional population. By continuing to apply prescribed fire and maintaining suitable habitat conditions, LGCWEA will fulfill its role for this species. However, factors affecting the regional population will influence the long-term use of LGCWEA by this species. As the FWC is a cooperating agency within Green Swamp complex, staff will continue to encourage management activities that support regional populations of imperiled species such as the southeastern American kestrel.

3.2.10: Southern Bald Eagle

Southern bald eagles are rarely observed on LGCWEA, but there is a nest on CCSP that was last active in 2008. One other nest is within 3 miles of LGCWEA is located on private property, and that nest was active in 2011.

The bald eagle does not trigger any of the prioritization parameters, but is protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The FWC approved a Bald Eagle Management Plan in 2008 to ensure the continued recovery of this species. This plan designated 16 Core Nesting Areas (CNAs), which are defined as areas containing high densities of bald eagle nesting territories. Regionally, LGCWEA and the greater complex of surrounding conservation lands are located between 3 CNAs: central Polk County, the Kissimmee Chain of Lakes, and the Harris Chain of Lakes.

Models indicate 190 acres of potential habitat within natural communities on LGCWEA and 25,456 acres within the Green Swamp complex. Bald eagles are not considered management-dependent and the opportunity to influence them on LGCWEA is low. However, ongoing efforts to manage for mature stands of trees and to apply prescribed fire will benefit this species, provided nest protection guidelines are followed. Any activities around nest sites will be conducted according to guidance in the management plan ([Section 4.3.10](#)). Because eagles naturally occur in relatively low densities, the species is more appropriately monitored at a statewide or regional basis. New nesting sites will be documented and reported ([Section 5.2.3](#) and [Section 6.1.1](#)).

The goal is to provide suitable foraging and nesting habitat for the southern bald eagle that will allow individuals using these areas to function as part of a regional population. The continued presence of this species on these areas is dependent on conditions that influence the regional population, but the large amount of potential habitat in the surrounding landscape increases the potential for this species to persist regionally.

3.2.11: Wading Birds

Four of the 8 focal species of wading birds (great egret [*Ardea alba*], little blue heron [*Egretta caerulea*], white ibis [*Eudocimus albus*], and wood stork [*Mycteria americana*]) have been documented on LGCWEA. The snowy egret (*Egretta thula*), tricolored heron (*E. tricolor*), reddish egret (*E. rufescens*), and the roseate spoonbill (*Platalea ajaja*) have not been documented. LGCWEA contains a mixed wading bird colony that includes wood storks, and is within the core foraging area for at least 3 other wood stork colonies (based on 2010 data).

LGCWEA was purchased in 1982 as a single-use property for the preservation of a significant wading bird colony containing a large number of wood stork nests, as well as other species. Wood storks have nested intermittently at this site for the past 70 years. They require standing water in the colony throughout the nesting season to protect against nest predation and abandonment. As a condition of purchase, the previous landowner agreed to provide proper equipment and structures needed to regulate the water flow and levels within the colony for 5 years after state purchase. This consisted of constructing a levee where the current pump is located, as well as small culverts under the levee and an 11-inch casing for water level augmentation. The FWC later installed weir structures to adhere to state

regulations regarding water control structures. The FWC's continued management of the water levels has allowed this colony to persist, even during drought years. The colony was active in 2010, 2011, and 2012, but was inactive for a few years prior to 2010. Managing and protecting this colony is a high priority on LGCWEA.

Statewide, wading birds are a moderate priority ([priorities table](#)). Several species are FWC-listed species of special concern and the USFWS lists the wood stork as endangered. The Millsap biological scores for the reddish egret, little blue heron, and wood stork are high. The snowy egret, little blue heron, and roseate spoonbill have SGCN declining population trends while the tricolored heron and white ibis have unknown trends.

Models indicate 276 acres of potential habitat within natural communities on LGCWEA and 70,557 acres within the Green Swamp complex. The colony itself encompasses approximately 10 acres of basin swamp. Wading birds may travel great distances between foraging and nesting habitat. While there is relatively little potential habitat on LGCWEA, compared to the surrounding landscape, this area provides nesting habitat even during drought years, indicating a high opportunity to support wading birds, particularly wood storks.

The LGCWEA colony was part of a study conducted from 1981-1985 assessing large-scaled nesting habitat variables in 15 wood stork colonies in north and central Florida ([Rodgers et al 1996](#)). This study found that nesting wood storks used 5 tree species in the LGCWEA colony (red maple [*Acer rubrum*], cypress [*Taxodium distichum*], green ash [*Fraxinus pennsylvanica*], laurel oak [*Quercus laurifolia*], and wax myrtle [*Myrica cerifera*]); red maple and cypress were the dominant nest tree species. Hurricanes in 2004 killed or knocked down most of the red maples within the colony. During this study, water levels beneath nests in the colony were 0.5–2.5 ft (47.8 ± 29.3 cm) deep. This study also documented potential early stages of impoundment-related stress on trees within the colony, possibly because of an extended hydroperiod.

While not dependent on actively managed natural communities, wading birds benefit from the application of prescribed fire in wetland habitats. Where possible, allow fire to burn across marshes and wetlands to decrease shrub encroachment. However, the affect of smoke on an active colony is not known, and managers should attempt to keep smoke out of the colony when nesting birds are present. Managers will continue to provide appropriate protection during land management activities on LGCWEA ([Section 4.3.11](#)).

Current management actions within the LGCWEA colony include periodic treatment of hardwoods in the center of the colony. This treatment makes it easier for wood storks to take flight from within the colony, and staff has applied this action twice since 2001. Managers will visually assess the take off area and will treat vegetation as needed to maintain an open area for flight. Any vegetation treatment will be done outside the nesting season.

Water level maintenance before and during the nesting season is another management action on LGCWEA ([Section 5.1.1](#)). Inundating the basin swamp that supports the colony before and during the nesting season creates conditions preferred by wood storks and protects

nests from mammalian predators such as raccoons. Managers use a water control structure and pump to maintain water levels at or above 6.7 ft at the water control structure. However, even when the water level is maintained at the desired depth at the water control structure, the actual water depth within the colony is unknown.

Periodic drought would benefit the colony area by allowing soils to aerate, protecting trees from stress. If wood storks do not nest in a given year, managers should consider turning off the pump and allowing the colony area to dry out, which may improve the long-term survival of nest trees. Finally, a boardwalk leading into the colony was installed several years ago but has since fallen into disrepair and will be removed by a contractor in FY 2012/13, if resources allow. Outside of the colony, the remainder of the potential habitat is not actively managed.

The FWC uses 3 water control structures located on Hwy 471 to manipulate water levels to promote wood stork nesting within a basin swamp. A neighboring landowner is concerned that his land floods during high water events because of the condition of the water control structures. The result of a hydrologic assessment would be beneficial in guiding managers' efforts to replace these structures in a fashion that provides for control of water levels within the basin swamp while being considerate of adjacent landowners. Furthermore, sinkholes have drained the basin swamp in the past. A hydrologic assessment may help understand the potential for future problems with sinkholes and allow managers to identify contingency plans should a sinkhole again occur. No hydrologic assessment has been conducted on LGCWEA, but FWC has plans to conduct one when funding becomes available.

To date, the monitoring and managing of water levels is done by sight and is based on manager knowledge; the process is not formalized or documented. Similarly, while staff verify the status of the colony each year, there is no standardized monitoring protocol. Formalizing the process for monitoring and maintaining water levels before and during the nesting season, and formalizing the process for annually documenting and reporting colony status is recommended [Section 5.2.2](#).

The basin swamp in which the wading bird colony is located on LGCWEA is closed to public access. The FWC provides for public access on the rest of the property, but visitors must secure a permit. Under the current rule language, a permit could be granted during the nesting season and it is possible the permit holder could disturb the colony if they ignore the restrictions on entering a closed area. Disturbance to the colony during the nesting season could result in decreased nesting success or abandonment and should be avoided. Revising the rule to limit all public access during the nesting season or providing guidelines for permit issuance that deny permit requests for access during the nesting season is recommended to address concerns about disturbance. To ensure permits are not issued during the wading bird nesting season, we propose adding a rule that specifies permits cannot be issued during the nesting season. Area and regional staff will coordinate with Division of Hunting and Game Management (DHGM) staff to address this issue ([Section 6.1.2](#)).

The goal for LGCWEA is to maintain the presence of successful breeding wading birds and wood storks on the area. The measurable objectives are to:

1. By the end of 2013, determine if the target water depth of 6.7 feet at the water control structure results in appropriate water levels within the basin swamp.
2. By the end of 2013, develop a datasheet to record information on the status and success of the colony, and water levels in the colony site.
3. Annually, document the status and success of the colony, and water levels in the colony site.

While FWC can take steps to ensure the conditions in the basin swamp are suitable for use by breeding wading birds, there may still be years when the colony is inactive due to factors outside the control of area staff. Wading birds are highly influenced by regional water levels, and factors affecting the regional population may limit use of the LGCWEA colony. However, the large amount of potential habitat in the surrounding landscape increases the potential for this group of species to persist regionally.

3.2.12: Florida Black Bear

Florida black bears are uncommon on LGCWEA and the surrounding conservation lands. LGCWEA is on the southeastern corner of the Big Bend Bear Management Unit (BMU), which is close to the border of both the Central BMU and the South/Central BMU. LGCWEA is approximately equidistance from the Chassahowitzka, Ocala, and Highlands bear subpopulations, but is not part of any primary or secondary bear range. The Florida black bear is a wide-ranging species capable of significant dispersal; however, it is typically dispersing males that move long distances. Because females tend to establish a home range near where they were born, this species is slow to colonize new breeding territory, and tends to grow out from existing populations. A number of variables, including resource availability and the level of habitat fragmentation on the landscape, influence home range size. A mosaic of flatwoods, swamps, scrub oak ridges, bayheads, and hammocks provides adequate den sites, a diversity of seasonally abundant food sources, and cover when traveling between these habitat types.

This species triggers 2 of 6 prioritization parameters ([priorities table](#)). In June 2012, the FWC approved a [bear management plan](#) and removed the species from the threatened list. The FWC intends for the management plan to guide continued recovery of this species. Models indicate 343 acres of potential habitat within natural communities on LGCWEA, which is too small to support even 1 bear. The surrounding complex of conservations lands contains over 100,000 acres of potential bear habitat, but is not occupied by a breeding bear population. Given that LGCWEA is not in or near primary or secondary bear habitat, there is a low opportunity to benefit bears on LGCWEA.

Land management activities that promote a mosaic of vegetation structure across the landscape will provide forage and cover for bears. See [Section 4.3.12](#) for more information on land management. Because FWC monitors this species at the subpopulation level, local monitoring for bears should be opportunistic ([Section 5.2.3](#)).

The goal is to maintain the habitat in suitable conditions for bears that may move through LGCWEA. The amount of potential habitat on conservation lands surrounding LGCWEA increases the likelihood that bears will continue to periodically use habitat on or near LGCWEA, but the future presence of bears on LGCWEA is dependent on whether or not bears re-occupy the greater Green Swamp ecosystem.

3.2.13: *Sherman's Fox Squirrel*

Sherman's fox squirrels are rarely seen on LGCWEA, but are considered common in the Green Swamp and CCSP. Suitable habitat for Sherman's fox squirrel includes longleaf pine sandhills or flatwoods with a mixture of mature pines and oaks, and a sparse to moderate shrub layer. Sherman's fox squirrels appear to do best in mature longleaf pine stands maintained with fire that results in an open understory with an oak component. Fox squirrels often use large oaks for nest sites and for daytime refugia. In addition, acorns provide a major part of their diet. Mature longleaf pines that produce seed bearing cones are an important energy-rich food source, particularly during summer. A mosaic of habitat conditions across the landscape ensures a year-round supply of food items that vary seasonally.

The Sherman's fox squirrel is an FWC-listed species of special concern and triggers 4 of 6 prioritization parameters ([priorities table](#)). The fox squirrel is a wide-ranging species and the literature suggests 2,000-9,000 acres of suitable habitat are required to support a population. Models indicate 297 acres of potential habitat within natural communities on LGCWEA and 60,293 acres within adjacent Green Swamp complex. Given the relatively small amount of potential habitat on LGCWEA, it is likely that this area functions in support of the regional population. Potential habitat on LGCWEA is in a condition suitable for use by fox squirrels, but suitability will improve as the pines mature.

Management actions that maintain or enhance habitat for fox squirrels include prescribed fire and mechanical actions that aid in restoring natural community structure, and timber management that results in open, mature pine forests, with an oak component. As these are planned and ongoing management actions on LGCWEA, there is no need for a SMA. Because this species naturally occurs at low densities and can be difficult to detect, no specific monitoring aside from opportunistic observation is recommended ([Section 5.2.3](#)).

The goal is to continue to provide suitable habitat that allows Sherman's fox squirrels on LGCWEA to function as part of a regional population. While the continued presence of fox squirrels on this area may be dependent on conditions affecting the regional population, LGCWEA is part of a large block of contiguous fox squirrel habitat that occurs on

conservation lands. As long as beneficial land management continues on these conservation lands, there is an increased chance of persistence.

3.2.14: Limited Opportunity Species

Three focal species (Limpkin, Florida Mottled Duck, Florida Sandhill Crane) modeled (using statewide data) to have potential habitat on LGCWEA lack reasonable opportunity for management on the area. Opportunistic observations of these species should be documented ([Section 5.2.3](#)). If any of these species are documented with increasing regularity, LGCWEA's role in their conservation and recovery should be re-visited.

Florida Mottled Duck - The status of Florida mottled ducks is unknown on LGCWEA and models indicate only 0.5 acres of potential habitat within natural communities.

For nesting, female mottled ducks prefer upland areas near wetlands. Mottled ducks have been documented nesting in dry marshes, pine flatwoods, citrus groves and urban areas. Habitats that are avoided include wet prairies, shrub and forested wetlands, open water and flooded areas. This species prefers foraging in shallow water less than 10 inches deep and wetlands with emergent vegetation. Potential foraging habitat can be enhanced through management activities that promote a mosaic of open water and cover within shallow emergent wetlands.

One of 2 game species addressed by the WCPR program, the mottled duck is not listed at either the state or federal level. This species triggers 2 of the 6 statewide prioritization parameters ([priorities table](#)), making it a medium priority statewide. Given the small amount of potential habitat on LGCWEA, the area lacks reasonable opportunity to manage for mottled ducks and it is considered a limited-opportunity species.

Florida Sandhill Crane - Florida sandhill cranes have not been observed on LGCWEA. In April 2012, a pair of sandhill cranes with a chick was observed at CCSP and two years ago, a pair of cranes successfully raised 2 chicks on CCSP.

Sandhill crane home range size varies seasonally and regionally, with adult pairs requiring approximately 300-600 acres. Habitat used includes a mosaic of emergent palustrine wetlands and open uplands such as pasture, prairie, and open pinelands. Sandhill cranes use a combination of shallow wetlands and open upland habitats with a majority of the vegetative cover ≤ 20 inches in height. Standing water is an important component of nesting habitat for Florida sandhill cranes. Nests consist of herbaceous plant material mounded in shallow water or marshy areas. LGCWEA does not have any potential nest sites.

The Florida sandhill crane is listed as threatened by the FWC and triggers 4 of 6 prioritization parameters ([priorities table](#)), making it a moderate to high statewide priority. However, models indicate only 5 acres of potential habitat within current natural communities on LGCWEA. Though sandhill cranes occur in the surrounding habitat, the

small amount of potential habitat on LGCWEA indicates the area lacks reasonable opportunity to manage for Florida sandhill cranes, making it a limited opportunity species on the area.

Limpkin - Limpkins are occasionally observed at LGCWEA. A 2008 avian survey by FNAI in Green Swamp documented 3 limpkins in Green Swamp West during 63 days of surveys. Managers at CCSP report an increase in incidental observations of limpkins in the past 5 years, particularly around lakes on the property.

Limpkins are highly mobile and influenced by regional water levels and the availability of prey items, primarily fresh water mollusks. Limpkins typically inhabit freshwater marshes, swamps, springs, and spring runs. Limpkins are a FWC species of special concern and trigger 1 of 6 prioritization parameters ([priorities table](#)). Models indicate only 3 acres of potential habitat within natural communities. Given the small amount of potential habitat on LGCWEA, there is a lack of reasonable opportunity to manage for limpkin, making it a limited opportunity species.

3.3 Other Listed and Locally Important Species

While natural community management focused on a set of focal species provides benefits to a host of species reliant upon these natural communities, species that are imperiled sometimes require specific attention. Further, subsection 253.034(5) of the Florida Statutes (F.S.) requires all land management plans to include an analysis of the property to determine if significant natural resources, including listed species, occur on the property. If significant natural resources occur, the plan shall contain management strategies to protect the resources. The Florida Forever Act (s. 259.105, F.S.) adds that all State lands that have imperiled species habitat shall include restoration, enhancement, management, and repopulation of such habitats as a consideration in the management plan. In this subsection, we discuss listed or locally important species that are not PLCP focal species.

It is possible other imperiled species occur on LGCWEA, and if encountered, staff will document these encounters. Florida's imperiled species are adapted to natural communities and should continue to benefit from FWC's ongoing or planned ecological management that aims to restore natural community structure and function. Under FWC's ecological management, these species have a higher probability of persistence than in the absence of this management.

3.3.1: Other Focal or Imperiled Wildlife

In addition to the listed species discussed in [Section 3.2](#), the American alligator (*Alligator mississippiensis*) is the only other listed species known to occur on LGCWEA.

American Alligator - The alligator is federally listed due to similarity of appearance with other listed crocodylians. Ongoing management to maintain healthy wetland habitats should ensure the continued existence of the alligator on LGCWEA.

3.3.2: Rare Plants

While there has been no formal rare plant inventory on LGCWEA, there is one imperiled plant known to occur on the WEA. The Florida Department of Agriculture and Consumer Services lists celestial lily (*Nemastylis floridana*) as endangered. If additional resources become available, it would be beneficial to contract for a rare plant inventory. The protections afforded plants by existing on conservations lands, in conjunction with management actions that include exotic plant removal and prescribed fire, will continue to maintain habitat for these and other rare plants. As such, these species should persist under planned management on LGCWEA.

Celestial Lily - Celestial lily (*Nemastylis floridana*) was recorded on LGCWEA by FNAI during natural community mapping. Celestial lilies are found in wet flatwoods, marshes, wet prairies, and along cabbage palm hammock edges. Known to occur on only about 15 managed areas, this species benefits from frequent prescribed fire (2-4 years) and protection from hydrologic alteration (ditching, drainage, conversion). Because celestial lily benefits from prescribed fire, ongoing land management activities should benefit this species, provided it is protect during mechanical treatments or exotic control efforts.

Section 4: Land Management Actions and Considerations

Models identified potential habitat for 16 focal species on the area ([Section 3.1](#)); however, not all of these species have the same level of management opportunity or need ([Section 3.2](#)). The FWC's natural community-based management, which emphasizes frequent growing season prescribed fire, will promote the habitat conditions necessary for most of these species, without the need for further strategic management actions. We may designate Strategic Management Areas (SMAs) when actions over and above ongoing natural community management are required in a specific location ([Section 4.1](#)). In addition, to ensure natural community management addresses the needs of these focal species, we evaluate the OBVM Desired Future Conditions (DFCs) for natural communities ([Section 4.2](#)). [Section 4.3](#) provides recommendations for species that need specific protective measures or land management considerations to ensure their continued use of the property.

4.1: Strategic Management Areas

The intent on LGCWEA is apply management actions that maintain intact natural communities in good condition and restore degraded or altered natural communities to a condition that will better suit focal and listed species. However, SMAs focus management actions on MUs with the highest possibility of success, and or MUs most critical for the conservation of a species on the WEA. Staff designates SMAs to achieve at least one of the following:

- Identify the area in which to apply specific land or species management that creates the highest probability for persistence and conservation of a species or suite of species. These specific actions should aid in restoring, enhancing, or maintaining the habitat or population.
- Identify an area in which to focus specific land or species management actions for the best chance of success, when there is more restoration and enhancement than can be accomplished in short order on the WMA. This might be the first or next step in a sequential series of management actions that will increase the likelihood of occupation and or persistence of a specific species.
- Identify an area that is so critical to the persistence of a species on the WMA that it warrants special designation to ensure protection against negative alteration.
- Identify areas that are critical for research or monitoring.
- Recommend MU-specific natural community DFCs that differ from the DFCs in the natural community area-wide, when this is necessary to benefit a specific species.

The WCPR workshop gave participants the opportunity to evaluate if there was the need for SMAs to meet the needs of focal species. Workshop participants agreed that planned and ongoing management actions across LGCWEA will meet the needs of the focal species; therefore, they did not designate any SMAs.

4.2: Objective-Based Vegetation Management Considerations

OBVM is an approach to land management that emphasizes maintaining and restoring natural plant communities towards pre-determined desired conditions. The OBVM DFCs (Table 2) target a range in values for various habitat attributes within actively managed communities. However, if a focal species requires a more restricted range in habitat attributes than is reflected in the area-wide DFCs, or depends on an attribute that is not currently monitored on LGCWEA, we may recommend adjusting the DFC range or adding the attribute. The workshop gave participants the opportunity to evaluate if the current DFCs meet the needs of focal species and if not, to suggest modifications. The following are common reasons to modify DFCs:

- To obtain maximum habitat suitability for a species that requires a more restricted range of DFC values than the current DFC values.

- To benefit a particular species in specific MUs; typically when we have designated a SMA that requires a change in natural community DFCs only within the the SMA and not in the natural community area-wide.
- To add an attribute that was not previously monitored.

The OBVM ‘data collection protocol’ and ‘attribute range in values’ have changed since the LGCWEA OBVM workshop. The data collection protocols for OBVM changed due to program review and budgetary issues. Additionally, the OBVM workshop occurred prior to the identification of reference sites. Reference sites are areas identified by FNAI as representing the highest quality examples of natural communities in the State. At the WCPR workshop, participants agreed use of the reference sites values would best meet the needs of the focal species. As such, Table 2 reflects the recommended OBVM DFCs for LGCWEA.

Table 2. Desired Future Conditions for specific vegetative attributes in actively managed natural communities at LGCWEA as identified via the OBVM workshop process.

Mesic Flatwoods	DFC Value Range
Pine Basal Area (sq ft per acre)	10-50
LL Basal Area (sq ft per acre)	10-50
Non Pine Density (count in 7m radius)	0
Subcanopy (count within 4m quadrat)	<1
Serenoa Cover (%)	10-25
Serenoa Petiole Density >3 ft (count)	0
Average Maximum Shrub Height (ft)	≤2
Shrub Cover (%)	<25
Shrub Stem Density >3 ft (count)	<1
Maximum Shrub DBH (inches)	<0.5
Herbaceous Cover (%)	>25
Wiry Graminoids Cover (%)	>10
Exotics Plant Cover (%)	0
Weed Cover (%)	<2

4.3: Further Land Management Considerations

Most generalist or wide-ranging species will benefit from management that restores the natural structure and function of natural communities they use. However, specific management recommendations and precautions are necessary to ensure continued suitability of the area for some species. The following recommendations should help ensure LGCWEA continues to fulfill its role in the conservation of these species.

4.3.1: Gopher Frog

Gopher frogs frequently move between wetland breeding ponds and adjacent uplands. Do not place new firebreaks or roads along wetland ecotones because they can alter or destroy the herbaceous component of pond margins preferred by this species and other amphibians. Wet-lining can be an alternative to mineral firebreaks around wetlands if necessary; however, it is preferable to allow fire to burn through the wetland. Use prescribed fire as the primary tool to remove shrubs and other thick vegetation from pond margins; use mechanical and chemical treatments sparingly to reduce effects on pond-breeding amphibians. Because it is important to maintain potential breeding ponds in good condition, minimize soil disturbance within 500 yards of potential breeding ponds.

Growing season (April–September) burns, preferably after April, are more beneficial to the gopher frogs than dormant season (October–March) burns. This is because they are more effective at reducing shrub cover and litter in the wetland basin, stimulating the growth of herbaceous emergent vegetation, enhancing the wetland to upland ecotone, and stimulating the reproduction of wiregrass in the surrounding uplands. The most beneficial time to burn is when the wetland is dry. While growing season fires are preferred, a burn during dormant season is preferable to not burning.

4.3.2: Eastern Indigo Snake

Large upland snakes such as the eastern indigo snake are relatively wide-ranging and elusive. Ongoing land management activities will enhance the suitability of habitat for this species but also could be directly detrimental. When using heavy equipment during land management activities, it is important to avoid direct mortality, if possible. In general, avoid removing stumps and leave coarse woody debris and residual stumps intact, when possible, to provide cover for these species. While it is acceptable to pile and burn excess logging slash if necessary, ensure some debris remains in the stand to provide cover for these species. Creating brush piles can provide cover for these species if escape cover is lacking.

4.3.3: Gopher Tortoise

To minimize negative impacts to gopher tortoises in areas where they occur, when appropriate, mechanical treatments should be done during the season when this species is dormant. Gopher tortoises are generally less active and remain in burrows during the winter months; therefore, mechanical equipment at this time will be less likely to crush or otherwise harm foraging tortoises. Because it is difficult for equipment operators to see hatchling tortoises, and hatchlings are most abundant during September and October, avoid mechanical treatments during these months when practical. However, also consider how timing of the treatment will affect management results, because growing season treatments frequently are

more successful in creating the diverse groundcover required by the gopher tortoise. Regardless of timing, make efforts to minimize impacts to known burrows, whether active, inactive, or abandoned.

4.3.4: American Swallow-Tailed Kite

Because swallow-tailed kites exhibit high nest site fidelity, protect known nest sites from disturbance and alteration, and retain all of the tallest pines in the area of nest sites. Maintaining a 330-foot protective buffer around active nests during nesting season should minimize the chance of disturbance. When possible, kite nesting areas should be managed to have a higher shrub height and density than surrounding areas as this may reduce the likelihood of nest predation. If kite activity is observed during nesting season, particularly if kites are observed carrying nesting material, mobbing, or congregating in groups of 3 or more, document this information and try to locate the nest. For information on how to locate nests, see:

Meyer, K. D., and M. W. Collopy. 1995. [Status, distribution, and habitat requirements of the American swallow-tailed kite \(*Elanoides forficatus*\) in Florida](#). Project Report, Florida Game and Fresh Water Fish Commission, Tallahassee, Florida, USA.

While kites have not been documented nesting on LGCWEA, it is important to preserve future potential nest trees. This can be done by retaining the largest, oldest trees on the landscape during land management activities.

4.3.5: Bachman's Sparrow

Prescribed fire improves habitat quality for Bachman's sparrows, and is the primary land management tool recommended to promote habitat for this species on LGCWEA. Suitable habitat can be created and maintained through frequent (≤ 3 year rotation) use of prescribed fire in sandhills and flatwoods. The occurrence of fire is critical to sustaining this species as use of an area by Bachman's sparrows declines rapidly around 18 months post-fire, and the species may abandon habitat if fire is excluded for more than 3 years. Because males use small shrubs as singing perches, apply the 'sloppy chop' technique when using mechanical treatments to reduce understory. Follow mechanical treatment with a prescribed burn.

4.3.6: Brown-Headed Nuthatch

Brown-headed nuthatches have not been documented on LGCWEA but have been documented on the adjacent CCSP. Ongoing management will maintain and increase habitat

suitability, which will increase potential for future occupation by the species. This cavity-nesting species is dependent on the presence of snags for suitable nesting habitat. As such, retain snags during land management activities and evaluate the affect of management activities on snags to ensure that new snags are replacing consumed snags. Old short snags with flaking bark and soft wood, and old decaying oaks with a diameter at breast height of <10 inches are important nesting sites for this species. Take care to retain these particular types of snags.

If brown-headed nuthatches are documented in a specific MU, an effort should be made to avoid prescribed fire during February and March in the MU because the loss of nests early in the season frequently results in re-nesting attempts. Since most re-nesting occurs during periods of increased snake activity, this can result in greater predation on nesting females, their eggs, and young. However, if this is the only time in which suitable conditions occur for a burn, it is better to burn than to avoid burning.

4.3.7: Cooper's Hawk

During the nesting season (April-July), Cooper's hawks are secretive and intolerant of human disturbance near the nest site. Males show a strong fidelity to traditional territories. For this reason, protect known nests from disturbance during land management activities by maintaining a 50-foot buffer around the nest during the nesting season. When practical, avoid heavy alteration of the habitat surrounding the nest. Whenever signs of Cooper's hawk nesting (e.g., carrying nesting material, aggressive dive bombing) are encountered, document the location and make an effort to protect the nest site.

4.3.8: Northern Bobwhite

The primary land management tool used to benefit northern bobwhite is the frequent use of prescribed fire. Ignite fires using a variety of firing techniques and environmental conditions with the goal of promoting mosaic burns. Mosaic burns result in a patchwork of burned and unburned areas that meet different life history requirements for northern bobwhite. Growing season fires are generally preferred as they trigger flowering and viable seed production in many native species. Recent evidence suggests that the frequency of fire in flatwoods communities may be just as important as the seasonality of burn. Thus, if growing season burns do not occur, it is better to burn the unit during the following dormant season rather than waiting until the following summer.

Pine stands with basal areas >70 ft²/acre should be thinned to trigger herbaceous growth and improve habitat conditions for this species. Ruderal areas can be managed for northern bobwhite through mechanical actions like mowing and or disking strips during the summer months to promote herbaceous growth.

4.3.9: Southeastern American Kestrel

Southeastern American kestrels are dependent on the occurrence of open upland habitats that contain a number of snags for nest sites and perches. While ongoing management will encourage the open foraging condition this species requires, make an effort to retain large snags during land management activities. The practice of snag management (i.e. protecting snags when safe and practical, promoting the creation of new snags in areas currently lacking) will benefit southeastern American kestrels. If nesting is documented, minimize the amount of mechanical activity within 500-feet of the nest during the nesting season and protect the snag during prescribed fire activities. For more information on management for kestrels, see:

Stys, B. 1993. [Ecology and habitat protection needs of the southeastern American kestrel \(*Falco sparverius paulus*\) on large-scale development sites in Florida](#). Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 13. Tallahassee, Florida, USA.

4.3.10: Southern Bald Eagle

State and federal law requires protection of bald eagles, including avoiding disturbance of nesting eagles. Managers will follow the management guidelines in the [state management plan](#) when planning activities within 660-feet of known eagle nests. Any new nests that are located will be documented. As this species is surveyed on a statewide basis, the [bald eagle nest locator](#) will be checked annually to determine if any new nests are detected via the survey. It is undesirable to have unnaturally dense stands around eagle nests. Continue to manage stands in which eagle nests occur, but avoid negative impacts to the eagles per the guidance of the management plan. During management activities, retain large, mature pines as potential future eagle nesting sites.

4.3.11: Wading Birds

It is possible that ongoing actions (e.g., prescribed fire, timber harvest) could have negative impacts on wading birds if the needs of the species are not considered during the planning of these actions. During the nesting season, providing a 330-foot buffer around nesting colonies will ensure adequate protection. Additionally, plan any mechanical or chemical control of vegetation at a time that avoids disturbance to the colony, and use methods that do not damage the plants where nests are constructed. In the LGCWEA colony, periodic hardwood removal in the center of the colony makes it easier for wood storks to take off in flight from within the colony. Managers visually assess the take off area and treat

vegetation as needed to maintain an open area for flight. Any vegetation treatment will be done outside the nesting season.

4.3.12: Florida Black Bear

Bears require large areas of dense vegetation for escape and denning cover. They also require a mosaic of dense cover and edge habitat, in both uplands and wetlands, which provides seasonally abundant forage. Efforts to restore flatwoods to a more open landscape with reduced tree density, lower shrub height, and reduced shrub cover may reduce denning and escape cover for bears. However, these same efforts may increase forage availability of some berries and tubers.

Land management activities that provide a mosaic habitat structure, particularly with multi-aged palmetto patches, will provide escape cover and foraging habitat for bears. During mechanical treatment along the transitional zone between hardwood swamps and uplands, retain patches of dense vegetation to provide foraging cover. Preserve connectivity between cypress heads, depressional wetlands, and hardwood swamps to allow appropriate cover for bears to move across the area.

Section 5: Species Management Opportunities

Land management that considers the needs of a suite of focal species provides direct benefits to many associated species. However, land management actions alone are insufficient to maintain or recover some species. These species need species-specific management ([Section 5.1](#)). Additionally, monitoring ([Section 5.2](#)) is required to verify management is having the desired influence on wildlife. [Section 5.3](#) identifies research necessary to guide future management.

5.1: Species Management

Species management as used here refers to actions other than land management, monitoring, or research, taken for a specific species. Species-specific management actions can include actions such as translocation, restocking, or installing artificial cavities. These actions may be needed for species that are currently present but occur at low densities, have low reproduction potential, or have other limitations that inhibit recovery. Additionally, species that are not present on a site, have limited dispersal capabilities, or are unlikely to occupy a site without reintroduction, may require species-specific management. [Section 2](#) and [Section 4](#) provide information on land management actions, such as prescribed fire or mechanical treatments. [Section 5.2](#) covers monitoring related actions, including banding or tagging.

5.1.1: Water Level Management for Wading Birds

The purpose of water level management is to provide conditions that create wading bird reproductive opportunity on site. The State acquired LGCWEA to protect and maintain the wading bird colony that occurs on the property. Wading birds prefer to build nests in trees that occur in standing water. Wading birds often abandon nest sites if water levels recede. The water level management that maintains suitable water levels has allowed this colony to be active even in years where other nearby colonies were abandoned due to drought. While wading birds respond to environmental conditions and frequently move nesting sites in response to environmental changes, active management of water levels has allowed the LGCWEA colony to remain active on a more consistent basis.

To date, monitoring of the water levels has been un-structured. Annually documenting the process for maintaining water levels before and during the nesting season is recommended. During 2012, staff developed a protocol for documenting water management actions and results. This protocol will be implemented during the 2013 nest season on a test basis. The purpose of this monitoring is to ensure water levels within the basin swamp remain at the appropriate level to support nesting wading birds.

Water Level Monitoring-- Staff currently maintain the water level at 6.7 feet at the water control structure; however, the actual water depth within the colony is unknown. A previous study found that the average water depth under wood stork nests in the LGCWEA colony was 47.8 ± 29.3 cm (0.5–2.5 feet) deep. During the 2013 nesting season, staff will attempt to measure the water depth under nest trees to determine if maintaining a 6.7-foot water level at the control structure is adequate. Staff will attempt to limit disturbance to nesting birds during this activity.

A datasheet will be developed to record data on water levels and colony status during the breeding season. The following process should be used to assess water levels prior to and during the breeding season. If needed, the target water depth at the water control structure will be changed after the 2013 season. This data will be provided to the Regional Conservation Biologist annually.

Check the water level at the pump between December 15 and December 31.

- If less than 6.7 feet, turn the pumps on by January 15.
- If greater than 6.7 feet, check water levels again by January 15 and re-assess.

Check water levels weekly from January 15 thru July 31.

- Make appropriate modifications to pumping or outflow to maintain water level at the pump at or above 6.7 feet.

At each weekly visit starting January 15, document water levels and actions using a datasheet.

5.2: Species Monitoring

Monitoring is critical to evaluating the effect of the management on wildlife. While we are unable to monitor all of the focal species on LGCWEA, the recommended monitoring will assess species in all actively managed communities. Monitoring of selected wetland-dependent species, as well as opportunistic monitoring of uncommon or hard to monitor species is also included. Data collected will be reported to the regional conservation biologist for inclusion in the appropriate database. The FWC will make monitoring data available to cooperating agencies and organizations, such as FNAI ([Section 6](#)).

This section lists the monitoring recommended for LGCWEA. We also provide the purpose for each monitoring effort. The FWC is in the process of standardizing monitoring protocols for a number of these species, and developing a central database for data storage. Area staff will work with the regional Conservation Biologist to implement standardized protocol, standardize ongoing monitoring that does not have a standardized protocol, and ensure data is included in the central database.

5.2.1: Bachman's Sparrow and Brown-Headed Nuthatch Monitoring

Bachman's sparrows have been identified as 'indicator' species; species whose continued presence is an indicator of good upland pine communities. Bachman's sparrows have been documented on LGCWEA, but the status of brown-headed nuthatches is unknown. Both species are relatively easy to detect during the breeding season (April–June for Bachman's sparrow, and February–June for the brown-headed nuthatch) and documenting presence on LGCWEA during this time is recommended. A protocol using standardized point counts and callback tapes is available, but at this time is not going to be implemented on LGCWEA. Instead, staff will informally attempt to document these species during the breeding season and will report observations using the protocol for documenting incidental observations. This informal monitoring effort will entail conducting point counts on the area at least once during the breeding season. During each monitoring event, at least one call station will occur in each MU containing potential habitat, and data will include the observer, date, coordinates for the call station, results, and other required fields from the opportunistic observation protocol.

5.2.2: Wading Bird and Wood Stork Colony Monitoring

To date, monitoring of the colony has been incidental and un-structured. Annually documenting the status of the colony is recommended. In 2012, staff drafted a standardized

monitoring protocol. This protocol will be implemented on a test basis during the 2013 nest season. The purpose of this monitoring is to determine the status and success of the colony.

Wading Bird Colony Monitoring-- Following the monitoring protocol, at each weekly visit starting January 15, staff will check the status of the colony and record appropriate information on the datasheet. Staff will report species observed, whether the colony is active or inactive, a range class for the estimated number of nests, and include whether young are observed in the nests. At the end of the nest season, staff will record if the colony was successful in fledging young from the colony.

5.2.3: Opportunistic Monitoring Opportunities

The purpose of opportunistic monitoring is to document the presence of specific species. Opportunistic monitoring is the process of recording important information as it is encountered. By following the standardized monitoring protocol, staff ensures their data are compatible with other opportunistic observation. Documentation of opportunistic sightings including information on species, date of the observation, observer, approximate lat/long or appropriate MU, number of individuals, behavior, and habitat type should be forwarded to the regional conservation biologist. Monitoring data will be made available to cooperating agencies and organizations such as FNAI ([Section 6.6](#)). Record observations or sign of the following focal species:

- Gopher frog
- Eastern indigo snake
- Gopher tortoise
- American swallow-tailed kite (aggregations of 3 or more birds on regular basis in one area during spring and any nesting activity)
- Bachman's sparrow
- Brown-headed nuthatch
- Cooper's hawk
- Florida mottled duck
- Florida sandhill crane
- Limpkin
- Southeastern American kestrel
- Southern bald eagle (record and report new nests)
- Florida black bear
- Sherman's fox squirrel
- Any listed species that does not have a monitoring protocol in this section.

5.3: Species Research Needs

Species management recommendations in other sections of this document are based on the most current information available. Cases may arise where little or no information is available to guide management, and research is needed. A number of the focal species that have not been documented on LGCWEA may not be able to naturally re-colonize the area. Therefore, research on methodology for successful reintroduction of certain focal species may be needed if, in the future, we desire to restore these species to LGCWEA. Further, many of these focal species do not have standard monitoring protocol. Research is needed to determine the most efficient means of monitoring these species. For many of the focal species, managers need research about aspects of natural history, such as minimum habitat patch size, preferred habitat parameters, and response to habitat management activities. However, workshop participants did not identify any species research needs on LGCWEA.

Section 6: Intra/Inter Agency Coordination

The WCPR process identified many recommendations regarding possible management actions for focal species. WHM staff can handle most proposed management actions; however, coordination with other sections in FWC or with other agencies sometimes is necessary or more efficient. This section describes coordination that is necessary outside of the WHM section, identifies the entity to coordinate with, and provides position contacts for these entities. We attempt to provide the name, position, and contact information for the people holding the position when the Strategy was drafted. As positions experience turnover, when in doubt, contact the current Section Leader or supervisor to determine the appropriate person now holding the position.

6.1: Florida Fish and Wildlife Conservation Commission

6.1.1: Species Conservation Planning Section (SCP)

Monitoring animal populations on a WMA/WEA gives managers a way to gauge animal response to management. If this information is not shared with others, valuable data that can be used to assess statewide conservation efforts is often lost. Managers will share monitoring data with the appropriate taxa coordinator and with program coordinators for species that are part of conservation initiatives or other management programs. The regional SCP biologist is a good source of information on the regional status of non-game species. Additionally, FWC staff is authorized to handle federally listed species as long as actions are consistent with the requirements of the agency's [Endangered Species Act Section 6 Cooperative Agreement](#). To meet these requirements, staff will provide reporting as outlined in the Agreement to the agency's Endangered Species Coordinator. Please note some

contacts will also be covered under [Section 6.1.4](#); FWRI, and [Section 6.1.7](#); Florida's Wildlife Legacy Initiative.

Contacts:

Elsa Haubold, Species Conservation Planning Section Leader: (850) 488-3831
Robin Boughton, Avian Taxa Coordinator: (352) 732-1225
Melissa Tucker, Mammalian Taxa Coordinator: (386) 758-0525 ext 114
Bill Turner, Herpetofauna Taxa Coordinator: (850) 921-1143
Brad Gruver, Endangered Species Coordinator: (850) 488-3831
Deborah Burr, Gopher Tortoise Management Plan Coordinator: (850) 921-1019
Michelle Vandeventer, Bald Eagle Management Plan Coordinator: (941) 894-6675
Nancy Douglass, Regional Biologist: (863) 648-3200
Amy Clifton, Assistant Regional Biologist: (863) 648-3200

6.1.2: Division of Hunting and Game Management (HGM)

As the FWC has a [statewide quail strategy](#), coordination with HGM – Game Species Management (GSM) is recommended if issues regarding northern bobwhite quail arise on LGCWEA. Coordination with HGM – Public Hunting Areas (PHA) to address the required rule change discussed for protection of wading birds during the nest season ([Section 3.2.11](#)).

Contacts:

Paul Schulz, GSM Section Leader: (850) 488-3831
Greg Hagan, FWC Quail biologist: (850) 893-4153 x 340
Don Coyner, PHA Section Leader: (352) 732-1760
Jason Burton, Southwest Regional PHA Biologist: (352) 540-6096

6.1.3: Aquatic Habitat Restoration and Enhancement Subsection (AHREs)

Wading birds on LGCWEA depend on quality aquatic ecosystems to meet their life requirements. WHM should maintain contact with AHREs when conducting hydrologic evaluations to determine opportunities for hydrologic improvements on LGCWEA.

Contacts:

Steve Shea, Section Leader: (850) 488-3831
Bill Coleman, Biological Administrator: (352) 357-2398
Don Fox, Biological Administrator: (863) 462-5190
Beacham Furse, Biological Administrator: (863)462-5192
Steven Gornak, Biological Scientist: (863) 462-5190

6.1.4: Fish and Wildlife Research Institute (FWRI)

Area staff will cooperate with FWRI staff conducting monitoring and research for bald eagles by reporting new eagle nests through the FWC bald eagle database. Area staff will cooperate with Kevin Enge on issues regarding herpetofauna and report documentation of these species to FWRI. Jim Rodgers administers the FWC's [migratory bird scientific collection permit](#). Report handling of migratory birds covered by the permit to Mr. Rodgers in January of each year. Staff will communicate with Mr. Rodgers on issues pertaining to the wading bird and wood stork colony on LGCWEA.

Contacts:

Tim O'Meara, Section Leader: (850) 488-3831
Jeff Gore, Biological Administrator (mammals): (850) 265-3677
Ron Bielefeld, Wildlife Biologist (Florida mottled duck): (772) 228-9125
Janell Brush, Avian Research Biologist (bald eagle): (352) 955-2081
Karl Miller, Biological Administrator (avian): (352) 955-2081
Kevin Enge, Associate Research Scientist (herps): (352) 955-2081
Walter McCown, Biological Scientist (bears): (352) 955-2081
Brian Scheick, Biological Scientist (bears): (352) 955-2081
Jim Rodgers, Research Administrator: (352) 955-2081

6.1.5: Office of Conservation Planning Services (CPS)

CPS works with private landowners and may be able to assist in making contacts or providing incentives for management activities on neighboring private lands. CPS also provides environmental commenting to ensure regional projects do not negatively influence the area. Maintaining communication regarding current and future projects will be critical.

Contacts:

Scott Sanders, CPS Office Director: (850) 488-3831
Luis Gonzalez, Regional Coordinator: (863) 648-3200
Joe Vaughn, Wildlife Biologist: (352) 588-3863

6.1.6: Imperiled Species Management Section (ISM)

The Imperiled Species Management Section is responsible for the implementation and evaluation of imperiled species management and recovery plans, and have staff dedicated to management of the black bear. Staff can coordinate with these individuals on issues related to the black bear.

Contacts:

Kipp Frohlich, Section Leader: (850) 922-4330
Dave Telesco, Biological Administrator (bears): (850) 922-4330
Mike Orlando, Biological Scientist (bears): (386) 965-2464

6.1.7: Florida's Wildlife Legacy Initiative (FWLI)

Monitoring animal populations on a WMA/WEA gives managers a way to gauge response to management. If this information is not shared with others, valuable data that can be used to assess statewide conservation efforts often is lost. FWLI can assist in identifying potential partners and collaborating efforts for monitoring and management. FWLI also might be a source of funding via the State Wildlife Grants program. Therefore, regular communication with this section will be valuable.

Contacts:

Katherine Haley, Program Coordinator: (850) 410-0656 x17297
Kelly Rezac, Wildlife Legacy Biologist: (863) 648-3200

6.1.8: Invasive Plant Management Section (IPM)

The Invasive Plant Management Section provides technical and financial assistance to assist in the control of upland and aquatic invasive exotic plants. The Invasive Plant Management Section may serve as a resource in identifying appropriate solutions to, and funding for, exotic plant issues.

Contacts:

Bill Caton, Section Leader: (850) 617-9428
Donald Eggeman, Biological Administrator: (850) 410-0656
Danielle Schobl: (863) 534-7074

6.2: Southwest Florida Water Management District (SWFWMD)

The SWFWMD manages the Green Swamp, and the Upper and Lower Hillsborough River tracts. FWC is a cooperator on these areas and coordinates with SWFWMD regarding prescribed fire activities, as well as permitting for hydrologic activities as needed.

Contacts:

Paul Elliott, Sr. Land Management Specialist: (863) 534-1448
August Fox, Sr. Land Management Specialist: (352) 796-7211

6.3: Florida Department of Environmental Protection (DEP)

The DEP manages Colt Creek State Park, adjacent to LGCWEA. Opportunities to coordinate management actions or initiate monitoring or research efforts for focal species should be discussed with DEP staff.

Contacts:

Larry Fooks, District Bureau Chief: (407) 884-2000
Robert Yero, Assistant Bureau Chief: (407) 884-2000
Bryon Maxwell, Park Manager: (863) 815-6761

6.4: Florida Forest Service (FFS)

The FFS provides authorizations for prescribed burning and assists in controlling escaped fires. FFS can provide assistance with timber management including administration of contracts for thinning operations. LGCWEA staff should continue to coordinate prescribed fire and timber management activities with FFS.

Contacts:

Kawika Bailey, Forest Area Supervisor, Withlacoochee District: (352) 523-5101
Butch Mallett, Senior Forester: (850) 228-7809
Dave Fogler, County Forester: (352) 523-5101

6.5: Avian Research and Conservation Institute (ARCI)

ARCI surveys and keeps information on American swallow-tailed kite and short-tailed hawk populations. Location information on the swallow-tailed kite and short-tailed hawk, particularly nests or nesting behavior, should be shared with ARCI.

Contacts:

Dr. Ken Meyer, Avian Researcher: (352) 335-4151; meyer@arciinst.org
Gina Kent, Research Ecologist and Coordinator: (352) 514-5607;
ginakent@arciinst.org

6.6: Florida Natural Areas Inventory (FNAI)

FNAI collects, interprets, and disseminates ecological information critical to the conservation of Florida's biological diversity. The FNAI's database and expertise facilitate environmentally sound planning and natural resource management to protect the plants, animals, and communities that represent Florida's natural heritage. The FNAI maintains a

database of rare and listed species that is often used for planning purposes. As such, staff should share information about tracked species occurrences on LGCWEA with FNAI to ensure this information is included in their database. FWC also has a contract with FNAI for plant and animal surveys if the need exists and resources are available.

Contacts:

Dan Hipes, Chief Scientist: (850) 224-8207

Section 7: Beyond the Boundaries Considerations

LGCWEA is relatively small, and does not have enough potential habitat to support independent, viable populations of most focal species, but with appropriate management, LGCWEA will continue to fulfill its conservation role. Through proper management of flatwoods, LGCWEA can help support a number of fire-dependent species, such as the gopher tortoise, Bachman's sparrow, brown-headed nuthatch, northern bobwhite, and Sherman's fox squirrel. Many of LGCWEA's wide-ranging focal species (e.g. Florida black bear, Cooper's hawk, southern bald eagle, and American swallow-tailed kite) are not common on the area, but will continue to occasionally use the WEA because of LGCWEA's proximity to a large block of conservation lands. Wading birds are highly mobile and wide-ranging, but the presence of a wading bird and wood stork colony on LGCWEA, as well as FWC's ability to manipulate water levels within the colony, increases the opportunity to support wading birds on LGCWEA. Furthermore, the surrounding network of conservation lands will help ensure the persistence of many of the wide-ranging focal species.

The current management boundaries do not include all important habitat for focal species, such as the lands identified as Strategic Habitat Conservation Areas (SHCAs) for American swallow-tailed kite and Cooper's hawk. The FWC originally identified SHCAs in the [Closing the Gaps in Florida's Wildlife Habitat Conservation System](#) report. The goal of SHCAs is to identify the minimum amount of land needed in Florida to ensure long-term survival of key components to Florida's biological diversity. The SHCAs identify important habitat conservation needs remaining on private lands. New SHCAs have been identified in a recent FWC update to the Closing the Gaps entitled "[Wildlife Habitat Conservation Needs in Florida](#)". This report identified SHCA within 3 miles of LGCWEA for the American swallow-tailed kite, Cooper's hawk, and Florida black bear. Although it is unlikely Florida will acquire all property identified in SHCAs, encouraging land use and management that is compatible with the needs of LGCWEA focal species should be a priority in this area.

Significant human population growth is projected to occur by the year 2060 in the area surrounding the complex of conservation lands that include LGCWEA. While the current conditions on LGCWEA and neighboring conservation areas provide an opportunity to further the conservation of many focal and imperiled species, changes in management or land use beyond the boundaries could have a significant effect. Any changes that impede the

ability to use prescribed fire would be detrimental to fire-dependent species such as the Bachman's sparrow and gopher tortoise. Any changes that alter hydrologic resources would be detrimental to wading birds.

All of LGCWEA's species are dependent on the availability of suitable habitat on adjacent private and public lands. The largest adjacent public lands are the Green Swamp, and the Upper and Lower Hillsborough WMAs, which are managed by SWFWMD with FWC as a cooperating agency. Because LGCWEA is relatively small and surrounded on all sides by private and conservation lands, the actions of adjacent landowners will determine if these focal species will persist on LGCWEA. Staff should coordinate with CPS to ensure private landowners are informed about incentive programs that encourage conservation-based management, and that they receive the proper technical assistance to affect this management. CPS should ensure environmental commenting includes recommendations for compatible uses of lands adjacent to LGCWEA.

Document Map

Species	Species Assessment	Land Management Actions	Species Management Actions	Species Monitoring	Research	Coordination
Gopher Frog	Section 3.2.1	Section 4.3.1		Section 5.2.3		Section 6.1.3
Eastern Indigo Snake	Section 3.2.2	Section 4.3.2		Section 5.2.3		Section 6.1.4
Gopher Tortoise	Section 3.2.3	Section 4.3.3		Section 5.2.3		
American Swallow-tailed Kite	Section 3.2.4	Section 4.3.4		Section 5.2.3		Section 6.5
Bachman's Sparrow	Section 3.2.5	Section 4.3.5		Section 5.2.1, 5.2.3		
Brown-headed Nuthatch	Section 3.2.6	Section 4.3.6		Section 5.2.1, 5.2.3		
Cooper's Hawk	Section 3.2.7	Section 4.3.7		Section 5.2.3		
Northern Bobwhite	Section 3.2.8	Section 4.3.8				
Southeastern American Cootrel	Section 3.2.9	Section 4.3.9		Section 5.2.3		Section 6.1.4
Southern Bald Eagle	Section 3.2.10	Section 4.3.10		Section 5.2.3		Section 6.1.1
Wading Birds	Section 3.2.11	Section 4.3.11	Section 3.1.1	Section 5.2.2		Section 6.1.3, 6.1.4, 6.2
Florida Black Bear	Section 3.2.12	Section 4.3.12		Section 5.2.3		Section 6.1.4, 6.1.6
Sherman's Fox Squirrel	Section 3.2.13			Section 5.2.3		
Limited Opportunity Spp.	Section 3.2.14			Section 5.2.3		

13.8 Prescribed Burning Plan

Little Gator Creek WEA Prescribed Fire Plan

INTRODUCTION

Historically, fire (both natural and man-made) has been used to manage vegetation and wildlife resources in Florida for many years. Continuation of prescribed fire is critical to the multiple fire-adapted plant and animal communities within Florida. Without regular fire cycles, desirable plant species are shaded out by the less palatable plants found in a closed canopy community. These less desirable community types also lead to heavy fuel buildups, which increases the chance of a wildfire.

Prescribed burning is used to control brush, lower fuel loads, control insects and diseases, improve access to areas, control exotics, enhance wildlife habitat, and to maintain ecological biodiversity. It is an important tool in managing the habitat for many game species, such as the bobwhite quail (*Colinus virginianus*), white tailed deer (*Odocoileus virginianus*), and wild turkey (*Meleagris gallopavo*). Other nongame wildlife, such as songbirds and small mammals, also benefit from prescribed fire as well.

BURN OBJECTIVES

Prescribed fire will be used on Little Gator Creek Wildlife and Environmental Area (LGCWEA) as a habitat management tool to accomplish multiple objectives. The primary objective for using fire on Little Gator Creek WEA is to restore and/or maintain the native fire-dependent plant communities. Achievement of this objective will preserve the native habitat types as well as improve the quality of wildlife habitat on the area. Other benefits of the continuation of prescribed fire on LGCWEA include:

- 1) Reduction of fuel loads, which reduces wildfire hazard

- 2) Control of exotic species
- 3) Enhanced aesthetics
- 4) Increased longleaf pine regeneration

DESCRIPTION OF AREA

The Little Gator Creek Wildlife Environmental Area (LGCWEA) is owned and managed by the Florida Fish and Wildlife Conservation Commission. The area is 566 acres in size and is located in the Southeast corner of Pasco County, 4.1 miles north of the State Road 98 / 471 intersection or 2.6 miles south of the Withlacoochee River on State Road 471. The WEA is located in Section 24 Township 25 South Range 22 East. The WEA was purchased in 1982 under the Conservation and Recreation Lands (CARL) program. The area was purchased under the single use concept; that being the preservation of a significant wading bird rookery containing a large number of nests of the endangered wood stork. LGCWEA is comprised mainly of mesic flatwoods (51%) and basin swamp (34%). Less common land cover types include hydric hammock, depression marsh, dome swamp, ruderal, and floodplain swamp. LGCWEA contains one river and two smaller creeks. The Withlacoochee River and Gator Creek run through portions of the northern end of the property, while the Little Gator Creek runs into the southeastern end of the property and flows north and northwest into the Withlacoochee River.

Mesic Flatwoods (291 acres)

Mesic flatwoods (or pine flatwoods) are characterized as an open canopy forest of widely spaced pine trees with little or no understory, but a dense ground cover of herbs and shrubs. They are the most widespread biological community in Florida. There are several variations of mesic flatwoods, and the most common is the longleaf pine (*Pinus palustris*)-wiregrass (*Aristida*

spp.) association. Other common plant species include gallberry (*Ilex glabra*), saw palmetto (*Serenoa repens*), St. Johns-wort (*Hypericum myrtifolium*), and broomsedge (*Andropogon spp.*). Slash pines (*Pinus elliottii*) are also associated with mesic flatwoods. Mesic flatwoods occur on relatively flat, moderately to poorly drained terrain. Fire is an important factor in mesic flatwoods and burning on these areas should preferably average 2 – 5 years in order to avoid hardwood succession. On LGCWEA, mesic flatwoods are the dominant habitat type. In order to maintain this diverse habitat, a growing season fire regime will be implemented.

Basin Swamp (190 acres)

Basin swamps are characterized by trees and shrubs that can withstand extended hydroperiod. They are variable in size, shape, and species composition, with the most common overstory species being pond cypress (*Taxodium ascendens*) and swamp tupelo (*Nyssa sylvatica*). Other trees associated with the basin swamp are slash pine, red maple (*Acer rubrum*), swamp bay (*Persea palustris*), swamp laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), and water oak (*Quercus nigra*). Shrubs may be found throughout a basin swamp, or around the perimeter, depending on the hydrology and fire history. Common shrubs include Virginia willow (*Itea virginica*), fetterbush (*Lyonia lucida*), wax myrtle (*Myrica cerifera*), and common buttonbush (*Cephalanthus occidentalis*). Common groundcover plants include Virginia chain fern (*Woodwardia virginica*), arrowheads (*Sagittaria spp.*), and bladderworts (*Utricularia spp.*). Basin swamps typically occur in any type of large, low-lying area such as river basins or old lake beds. Basin swamps are important foraging and nesting habitat for several endangered animals, including the wood stork (*Mycteria americana*). Wood storks do utilize this habitat type on LGCWEA for nesting; therefore the interior of the basin swamps on the area should be protected from fire. This is usually simple to do, based on the fact that the basin swamps are

usually inundated. However, during drier years, fire lines should be established to reduce occurrence of muck fires. The exposed outer edges of the basin swamps are more susceptible to fire and when the interior is inundated, the edge will be allowed to burn in conjunction with the surrounding land type.

Hydric Hammock (47 acres)

Hydric hammocks are evergreen hardwood and/or palm forests with swamp laurel oak and/or live oak (*Quercus virginiana*) being the dominant canopy species. Other common overstory species include cabbage palm (*Sabal palmetto*), sweetbay (*Magnolia virginiana*), red maple and water oak. There are multiple vine and grasses common in the hydric hammock, including poison ivy (*Toxicodendron radicans*), trumpet creeper (*Campsis radicans*), yellow jessamine (*Gelsemium sempervirens*), greenbriers (*Smilax* spp.), sedges (*Carex* spp.), woodoats (*Chasmanthium* spp.), and elephantsfoot (*Elephantopus nudatis*). Species composition is largely influenced by flooding patterns. Hydric hammocks occur on low, wet sites where soil moisture is maintained at a high level due to poorly drained soils. Traditionally, fire is not an important part of the hydric hammock system. Fire will not be introduced into these areas on LGCWEA. Disked fire lines will prevent prescribed fire from entering these areas.

Dome Swamp (31 acres)

Dome swamps are forested, depression wetlands that are isolated within a larger, fire-maintained community, such as mesic flatwoods. The dome swamps on LGCWEA are relatively small, with the largest being only 11 acres. The dome shape is created by the smaller trees growing on the outer edge and the taller trees growing in the deeper water in the interior of the swamp. Pond cypress is typically the dominant canopy tree, with red maple, swamp bay, and slash pine being present as well. Shrubs are not very common, but when present include

Virginia willow, fetterbush, wax myrtle, and St. John's-wort. Multiple fern and vine species can be found in dome swamps as well. Periodic fires are important for maintaining the species composition, and pond cypress is generally tolerant of light surface fires. However, fires that burn into the peat can kill the cypress trees. Fire should be kept out of the interior of the dome to avoid a muck fire, however it should be allowed on the periphery of the dome while burning surrounding land types. On LGCWEA the dome swamps typically hold water and extinguish the fire naturally. During drier years, disked fire lines will be utilized to protect the interior of the cypress dome.

Ruderal (7 acres)

Ruderal areas are places where the natural vegetation cover has been disturbed through agricultural or other human factors. These areas contain plant species different from the historical vegetation type and are susceptible to invasive exotic plants. Ruderal areas typically consist of a variety of species, with bahaiagrass (*Paspalum notatum*), blackberry (*Rubus* spp.), and American pokeweed (*Phytolacca americana*) being some of the more common species. On LGCWEA the ruderal areas are mainly found along the boundary fence and burning will typically not be done on this area. Some of the ruderal areas will be converted to fire lines.

Depression Marsh (5 acres)

Depression marshes are shallow depressions that usually occur within a fire-maintained community. Vegetation cover is dependent upon hydroperiod and depth. The drier areas typically consist of beaksedges (*Rhynchospora* spp.), wiregrasses and St. John's-wort. The innermost, deeper areas are made up of maidencane (*Panicum hemitomon*), arrowhead, and/or sawgrass (*Cladium jamaicense*). Hardwood encroachment is regulated through hydrologic cycles as well as fire. Depression marshes are typically burned with the surrounding habitat

types. On LGCWEA, fire will be allowed into the depression marshes in conjunction with the surrounding mesic flatwoods. Oftentimes, these marshes will hold water in the center and will extinguish fire naturally.

Floodplain Swamp (2 acres)

Floodplain swamps are characterized by a closed-canopy forest occurring in areas that are frequently flooded. The overstory is usually dominated by bald cypress (*Taxodium distichum*) and tupelo species (*Nyssa* spp.). Due to the nature of the floodplain swamp, groundcover consists mainly of flood tolerant ferns and herbs. Examples include lizard's tail (*Saururus cernuus*), false nettle (*Boehmeria cylindrical*), climbing aster (*Symphotrichum carolinianum*), and string lily (*Crinum americanum*). Floodplain swamp on LGCWEA is concentrated on the northern end of the property, near the Withlacoochee River. The swamp typically stays too wet to support fire, and prescribed fire will be kept out of this area using disked fire lines.

***Natural community descriptions are derived from the Florida Natural Areas Inventory's natural community guide.**

PRESCRIBED BURNING PROGRAM

Fire Lines

Existing features (e.g. roads), natural fire breaks (water in swamp, rivers, etc.) as well as perimeter firebreaks will be utilized as fire lines to safely contain prescribed fires. The existing natural features are evenly spaced throughout the property and assist in delineating 4 burn blocks of modest and manageable size. Perimeter firebreaks require maintenance through disking, mowing, and/or wet lines. Disked firebreaks are to be cut to expose mineral soil prior to actual burning. All fire line maintenance is to be performed by FWC personnel. Additional fire lines will be considered when necessary.

Size and Arrangement of Management Units

LGCWEA is divided into 4 burn units for prescribed fire purposes (Figure 1). The burn zones are irregular in shape (based on natural community features) and average 79 acres in size, with the largest unit at 137 acres and the smallest at 44 acres. Unit 2 is separated into 2 parts due to the fact that both areas have historically been burned at the same time.

All burn units are composed mainly of mesic flatwoods habitat, with light to moderate fuel loadings. The forest canopy is dominated by longleaf pine with some large live oaks and slash pine scattered throughout the property. The average basal area of the flatwoods is approximately 35 ft². The groundcover is dominated by saw palmetto, broom sedge, and wiregrass, but contains a diverse array of native mesic flatwoods species. The groundcover is dense enough to effectively carry fire across each burn zone with moderate weather conditions at the time of ignition.

The burn zones can all be burned at one time or separated out according to management timetables, considering relative need, weather conditions, and personnel availability. It is recommended that units are burned on an alternating basis to allow for a mosaic of habitat stages. Units 1 and 2 are smaller units that should be burned the same year. Ideally, burns should be conducted at one to three year intervals with a two year rotation being optimal.

Type of Burn

All 4 burn units are currently in a 2-3 year burn rotation. The mesic flatwoods found at LGCWEA should be burned using backfire, strip head fire, or flanking fire. Firing technique will likely vary due to ambient weather conditions at the time of ignition, as well as fuel loading. The appropriate technique will keep fire intensity down to minimize pine mortality while providing adequate heat to control mid story species. Every effort will be made to burn during

the growing season to best control small oaks, stimulate the production of viable grass seeds, and flowering of native forbs.

Season and Time of Day

Growing season burning will be preferred but dormant season burns should be allowed when needed. Burning will be conducted primarily during daylight hours; night burning will be avoided due to problems associated with smoke dispersal.

Optimal Weather Conditions

Prescribed burns should be conducted no more than 7 days after a rain and require relative humidity of from 30-60% and air temperature of 60-95°F. Winds should be steady and range from 5-12 mph. LGCWEA can be burned using a wide variety of wind directions given its location, however east to southeast winds are preferred in order to keep smoke off of State Highway 471.

SMOKE MANAGEMENT

There is considerable flexibility when burning at LGCWEA due to the absence of smoke sensitive areas in the immediate vicinity. State Highway 471 is the eastern boundary of LGCWEA and will be well posted with caution signs to warn of any smoke on the road. To minimize smoke issues, burning should be conducted with a mixing height minimum of 1,500 feet, with transport winds of 5-15 mph, and a slightly unstable atmosphere. The use of backfires will also produce less smoke. Special care will also be taken to minimize the smoke in and around the wood stork rookery.

PERSONNEL AND EQUIPMENT NEEDED

Personnel

Under ideal conditions, burning of any compartment can be conducted with a minimum crew of four trained and qualified employees. All participating staff will be required to wear personal protective equipment (PPE) as identified in the agency's prescribed burn policy.

Equipment

Fire fighting hand tools, drip torches, burn fuel, four-wheeled ATVs, hand held radios, a 4 wheel drive tractor with disk harrow, and two 225 gallon truck bed-mounted skid units are needed to properly burn on LGCWEA. Road side smoke caution signs (hazard) signs will also be used.

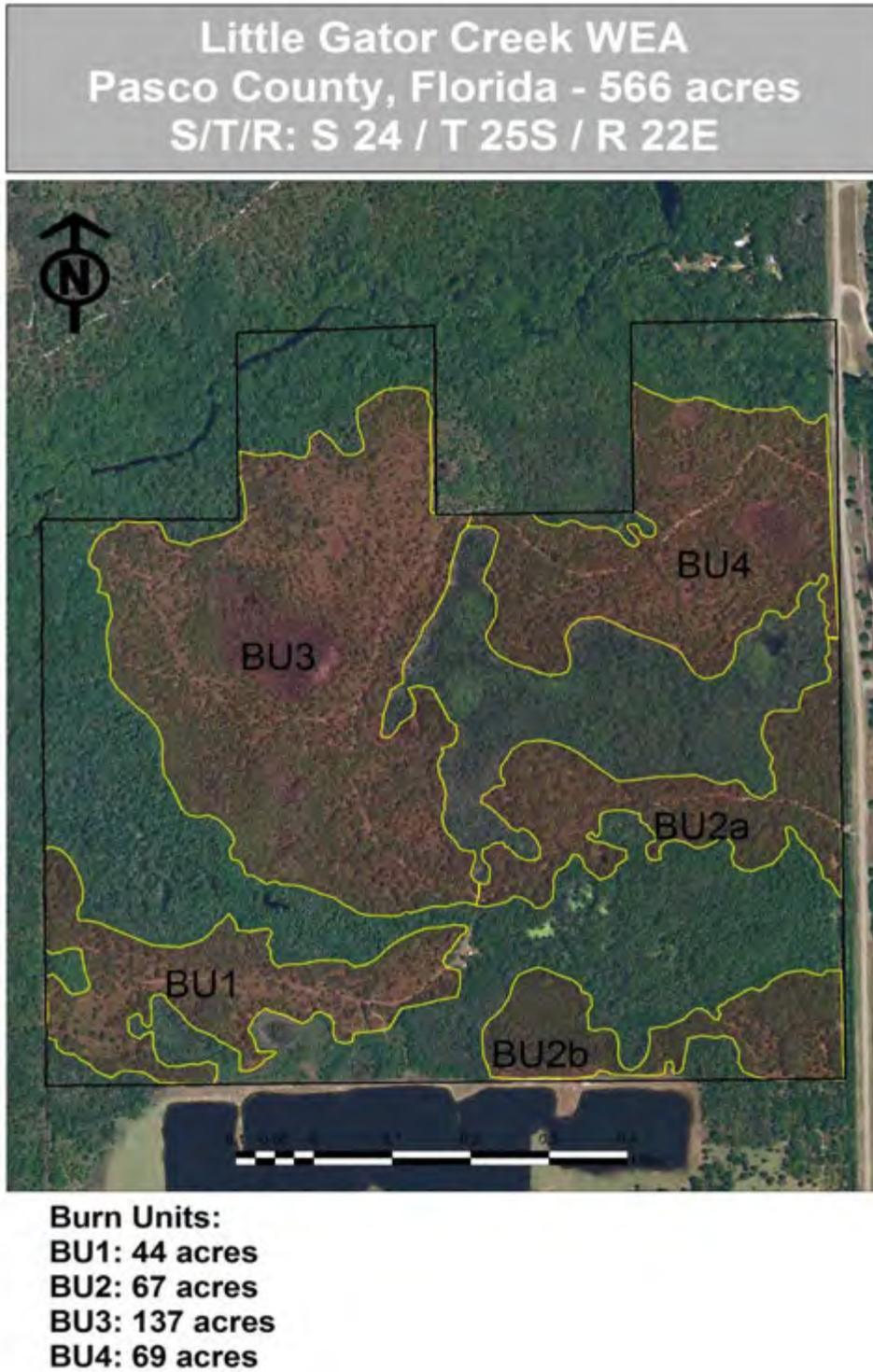
Fire Weather Monitoring

One person will be assigned to monitor fire weather on each burn. This person will monitor and record wind speed, wind direction and humidity hourly, or as requested by any burn crew member, during the burn. If conditions stray outside of the burn prescription the burn boss will be notified and appropriate measures can be taken.

PERMITS AND NOTIFICATIONS

A permit will be obtained from the Florida Forest Service (FFS) on the morning of the burn.

Figure 1. Burn units on Little Gator Creek Wildlife Environmental Area (LGCWEA) Pasco, County, Florida.



13.9 Hydrology Assessment and Conceptual Restoration Plan



Florida Fish & Wildlife Conservation Commission

HYDROLOGY ASSESSMENT AND CONCEPTUAL RESTORATION PLAN



LITTLE GATOR CREEK WILDLIFE AND ENVIRONMENTAL AREA

Pasco County, Florida

FDEP Contract No: PL074

WRS Project No: 32-61-120016



Submitted by:

**WRS Infrastructure & Environment, Inc.,
d/b/a WRSScompass**

**HYDROLOGY ASSESSMENT AND
CONCEPTUAL RESTORATION PLAN
FOR THE LITTLE GATOR CREEK WILDLIFE AND ENVIRONMENTAL
AREA**

**Pasco County, Florida
WRS Project No. 32-61-120016**

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Appendix A	Site Photographs
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1.0 INTRODUCTION

1.1 Purpose

WRS Infrastructure & Environment, Inc., doing business as WRScompass (WRS) was authorized by the Florida Fish and Wildlife Conservation Commission (FFWCC) under Florida Department of Environmental Protection (FDEP) Contract Number PL074 to perform a hydrology assessment and produce a conceptual hydrology restoration plan for the Little Gator Creek Wildlife and Environmental Area (WEA) located in Pasco County, Florida. The objective of this report is to provide a comprehensive plan that identifies anthropogenic impacts to site hydrology and to restore natural water regimes, to the extent practical. Specific objectives of this hydrology assessment and conceptual hydrology restoration plan are to:

- Provide site-specific information regarding the historical and current drainage pathways,
- Identify drainage divide locations,
- Identify existing structures or features that have altered basin hydrology, and
- Propose changes to the existing drainage structures or features that restore the hydrology to historic and/or natural conditions.

Additionally, a rookery lies in the southeastern corner of the site that serves as nesting area for Wood Storks. Recommendations will be made for optimizing seasonal flow in this area.

1.2 Site Setting

The Little Gator Creek WEA encompasses 566 acres (in the northeastern portion of Pasco County adjacent to Polk County line, approximately 8 miles north east of Zephyrhills, Florida). The Little Gator Creek WMA study area lies within the Branchborough 7.5-minute topographic quadrangle maps (United States Geologic Survey [USGS]). The location of the Little Gator Creek WEA in reference to the surrounding region is illustrated in **Figure 1**. Site photographs are provided in **Appendix A**.

1.3 Site History

The earliest use of the site appears to have been as a stone quarry for chert by native inhabitants. The Little Gator Creek Conceptual management Plan (CMP) (A Conceptual Management Plan for Little Gator Creek Wildlife and Environmental Area, 2001 – 2006) (FFWCC, 2001) indicates:

“Archaeologists have theorized that the entire tract may have been a single large prehistoric quarry where chert was mined for use in tool -making. Stone tools found at the WEA site indicate early use by Indian cultures during a period ranging from 9,000 to 2,000 years before the present.”

More recent uses of site include cattle grazing, logging and for navel stores. Historical maps show areas that have been logged and logging areas. Some cypress logging may have occurred in the area, but this could not be determined definitively. The CMP (FFWCC, 2001) indicates the following timeline for historical land use:

- **1903, 1904:** Virgin longleaf pine and slash pine were harvested
- **1928-1934:** Navel stores operations (the collection of oleoresin from slash and longleaf pine) were conducted.
- **1939:** Timber harvesting was conducted.
- **1949, 1955:** Bald cypress was harvested.

The CMP also indicates that no virgin timber remains on the tract.

Directly to south of the site is a quarry that borders the Little Gator Creek WEA. Based on the historical aerial photographs, the quarry first appears on a 1977 photograph and appears to be in full operation in the 1982 aerial photograph. Some alterations to surface water hydrology can be seen on the historical photographs including a ditch in the southwest corner of the site and the quarry appears to have altered a drainage area that once fed into the rookery in the southeastern corner of the site.

1.4 Summary of Site Activities

In order to assess the historical and current drainage patterns and produce a conceptual hydrology restoration plan, the following tasks were performed:

- Historical aerial photography from 1941 to 2001 and topographic maps from 1960 were scanned and georeferenced.
- Historical drainage patterns were assessed using aerial photographs dating from 1941 to 2011, and the following historic quadrangles:
 - 1960 Branchborough Quadrangle (1:62,400)

Although typically useful for evaluating hydrological restoration, historical Florida Natural Areas Inventory (FNAI) maps were not available for this area.

- Archaeological data from the Florida Master Site File was evaluated to determine historical impacts and to ensure that restoration activities would not damage archaeological sites in and near the parcels.

- WRS personnel conducted on-site surveys to confirm location and status of existing structures, define current flow directions, where possible, and locate previously unidentified structures
- In addition, to the site hydrology survey, current conditions were also evaluated using the recent topographic maps, natural community maps, and aerial photographs.
- Restoration structures (culverts, hardened low-water crossings) have been recommended.
- Seven populated shape files with metadata and five associated tables were produced:
 - Historic basin and subbasin delineation (polygon) – Table 1
 - Current basin and subbasin delineation (polygon) – Table 1
 - Natural drainage way and flow direction (line) - Table 2
 - Current conveyance structures (ditches) and flow direction (line) – Table 3
 - Historic flow (line)
 - Existing water control structures (point) – Table 4
 - Recommended water control structures and removals (point) – Table 5

A field survey was conducted at the site between September 4th and 5th, 2012. During the on-site survey, WRS personnel confirmed the location and classification of existing drainage structures and features within the Little Gator Creek WEA. The field survey was performed using a Panasonic Toughbook[®] Tablet PC with ESRI ArcPad software linked to an external Garmin Global Positioning System (GPS) receiver with differential correction technology. The use of a larger field computer allowed aerial maps to be displayed as data was collected and improve field evaluations.

2.0 STUDY AREA CHARACTERIZATION

2.1 Climate

The Withlacoochee River Basin has a subtropical climate. The average temperature is about 72°F and ranges between approximately 95°F in the summer to below freezing in the winter. The mean annual rainfall is about 55 inches (Trommer et al, 2009).

2.2 Topography

The study area lies in the Western Valley physiographic region as identified by William A. White in *The Geomorphology of the Florida Peninsula* (White, 1970). This region as well as the adjacent Tsala Apopka region are in the low-lying area associated with the Withlacoochee River flows and is situated between the Brooksville Ridge to the west and the Lake Upland to the east, which both have higher mean elevations. To the southeast is the Zephyrhills Gap. The study area is located at the southern end of the Western Valley where it turns to the southwest. Farther to the southeast in this area the Hillsborough and Withlacoochee Rivers are diffluent and the area is drained by both

streams; however, the study area itself appears to only drain into the Withlacoochee River or its tributaries. In addition, Florida's physiography is frequently delineated further using topographic elevation zones based on ancient marine terraces. Based on Healy's identification (Healy, 1975), the entire site is part of the Wicomico Terrace (70 to 100 feet above mean sea level [MSL]).

The topography of the study area is relatively flat. Some of the topography appears to have been defined by Karst features such as karst depressions and sinkholes. Karst topography is created by the dissolution of soluble bedrock, typically limestone. Higher elevations exist in northeast corner and western side of the site; however, these elevation differences are relatively minor with site elevation ranging between 80 to 95 feet MSL. The lowest elevations are associated with the Withlacoochee River to the north and Gator Creek to the northeast. **Figure 1** provides a topographic map of the site and the surrounding area.

2.3 Geology and Hydrogeology

Based on available geologic information, the upper strata likely consist of sand and clays underlain by Ocala Limestone, which is part of the Ocala Group. The CMP for the site indicates that the estimated value of the commercial grade limestone is approximately \$980,000 (FFWCC, 2001). Cross-sections (Arthur, et al., 2001) and the geological map of the area (Arthur, 1993) indicate that the Suwannee Limestone is not present and was likely eroded away. Beneath the Ocala Group is the Avon Park Formation, which probably had significantly less impact on the site's surface water hydrology. Additional soil data as described below; site observations and site hydrologic behavior indicates that the upper soil profile is predominantly a fine sand and muck rather than clay or coarser sand.

The site geology, geomorphology, and hydrogeology have a significant influence on the Little Gator Creek WEA surface water hydrology due to the surface topography and underlying sediments. Specifically, the dissolution of the underlying limestone at the site has created a Karst topography that affects drainage, the surface topography, and stream flow. The underlying Ocala Limestone, topography, hydrology, and hydrogeology of the WEA are heavily influenced by a type of limestone erosion known as Karst. Karst topography is created by the dissolution of carbonates like the Suwannee Limestone. Karst features include sinkholes, springs, seeps, caves, losing surficial streams, natural bridges, and underground streams. In some Karst environments, there is reduced surface water flow due to subterranean drainage.

Due to soil characteristics, depth to the Floridan Aquifer, and the presence of sinkholes and Karst depressions, an understanding of the subsurface geology and hydrogeology is imperative to understanding the surface hydrology of the study area. The underlying Ocala Limestone affects surface water hydrology in a number of ways including:

- The formation of sinkholes, which affect both above and below the surface;

- The formation of Karst depressions, which can retain surface water flow and intersect the water table;
- The depth of groundwater;
- Groundwater-surface water interactions associated with ponds, streams, and ditch channels.

The depressed area in use as a rookery appears to be a karst feature and is likely the result of subsidence due to karst processes. In addition, a 40-foot deep sinkhole (14-501) on the southeast side of the rookery area is listed in the Florida Geological Survey (FGS) Subsidence Incident Report database (FGS, 2012). The variations in subsidence cause alterations in the surface water flow and hydrology. Because the depressions and sinkholes that form are at lower elevation than the less altered areas surrounding them, surface water typically flows through these areas and often wetlands form within these depressions. In turn, increased water percolation and the creation of natural organic acids due to decaying organic matter may cause further dissolution and subsidence, which further defines the topography and hydraulic flow.

Due to the erosion overlying geological units, the Floridan aquifer is the surficial aquifer area. This is consistent with other areas near the Brooksville Ridge, which is the west of the WEA. Although there do not appear to be any shallow wells present within the property boundary, there are several wells listed just south of the property in the Southwest Florida Water management District (SWFWMD) Water Management Information System (WMIS) database. Based on groundwater information associated with the well construction permits, the static depth to groundwater in these wells is about 8-10 feet below land surface (bls). Because the surface elevation is about 10 feet higher in the locations than the lower elevations across the site, it appears that the groundwater table is likely intercepted in the depressed areas of the site and is contributing to surface water flow. Evidence of this is also seen in the aerial photographs of the sites showing excavated areas to the south (quarry area) and to the southeast filled with water. This water is likely flow from groundwater as there does not appear to be surface water flow into these areas.

2.4 Soil Characterization

Five soil map units were identified within the Little Gator Creek WEA based on a soil report prepared through the NCRS website (see Appendix B, [NCRS, 2012]). Because the study area is adjacent to county lines dividing Pasco County from Polk County, a small fraction of area is listed under Polk County in the generated report. Because this is, an error associated with the limitations in defining the site boundary within Pasco County, the table below lists only soils present in Pasco County.

Map Unit Symbol	Map Unit Name	Percent of Subject Property
10	Wabasso fine sand	6.6%
16	Zephyr muck	1.8%
39	Chobee soils, frequently flooded	48.7%
40	Paisley fine sand	42.3%
99	Water	0.1%

Figures 2 and 3 show the Soil Drainage Class and Ponding Class, respectively. Most of the study area has been classified as being poorly drained soil to very poorly drained soil particularly in the waterways and depressions. Much less of the site was classified as having a frequent ponding, however, this may also a result of site hydrology and not the actual condition of the soil in areas where closed depressions are present at the site that are not associated with surface water flow. A full description of the soils identified at the study area and additional maps showing the soil type underlying the study area are included in Appendix B.

2.5 Drainage and Hydrology

Drainage at the site appears to be either through the Gator Creek basin or directly to the Withlacoochee River. Gator Creek is a tributary of the Withlacoochee River and flows into the river a short distance from the northern property boundary. There did not appear to be any other stream basins associated with the property. Although there are areas that appear to have significant hydraulic flow, distinct streams do not appear to have formed. This is most likely due to a relatively flat topography in these areas. Both the Withlacoochee River and Gator Creek exhibit some braiding; however, the Withlacoochee River is not as braided in this run of the river as has been observed in other areas, which may be indicative of higher flow velocities. Braiding is the result of several factors including sediment size, changes in discharge and slope.

There appears to be several karst depressions in the southwest corner of the property that do not drain directly through surface water flow. These are likely partially supplied by groundwater seepage. Any excess water that flows into these depressions during precipitation events likely feed the stream basins through percolation to the surficial aquifer, which likely daylight at lower elevations in lower areas to the north and ultimately flows into the Withlacoochee River.

All of the roads throughout the study area are unpaved. Roads in the area appear to be cut through native soil, although most roads were probably partially constructed from fill materials brought in from outside sources. As with many of FFWCC's Wildlife Management Areas and Wildlife and Environmental Areas, the roads and associated drainage structures have had an impact on natural and/or historic drainage patterns. Field observations have indicated that this was further compounded by the condition of some of the culverts and low water crossings. For clarification, observed structural features are defined as follows:

Washout - an area where surface water crosses or pools on the road

Low water crossing – an area where either the roadway was improved to allow passage through an existing stream or drainage way or any washout that had been improved through the use of oyster shells, gravel, or logs

Culverts – surface water conveyance structures of various shape and construction material

Bridge – a fabricated structure spanning a surface water feature

Swale – a wide but very shallow man-made ditch or depression that may convey surface water, typically completely covered with grass or vegetation

Ditch – a man-made depression, typically having well defined edges, which conveys water frequently

Predominantly, the ditches that were identified were either associated with existing roads (SR 471) or drainage ditches associated with the quarry ponds to the south of Little Gator Creek WEA. The ditch extending from the quarry ponds was historically used to pump water from the quarry to the rookery located on site.

2.6 Basin Delineation

A drainage basin is defined as a region or area bounded by a drainage divide and occupied by a drainage system. Typically, this drainage system will be a surface stream or river. Drainage basins tend to cover large areas and area typically controlled by topography. A sub-basin is a subset of a drainage basin that is defined as the area bounded by a drainage divide for a tributary of the stream or river that defines a basin. Because of their size, basins are frequently divided into sub-basins.

The USGS has divided the watersheds in the United States into successively smaller hydrologic units, which were classified into four levels: regions, sub-regions, accounting units, and cataloging units. The smallest hydrologic units in this system are the cataloging units. Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits depending on its level of classification in the hydrologic unit system (USGS, 2009). The Little Gator Creek WEA lies completely in the USGS Withlacoochee Hydrologic Cataloging Unit (HCU) (HUC 03100208) (USGS, 2012).

The FDEP Division of Water Resource Management uses the same watershed boundaries as planning units (FDEP, 2006); however, the FDEP Division of Water Resource Management has broken the planning units down further into smaller planning units, the smallest of which have unique Waterbody Identification (WBID) numbers. The Little Gator Creek WEA lies within the Upper Withlacoochee Planning Unit within WBID 1329F. For the purposes of this report, the basins and sub-basins were broken down into two units corresponding to named streams and rivers: Withlacoochee and Gator Creek. Although the site appears to be named after Little Gator Creek, which flows into Gator Creek east of the WEA, the basin for Little Gator Creek is not within the property boundaries. These divisions met the basin and sub-basin criteria of this assessment and their delineation was relevant to the purpose of this study. A list of the identified sub-basins is provided in **Table 1**. The delineation of these units is shown on **Figures 4 and 5**. In addition, supplemental information on

natural drainage ways (streams and river channels) and anthropogenic drainage structures (ditches) is provided in **Tables 2 and 3**, respectively.

Although the current and historical basin delineations are identical, there were differences in the current surface water flow patterns in comparison to historical patterns. Most of these differences were associated with stream flow modifications due to the surface water structures present at the site including ditches, swales, and culverts. In addition, the quarry to the south of the site has altered flow onto the WEA.

3.0 CURRENT DRAINAGE PATTERNS AND RECOMMENDATIONS

WRS personnel mobilized to the site to perform the on-site survey on September 4th and 5th, 2012. Field data was collected using the GPS system described in Section 1.3. Structure type, flow direction, condition (good, fair, poor), and comments are presented in **Table 4**. This information is also included as attributes associated with each shape file. Current drainage basins and flow patterns are shown in **Figure 5** and current flow structures are shown on **Figure 7**. All data collected in the field and evaluated in the office is provided in **Appendix C** on compact disks.

Historical topographic maps (1960) and aerial photograph maps (1941-2001) were utilized to prepare the historical drainage maps. Additional information was acquired from internet research of historical land use information and reports from the Florida Division of Historical Resources Master Site File. Elevation contours, visible streams and rivers, vegetation patterns, and other visual data were used to determine historic basins and flow directions. Drainage flow lines are generalized, representing overall flow within each basin or subbasin. Historic drainage basins and flow directions are shown on **Figure 6**.

A review of archeological data was performed to identify additional information about historical impacts and to ensure that restoration measures would not damage archeological sites. Based on a review of archaeological sites in the Florida Master Site File that are located near or in the Little Gator Creek WEA, seven pre-historic archaeological site locations were found during a two-day survey conducted in July of 1981, by B. Calvin Jones, archaeologist, with the Bureau of Historic Sites and Properties, Division of Archives, History and Records Management. These sites range from approximately one-half to eight acres in area. They were defined on the basis of where identifiable man-made chipped stone artifacts, i.e. spear points, preforms or knives, cores, hammerstones and secondary flakes were found; otherwise, essentially the entire survey tract might be considered to have been a single large site or pre-historic quarry, since large cortex flakes and fractured exposed chert typifies the surface of the property. Much of this broken chert material was no doubt the result of pre-historic quarrying, but due to the limited time of the survey and the difficulty in differentiating fire and ice cracked rock from that which was fractured by man, only those areas with distinctively man-constructed artifacts were identified as sites. Primary usage of these sites on the Subject Property seems to have been for extraction of usable quality chert for tool and weapon construction. Based on the area surveyed in this tract, this property is considered to have a high ratio of cultural resource site locations per acreage and it had a long span of usage over a period of several thousand years by several different Indian cultures. It does not appear that restoration activities would have any negative impacts to these archaeological sites. Four of the seven sites, which are located over the northern portion of the Subject Property, are at elevations that would not be affected. The remaining three sites appear to be located on the periphery of the wood stork rookery area and already experience occasional or prolonged periods of flooding due to natural site conditions and the impounding of water by existing water control structures. Any improvements/modifications that are being

proposed for these water control structures would not affect hydrology in a way that would negatively impact the three archaeological sites in this area.

The following sections discuss each of the two drainage basins, describing the field-verified structures as well as recommendations for new structures. The basin extents were evaluated based on topography, flow patterns, and field observations. Because a detailed analysis was performed independently to other basin delineations, the basin extents do not precisely conform to previous basin delineations performed in the past. The proposed modifications to control structures are presented in **Table 5** and shown on **Figure 8**. Recommended restoration measures are based on the following assumptions:

- "Historic flow" is generally defined as the flow regime evident prior to 1960 based on topographic maps, photographs, and historical information. In addition, efforts were made to identify hydrological impacts due changes in vegetation and the flow regime based on topography and an evaluation of the natural flow regime.
- Flow will be restored on a general sub-basin scale and where possible on a smaller scale, as is practical.

3.1 Gator Creek Sub-basin

The Gator Creek Sub-basin encompasses a small portion of the northeastern portion of the Little Gator Creek WEA and consists of approximately 28.02 acres. As a tributary of the Withlacoochee River, it has been identified as a sub-basin. Gator Creek flows in a northeast direction and bisects the northeastern corner of the Little Gator Creek WEA. Gator Creek and the extent of its drainage basin on the Little Gator Creek WEA appears to be relatively unaffected by anthropogenic impacts. As no culverts or low water crossings were identified within the Gator Creek sub-basin, no recommendations for restoration are needed.

Because surface water flow at the Little Gator Creek is influenced significantly by properties to the south, southeast and east; plans for Colt Creek State Park for modifications to both Gator Creek and Little Gator Creek by the Florida Department of Environmental Protection (FDEP) Division of Recreation and Parks (FDEP, 2007). The concern was that planned ditch plugs in Gator Creek and potential flow modifications in Little Gator Creek could change flow into the ditch by County Road 471 that is drained into the Little Gator Creek WEA. Specifically, some water now in the Gator Creek basin could flow into the Withlacoochee basin and increase flow in the ditch. Based on these plans, it appears that these modifications are a significant distance to the south and would not likely have a significant impact since it appears that affected surface water would remain in the Gator Creek Basin. Some reduced flow into Gator Creek may occur but this would have minimal impact on the WEA. Furthermore, it appears that the restorations are designed to restore natural conditions within the park.

3.2 Withlacoochee River Basin

The Withlacoochee River Basin encompasses approximately 544.82 acres within the Little Gator Creek WEA. As shown on **Figures 5 and 6**, it is comprised of an area in which surface water discharges directly into the river. SWFMD has indicated that this basin is impaired (Category 4c) due to dissolved oxygen and potentially impaired due to iron and the presence of mercury in fish (FDEP, 2006). The lower elevation areas of this basin appear to be relatively pristine, whereas those areas at higher elevations have been affected by the same road and land use impacts as the other basins.

Much of the recommended restoration in the Withlacoochee River Basin is associated with the road and trail system present at the site, as well as the rookery present at the site. The following restoration activities are recommended for the Withlacoochee River Basin within the Little Gator Creek WEA. All culvert and low water crossing numbers are referenced to **Figure 8**.

3.2.1 Culverts

The following culvert modifications are recommended throughout the Withlacoochee River Basin:

- **Culvert 2** – This culvert is located along the road that runs parallel to the rookery that is presently onsite. Due to the observed condition of this culvert, it is recommended that it be replaced.
- **Culverts 3** – The three culverts located in this location serve as outflow structures of the rookery. Although these three culverts are in fair condition it is recommended that outflow volumes of the rookery be further evaluated to determine the appropriate type/number/size of structures needed to control and facilitate outflow of the rookery.
- **Culverts 4** – Like the three culverts located at location 3, these two culverts also serve as outflow structures of the rookery. These two culverts were installed in an attempt to increase outflow of the rookery during times of high water volumes. Although these two culverts are in fair condition it is recommended that outflow volumes of the rookery be further evaluated to determine the appropriate type/number/size of structures needed to control and facilitate outflow of the rookery.
- **Culverts 5** – The three culverts located in this location serve as the inflow structures of the rookery. These three culverts were observed in poor condition. Due to the current condition of these culverts, it is recommended that they be replaced. It is also recommended that inflow volumes of the rookery be further evaluated to determine the appropriate type/number/size of structures needed to control and facilitate inflow into the rookery from the corresponding ditching located along SR 471.
- **Culvert 15** – This location lies in the south-central portion of Little Gator Creek WEA and corresponds to the historic ditch, which can be seen on the 1982 aerial photograph (**Figure 9**). This ditch was historically used for pumping water into

the rookery from the quarry operation located to the south of the WEA. Currently, no culvert is located on the road that crosses this ditch; however, given the observed conditions, it is recommended that a culvert be placed at this location.

3.2.2 Low Water Crossings

- **Low Water Crossing 6** – This existing low water crossing in the central portion of the site needs to be upgraded to a hardened low water crossing.
- **Low Water Crossing 7, 8, 9, and 10** – It is recommended that these low water crossings on the northwestern portion of the site be upgraded to hardened low water crossings.
- **Ponded areas of road 11, 12, and 13** – It is recommended that these ponded areas be replaced with hardened low water crossings.
- **Low Water Crossing 14** – It is recommended that this low water crossing on the northwestern portion of the site be upgraded to a hardened low water crossing.
- **Low Water Crossing 16** – It is recommended that this low water crossing on the southeastern portion of the site be upgraded to a hardened low water crossing.

3.2.3 Ditches

Like the sub-basins, ditches were identified in the Withlacoochee River Basin. The primary ditch identified within the Withlacoochee River Basin is located along SR 471. This ditch was observed paralleling SR 471 from US 98 to the south of Little Gator Creek WEA. Flow in this ditch was observed in a northerly direction. The northern end of this ditch serves as the inflow to the rookery located on the WEA. No additional modifications are recommended for this ditch other than those concerning the inflow structures of the rookery. The other ditch observed within the Withlacoochee River Basin consists of a ditch that was historically used to pump water from the adjoining quarries into the rookery. This ditch is located on the south-central portion of Little Gator Creek WEA. No additional modifications are recommended for this ditch other than those discussed in Section 3.2.1 (Culvert 15).

3.2.4 Well and Pump Outfall

A 10 inch well along with a pump was observed on the eastern portion of Little Gator Creek WEA within the Withlacoochee River Basin. This well and pump is currently used by FFWCC to provide additional water resources to the rookery when needed. In order to decrease erosion and the loss of water through infiltration and evaporation, it is recommended that the pump outfall be extended to the northern boundary of the rookery. No other modifications are recommended to this well and pump outfall.

3.3 Little Gator Creek WEA Roads and Trails

In preparing this plan, it was assumed that most of the roads and trails would remain in use by FFWCC and the general public. No roads or trails were identified that were not

in use that warranted a recommendation for closure or abandonment due to hydrologic impacts. However, if FFWCC determines that any road or trail should be abandoned or permanently closed, it is recommended that any existing culverts be removed and that the grade be returned to natural conditions in the area of the culvert. In addition, although regrading or physical removal of the road base is not likely necessary in other areas, the natural vegetative cover should be allowed to recover in these other affected areas.

4.0 CONCLUSIONS

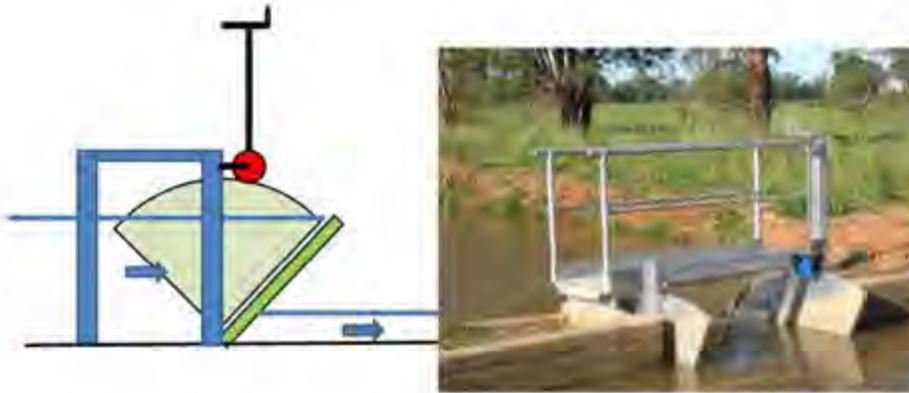
A summary of the recommended mitigation measures for each basin is as follows. All location numbers are based on **Figure 8**.

Withlacoochee River Basin

- 1) Extend pump outfall in to the rookery at point 1;
- 2) Replace culvert at Location 2;
- 3) Evaluate inflow and outflow volumes and replace culverts at Locations 3, 4, and 5;
- 4) Install new culvert at Location 15;
- 5) Install hardened low water crossing at ponded Locations 11, 12, and 13;
- 6) Upgrade to hardened low water crossings at locations 6, 7, 8, 9, 10, 14, and 16.

Additionally, large amounts of aquatic vegetation were observed in the ditch adjacent to the inflow structure of the rookery. Site photographs 17 and 18 in **Appendix A** show the aquatic vegetation that is located upstream of the inflow structures. This vegetation appears to be impeding flow into the rookery. Although this vegetation and ditch are not located within the WEA boundary, it is recommended that FFWCC and FDOT have discussions regarding the removal of this vegetation.

In addition to the above recommendations, improvements to the existing flow structures to achieve better flow control are recommended for the rookery. Based on a preliminary analysis and discussions with various technical personnel, a manually operated overshot gate such as the one pictured below appears to be a good option for maintaining seasonal water levels in the rookery. It is recommended that this type of gate be used in both the inflow and outflow to the rookery,



The advantages of this type of gate at Little gator Creek rookery are as follows:

- The outflow gate would allow water levels to be set within the rookery, while still allowing overflow during heavy precipitation events;
- The outflow gate could be lowered down completely to allow the rookery to drain; and
- The inflow gate could be raised to retain water in the rookery while still allowing water to flow over into the rookery if a heavy precipitation were to occur (to reduce upstream flooding)

The recommendations made above do not need to be addressed in any particular order. Flow structure installation and modifications to restore the historic flow patterns to the extent practical have been discussed in detail in Section 3.0 of this report. Their primary purpose is to restore flow to historic basins that have been re-routed by the current structure configuration and to improve the current structures used to regulate surface water in the rookery.

5.0 REFERENCES

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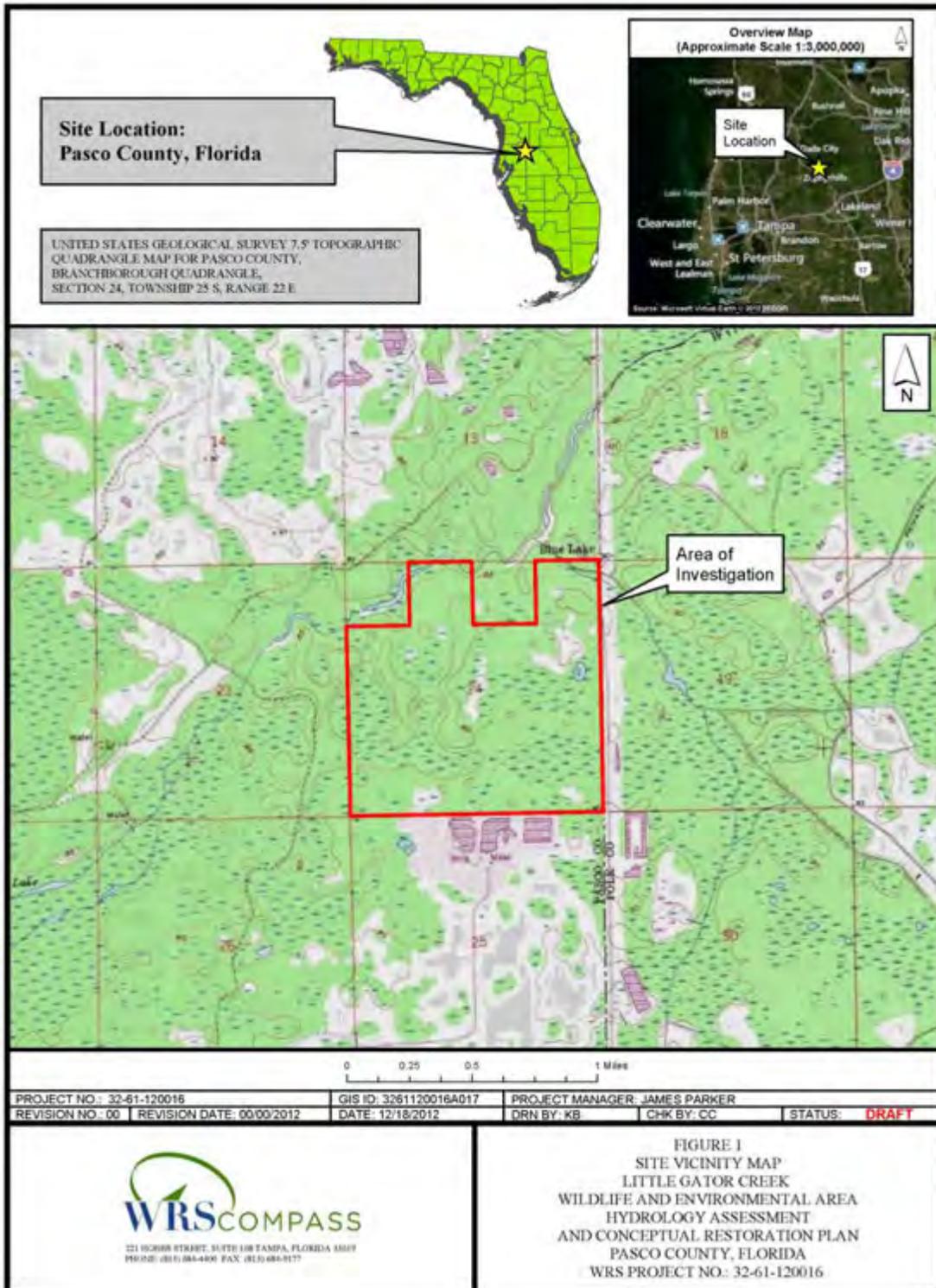
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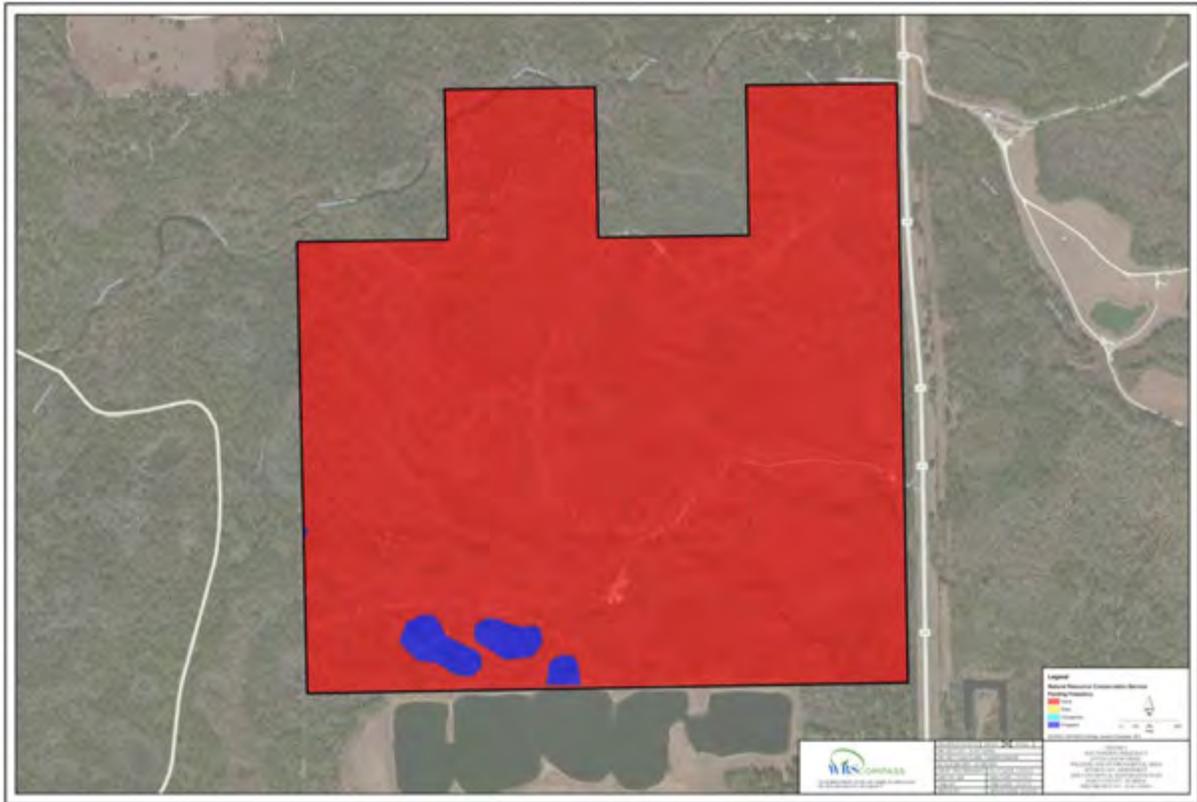
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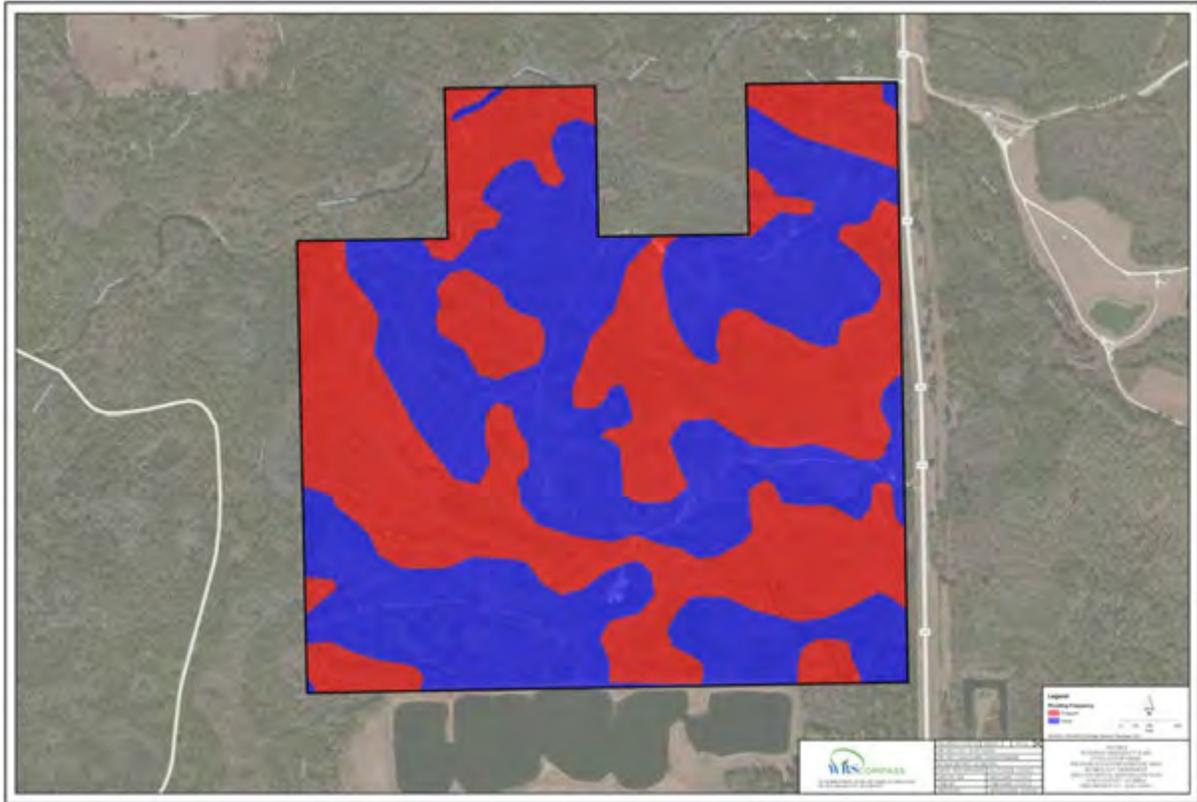
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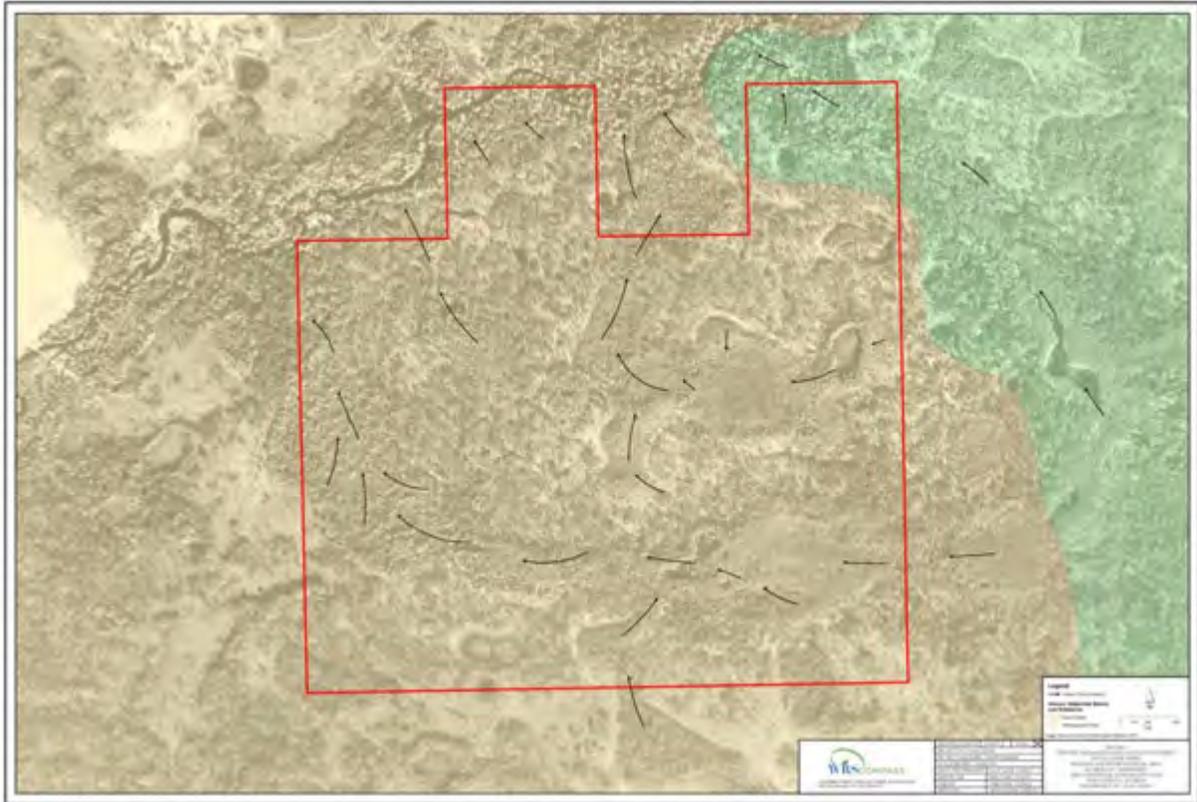
Figures

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Tables

Table 1
Current and Historic Basin Delineation
Little Gator Creek Wildlife and Environmental Area

Basin or Subbasin Designation	Current Size		Historic Size		Difference (Acres)
	Square Feet	Acres	Square Feet	Acres	
Gator Creek Basin	1,220,551	28.02	1,220,551	28.02	0.00
Withlacoochee River Basin	23,732,359	544.82	23,732,359	544.82	0.00

Notes:
 All area measurements reported are basin dimensions within the Little Gator Creek WEA and not the actual basin size.

Table 2
Natural Drainage Ways
Little Gator Creek Wildlife and Environmental Area

ID	Description	Flow Direction	App. Length (feet)
1	Gator Creek	NW	1,111.2
2	Withlacoochee River	NW	535.1
3	Withlacoochee River	SW	546.0

Notes:

Because of meandering in the Withlacoochee River , multiple stream channels are listed.

Table 3
Current Conveyance Structures and Flow Direction
Little Gator Creek Wildlife and Environmental Area

ID	Type	Flow	App. Length (feet)
1	Ditch (between eastern property boundary and SR 471)	N	1,121.0
2	Ditch (historic ditch used for pumping water from quarry to rookery)	NE	1,059.0

Notes:

Flow direction was determined based on an evaluation of hydrology including topography, stream locations, field observations, and an evaluation of available data like aerial photographs and the location of natural and anthropogenic features.

**Table 4
Existing Water Control Structures
Little Gator Creek Wildlife and Environmental Area**

Point ID	Structure	Diameter	Length	Material	Flow Direction	Condition	Comments/Observations	Latitude	Longitude
1	Well/Pump						Used as additional water source for Rookery	28.29366642	-82.05672348
2	Pump Outfall				S		Discharge point of water from pump, recommend extending outflow location	28.29332308	-82.05676014
3	Culvert	18in	44ft	concrete	N	good	Flow to the north	28.29382642	-82.05722014
4	Culvert	18in	32ft	concrete		good	Unable to determine flow due to dry conditions	29.29391612	-82.06026191
5	Culvert	18in	20ft	metal	S	poor	Northside of culvert collapsed	28.29366142	-82.06102514
6	Culvert	18in	40ft	concrete		good	Unable to determine flow due to dry conditions	28.29207476	-82.06320514
7	Culvert	36in	52ft	metal	W	fair	S-culvert, outflow of rookery	28.29172309	-82.06357846
8	Culvert	36in	43ft	metal	W	fair	N-culvert, outflow of rookery	28.29138142	-82.06365681
9	Low Water Crossing				N	good	Unable to determine flow due to dry conditions, possible north	28.29033976	-82.07122847
10	Gate							28.29006308	-82.07259181
11	Culvert	18in	25ft	metal	W	poor	culvert located offsite	28.29089476	-82.07263014
12	Culvert	18in	20ft	plastic	N	good	2 plastic culverts	28.29930809	-82.06281681
13	Gate							28.30050142	-82.05614181
14	Bridge				W		Gator Creek Bridge located on SR 471	28.30216142	-82.05389514
15	Culvert	18in	20ft	metal		fair	Unable to determine flow due to dry conditions	28.29332975	-82.05606681
16	Abandoned Well					abandoned	Abandoned well	28.29295975	-82.05609846
17	Culvert	48in	40ft	metal	E	poor	3 metal culverts, inflow to rookery	28.29162642	-82.05619846
18	Culvert	10ft	95ft	concrete	W	good	2-10 ft wide FDOT box culverts, vegetation may be decreasing flow	28.29151976	-82.05559181
19	Ditch				N		large ditch observed along SR471, flow is to the north into the inflow structures of the rookery	28.28922976	-82.05982346
20	Low Water Crossing			Earth			Recommend an upgrade to hardened low water crossing	28.29556975	-82.06735347
21	Withlacoochee River						Withlacoochee River flood plain	28.29978897	-82.07217415
22	Low Water Crossing			Earth	SE	50ft x 15ft	Recommend an upgrade to hardened low water crossing	28.29920809	-82.07114347
23	Low Water Crossing			Earth	N	60ft x 15ft	Recommend an upgrade to hardened low water crossing	28.29877309	-82.06931847
24	Low Water Crossing			Earth	N	60ft x 15ft	Recommend an upgrade to hardened low water crossing	28.29992309	-82.06814847
25	Low Water Crossing			Earth	N	app 100ft x 20ft	Recommend an upgrade to hardened low water crossing, impassible	28.30125676	-82.06655515
26	Low Flooded Area of road			Earth			Recommend an upgrade to hardened low water crossing	28.30192642	-82.06534847
27	Low Flooded Area of road			Earth			Recommend an upgrade to hardened low water crossing	28.30188475	-82.06484014
28	Low Flooded Area of road			Earth			Recommend an upgrade to hardened low water crossing	28.30161809	-82.06434981
29	Large wetland					impassible	Large wetland which extends into road	28.30051309	-82.06448881
30	Low Water Crossing			Earth	W	20ft x 12ft	Recommend an upgrade to hardened low water crossing	28.30018475	-82.06010348
31	Ditch				SE		Former ditch used to pump water into the rookery. Recommend installation of new culvert under road to facilitate flow into the rookery	28.28938808	-82.06557014
32	Impassible Area			Earth				28.28859142	-82.06582514
33	Low Water Crossing			Earth	N	100ft x 15ft	Recommend an upgrade to hardened low water crossing	28.28965642	-82.05938014

Notes

Not all items listed are water control structures. Field observations relevant to the assessment were also included in the table for completeness. Point IDs are based on the locations shown in Figure 7 and this figure should be referenced for the map location of these structures.

Table 5
Recommended Water Control Structures
Little Gator Creek Wildlife and Environmental Area

ID	Structure/Modification	Latitude	Longitude
1	Pump Outfall, Extend further into rookery	28.29332309	-82.05676014
2	Culvert replacement	28.29366142	-82.06102514
3	Culvert replacement	28.29172309	-82.06357848
4	Culvert replacement	28.29158142	-82.06365681
5	Culvert replacement	28.29162642	-82.05619848
6	Upgrade to a HLWC	28.29556975	-82.06735347
7	Upgrade to a HLWC	28.29920809	-82.07114347
8	Upgrade to a HLWC	28.29877309	-82.06931847
9	Upgrade to a HLWC	28.29992309	-82.06814847
10	Upgrade to a HLWC	28.30125676	-82.06655515
11	Upgrade to a HLWC	28.30192642	-82.06534847
12	Upgrade to a HLWC	28.30188475	-82.06484014
13	Upgrade to a HLWC	28.30161809	-82.06438181
14	Upgrade to a HLWC	28.30018475	-82.06010348
15	New Culvert	28.28938809	-82.06557014
16	Upgrade to a HLWC	28.28963642	-82.05938014

Notes: HLWC = Hardened Low Water Crossing

Appendices

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Appendix A
Site Photographs

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Photograph 1: Water well and pump which provides water for the rookery.



Photograph 2: Small ditch which allows water to flow from the pump outfall to the rookery in a southern direction.



SITE PHOTOGRAPHS 1 & 2
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 3: View of a 18 inch concrete culvert in good condition.



Photograph 4: View of a 18 inch concrete culvert in good condition.



SITE PHOTOGRAPHS 3 & 4
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 5: View of a 18 inch metal culvert in poor condition.



Photograph 6: View of a 18 inch concrete culvert in good condition.



SITE PHOTOGRAPHS 5 & 6
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 7: View of three 36 inch metal culverts in fair condition located at the outflow of the rookery.



Photograph 8: View of three 36 inch metal culverts in fair condition located at the outflow of the rookery..



SITE PHOTOGRAPHS 7 & 8
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 9: View of two 36 inch metal culverts in fair condition located at the outflow of the rookery.



Photograph 10: View of two 36 inch metal culverts in fair condition located at the outflow of the rookery..



SITE PHOTOGRAPHS 9 & 10
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 11: View of a low water crossing on the western portion of Little Gator Creek WEA.



Photograph 12: View of two 18 inch plastic culverts in good condition.



SITE PHOTOGRAPHS 11 & 12
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 13: Looking west at Gator Creek from State Road 471 on the northern portion of Little Gator Creek WEA.



Photograph 14: View of a 18 inch metal culvert in good condition.



SITE PHOTOGRAPHS 13 & 14
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 15: View of an abandoned well located on the eastern portion of Little Gator Creek WEA.



Photograph 16: View of a low water crossing observed at Little Gator Creek WEA, recommended for upgrade to hardened low water crossing.



SITE PHOTOGRAPHS 15 & 16
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 17: View of two 10ft wide concrete box culverts located to the east of the inflow structures on State Road 471.



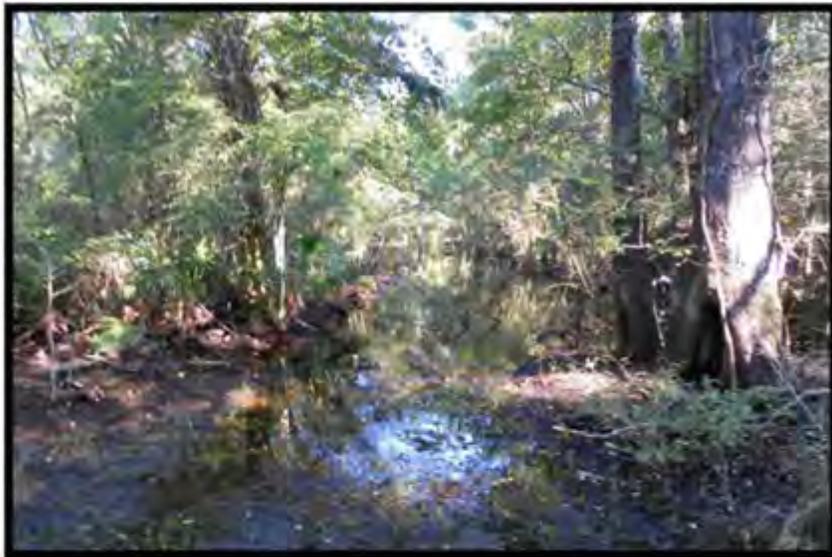
Photograph 18: View looking south at the large ditch which parallels the eastern boundary of Little Gator Creek WEA.



SITE PHOTOGRAPHS 17 & 18
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 19: View of the large ditch which parallels the eastern boundary of Little Gator Creek WEA, flow to the north.



Photograph 20: Looking west at the floodplains of the Withlacoochee River to the west of Little Gator Creek WEA.



SITE PHOTOGRAPHS 19 & 20
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 21: View of a low water crossing observed on the northern portion of Little Gator Creek WEA, recommended for upgrade to a hardened low water crossing, flow to the north.



Photograph 22: View of a low water crossing observed on the northern portion of Little Gator Creek WEA, recommended for upgrade to a hardened low water crossing, flow to the north.



SITE PHOTOGRAPHS 21 & 22
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 23: View of a low water crossing observed on the northern portion of Little Gator Creek WEA, recommended for upgrade to a hardened low water crossing, flow to the northwest.



Photograph 24: View of a low water crossing observed on the northern portion of Little Gator Creek WEA, recommended for upgrade to a hardened low water crossing, flow to the north.



SITE PHOTOGRAPHS 23 & 24
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 25: View of a ponded area of a road, no flow.



Photograph 26: View of a large wetland on the northern portion of Little Gator Creek WEA.



SITE PHOTOGRAPHS 25 & 26
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 27: View of a low water crossing observed on Little Gator Creek WEA, recommended for upgrade to hardened low water crossing, indications of flow to the west.



Photograph 28: View of a ditch on the southern portion of Little Gator Creek WEA, ditch flow obstructed by road, recommended for installation of new culvert.



SITE PHOTOGRAPHS 27 & 28
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016



Photograph 29: View of a low water crossing observed on Little Gator Creek WEA, recommended for upgrade to hardened low water crossing, flow to the north.



SITE PHOTOGRAPH 29
LITTLE GATOR CREEK WEA
LITTLE GATOR CREEK WEA HYDROLOGY ASSESSMENT
AND CONCEPTUAL RESTORATION PLAN
PASCO COUNTY, FLORIDA
WRS COMPASS PROJECT NO.: 32-61-120016

Appendix B
Custom Soil Report for Little Gator Creek WEA

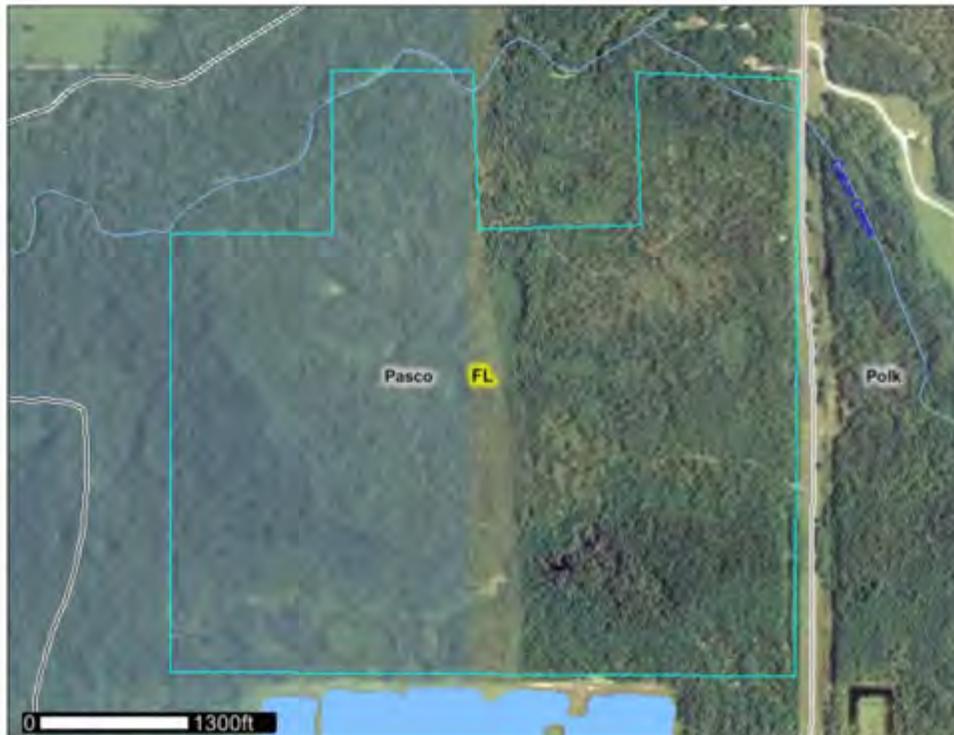
WRS Infrastructure & Environment, Inc.



A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Pasco County, Florida, and Polk County, Florida

Little Gator Creek Wildlife and Environmental Area



September 27, 2012

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

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individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

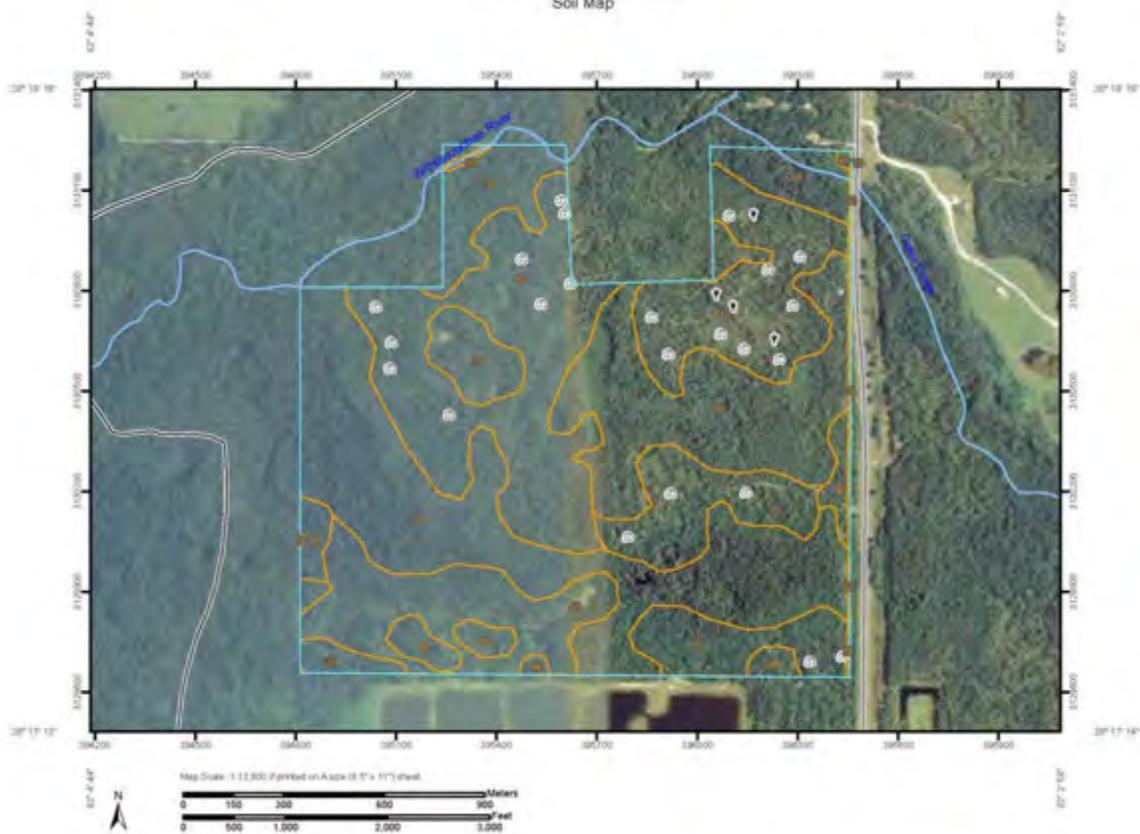
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

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Soil Map



Map Unit Legend

Pasco County, Florida (FL101)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Wabasso fine sand	38.4	6.6%
16	Zephyr muck	9.9	1.8%
39	Chobee soils, frequently flooded	270.5	48.7%
40	Paisley fine sand	235.0	42.3%
99	Water	0.7	0.1%
Subtotals for Soil Survey Area		552.5	99.5%
Totals for Area of Interest		555.3	100.0%

Polk County, Florida (FL105)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	0.7	0.1%
Subtotals for Soil Survey Area		2.9	0.5%
Totals for Area of Interest		555.3	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified

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by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Pasco County, Florida

10—Wabasso fine sand

Map Unit Setting

Elevation: 30 to 100 feet
Mean annual precipitation: 50 to 58 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days

Map Unit Composition

Wabasso, non-hydric, and similar soils: 70 percent
Wabasso, hydric, and similar soils: 10 percent
Minor components: 20 percent

Description of Wabasso, Non-hydric

Setting

Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Moderate (about 6.2 inches)

Interpretive groups

Land capability (nonirrigated): 3w
Ecological site: South Florida Flatwoods (R154XY003FL)

Typical profile

0 to 6 inches: Fine sand
6 to 23 inches: Fine sand
23 to 30 inches: Fine sand
30 to 80 inches: Sandy clay loam

Description of Wabasso, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy marine deposits

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Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 0 to 6 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0

Available water capacity: Moderate (about 6.2 inches)

Interpretive groups

Land capability (nonirrigated): 3w

Ecological site: South Florida Flatwoods (R154XY003FL)

Typical profile

0 to 6 inches: Fine sand

6 to 23 inches: Fine sand

23 to 30 inches: Fine sand

30 to 80 inches: Sandy clay loam

Minor Components

Aripeka

Percent of map unit: 7 percent

Landform: Rises on karst marine terraces

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: Cabbage Palm Flatwoods (R154XY005FL)

Eaugallie, non-hydric

Percent of map unit: 7 percent

Landform: Rises on marine terraces

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: South Florida Flatwoods (R154XY003FL)

Paisley, non-hydric

Percent of map unit: 6 percent

Landform: Rises on marine terraces

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Linear

Ecological site: South Florida Flatwoods (R154XY003FL)

16—Zephyr muck

Map Unit Setting

Mean annual precipitation: 50 to 58 inches

Mean annual air temperature: 70 to 77 degrees F

Frost-free period: 324 to 354 days

Map Unit Composition

Zephyr and similar soils: 80 percent

Minor components: 20 percent

Description of Zephyr

Setting

Landform: Depressions on marine terraces

Landform position (three-dimensional): Interfluvial, dip

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Organic material over sandy and loamy marine deposits

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 4.0

Available water capacity: Moderate (about 8.2 inches)

Interpretive groups

Land capability (nonirrigated): 7w

Ecological site: Freshwater Marshes and Ponds (R154XY010FL)

Typical profile

0 to 13 inches: Muck

13 to 31 inches: Fine sand

31 to 61 inches: Sandy clay loam

61 to 80 inches: Fine sandy loam

Minor Components

Felda

Percent of map unit: 10 percent

Landform: Flats on marine terraces

Landform position (three-dimensional): Tail

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Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Slough (R154XY011FL)

Anclote

Percent of map unit: 10 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Freshwater Marshes and Ponds (R154XY010FL)

39—Chobee soils, frequently flooded

Map Unit Setting

Elevation: 10 to 100 feet
Mean annual precipitation: 50 to 58 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days

Map Unit Composition

Chobee and similar soils: 75 percent
Minor components: 25 percent

Description of Chobee

Setting

Landform: Depressions on flood plains on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Moderate (about 8.5 inches)

Interpretive groups

Land capability (nonirrigated): 5w

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Typical profile

0 to 11 inches: Fine sandy loam
11 to 56 inches: Sandy clay loam
56 to 80 inches: Sandy clay loam

Minor Components

Nobleton

Percent of map unit: 5 percent
Landform: Rises on marine terraces
Landform position (three-dimensional): Interfluvial
Down-slope shape: Convex
Across-slope shape: Linear

Pineda

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Tail
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Slough (R154XY011FL)

Okeelanta

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Freshwater Marshes and Ponds (R154XY010FL)

Terra ceia

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Tail
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Freshwater Marshes and Ponds (R154XY010FL)

Zephyr

Percent of map unit: 5 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Interfluvial, dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Freshwater Marshes and Ponds (R154XY010FL)

40—Paisley fine sand

Map Unit Setting

Elevation: 30 to 100 feet
Mean annual precipitation: 50 to 58 inches

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Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 324 to 354 days

Map Unit Composition

Paisley, non-hydric, and similar soils: 60 percent
Paisley, hydric, and similar soils: 30 percent
Minor components: 10 percent

Description of Paisley, Non-hydric

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey marine deposits

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability (nonirrigated): 3w
Ecological site: South Florida Flatwoods (R154XY003FL)

Typical profile

0 to 3 inches: Fine sand
3 to 10 inches: Fine sand
10 to 80 inches: Sandy clay

Description of Paisley, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey marine deposits

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None

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Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: High (about 9.8 inches)

Interpretive groups

Land capability (nonirrigated): 3w
Ecological site: South Florida Flatwoods (R154XY003FL)

Typical profile

0 to 3 inches: Fine sand
3 to 10 inches: Fine sand
10 to 80 inches: Sandy clay

Minor Components

Wabasso, non-hydric

Percent of map unit: 10 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: South Florida Flatwoods (R154XY003FL)

99—Water

Map Unit Composition

Water (fresh): 100 percent

Polk County, Florida

78—Paisley fine sand, stony subsurface

Map Unit Setting

Elevation: 20 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days

Map Unit Composition

Paisley, non-hydric, and similar soils: 60 percent
Paisley, hydric, and similar soils: 20 percent
Minor components: 20 percent

Description of Paisley, Non-hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey marine deposits

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 60 to 80 inches to lithic bedrock
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: High (about 9.4 inches)

Interpretive groups

Land capability (nonirrigated): 3w
Ecological site: South Florida Flatwoods (R154XY003FL)
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)

Typical profile

0 to 4 inches: Fine sand
4 to 18 inches: Stony fine sand
18 to 22 inches: Sandy clay
22 to 60 inches: Sandy clay
60 to 64 inches: Unweathered bedrock

Description of Paisley, Hydric

Setting

Landform: Flats on marine terraces
Landform position (three-dimensional): Talf

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Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey marine deposits

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 60 to 80 inches to lithic bedrock
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: High (about 9.4 inches)

Interpretive groups

Land capability (nonirrigated): 3w
Ecological site: South Florida Flatwoods (R154XY003FL)
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)

Typical profile

0 to 4 inches: Fine sand
4 to 18 inches: Stony fine sand
18 to 22 inches: Sandy clay
22 to 60 inches: Sandy clay
60 to 64 inches: Unweathered bedrock

Minor Components

Felda

Percent of map unit: 7 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: Slough (R154XY011FL)
Other vegetative classification: Sandy over loamy soils on flats of hydric or mesic lowlands (G154XB241FL)

Bradenton, hydric

Percent of map unit: 7 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Upland Hardwood Hammocks (R154XY008FL)
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)

Wabasso, non-hydric

Percent of map unit: 6 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf

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Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: South Florida Flatwoods (R154XY003FL)
Other vegetative classification: Sandy soils on flats of mesic or hydric lowlands (G154XB141FL)

80—Chobee fine sandy loam, frequently flooded

Map Unit Setting

Elevation: 10 to 100 feet
Mean annual precipitation: 46 to 54 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 350 to 365 days

Map Unit Composition

Chobee and similar soils: 90 percent
Minor components: 10 percent

Description of Chobee

Setting

Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability (nonirrigated): 5w
Other vegetative classification: Loamy and clayey soils on stream terraces, flood plains, or in depressions (G154XB346FL)

Typical profile

0 to 12 inches: Fine sandy loam
12 to 32 inches: Sandy clay loam
32 to 80 inches: Sandy loam

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Minor Components

Floridana, depressional

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Freshwater Marshes and Ponds (R154XY010FL)
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G154XB245FL)

Kaliga

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: Freshwater Marshes and Ponds (R154XY010FL)
Other vegetative classification: Organic soils in depressions and on flood plains (G154XB645FL)

Nittaw

Percent of map unit: 2 percent
Landform: Flood plains on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Other vegetative classification: Organic soils in depressions and on flood plains (G154XB645FL)

Paisley, hydric

Percent of map unit: 2 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: South Florida Flatwoods (R154XY003FL)
Other vegetative classification: Loamy and clayey soils on flats of hydric or mesic lowlands (G154XB341FL)

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit

This rating indicates the proportion of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is designated as "all hydric," "partially hydric," "not hydric," or "unknown hydric," depending on the rating of its respective components.

"All hydric" means that all components listed for a given map unit are rated as being hydric, while "not hydric" means that all components are rated as not hydric. "Partially hydric" means that at least one component of the map unit is rated as hydric, and at least one component is rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part

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(Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

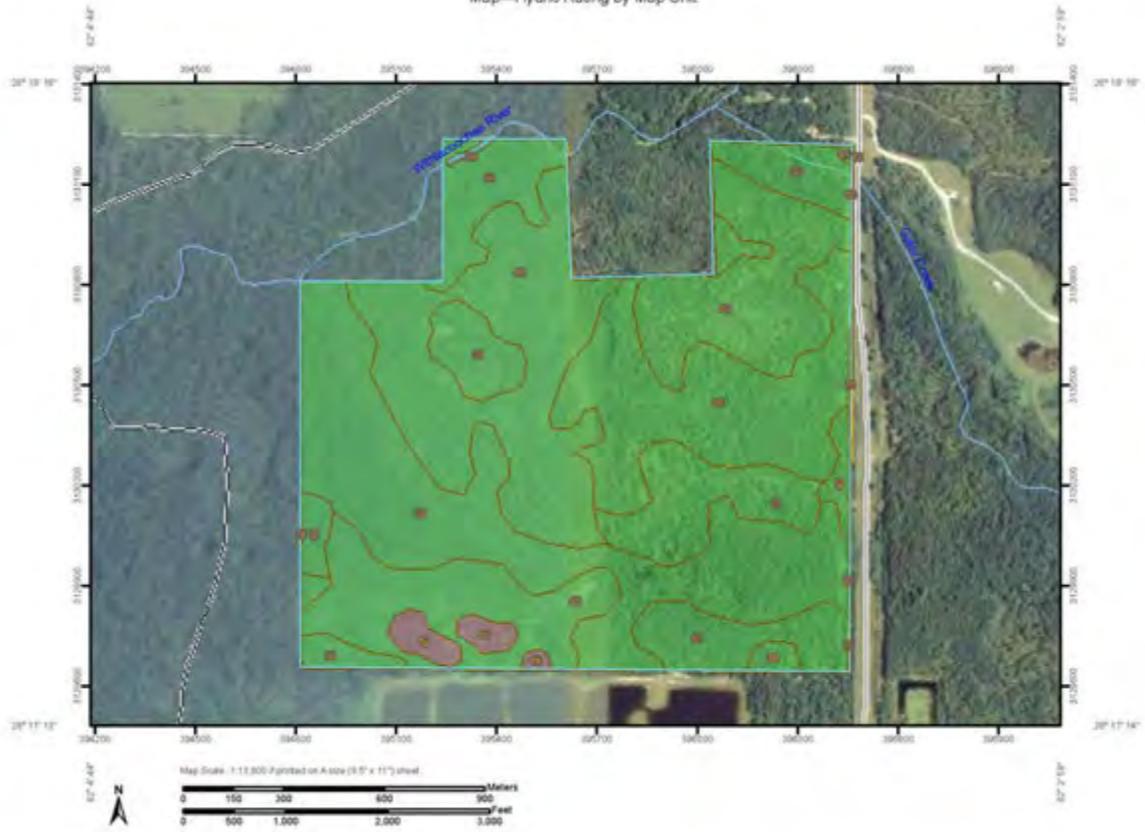
The NCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.
- Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



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MAP LEGEND	MAP INFORMATION
<p>Area of Interest (AOI)</p> <ul style="list-style-type: none">  Area of Interest (AOI)  Area of Interest (AOI) <p>Soils</p> <ul style="list-style-type: none">  Soil Map Unit <p>Soil Ratings</p> <ul style="list-style-type: none">  Ar Hydric  Potentially Hydric  Not Hydric  Unkown Hydric  Not rated or not available <p>Political Features</p> <ul style="list-style-type: none">  Cities <p>Water Features</p> <ul style="list-style-type: none">  Streams and Canals <p>Transportation</p> <ul style="list-style-type: none">  State  Interstate Highways  US Routes  Major Roads  Local Roads 	<p>Map Scale: 1:13,000 if printed on A size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:50,000.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> </div> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 6, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 6, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Desktop aerial images were photographed: 05/14/2007</p> <p>The orthophoto or other base map on which the soil lines were digitized and displayed probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Table—Hydric Rating by Map Unit

Hydric Rating by Map Unit— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Wabasso fine sand	Partially Hydric	36.4	6.6%
16	Zephyr muck	All Hydric	9.9	1.8%
39	Chobee soils, frequently flooded	Partially Hydric	270.5	48.7%
40	Paisley fine sand	Partially Hydric	235.0	42.3%
99	Water	Unknown Hydric	0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Hydric Rating by Map Unit— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	Partially Hydric	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	All Hydric	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Absence/Presence

Tie-break Rule: Lower

Water Management

Water Management interpretations are tools for evaluating the potential of the soil in the application of various water management practices. Example interpretations include pond reservoir area, embankments, dikes, levees, and excavated ponds.

Pond Reservoir Areas

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the saturated hydraulic conductivity (Ksat) of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified

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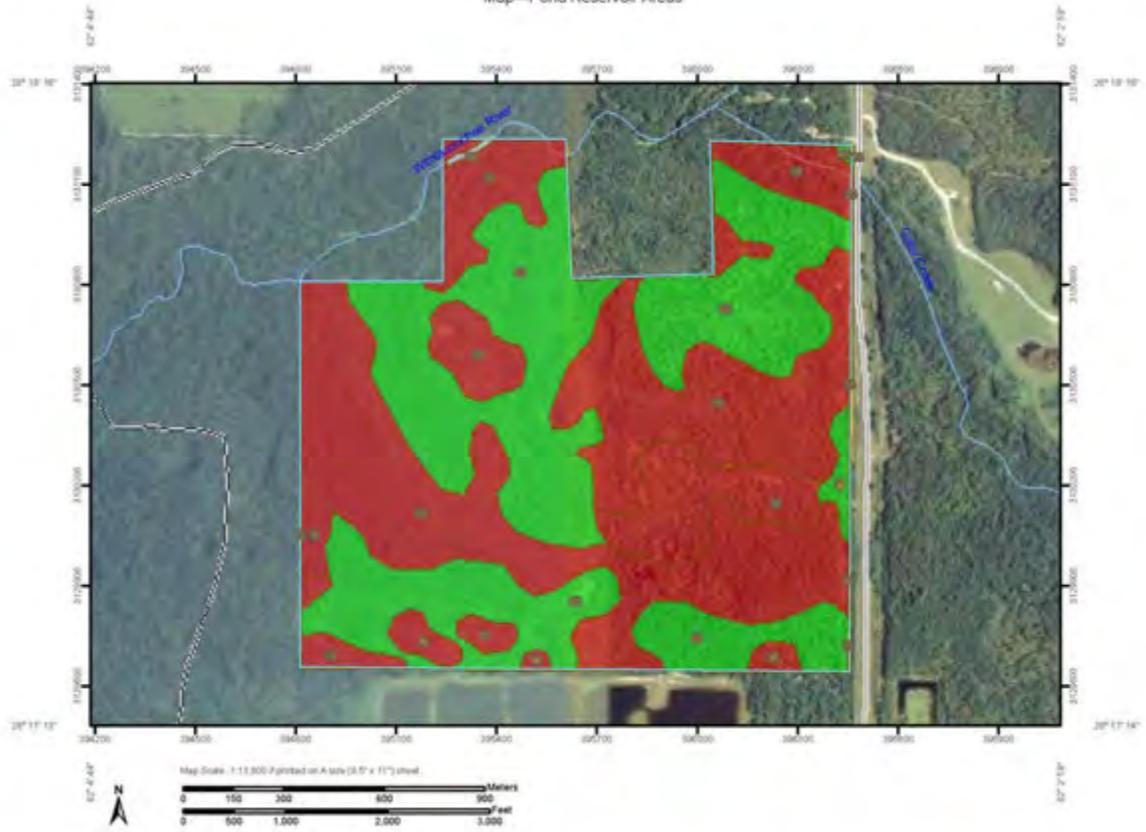
use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Pond Reservoir Areas



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MAP LEGEND	MAP INFORMATION
<p>Area of Interest (AOI)</p> <ul style="list-style-type: none">  Area of Interest (AOI)  Area of Interest (AOI) <p>Soils</p> <ul style="list-style-type: none">  Soil Map Unit <p>Soil Ratings</p> <ul style="list-style-type: none">  Very limited  Somewhat limited  Not limited  Not rated or not available <p>Political Features</p> <ul style="list-style-type: none">  City <p>Water Features</p> <ul style="list-style-type: none">  Stream and Canal <p>Transportation</p> <ul style="list-style-type: none">  Rail  Interstate Highway  US Route  Major Road  Local Road 	<p>Map Scale: 1:13,000 if printed on A size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:50,000.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> </div> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 6, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 6, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Digital aerial images were photographed: 05/14/2007</p> <p>The orthophoto or other base map on which the soil lines were digitized and displayed probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

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Tables—Pond Reservoir Areas

Pond Reservoir Areas— Summary by Map Unit — Pasco County, Florida (FL101)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
10	Wabasso fine sand	Very limited	Wabasso, non-hydric (70%)	Seepage (1.00)	36.4	6.6%
			Wabasso, hydric (10%)	Seepage (1.00)		
			Aripeka (7%)	Seepage (1.00)		
				Depth to bedrock (0.95)		
	EauGallie, non-hydric (7%)	Seepage (1.00)				
16	Zephyr muck	Very limited	Zephyr (80%)	Seepage (1.00)	9.9	1.8%
			Felda (10%)	Seepage (1.00)		
			Anclote (10%)	Seepage (1.00)		
39	Chobee soils, frequently flooded	Very limited	Chobee (75%)	Seepage (1.00)	270.5	48.7%
			Nobleton (5%)	Seepage (1.00)		
			Pineda (5%)	Seepage (1.00)		
			Okeelanta (5%)	Seepage (1.00)		
			Terra Ceia (5%)	Seepage (1.00)		
			Zephyr (5%)	Seepage (1.00)		
40	Paisley fine sand	Not limited	Paisley, non-hydric (60%)		235.0	42.3%
			Paisley, hydric (30%)			
99	Water	Not rated	Water (fresh) (100%)		0.7	0.1%
Subtotals for Soil Survey Area					552.5	99.5%
Totals for Area of Interest					555.3	100.0%

Pond Reservoir Areas— Summary by Map Unit — Polk County, Florida (FL105)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	Somewhat limited	Paisley, non-hydric (60%)	Seepage (0.70)	2.2	0.4%
			Paisley, hydric (20%)	Seepage (0.70)		
80	Chobee fine sandy loam, frequently flooded	Very limited	Chobee (90%)	Seepage (1.00)	0.7	0.1%
			Floridana, depressional (3%)	Seepage (1.00)		
			Kaliga (3%)	Seepage (1.00)		
Subtotals for Soil Survey Area					2.9	0.5%
Totals for Area of Interest					555.3	100.0%

Pond Reservoir Areas— Summary by Rating Value		
Rating	Acres in AOI	Percent of AOI
Very limited	317.5	57.2%
Not limited	235.0	42.3%
Somewhat limited	2.2	0.4%

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Pond Reservoir Areas— Summary by Rating Value		
Rating	Acres in AOI	Percent of AOI
Null or Not Rated	0.7	0.1%
Totals for Area of Interest	555.3	100.0%

Rating Options—Pond Reservoir Areas

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

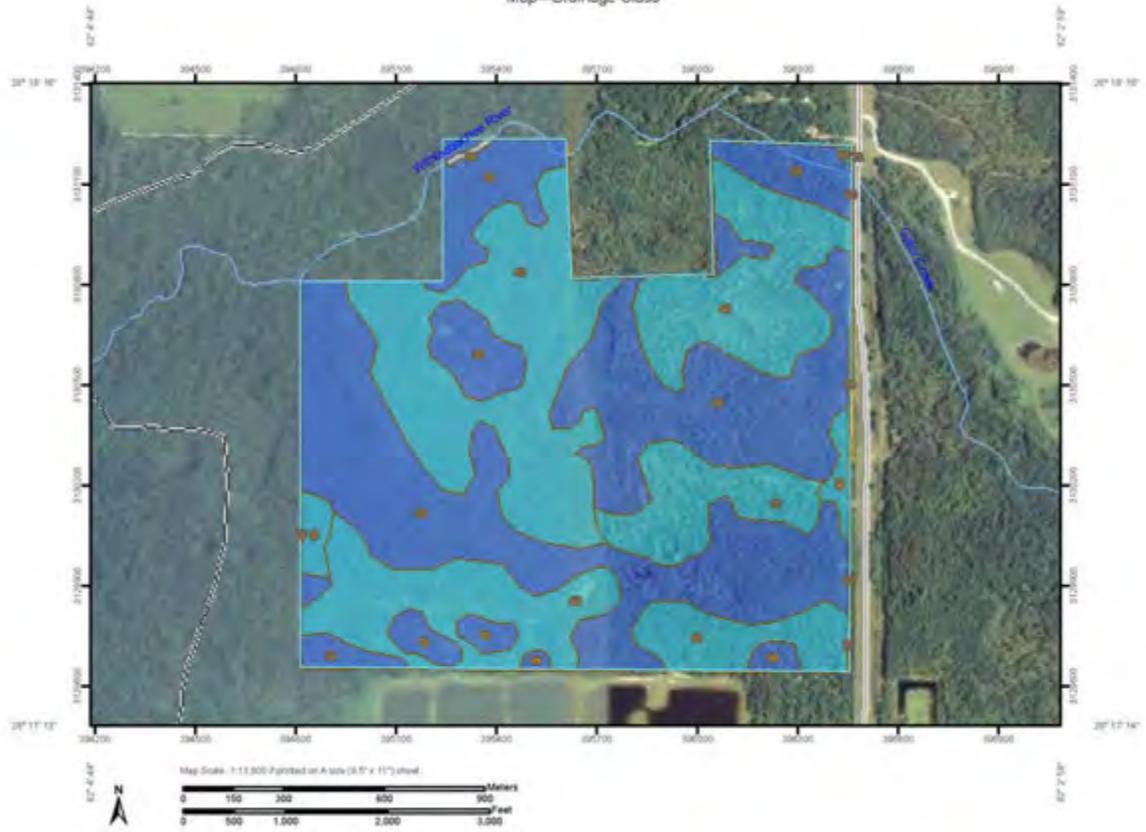
Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

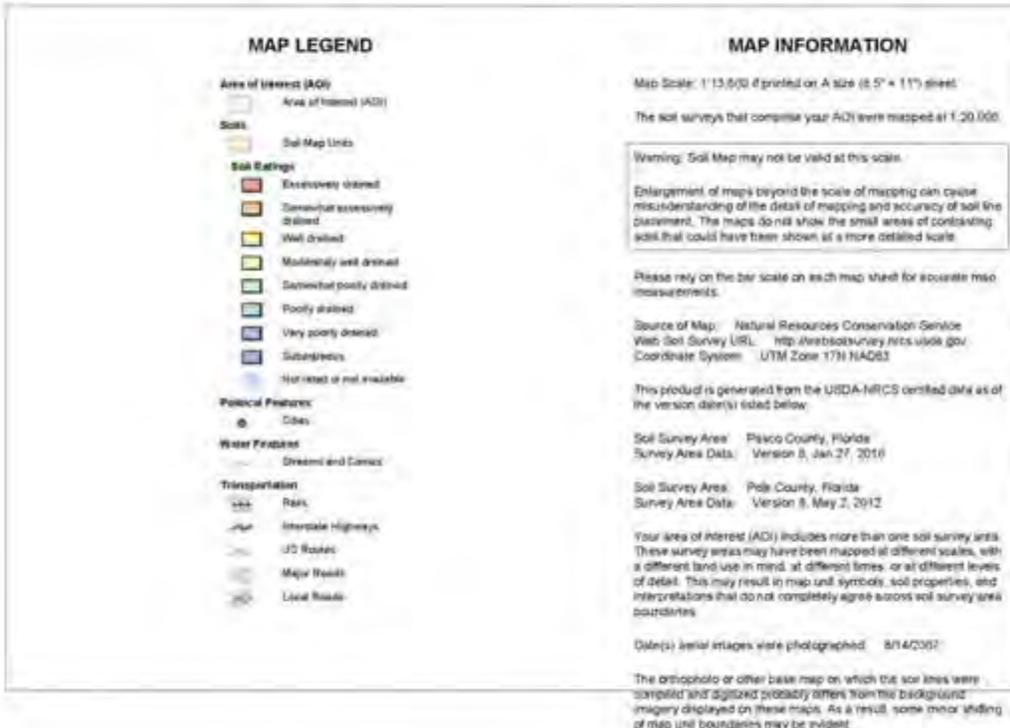
Drainage Class

"Drainage class (natural)" refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized-excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."

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Map—Drainage Class



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Table—Drainage Class

Drainage Class— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Wabasso fine sand	Poorly drained	36.4	6.6%
16	Zephyr muck	Very poorly drained	9.9	1.8%
39	Chobee soils, frequently flooded	Very poorly drained	270.5	48.7%
40	Paisley fine sand	Poorly drained	235.0	42.3%
99	Water		0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Drainage Class— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	Poorly drained	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	Very poorly drained	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Drainage Class

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified
Tie-break Rule: Higher

Unified Soil Classification (Surface)

The Unified soil classification system classifies mineral and organic mineral soils for engineering purposes on the basis of particle-size characteristics, liquid limit, and plasticity index. It identifies three major soil divisions: (i) coarse-grained soils having less than 50 percent, by weight, particles smaller than 0.074 mm in diameter; (ii) fine-grained soils having 50 percent or more, by weight, particles smaller than 0.074 mm in diameter; and (iii) highly organic soils that demonstrate certain organic characteristics. These divisions are further subdivided into a total of 15 basic soil groups. The major soil divisions and basic soil groups are determined on the basis of estimated or measured values for grain-size distribution and Atterberg limits. ASTM D 2487 shows the criteria chart used for classifying soil in the Unified system and the 15 basic soil groups of the system and the plasticity chart for the Unified system.

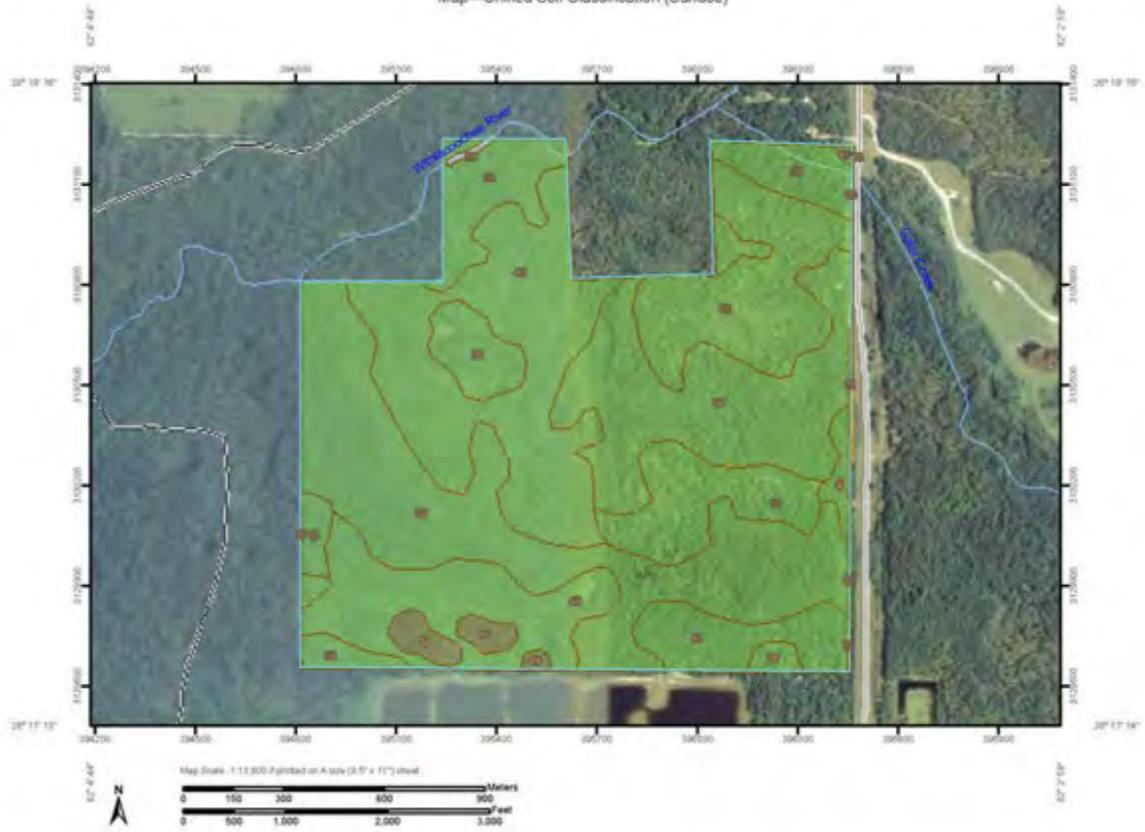
The various groupings of this classification correlate in a general way with the engineering behavior of soils. This correlation provides a useful first step in any field or laboratory investigation for engineering purposes. It can serve to make some

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general interpretations relating to probable performance of the soil for engineering uses.

For each soil horizon in the database one or more Unified soil classifications may be listed. One is marked as the representative or most commonly occurring. The representative classification is shown here for the surface layer of the soil.

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Map—Unified Soil Classification (Surface)



Custom Soil Resource Report

MAP LEGEND		MAP INFORMATION	
<p>Area of Interest (AOI)</p> <p>Area of Interest (AOI)</p> <p>Soils</p> <p>Soil Map Units</p> <p>Soil Ratings</p> <p>OH</p> <p>CL</p> <p>CL-A (proposed)</p> <p>CL-K (proposed)</p> <p>CL-ML</p> <p>CL-D (proposed)</p> <p>CL-T (proposed)</p> <p>GC</p> <p>GC-OM</p> <p>OM</p> <p>OP</p> <p>OP-OC</p> <p>OP-OM</p> <p>DW</p> <p>DW-OC</p> <p>DW-OM</p> <p>MH</p> <p>MH-A (proposed)</p> <p>MH-K (proposed)</p> <p>MH-C (proposed)</p> <p>MH-T (proposed)</p>	<p>ML</p> <p>ML-A (proposed)</p> <p>ML-E (proposed)</p> <p>ML-G (proposed)</p> <p>ML-T (proposed)</p> <p>DH</p> <p>DH-T (proposed)</p> <p>CL</p> <p>PT</p> <p>DC</p> <p>DC-SM</p> <p>SM</p> <p>SP</p> <p>SP-SC</p> <p>SP-SM</p> <p>DW</p> <p>DW-SC</p> <p>DW-SM</p> <p>Not rated or not available</p> <p>Political Features</p> <p>Cities</p> <p>Water Features</p> <p>Streams and Creeks</p> <p>Transportation</p> <p>Roads</p> <p>Interstate Highways</p>	<p>US Roads</p> <p>Major Roads</p> <p>Local Roads</p>	<p>Map Scale: 1:13,500 if printed on A size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:20,000.</p> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 8, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 8, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Date(s) aerial images were photographed: 8/14/2007</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Table—Unified Soil Classification (Surface)

Unified Soil Classification (Surface)— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Wabasso fine sand	SP-SM	56.4	6.6%
16	Zephyr muck	PT	9.9	1.8%
39	Chobee soils, frequently flooded	SP-SM	270.5	48.7%
40	Paisley fine sand	SP-SM	235.0	42.3%
99	Water		0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Unified Soil Classification (Surface)— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	SP-SM	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	SM	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Unified Soil Classification (Surface)

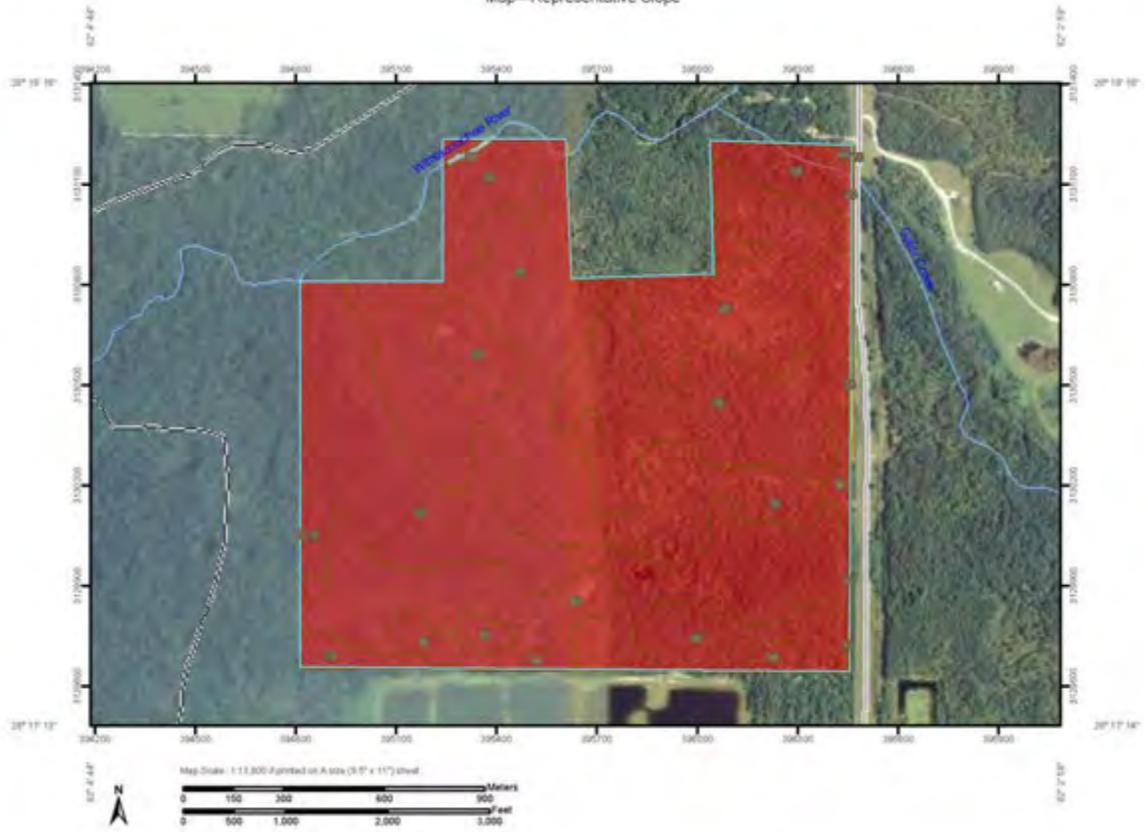
- Aggregation Method:* Dominant Condition
- Component Percent Cutoff:* None Specified
- Tie-break Rule:* Lower
- Layer Options:* Surface Layer

Representative Slope

Slope gradient is the difference in elevation between two points, expressed as a percentage of the distance between those points.

The slope gradient is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

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Map—Representative Slope



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MAP LEGEND	MAP INFORMATION
<p>Area of Interest (AOI)</p> <p>Area of Interest (AOI)</p> <p>Soils</p> <p>Soil Map Units</p> <p>Soil Ratings</p> <p>0 - 6</p> <p>6 - 15</p> <p>15 - 30</p> <p>30 - 45</p> <p>45 - 90</p> <p>Not rated or not available</p> <p>Political Features</p> <p>City</p> <p>Water Features</p> <p>Streams and Canals</p> <p>Transportation</p> <p>Rail</p> <p>Interstate Highways</p> <p>US Routes</p> <p>Major Roads</p> <p>Local Roads</p>	<p>Map Scale: 1:13,000 if printed on A size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:50,000.</p> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 6, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 6, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Digital aerial images were photographed: 05/4/2007</p> <p>The orthophoto or other base map on which the soil maps were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Table—Representative Slope

Representative Slope— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
10	Wabasso fine sand	1.0	36.4	6.6%
16	Zephyr muck	0.9	9.9	1.8%
39	Chobee soils, frequently flooded	0.9	270.5	48.7%
40	Paisley fine sand	1.0	235.0	42.3%
99	Water		0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Representative Slope— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	1.0	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	1.0	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Representative Slope

- Units of Measure:* percent
- Aggregation Method:* Dominant Component
- Component Percent Cutoff:* None Specified
- Tie-break Rule:* Higher
- Interpret Nulls as Zero:* No

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

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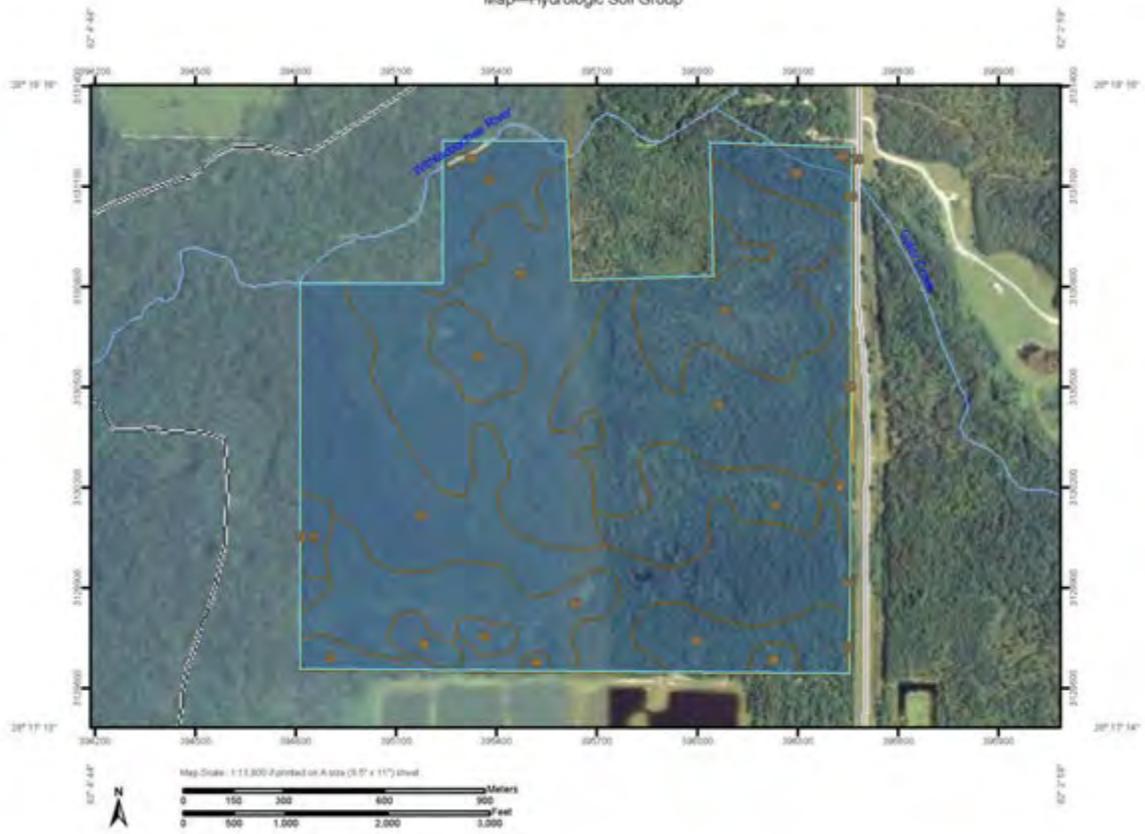
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report
Map—Hydrologic Soil Group



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MAP LEGEND	MAP INFORMATION
<p>Area of Interest (AOI)</p> <p>Area of Interest (AOI)</p> <p>Soils</p> <p>Soil Map Units</p> <p>Soil Ratings</p> <p>A</p> <p>A(0)</p> <p>B</p> <p>B(0)</p> <p>C</p> <p>C(0)</p> <p>D</p> <p>Not rated or not available</p> <p>Political Features</p> <p>Cities</p> <p>Water Features</p> <p>Streams and Canals</p> <p>Transportation</p> <p>Rails</p> <p>Interstate Highways</p> <p>US Routes</p> <p>Major Roads</p> <p>Local Roads</p>	<p>Map Scale: 1:13,000 if printed on A size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:50,000.</p> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 8, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 8, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>District aerial images were photographed: 05/4/2007</p> <p>The orthophoto or other base map on which the soil lines were computed and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Table—Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Wabasso fine sand	C/D	56.4	6.6%
16	Zephyr muck	C/D	9.9	1.8%
39	Chobee soils, frequently flooded	C/D	270.5	48.7%
40	Paisley fine sand	C/D	235.0	42.3%
99	Water		0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Hydrologic Soil Group— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	B/D	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	C/D	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Unified Soil Classification (Surface)

The Unified soil classification system classifies mineral and organic mineral soils for engineering purposes on the basis of particle-size characteristics, liquid limit, and plasticity index. It identifies three major soil divisions: (i) coarse-grained soils having less than 50 percent, by weight, particles smaller than 0.074 mm in diameter; (ii) fine-grained soils having 50 percent or more, by weight, particles smaller than 0.074 mm in diameter; and (iii) highly organic soils that demonstrate certain organic characteristics. These divisions are further subdivided into a total of 15 basic soil groups. The major soil divisions and basic soil groups are determined on the basis of estimated or measured values for grain-size distribution and Atterberg limits. ASTM D 2487 shows the criteria chart used for classifying soil in the Unified system and the 15 basic soil groups of the system and the plasticity chart for the Unified system.

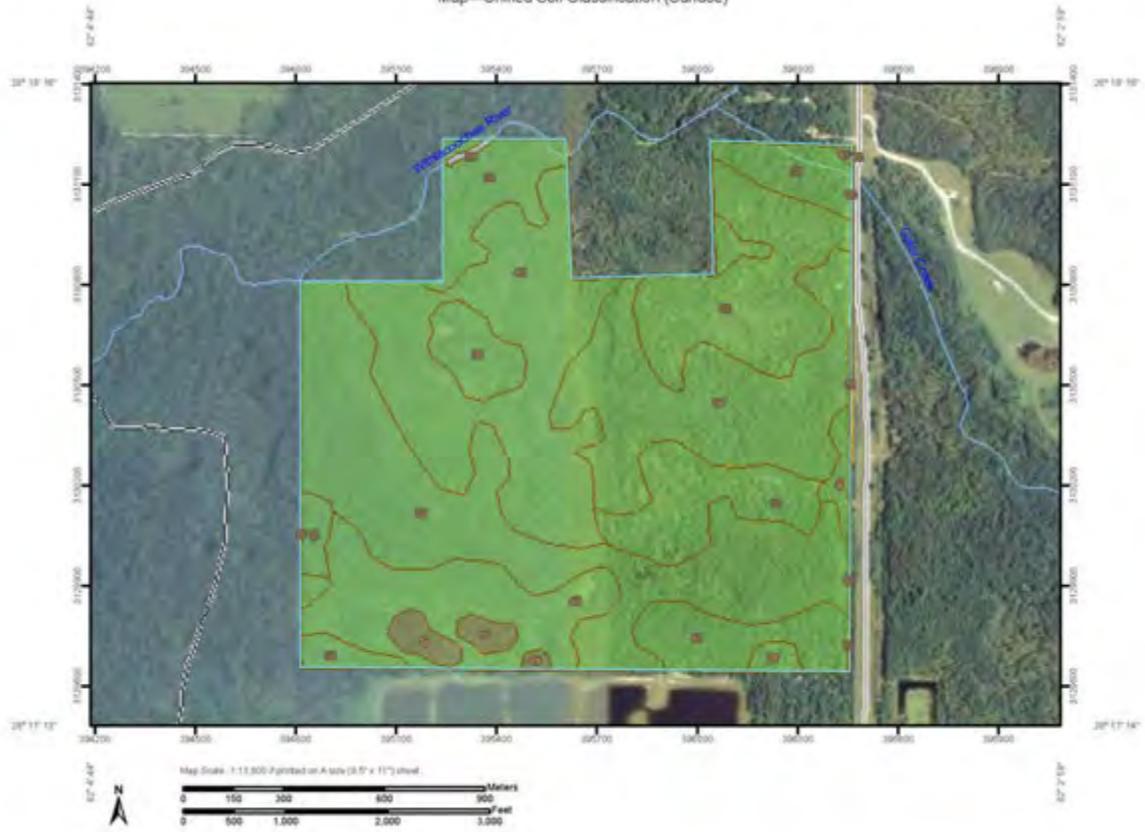
The various groupings of this classification correlate in a general way with the engineering behavior of soils. This correlation provides a useful first step in any field or laboratory investigation for engineering purposes. It can serve to make some

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general interpretations relating to probable performance of the soil for engineering uses.

For each soil horizon in the database one or more Unified soil classifications may be listed. One is marked as the representative or most commonly occurring. The representative classification is shown here for the surface layer of the soil.

Custom Soil Resource Report
Map—Unified Soil Classification (Surface)



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MAP LEGEND		MAP INFORMATION	
<p>Area of Interest (AOI)</p> <p>Area of Interest (AOI)</p> <p>Soils</p> <p>Soil Map Units</p> <p>Soil Ratings</p> <p>OH</p> <p>CL</p> <p>CL-A (proposed)</p> <p>CL-K (proposed)</p> <p>CL-ML</p> <p>CL-D (proposed)</p> <p>CL-T (proposed)</p> <p>GC</p> <p>GC-OM</p> <p>OM</p> <p>OP</p> <p>OP-OC</p> <p>OP-OM</p> <p>DW</p> <p>DW-OC</p> <p>DW-OM</p> <p>MH</p> <p>MH-A (proposed)</p> <p>MH-K (proposed)</p> <p>MH-C (proposed)</p> <p>MH-T (proposed)</p>	<p>ML</p> <p>ML-A (proposed)</p> <p>ML-E (proposed)</p> <p>ML-G (proposed)</p> <p>ML-T (proposed)</p> <p>DH</p> <p>DH-T (proposed)</p> <p>CL</p> <p>PT</p> <p>DC</p> <p>DC-SM</p> <p>SM</p> <p>SP</p> <p>SP-SC</p> <p>SP-SM</p> <p>DW</p> <p>DW-SC</p> <p>DW-SM</p> <p>Not rated or not available</p> <p>Political Features</p> <p>City</p> <p>Water Features</p> <p>Stream and Creek</p> <p>Transportation</p> <p>Road</p> <p>Interstate Highway</p>	<p>US Road</p> <p>Major Road</p> <p>Local Road</p>	<p>Map Scale: 1:13,500 if printed on A size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:20,000.</p> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 8, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 8, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Date(s) aerial images were photographed: 8/14/2007</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Table—Unified Soil Classification (Surface)

Unified Soil Classification (Surface)— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Wabasso fine sand	SP-SM	56.4	6.6%
16	Zephyr muck	PT	9.9	1.8%
39	Chobee soils, frequently flooded	SP-SM	270.5	48.7%
40	Paisley fine sand	SP-SM	235.0	42.3%
99	Water		0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Unified Soil Classification (Surface)— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	SP-SM	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	SM	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Unified Soil Classification (Surface)

- Aggregation Method:* Dominant Condition
- Component Percent Cutoff:* None Specified
- Tie-break Rule:* Lower
- Layer Options:* Surface Layer

Water Features

Water Features include ponding frequency, flooding frequency, and depth to water table.

Ponding Frequency Class

Ponding is standing water in a closed depression. The water is removed only by deep percolation, transpiration, or evaporation or by a combination of these processes. Ponding frequency classes are based on the number of times that ponding occurs over a given period. Frequency is expressed as none, rare, occasional, and frequent.

"None" means that ponding is not probable. The chance of ponding is nearly 0 percent in any year.

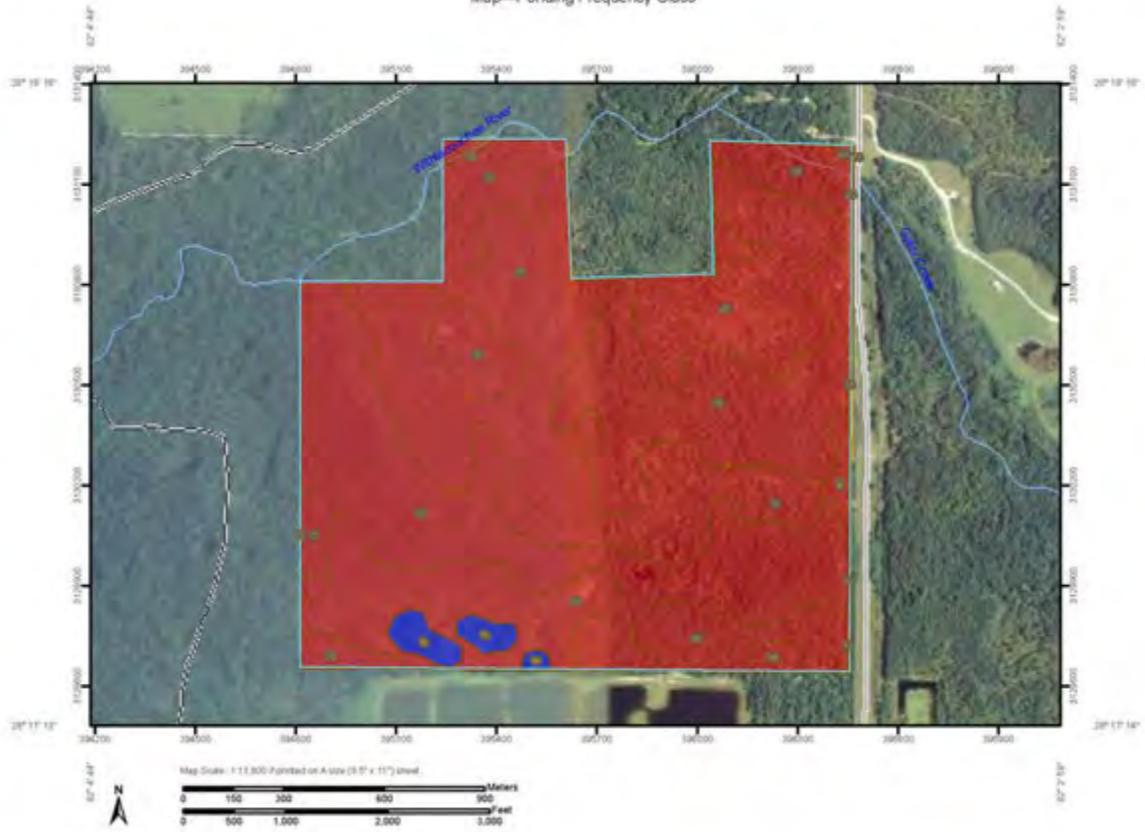
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"Rare" means that ponding is unlikely but possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5 percent in any year.

"Occasional" means that ponding occurs, on the average, once or less in 2 years. The chance of ponding is 5 to 50 percent in any year.

"Frequent" means that ponding occurs, on the average, more than once in 2 years. The chance of ponding is more than 50 percent in any year.

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Map—Ponding Frequency Class



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MAP LEGEND	MAP INFORMATION
<p>Area of Interest (AOI)</p> <ul style="list-style-type: none"> Area of Interest (AOI) <p>Soils</p> <ul style="list-style-type: none"> Soil Map Units <p>Soil Ratings</p> <ul style="list-style-type: none"> None Rare Occasional Frequent <p>Political Features</p> <ul style="list-style-type: none"> Cities <p>Water Features</p> <ul style="list-style-type: none"> Rivers and Canals <p>Transportation</p> <ul style="list-style-type: none"> Rail Interstate Highways US Routes Major Roads Local Roads 	<p>Map Scale: 1:13,000 if printed on A-size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:50,000.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil use placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> </div> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 5, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 8, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Details aerial images were photographed: 05/14/2007</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Table—Ponding Frequency Class

Ponding Frequency Class— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Wabasso fine sand	None	36.4	6.6%
16	Zephyr muck	Frequent	9.9	1.8%
39	Chobee soils, frequently flooded	None	270.5	48.7%
40	Paisley fine sand	None	235.0	42.3%
99	Water	None	0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Ponding Frequency Class— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	None	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	None	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Ponding Frequency Class

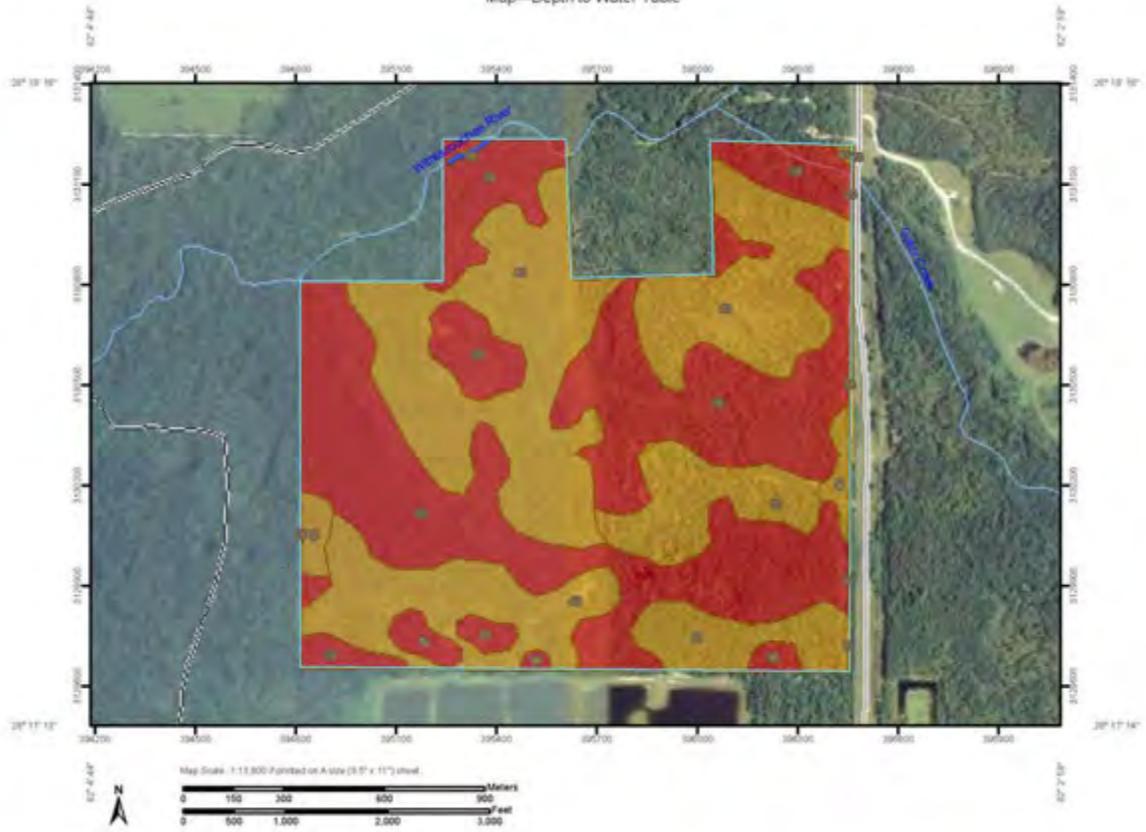
- Aggregation Method:* Dominant Condition
- Component Percent Cutoff:* None Specified
- Tie-break Rule:* More Frequent
- Beginning Month:* January
- Ending Month:* December

Depth to Water Table

“Water table” refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A “representative” value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

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Map—Depth to Water Table



Custom Soil Resource Report

MAP LEGEND	MAP INFORMATION
<p>Area of Interest (AOI)</p> <p>Area of Interest (AOI)</p> <p>Soils</p> <p>Soil Map Units</p> <p>Soil Ratings</p> <ul style="list-style-type: none"> 0 - 20 25 - 50 50 - 100 100 - 150 150 - 200 > 200 <p>Political Features</p> <p>Cities</p> <p>Water Features</p> <p>Streams and Canals</p> <p>Transportation</p> <ul style="list-style-type: none"> Rail Interstate Highways US Routes Major Roads Local Roads 	<p>Map Scale: 1:13,000 if printed on A-size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:50,000.</p> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil use placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 5, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 6, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>District aerial images were photographed: 5/14/2007</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Custom Soil Resource Report

Table—Depth to Water Table

Depth to Water Table— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
10	Wabasso fine sand	31	36.4	6.6%
16	Zephyr muck	0	9.9	1.8%
39	Chobee soils, frequently flooded	8	270.5	48.7%
40	Paisley fine sand	38	235.0	42.3%
99	Water	>200	0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Depth to Water Table— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	38	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	15	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

Flooding Frequency Class

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

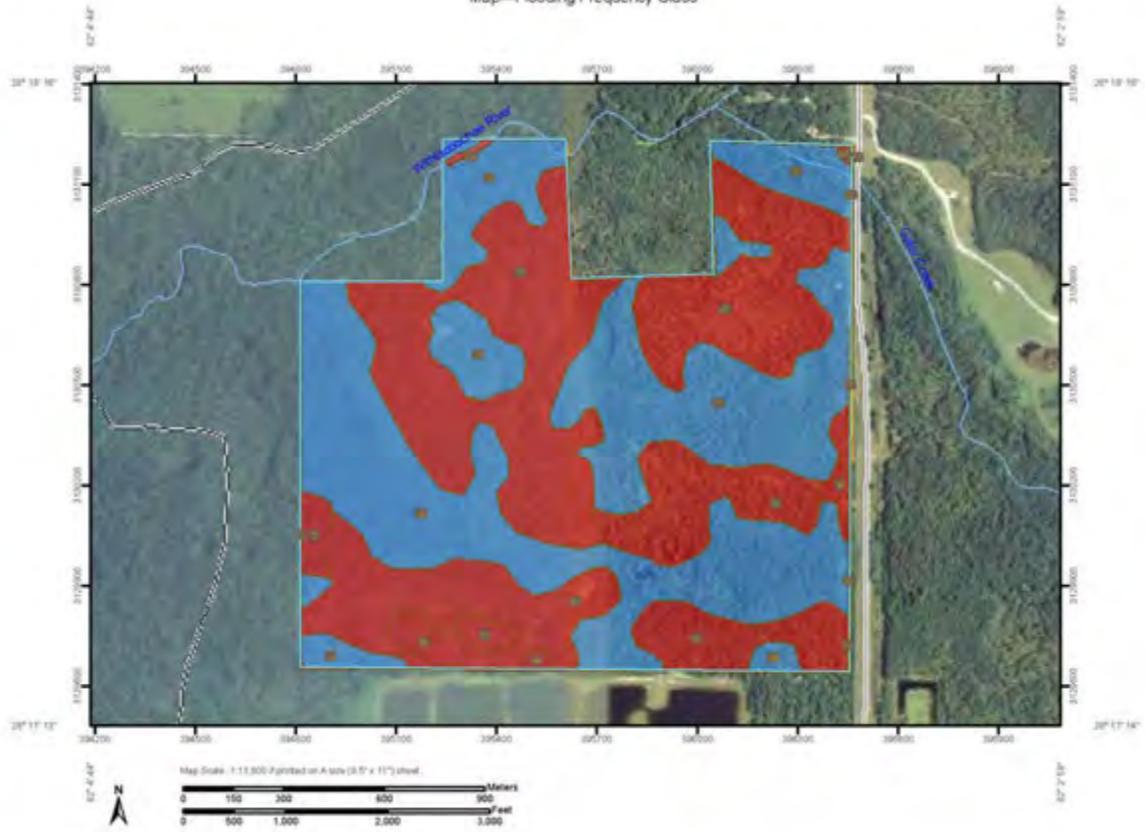
"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

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Map—Flooding Frequency Class



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MAP LEGEND	MAP INFORMATION
<p>Area of Interest (AOI)</p> <ul style="list-style-type: none">  Area of Interest (AOI) <p>Soils</p> <ul style="list-style-type: none">  Soil Map Unit <p>Soil Ratings</p> <ul style="list-style-type: none">  None  Very Rare  Rare  Occasional  Frequent  Very Frequent <p>Political Features</p> <ul style="list-style-type: none">  City <p>Water Features</p> <ul style="list-style-type: none">  Streams and Canals <p>Transportation</p> <ul style="list-style-type: none">  Rail  Interstate Highways  US Routes  Major Roads  Local Roads 	<p>Map Scale: 1:13,000 if printed on A-size (8.5" x 11") sheet</p> <p>The soil surveys that comprise your AOI were mapped at 1:50,000.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Warning: Soil Map may not be valid at this scale.</p> <p>Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.</p> </div> <p>Please rely on the bar scale on each map sheet for accurate map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 17N NAD83</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Pasco County, Florida Survey Area Date: Version 8, Jan 27, 2010</p> <p>Soil Survey Area: Polk County, Florida Survey Area Date: Version 8, May 2, 2012</p> <p>Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.</p> <p>Details aerial images were photographed: 8/14/2007</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p>

Table—Flooding Frequency Class

Flooding Frequency Class— Summary by Map Unit — Pasco County, Florida (FL101)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
10	Wabasso fine sand	None	36.4	6.6%
16	Zephyr muck	None	9.9	1.8%
39	Chobee soils, frequently flooded	Frequent	270.5	48.7%
40	Paisley fine sand	None	235.0	42.3%
99	Water	None	0.7	0.1%
Subtotals for Soil Survey Area			552.5	99.5%
Totals for Area of Interest			555.3	100.0%

Flooding Frequency Class— Summary by Map Unit — Polk County, Florida (FL105)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
78	Paisley fine sand, stony subsurface	Rare	2.2	0.4%
80	Chobee fine sandy loam, frequently flooded	Frequent	0.7	0.1%
Subtotals for Soil Survey Area			2.9	0.5%
Totals for Area of Interest			555.3	100.0%

Rating Options—Flooding Frequency Class

- Aggregation Method:* Dominant Condition
- Component Percent Cutoff:* None Specified
- Tie-break Rule:* More Frequent
- Beginning Month:* January
- Ending Month:* December

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Water Features

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

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Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

The *months* in the table indicate the portion of the year in which a water table, ponding, and/or flooding is most likely to be a concern.

Water table refers to a saturated zone in the soil. The water features table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

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Water Features- Pasco County, Florida										
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				R ₁	R ₂	R				
10—Webasto fine sand										
Webasto, non-hydric	CO	High	February	1.0-3.5	>6.0	—	—	None	—	None
	CO	High	March	1.0-3.5	>6.0	—	—	None	—	None
	CO	High	April	1.0-3.5	>6.0	—	—	None	—	None
	CO	High	May	1.0-3.5	>6.0	—	—	None	—	None
	CO	High	June	0.5-1.5	>6.0	—	—	None	—	None
	CO	High	July	0.5-1.5	>6.0	—	—	None	—	None
	CO	High	August	0.5-1.5	>6.0	—	—	None	—	None
	CO	High	September	0.5-1.5	>6.0	—	—	None	—	None
	CO	High	October	1.0-3.5	>6.0	—	—	None	—	None
	CO	High	November	1.0-3.5	>6.0	—	—	None	—	None
Webasto, hydric	CO	High	June	0.0-0.5	>6.0	—	—	None	—	None
	CO	High	July	0.0-0.5	>6.0	—	—	None	—	None
	CO	High	August	0.0-0.5	>6.0	—	—	None	—	None
	CO	High	September	0.0-0.5	>6.0	—	—	None	—	None
16—Zephyr muck										
Zephyr	CO	Negligible	June	0.0	>6.0	0.0-2.0	Very long	Frequent	—	None
	CO	Negligible	July	0.0	>6.0	0.0-2.0	Very long	Frequent	—	None
	CO	Negligible	August	0.0	>6.0	0.0-2.0	Very long	Frequent	—	None
	CO	Negligible	September	0.0	>6.0	0.0-2.0	Very long	Frequent	—	None
	CO	Negligible	October	0.0	>6.0	0.0-2.0	Very long	Frequent	—	None
	CO	Negligible	November	0.0	>6.0	0.0-2.0	Very long	Frequent	—	None

Custom Soil Resource Report

Water Features- Pasco County, Florida										
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				ft	ft	ft				
29—Chobee soils, frequently flooded										
Chobee	CD	Very high	January	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	February	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	June	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	July	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	August	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	September	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	October	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	November	0.0-0.5	>6.0	—	—	None	Very long	Frequent
	CD	Very high	December	0.0-0.5	>6.0	—	—	None	Very long	Frequent
43—Paisley fine sand										
Paisley, non-hydric	CD	Very high	June	1.0-1.5	>6.0	—	—	None	—	None
	CD	Very high	July	1.0-1.5	>6.0	—	—	None	—	None
	CD	Very high	August	1.0-1.5	>6.0	—	—	None	—	None
	CD	Very high	September	1.0-1.5	>6.0	—	—	None	—	None
	CD	Very high	October	1.0-1.5	>6.0	—	—	None	—	None
	CD	Very high	November	1.0-1.5	>6.0	—	—	None	—	None
Paisley, hydric	CD	Very high	June	0.0-0.5	>6.0	—	—	None	—	None
	CD	Very high	July	0.0-0.5	>6.0	—	—	None	—	None
	CD	Very high	August	0.0-0.5	>6.0	—	—	None	—	None
	CD	Very high	September	0.0-0.5	>6.0	—	—	None	—	None
	CD	Very high	October	0.0-0.5	>6.0	—	—	None	—	None
	CD	Very high	November	0.0-0.5	>6.0	—	—	None	—	None

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Water Features—Pasco County, Florida										
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Flooding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				Fl	Fl	Fl				
99—Water										
Water (fresh)	—	—	Jan-Dec	—	—	—	—	None	—	—

Water Features—Polk County, Florida										
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Flooding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				Fl	Fl	Fl				
75—Paisley fine sand stony subsurface										
Paisley, non-hydric	B/D	Very high	June	1.0-1.5	>6.0	—	—	None	Brief	Rare
	B/D	Very high	July	1.0-1.5	>6.0	—	—	None	Brief	Rare
	B/D	Very high	August	1.0-1.5	>6.0	—	—	None	Brief	Rare
	B/D	Very high	September	1.0-1.5	>6.0	—	—	None	Brief	Rare
	B/D	Very high	October	1.0-1.5	>6.0	—	—	None	Brief	Rare
	B/D	Very high	November	1.0-1.5	>6.0	—	—	None	Brief	Rare
Paisley, hydric	B/D	Very high	June	0.0-1.0	>6.0	—	—	None	Brief	Rare
	B/D	Very high	July	0.0-1.0	>6.0	—	—	None	Brief	Rare
	B/D	Very high	August	0.0-1.0	>6.0	—	—	None	Brief	Rare
	B/D	Very high	September	0.0-1.0	>6.0	—	—	None	Brief	Rare
	B/D	Very high	October	0.0-1.0	>6.0	—	—	None	Brief	Rare

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Water Features- Polk County, Florida										
Map unit symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding			Flooding	
				Upper limit	Lower limit	Surface depth	Duration	Frequency	Duration	Frequency
				ft	ft	ft				
80-Clabee fine sandy loam, frequently flooded										
Clabee	CD	Very high	January	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	February	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	June	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	July	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	August	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	September	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	October	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	November	0.0-1.0	>6.0	—	—	None	Long	Frequent
	CD	Very high	December	0.0-1.0	>6.0	—	—	None	Long	Frequent

Water Management

This folder contains a collection of tabular reports that present soil interpretations related to water management. The reports (tables) include all selected map units and components for each map unit, limiting features and interpretive ratings. Water management interpretations are tools for evaluating the potential of the soil in the application of various water management practices. Example interpretations include pond reservoir area, embankments, dikes, levees, and excavated ponds.

Ponds and Embankments

This table gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect these uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the saturated hydraulic conductivity (Ksat) of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. Embankments that have zoned construction (core and shell) are not considered. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or

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salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, Ksat of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Information in this table is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of 5 to 7 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this table. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Report—Ponds and Embankments

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

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Ponds and Embankments— Pasco County, Florida							
Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
10—Wabasso fine sand							
Wabasso, non-hydric	70	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	1.00		
Wabasso, hydric	10	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	1.00		
Aripeka	7	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Depth to saturated zone	0.99	Depth to hard bedrock	1.00
		Depth to bedrock	0.95	Thin layer	0.95	Cutbanks cave	0.10
				Seepage	0.80	Depth to saturated zone	0.01
Eaugallie, non-hydric	7	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	1.00		
Paisley, non-hydric	6	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Slow refill	1.00
				Seepage	1.00	Cutbanks cave	0.10
				Piping	1.00		
16—Zephyr muck							
Zephyr	80	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
				Seepage	0.85		
Anclole	10	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
				Seepage	1.00		
Felda	10	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	1.00		

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Ponds and Embankments— Pasco County, Florida							
Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
39—Chobee soils, frequently flooded							
Chobee	75	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	0.10
				Seepage	0.08		
Nobleton	5	Very limited		Somewhat limited		Very limited	
		Seepage	1.00	Seepage	0.86	Depth to water	1.00
				Depth to saturated zone	0.84		
Okeelanta	5	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
				Seepage	1.00		
Pineda	5	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
				Seepage	1.00		
Terra ceia	5	Very limited		Not rated		Somewhat limited	
		Seepage	1.00			Cutbanks cave	0.10
Zephyr	5	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Cutbanks cave	1.00
				Depth to saturated zone	1.00		
				Seepage	0.80		

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Ponds and Embankments— Pasco County, Florida							
Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
40—Paisley fine sand							
Paisley, non-hydric	60	Not limited		Very limited		Very limited	
				Depth to saturated zone	1.00	Slow refill	1.00
				Seepage	1.00	Cutbanks cave	0.10
				Piping	1.00		
Paisley, hydric	30	Not limited		Very limited		Somewhat limited	
				Depth to saturated zone	1.00	Cutbanks cave	0.10
				Seepage	1.00		
				Piping	1.00		
Wabasso, non-hydric	10	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Cutbanks cave	1.00
				Seepage	1.00		
99—Water							
Water (fresh)	100	Not rated		Not rated		Not rated	

Custom Soil Resource Report

Ponds and Embankments—Polk County, Florida							
Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
78—Paisley fine sand, stony subsurface							
Paisley, non-hydric	60	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Unstable excavation walls	0.50
Paisley, hydric	20	Somewhat limited		Very limited		Somewhat limited	
		Seepage	0.70	Depth to saturated zone	1.00	Unstable excavation walls	0.50
Bradenton, hydric	7	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Unstable excavation walls	0.10
				Seepage	1.00		
Felda	7	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Unstable excavation walls	1.00
				Seepage	1.00		
Wabasso, non-hydric	6	Very limited		Very limited		Very limited	
		Seepage	1.00	Depth to saturated zone	1.00	Unstable excavation walls	1.00
				Seepage	0.96		

Custom Soil Resource Report

Ponds and Embankments—Polk County, Florida							
Map symbol and soil name	Pct. of map unit	Pond reservoir areas		Embankments, dikes, and levees		Aquifer-fed excavated ponds	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
80—Chobee fine sandy loam, frequently flooded							
Chobee	90	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Depth to saturated zone	1.00	Unstable excavation walls	0.10
				Seepage	1.00		
Floridana, depressional	3	Very limited		Very limited		Very limited	
		Seepage	1.00	Ponding	1.00	Unstable excavation walls	1.00
				Depth to saturated zone	1.00		
				Seepage	0.78		
Kaliga	3	Very limited		Very limited		Somewhat limited	
		Seepage	1.00	Ponding	1.00	Unstable excavation walls	0.50
				Depth to saturated zone	1.00		
				Seepage	1.00		
				Hard to pack	1.00		
Nittaw	2	Not limited		Very limited		Somewhat limited	
				Depth to saturated zone	1.00	Unstable excavation walls	0.10
				Hard to pack	0.68		
Paisley, hydric	2	Not limited		Very limited		Somewhat limited	
				Depth to saturated zone	1.00	Unstable excavation walls	0.10

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Custom Soil Resource Report

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Appendix C
Meta-Data (Compact Disk)

WRS Infrastructure & Environment, Inc.

13.10 FWC Apiary Policy

Apiary Policy

Division of Habitat and Species Conservation

Issued by:
Terrestrial Habitat Conservation and Restoration Section
9/1/2010

Enclosed is the HSC/THCR Apiary Policy for all Florida Fish and Wildlife Conservation Commission's Wildlife Management Areas and Wildlife and Environmental Areas.

DIVISION OF HABITAT AND SPECIES CONSERVATION POLICY
Issued September 2010

**SUBJECT: APIARY SITES ON FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
 WILDLIFE MANAGEMENT AREAS AND WILDLIFE AND ENVIRONMENTAL AREAS**

STATEMENT OF PURPOSE: It is the intent of this policy to determine which Florida Fish and Wildlife Conservation Commission (FWC) Wildlife Management Areas or Wildlife and Environmental Areas (WMA/WEA) may have apiary sites, and provides direction on site location, management and administration of said apiaries.

Definitions

Apiary – A place where bees and beehives are kept, especially a place where bees are raised for their honey.

Apiary Site – An area set aside on a WMA/WEA for the purpose of allowing a beekeeper to locate beehives in exchange for a fee as established by contract between the beekeeper and FWC.

Apiary Wait List – An apiary wait list will be maintained by the Terrestrial Habitat Conservation and Restoration (THCR) Section Leader’s Office based on applications received from interested beekeepers. Only qualified apiarists will be added to the list. To become qualified the new apiarist must submit an application form and meet the criteria below under the section titled “Apiary Wait List and Apiary Application.”

Beekeeper/Apiarist – A person who keeps honey bees for the purposes of securing commodities such as honey, beeswax, pollen; pollinating fruits and vegetables; raising queens and bees for sale to other farmers and/or for purposes satisfying natural scientific curiosity.

Best Management Practices – The Florida Department of Agriculture & Consumer Services (FDACS; Division of Plant Industry (DPI), Apiary Inspection Section, P.O. Box 147100, Gainesville, FL 332614-1416) provides Best Management Practices (BMP) for maintaining European Honey Bee colonies and FWC expects apiarists to follow the BMP.

Hive/Colony – Means any Langstroth-type structure with movable frames intended for the housing of a bee colony. A hive typically consists of a high body hive box with cover, honey frames, brood chambers and a bottom board and may have smaller super hive boxes stacked on top for the excess honey storage. A hive/colony includes one queen, bees, combs, honey, pollen and brood and may have additional supers stacked on top of a high body hive box.

Establishment of Apiary Sites on WMA/WEA

During the development of an individual WMA/WEA Management Plan, apiaries will be considered under the multiple-use concept as a possible use to be allowed on the area. “Approved” uses are deemed to be in concert with the purposes for state acquisition, with the Conceptual State Lands Management Plan, and with the FWC agency mission, goals, and objectives as expressed in the agency strategic plan and priorities documents. Items to consider when making this determination can also include:

- Were apiaries present on the area prior to acquisition?
- Are there suitable available sites on the WMA/WEA?
- Will the apiary assist in pollination of an onsite FWC or offsite (adjacent landowner) citrus grove or other agricultural operation?

For those WMA/WEAs that have not considered apiaries in their Management Plan, upon approval of this policy Regional Staff will work with the Conservation Acquisition and Planning (CAP) staff and THCR Section leadership to determine if apiaries are an approved use on the area. If apiaries are considered an approved use then a request will be made to the Division of State Lands to allow this use as part of an amended Management Plan. This request will be made through the THCR’s Section Leader’s office and coordinated by the CAP.

Determination of apiary site locations on WMA/WEAs should be done using the following guidelines:

- Apiary sites should be situated so as to be at least one-half mile from WMA/WEA property boundary lines, and at least one mile from any other known apiary site. Exceptions to this requirement must be reviewed by the Area Biologist and presented to the THCR Section Leader for approval.
- Site should be relatively level, fairly dry, and not be prone to flooding when bees would normally be present.
- Site should be accessible by roads which allow reasonable transfer of hives to the site by vehicle.
- If a site is to be located near human activity, such as, an agricultural field, food plot, wildlife opening, campsites, etc., or if the site may be manipulated by machinery at a time when bees would be present, then the apiary site should be located at a minimum of 150 to 200 yards from the edge of that activity. This will ensure minimal disturbance to the bees and minimize incidents with anyone working in the area.

- It is preferable to have apiary sites located adjacent to or off roads whenever possible. If traditional apiary sites were located on roads and the Area Biologist determines that the site will not impact use of the road by visitors then it will be allowed.
- FWC Area Biologist shall select apiary site(s) and the site(s) selected should not require excessive vegetation clearing (numerous large trees, dense shrubs) or ground disturbance (including fill).

WMA/WEA Staff Responsibilities

Area Biologist on WMAs/WEAs with approved apiary sites will forward a GIS shapefile depicting all the apiary site polygon(s), including a name or number with coordinates for each apiary site, to the THCR Contract Manager.

Area Biologist will monitor each apiary site no less than once a year to determine if the beekeeper is abiding by the contract requirements. If violations are noted, staff should bring them to the attention of the beekeeper for correction. If violations continue staff should notify the THCR Contract Manager who will determine if or what additional action is warranted.

Area Biologist will establish and maintain firelines around the apiary site to ensure the apiary site is ready when a planned burn is scheduled.

Area Biologist will advise the beekeeper of burn plans, road work, gate closures, or other site conditions and management activities that may affect the beekeeper's ability to manage or access the apiary site.

Area Biologist is not responsible to ensure access roads are in condition suitable for beekeepers to access their hives with anything other than a four wheeled drive vehicle. (The site of the apiary may be high and dry, but the roads accessing them may be difficult to impossible to get a two wheeled drive vehicle into during extreme weather, e.g., heavy rainfall events.)

Apiary Wait List and Apiary Application

An electronic waiting list for apiary sites will be maintained by the THCR's Contract Manager for each WMA/WEA. To be placed on the waiting list an interested beekeeper must submit an apiary application form to the contract manager (See Enclosed Application Form). Each applicant will be considered based on the following criteria:

- Proof of a valid registration with the FDACS/DPI.
- Proof of payment of outstanding special inspection fees for existing sites.
- A validated history of being an apiary manager.
- Three references that can attest to the applicant's beekeeping experience.

If an apiary site becomes available on a WMA/WEA and there are beekeepers on the waiting list interested in that particular area, those individuals meeting the criteria above will be given preference. If there is more than one beekeeper meeting the criteria with their name on the list then a random drawing will be held by the THCR Contract Manager to determine who will receive the site. Beekeepers on the waiting list will be notified in writing of the random drawing's date/location and will be invited to attend. The individual's name selected during this drawing will be awarded the contract.

Apiary agreements are non-transferable. Each agreement serves as a contract between a specific individual or company and FWC, and the rights and responsibilities covered by an individual agreement cannot be transferred.

Contracts

Apiary contracts are for five (5) years and renewals are contingent upon a satisfactory performance evaluation by Area Biologist and concurrence of the THCR Section Leader. Approval is based on apiarist performance, adherence to rules and regulations and general cooperation. If an Area Biologist decides an apiarist whose contract is expiring is unacceptable he may recommend not approving the new contract. If this transpires then the wait list process using random selection will be used. If there is no apiarist on a current wait list then the apiarists who are in good standing with existing contracts will be notified to see if any want to be put on the wait list for the drawing. If none are interested then the site will be put on hold pending a valid request.

Pricing of Apiary Site(s)

Cost of each apiary site will be \$40 annually which will include up to 50 beehives. Additional beehives will be charged at the rate of \$40 per 50 beehives.

Pricing examples:

- A beekeeper is leasing 2 apiary sites with up to 100 beehives - the fee per year is \$80.
- A beekeeper is leasing 3 apiary sites with up to 200 beehives - the fee per year is \$160.

Note: The maximum number of hives/colonies allowed on an apiary site will be at the discretion of the apiarist. However, the apiarist is strongly recommended to follow the BMP as recommended by the FDACS/DPI. In addition to providing the BMP, FDACS/DPI's management has recommended 50 hives per site in pineland communities and no more than 100 hives per site in areas with bountiful resources. However, FWC will not dictate the number of hives on a site unless they create land management issues.

Bear Depredation Control at Apiary Site(s)

Beekeepers are required to consult with the WMA/WEA Area Biologist to see if electric fencing is required for their apiary sites. If the Area Biologist requires electric fencing then the

Beekeeper shall construct and maintain electric fences for each apiary site. Numerous electric fence designs have been used to varying success and FWC as a courtesy provides an electric fence technical information bulletin with each Agreement. This bulletin is attached in order to assist the Beekeeper and/or provide a design that has been proven to be reasonable effective.

SUBJECT MATTER REFERENCES

Apiary Inspection Law - Chapter 586, Florida Statutes (see <http://www.leg.state.fl.us/Statutes/>), Rule Chapter 5B-54, Florida Administrative Code (see www.flrules.org).

The Board of Trustees of the Internal Improvement Trust Fund – Recommended Apiary Agreement Guidelines For Apiaries & Revisions to an Agreement for Apiary Activities on State Lands on September 23, 1986

S:\HSC\THCR\APIARY.BACKUP.POLICY\dlissupport@dos.state.fl.us_20100903_111446.pdf

Senate Resolution 580, September 21, 2006: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_bills&docid=f:sr580ats.txt.pdf

Attachments

Sample Apiary Agreement W/Attachments (Map Placeholder & Electric Fence Bulletin)

Sample Apiary Site Application Form W/Mission Statement

Best Management Practices for Maintaining European Honey Bee Colonies

Sample of Random Selection Process Procedure

APPROVED:

Division Director or Designee

DATE: _____

APIARY AGREEMENT

AGREEMENT FOR APIARY ACTIVITIES ON STATE LANDS

THIS AGREEMENT is made by and between the Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street, Tallahassee, FL 32399-1600, hereinafter known as “the COMMISSION,” and (Insert Name and Address of Apiarist Here), telephone number (Insert Phone Number of Apiarist Here), hereinafter known as “the USER.”

WITNESSETH

In consideration of the mutual promises to be kept by each and the payments to be made by the USER, the parties agree as follows:

1. TERM: This Agreement will begin (Insert date here) or the date signed by both parties, whichever is later, and will end five (5) years from the date of execution. Issuance of a new five (5) year Agreement is contingent upon satisfactory performance evaluation by the Area Biologist and approval of the THCR Section Leader.
2. The COMMISSION Agrees:
 - a. To provide apiary sites on state lands, which will be identified by the COMMISSION staff and located on the property identified in (4)(f) below.
 - b. To provide technical assistance for bear-proofing, if required by Area Biologist, of sites made available under this Agreement.
 - c. To allow the USER to place a total number of (insert number of hive boxes here) hive boxes on the COMMISSION-managed property at the apiary site(s).
3. The USER Agrees:
 - a. To pay (Insert Total Dollars Here) on or before the execution date of this Agreement and each year thereafter on or before anniversary date of the original contract execution date, with check or money order payable to the Florida Fish and Wildlife Conservation Commission. All payments shall be remitted to The Florida Fish and Wildlife Conservation Commission, Finance and Budgeting, Accounting Section, PO Box 6150, Tallahassee, FL 32399-6150, and a copy of the check to The Florida Fish and Wildlife Conservation Commission, Terrestrial Habit Conservation and Restoration Section, Attn: Section Leader, 620 South Meridian Street, Tallahassee, Florida 32399-1600.

- b. To have no more than (Insert Number of Hive boxes here) hive boxes on the property at one time.
- c. To comply with the Florida Honey Certification and Honeybee Law, Chapter 586, Florida Statutes, and Rule 5B-54, Florida Administrative Code, and all other applicable federal, state, or local laws, rules or ordinances.
- d. To not damage, cut or remove any trees in the course of preparing for or conducting operations under this Agreement.
- e. To repair within 30 days of occurrence any damage to roads, trails, fences, bridges, ditches, or other public property caused by USER'S operations under this Agreement based on discretion of the COMMISSION to ensure the WMA/WEA management goals are met. All repairs will be coordinated with the Area Biologist to ensure management goals are met. If USER does not comply within the 30 day requirement, then the COMMISSION may use a third party to perform the repairs and charge the USER accordingly.
- f. To report any forest fires observed and to prevent forest fires during the course of operations under this Agreement.
- g. To abide by all WMA/WEA rules and regulations in addition to items in this Agreement.
- h. To notify the Area Biologist within 24 hours when a bear depredation event occurs.
- i. To post their name in an agreed upon location at each site covered by this Agreement or otherwise use an identifying system that is approved by the Area Biologist.
- j. To furnish proof of general liability insurance prior to starting apiary activities on state property or within 30 days of execution of this Agreement, whichever is earlier, and proof of annual renewal of the general liability insurance policy prior to or upon expiration date of the policy. The USER shall maintain continuous general liability insurance throughout the term of this Agreement for no less than \$300,000 for bodily injury and \$100,000 for property damage for each occurrence. Such a policy shall name the COMMISSION as the Certificate Holder. The USER's current certificate of insurance shall contain a provision that the insurance will not be canceled for any reason during the term of this Agreement except after thirty (30) days written notice to the COMMISSION.

- k. To be liable for all damage to persons or property resulting from operations under this Agreement, and to release, acquit, indemnify, save and hold harmless the COMMISSION, its officers, agents, employees and representatives from any and all claims, losses, damages, injuries and liabilities whatsoever, whether for personal injury or otherwise, resulting from, arising out of or in any way connected with activities under this Agreement or activities occurring from any other source not under this Agreement and the USER further agrees to assume all risks of loss and liabilities incidental to any natural or artificial condition occurring on state lands cover by this Agreement.
 - l. To construct and maintain electric fences, if required by the Area Biologist at the Area Biologist's discretion, to provide protection of apiaries from black bear depredation consistent with the technical information bulletin attached to this agreement, and, if so required, to maintain an open buffer around the fencing of five (5) feet or more. (See Attachment 1)
 - m. To remove all personal property from the site within thirty (30) days of termination or expiration of this Agreement. The USER understands that after this time, all the USER'S personal property remaining on the WMA/WEA shall be deemed abandoned and become the property of the COMMISSION, which will be utilized or disposed of at the sole discretion of the COMMISSION, and that reasonable storage and/or disposal fees and/or costs may be charged to the USER.
4. The parties mutually agree:
- a. This Agreement is not transferable.
 - b. The USER's failure to submit payment by the due date established herein may result in cancellation of the Agreement by the COMMISSION.
 - c. The USER's failure to submit proof of general liability insurance or proof of annual renewal in compliance with (3) (j) above may result in cancellation of this Agreement by the COMMISSION.
 - d. This Agreement shall be in effect for a period of five (5) years and issuance of a new agreement will be contingent upon a satisfactory performance evaluation and approval of the Area Biologist and THCR Section Leader.
 - e. Each apiary site shall be situated so as to be at least one-half (1/2) mile inward from state property lines and there shall be at least one (1) mile separation

between sites. Exceptions to this rule must be reviewed by Area Biologist presented to and approved by the Terrestrial Habitat Conservation and Restoration Section Leader.

- f. The property covered by this Agreement is described as follows: That the property sites (Insert Area Name) Wildlife Management Area are represented by Attachment 2.
- g. In accordance with Section 287.134, Florida Statutes, an entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid, proposal or reply on a contract to provide goods or services to any public entity; may not submit a bid, proposal or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant with any public entity; and may not transact business with a public entity.
- h. As part of the consideration of this Agreement, the parties hereby waive trial by jury in action brought by either party pertaining to any matter whatsoever arising out of or in any way connected with this Agreement. Exclusive venue for all judicial actions pertaining to this Agreement is in Leon County, Florida.
- i. This Agreement may be terminated by the COMMISSION upon thirty (30) days written notice to the USER in the event the continuation of the apiary activities are found to be incompatible with the COMMISSION'S management plans or for any other reason at the sole discretion of the COMMISSION.

This Area Intentionally Left Blank

IN WITNESS WHEREOF, the parties have executed this Agreement on the day and year last below written.

USER SIGNATURE

Date: _____

Witness

Witness

FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

Mike Brooks, Section Leader
Terrestrial Habitat Conservation and
Restoration

Date: _____

Approved as to form and legality

Commission Attorney

Date: _____

AGREEMENT

ATTACHMENT 1

Use of Electric Fencing to Exclude Bears And Prevent Property Damage

Florida Fish and Wildlife Conservation Commission
Technical Information Bulletin (2001)

Electric fencing has proven effective in deterring bears from entering landfills, apiaries (beehives), livestock pens, gardens, orchards, and other high-value properties. Numerous electrical fence designs have been used with varying degrees of success. Design, quality of construction, and proper maintenance determine the effectiveness of an electric fence. The purpose of this technical bulletin is to assist the property owner in understanding and implementing electrical fencing as a tool to exclude and prevent damage caused by black bears.

Understanding Electric Fencing

Electric fencing provides an electrical shock when an animal comes into contact with the electrically charged wires of the fence. People unfamiliar with electric fencing often are afraid that it will injure, permanently damage, or kill an individual or pet that contacts the fence. **This is not true!** A properly constructed electric fence is safe to people, pets, and bears.

Components of Electric Fencing

An electric fence is composed of four main elements: a charger, fence posts, wire, and the ground rod.

Fence Charger. On a small scale electric fence (like that typically needed for bear exclusion), the largest cost is normally the fence charger. A fence charger's job is to send an electrical pulse into the wire of the fence. Contrary to popular belief, there is not a continuous charge of electricity running through the fence. Instead the charger emits a short pulse or burst of electricity through the fence. The intensity and duration of the electrical pulse varies with the type of charger or controller unit. Chargers with a high-voltage, short duration burst capacity are the best because they are harder to ground out by tall grass and weeds. These types are also the safest, because, even though the voltage is high (5 kilovolts) the duration of the burst is very short (2/10,000 of a second) (FitzGerald, 1984).

Two basic energy sources for chargers are batteries (12-volt automotive type) and household current (110 volt). Battery-type chargers are typically cheaper to purchase but require more maintenance because of the necessity of charging the battery. The advantage of a battery powered charger is that it can be used in a remote location where 110-volt current is not available. Most units that are powered by a fully charged 12-volt deep-cycle batteries can last three weeks before needing a charge. Addition of a solar trickle charger will help prolong the duration of effective charge in 12-volt batteries.

Fence Posts. On small scale fences, the posts are normally the second largest expense involved in construction. Therefore, when planning an electric fence it is a good idea to utilize existing fencing in order to save money. If no existing fence is available, posts will need to be placed around the area needing protection. Posts may be wood, metal, plastic, or fiberglass. Wood and metal posts will need to have plastic insulators attached to them which prevent the electric wire from touching the post causing it to ground out. Plastic and fiberglass posts do not need insulators, the wire may be affixed directly to these posts. Wood and metal posts are typically more expensive and require the added expense of insulators, however, they are more durable and generally require less maintenance.

Wire. Fourteen to seventeen gauge wire is the most common size range used in electric fencing. Heavier wire (a lower gauge number) is more expensive but carries current with less resistance and is more durable (FitzGerald, 1984).

The two most common types of wire are galvanized and aluminum. Galvanized wire is simply a steel wire with a zinc coating to prevent rust, which makes the wire last longer. Some wire is more galvanized than others. The degree or amount of zinc coating that is around the core steel wire is measured in three classes. A class I galvanization means the wire has a thinner coating of zinc than a class II galvanization. Class III galvanized wire has the heaviest zinc coating and will last longer than the class I and class II wire (FitzGerald, 1984). In general, the cost of galvanized wire increases as the class or amount of galvanization increases.

Aluminum wire is typically more expensive than the galvanized wire. Some advantages of aluminum wire are: it will not rust, it conducts electricity four times better, and it weighs one-third less than steel wire.

The Ground Rod. The ground is an often overlooked, but critical part of an electric fence. Without a good ground, electricity will not flow through the wire. When an animal touches a charged wire, the body of the animal completes the electrical circuit and the animal feels the “shock”. The current must travel from the charger through the wire to the animal and then back through the ground to the charger if the animal is to

feel the shock. The soil acts as the return “wire” (ground) in the circuit. However, if a bird was to land on a charged wire without touching the soil the bird would not complete the circuit and would be unaffected (FitzGerald, 1984). Some fence configurations use actual grounded wires within the fence to enhance the grounding system.

The ground may be a commercial ground rod or a copper tube or pipe driven six to eight feet in moist soil. Copper is expensive, so a copper coated steel pipe or any other good conducting metal pipe will work also. Very dry soil can effect the ability to create a good ground and has sometimes been a problem during drought conditions. Pipe may be a better choice than a solid rod during drought conditions, because water may be poured down the ground pipe to improve the ground. Some fence configurations use wires as the grounding system, rather than relying solely on the soil as a ground.

Recommended Electric Fence to Deter Black Bears

Conditions at fence sites will vary and will determine what the most effective fence configuration will be. Commission biologists welcome the opportunity to visit sites and provide custom tailored advice on constructing an effective electric fence. The following recommendation will cover most situations with low to moderate pressure from black bears. Use a five strand aluminum wire fence that is 40 inches high with wire spacing every eight inches apart using the previously mentioned wired grounding system (see Figure 1). The wire closest to the ground level (the lowest wire) should be a charged or “hot” wire. The second wire should be grounded. The third wire should be hot. The fourth wire should be grounded and the fifth wire should be hot. If using metal or wood posts, insulators must be used to keep the hot wires from grounding out. The cost of this type of electric fence utilizing fiberglass posts and a 110 volt fence charger is approximately \$200 for a 40' x 40' area (160 linear feet of fence).

Materials:

- 1 - 1, 312 foot roll (1/4 mile) 14 gauge aluminum electric fence wire
- 1 - 50 foot roll 12 gauge insulated wire
- 20 - 5 foot 5/8 inch dia fiberglass fence posts
- 5 - plastic gate handles
- 1 - 110 volt fence charger
- 1 - 10 foot ground pipe
- 4 - plastic electric fence signs

Installation. These instructions are for a square shape fence exclusion, but the process would be very similar for other applications. Drive 4 corner posts 1-foot deep into ground and stake with guy wires. Clip, rake, and keep clear any vegetation in a 15-inch wide strip under the fence and apply herbicide. Attach and stretch the aluminum wire at 8-inch increments starting 8 inches from ground level. A loop of wire should be left on each wire at the first corner post. Once the wire has been stretched around the outside of all the corner posts back to the first post a plastic gate handle

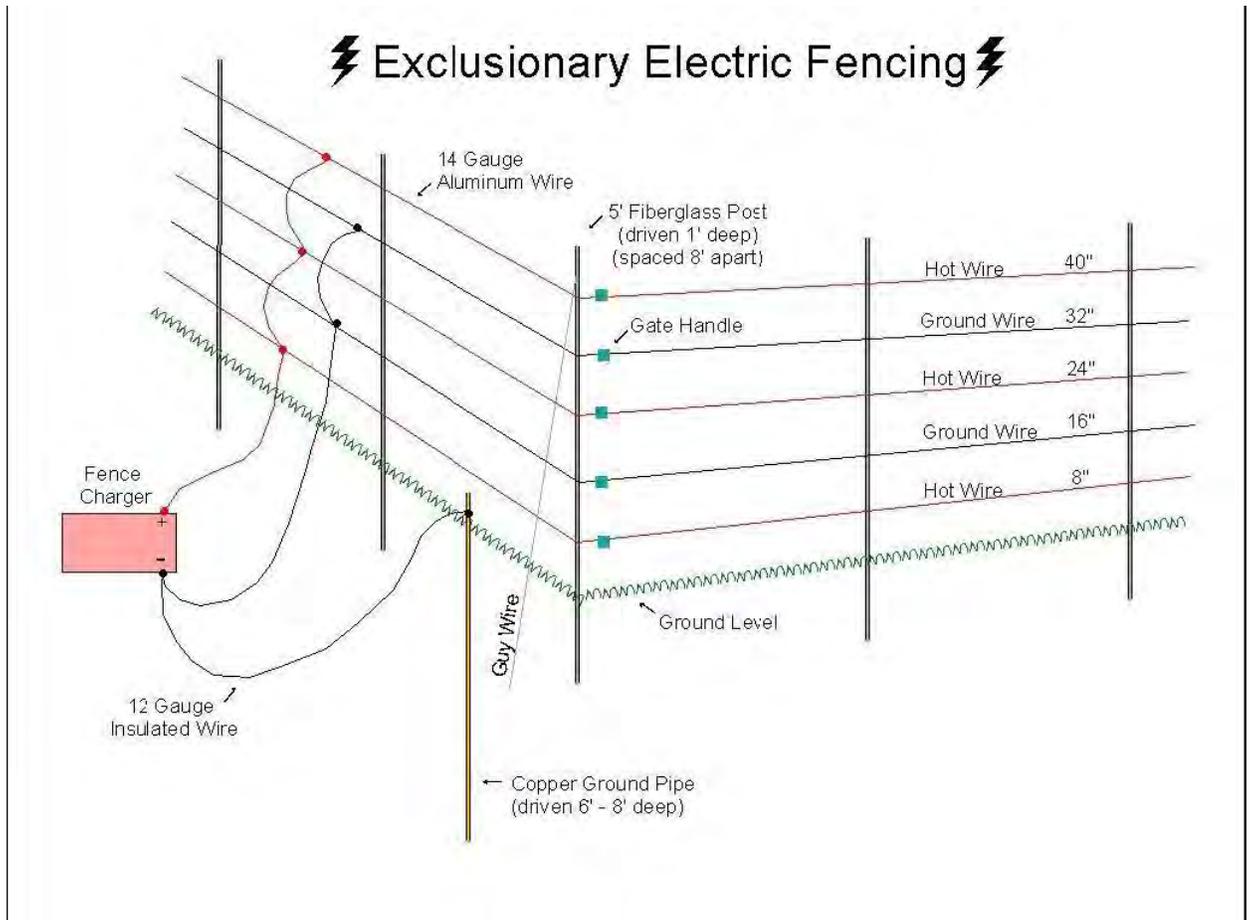
should be attached to each wire and the gate handles should be attached to each corresponding loop on the first corner post. Drive in the remaining 16 posts to the same depth at 8-foot intervals between corner posts. Secure each of the five wires to each of the posts with additional wire. Attach four plastic electric fence signs (one on each side) to the top wire of the fence. Attach a 12-gauge strand of insulated wire to the positive terminal of the fence charger and attach it to the first, third, and fifth wires of the fence. Attach another 12 gauge insulated wire to the negative terminal of the charger and attach this wire to the ground pipe which has been driven into the ground 6 to 8-feet deep. Attach another 12 gauge insulated wire from the negative terminal of the charger to the second and fourth wires on the fence. Plug the charger into a 110 volt power supply and the fence is in operation.

Tips to improve the effectiveness of your electric fence to deter black bears:

1. If using a 12-volt fence charger, ensure that the battery is charged; check every two weeks.
2. Make sure terminals on the charger and battery are free of corrosion.
3. Make sure hot wires are not being grounded out by tall weeds, fallen tree branches, broken insulators, etc.
4. If fence wires have been broken and repaired, make sure wires are corrosion free where they have been spliced together. Also, tighten the fence at each corner post as wires that have been spliced and are loose make poor connections.
5. Be sure to rake vegetation from under and around the outside of the fence as this may act as an insulator.
6. To improve the ground around the perimeter of the fence add a piece of 24 inch chicken wire laying on the ground around the outside of the fence. This should be connected to ground.
7. During periods of drought pour water down the ground pipe and around the ground pipe to improve the ground. Digging a 6 inch deep 6 inch diameter hole around the ground pipe and back filling with rock salt will also improve the ground. Additional ground pipes may also be added to portions of the fence farthest from the charger.
8. To ensure that the bear solidly contacts the charged portion of the fence, a bait like bacon strips, a can of sardines, or tin foil with peanut butter may be attached to one of the top hot wires. Make sure these do not contact the ground, thus shorting out the fence.
9. When protecting a specific structure (like a shed or rabbit hutch), the fence should be placed 3 to 5 feet away from the structure (rather than on it) so that the bear encounters the fence before reaching the attractant.
10. Protect the fence charger from the elements by covering it with a plastic bucket or a wooden box.
11. Place plastic electric fence signs around the perimeter of your fence to improve visibility and to warn other people.

LITERATURE CITED

FitzGerald, James (1984), *The Best Fences*. Storey Publishing Bulletin A-92, Pownal, Vermont. p. 14-16.



AGREEMENT

ATTACHMENT 2

Place Holder for Map

Of

Apiary Locations

At

WMA/WEA

APIARY SITE APPLICATION FORM

**Florida Fish and Wildlife
Conservation Commission**

RETURN TO: The Florida Fish and Wildlife Conservation Commission, 620 South Meridian Street,
Tallahassee, FL 32399-1600. Please print or type all information. Attach additional sheets if necessary.

Name _____ Telephone Number _____

Mailing Address _____

City or Town _____ County _____ Zip Code _____

Physical Address (If Different from Mailing Address)

Company Name:

Email Address

Requested Wildlife Management or Wildlife and Environmental Area(s)(see attached list of WMA/WEAs
with apiary sites):

WMA/WEA _____ County _____ # of Sites _____

WMA/WEA _____ County _____ # of Sites _____

WMA /WEA _____ County _____ # of Sites _____

WMA /WEA _____ County _____ # of Sites _____

Planned Number of Hives Per Site: _____ Permanent: ____ Seasonal: _____

Member of Beekeepers Association: Yes ____ No ____

Number of Years a Member _____

Name of Beekeepers Association: _____

Are you registered with Florida Department of Agriculture and Consumer Services/Division of Plant
Industry (FDACS/DPI): _____ Yes _____ No _____ N/A If yes, please provide proof.

Are you current with any and all special inspection fees: _____ Yes _____ No _____ N/A. If yes,
please provide proof.

Do you follow all recommended Best Management Practices from FDACS/DPI?: _____ Yes _____ No

If no, then please explain on a separate piece of paper.

Please provide below a chronological history of your beekeeping experience. If you need more space, please provide additional sheets:

References: If a new apiary contractor, please provide on a separate piece of paper at least 3 references who can verify your apiary experience. Provide each reference's name, address, phone number and email address (if applicable). Please attach reference sheet to this document and submit.

MISSION STATEMENT

Management

Of

Florida Fish and Wildlife Conservation Commission's

Wildlife Management Areas

And

Wildlife and Environmental Areas

The mission of the Florida Fish and Wildlife Conservation Commission (FWC) is to manage fish and wildlife resources for their long-term well-being and the benefit of the people. To aid in accomplishing this mission, one of FWC's management goals is to manage fire-adapted natural communities on our Wildlife Management and Environmental Areas (WMA/WEA) to support healthy populations of the plants and animal's characteristic of each natural community. In order to achieve this goal various habitat management techniques are used. These include prescribed burning, applications of herbicides and mechanical treatment of vegetation. These management efforts will take place at various times and locations on each of the FWC's WMA/WEAs. Staff on each WMA/WEA will work with and make users aware of these activities when necessary. Users must be aware and accept that these activities are necessary for the proper management of the area.

Note: This document is included as an attachment with each Application and executed Contract.

FDACS/DPI's BMP

Florida Department of Agriculture & Consumer Services BEST MANAGEMENT PRACTICES FOR MAINTAINING EUROPEAN HONEY BEE COLONIES

1. Beekeepers will maintain a valid registration with the Florida Department of Agriculture and Consumer Services/Division of Plant Industry (FDACS/DPI), and be current with any and all special inspection fees.
2. A Florida apiary may be deemed as European Honey Bee with a minimum 10% random survey of colonies using the FABIS (Fast African Bee Identification System) and/or the computer-assisted morphometric procedure (i.e., Universal system for the detection of Africanized Honey Bees (AHB) (USDA-ID) or other approved methods by FDACS on a yearly basis or as requested.
3. Honey bee colony divisions or splits should be queened with production queens or queen cells from EHB breeder queens following Florida's Best Management Practices.
4. Florida beekeepers are discouraged from collecting swarms that cannot be immediately re-queened from EHB queen producers.
5. Florida Beekeepers should practice good swarm-prevention techniques to prevent an abundance of virgin queens and their ready mating with available AHB drones that carry the defensive trait.
6. Maintain all EHB colonies in a strong, healthy, populous condition to discourage usurpation (take over) swarms of AHB.
7. Do not allow any weak or empty colonies to exist in an Apiary, as they may be attractive to AHB swarms.
8. Recommend re-queening with European stock every six months unless using marked or clipped queens and having in possession a bill of sale from an EHB Queen Producer.
9. Immediately re-queen with a European Queen if previously installed clipped or marked queen is found missing.
10. Maintain one European drone source colony (250 square inches of drone comb) for every 10 colonies in order to reduce supercedure queens mating with AHB drones.

11. To protect public safety and reduce beekeeping liability, do not site apiaries in proximity of tethered or confined animals, students, the elderly, general public, drivers on public roadways, or visitors where this may have a higher likelihood of occurring.

12. Treat all honey bees with respect.

RANDOM
SELECTION PROCESS
FOR VACANT APIARY SITE

When an apiary site becomes available the following procedure is used to randomly select the next apiarist (beekeeper) for an available apiary site on a WMA or WEA. Only those who have been evaluated and deemed qualified to be an apiarist on a WMA/WEA through the Apiary Application process will be eligible for this selection process. The steps below will be followed by the THCR Contract Manager when a site becomes available to be filled by a qualified apiarist:

1. The THCR Contract Manager will maintain an “Apiary Wait List Folder” on the THCR SharePoint for each WMA/WEA with apiary sites.
2. A wait list is either created or updated when an Apiary Application(s) is received by the THCR Contract Manager from a qualified apiarist.
3. Upon receipt of an apiary site application, the THCR Contract Manager will review the WMA/WEA folder to see if there is an “Apiary Wait List”.
4. If a list exists then the qualified applicant will be added to the list.
5. When an apiary site becomes available if there are more than one qualified apiarist then these apiarists will be contacted by certified letter to determine their interest.
6. The letter will request a response within 10 working days to make them eligible for the random drawing.
7. If there is no response or is negative then that apiarist will not be included in the random drawing and the name will be removed from the waiting list*.
8. If only one apiarist responds positively to the certified letter then the available site will be awarded to that interested apiarist.

9. If there are no apiarists on a wait list or all responses are negative then apiarists who currently have site(s) under Agreement and where not on the waiting list will be contacted to see if any have interest in the available site. If more than one responds then the random drawing process will be used to determine who will be awarded the site.
10. Steps to be performed by the THCR Contract Manager to execute the random selection for an available apiary site are listed below:
 - a. The names of each interested apiarist will be noted on a 1" X 2" piece of paper and folded in half.
 - b. The pieces of paper will be inserted into a "black film canister" which has a snap top and placed into a container and stirred up prior to the selection.
 - c. A non-biased person will be selected to reach into the bowl (which will be held above the selection person's eyesight) and randomly select one of the canisters.
 - d. The canister will be opened by the person performing the selection and the name is read aloud for those in attendance. Everyone in attendance will sign a witness sheet.
 - e. The apiarist whose name is selected will be awarded the available site.
 - f. A new Agreement will be developed by the THCR Contract Manager.

*A new apiary application must be submitted once requestor's name is removed from a waiting list.

13.10.1 Apiary Assessment for LGCWEA

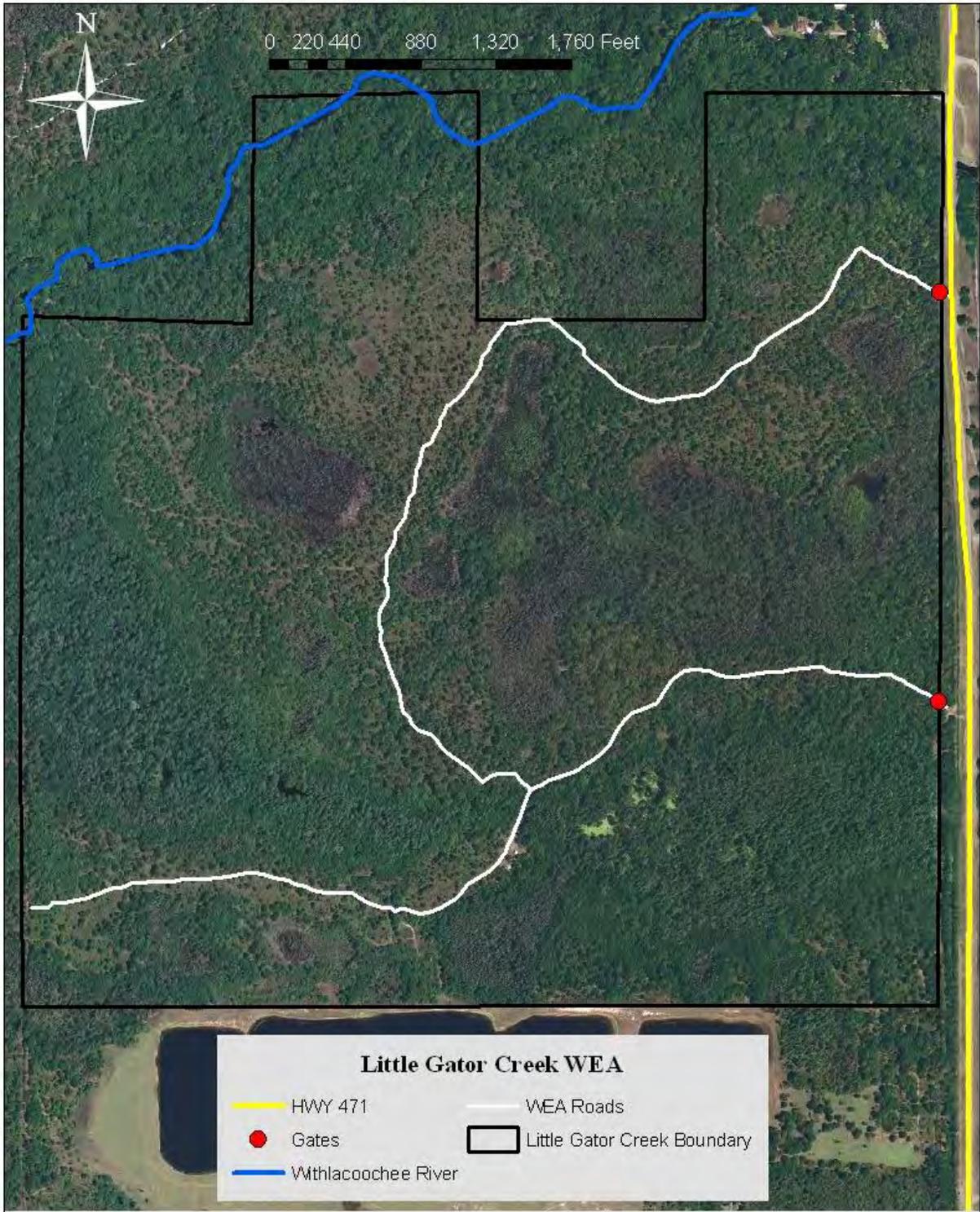
Little Gator Creek Wildlife & Environmental Area (WEA) Apiary Assessment

In accordance with the Division of Habitat & Species Conservation's Apiary Policy issued by the Terrestrial Habitat Conservation and Restoration Section (Sept 1, 2010), the following guidelines were used to determine whether the Little Gator Creek WEA should consider apiaries in its Management Plan.

1. Apiary sites should be situated at least ½ mile from WMA/WEA property boundary lines, and at least one mile from any other known apiary site.
2. Sites should be relatively level, fairly dry, and not prone to flooding when bees would be normally present.
3. Sites should be accessible by roads which allow for reasonable transfer of hives to the site by vehicle.
4. If a site is to be located near human activity, then the apiary site should be located at a minimum of 150-200 yards from the edge of that activity.
5. It is preferable to have apiary sites located adjacent to or off roads whenever possible.
6. FWC Area Biologist shall select apiary sites and the site shall not require excessive vegetation clearing or ground disturbance (including fill).

Based on the following analysis as required in the policy, area staff identified zero sites with the potential to be suitable apiary locations on Little Gator Creek WEA.

1. Upon review of Little Gator Creek's GIS mapping files, it was determined that no parts of the WEA are more than ½ mile from the property boundary. As such no suitable sites were identified and no further analysis was conducted.



13.11 Management Procedures Guidelines - Management of Archaeological and Historical Resources

Management Procedures for Archaeological and Historical Sites and Properties on State-Owned or Controlled Properties (revised March 2013)

These procedures apply to state agencies, local governments, and non-profits that manage state-owned properties.

A. General Discussion

Historic resources are both archaeological sites and historic structures. Per Chapter 267, Florida Statutes, *‘Historic property’ or ‘historic resource’ means any prehistoric district, site, building, object, or other real or personal property of historical, architectural, or archaeological value, and folklife resources. These properties or resources may include, but are not limited to, monuments, memorials, Indian habitations, ceremonial sites, abandoned settlements, sunken or abandoned ships, engineering works, treasure trove, artifacts, or other objects with intrinsic historical or archaeological value, or any part thereof, relating to the history, government, and culture of the state.’*

B. Agency Responsibilities

Per State Policy relative to historic properties, state agencies of the executive branch must allow the Division of Historical Resources (Division) the opportunity to comment on any undertakings, whether these undertakings directly involve the state agency, i.e., land management responsibilities, or the state agency has indirect jurisdiction, i.e. permitting authority, grants, etc. No state funds should be expended on the undertaking until the Division has the opportunity to review and comment on the project, permit, grant, etc.

State agencies shall preserve the historic resources which are owned or controlled by the agency.

Regarding proposed demolition or substantial alterations of historic properties, consultation with the Division must occur, and alternatives to demolition must be considered.

State agencies must consult with Division to establish a program to location, inventory and evaluate all historic properties under ownership or controlled by the agency.

C. Statutory Authority

Statutory Authority and more in depth information can be found at:
<http://www.flheritage.com/preservation/compliance/guidelines.cfm>

D. Management Implementation

Even though the Division sits on the Acquisition and Restoration Council and approves land management plans, these plans are conceptual. Specific information regarding individual projects must be submitted to the Division for review and recommendations.

Managers of state lands must coordinate any land clearing or ground disturbing activities with the Division to allow for review and comment on the proposed project. Recommendations may include, but are not limited to: approval of the project as submitted, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effects.

Projects such as additions, exterior alteration, or related new construction regarding historic structures must also be submitted to the Division of Historical Resources for review and comment by the Division's architects. Projects involving structures fifty years of age or older, must be submitted to this agency for a significance determination. In rare cases, structures under fifty years of age may be deemed historically significant. These must be evaluated on a case by case basis.

Adverse impacts to significant sites, either archaeological sites or historic buildings, must be avoided. Furthermore, managers of state property should make preparations for locating and evaluating historic resources, both archaeological sites and historic structures.

E. Minimum Review Documentation Requirements

In order to have a proposed project reviewed by the Division, certain information must be submitted for comments and recommendations. The minimum review documentation requirements can be found at: http://www.flheritage.com/preservation/compliance/docs/minimum_review_documentation_requirements.pdf.

* * *

Questions relating to the treatment of archaeological and historic resources on state lands should be directed to:

Deena S. Woodward
Division of Historical Resources
Bureau of Historic Preservation
Compliance and Review Section
R. A. Gray Building
500 South Bronough Street
Tallahassee, FL 32399-0250

Phone: (850) 245-6425
Toll Free: (800) 847-7278
Fax: (850) 245-6435

13.11.1 Archaeological Sites of Little Gator Creek WEA

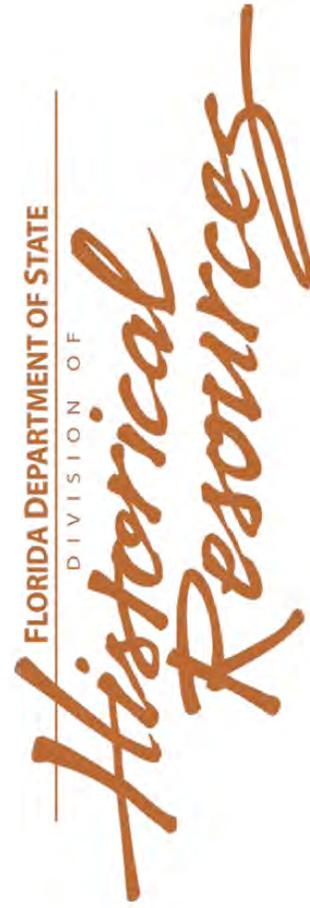
Archaeological Sites of Little Gator Creek WEA

Florida Sites							Total	Percent		
SITE NAME	SITEID	SITETYPE1	SITETYPE2	SITETYPE3	SITETYPE4	SITETYPE5	SITETYPE6	HUMANREMN	Area (acres)	of Area
MCNEIL	PA00058	Land-terrestrial	Artifact scatter- low density (< 2 per sq meter)						1.24	0.22 %
NN	PA00062	Lithic scatter/quarry (prehistoric: no ceramics)							0.78	0.14 %
NN	PA00063	Single artifact or isolated find							1.12	0.2 %
NN	PA00064	Lithic scatter/quarry (prehistoric: no ceramics)							0.82	0.14 %
NN	PA00059	Lithic scatter/quarry (prehistoric: no ceramics)							2.09	0.36 %
NN	PA00060	Lithic scatter/quarry (prehistoric: no ceramics)							1.37	0.24 %
NN	PA00061	Lithic scatter/quarry (prehistoric: no ceramics)							4.91	0.86 %
TOTAL:									12.33	2.15 %
Florida Structures										
No Records Found										
Historical Cemeteries										
No Records Found										
Historic Bridges										
No Records Found										
National Register of Historic Places										
No Records Found										
Resource Groups										
No Records Found										
Field Survey										
TITLE							Total Area (acres)	Percent of Area		
Cultural Resource and Assessment Survey of Little Gator Creek, Wood Stork Rookery Tract							510.48	88.92 %		
Historic Resources Survey of East Pasco County							544.43	94.83 %		
Colt Creek State Park, Various Start-up Projects, Polk County							0.05	0.01 %		
TOTAL:							1,054.96	183.76 %		

13.11.2 Division of Historical Resources Guidelines for Ground Disturbing Activities

USING THE MATRIX

Guidelines for Ground Disturbing Activities



Why do we need the Matrix?

- ❑ Regular ground disturbing activities by land managers can damage archaeological resources
- ❑ Projects vary, impacts vary
- ❑ Balance money, cultural resource protection, time, and necessary projects

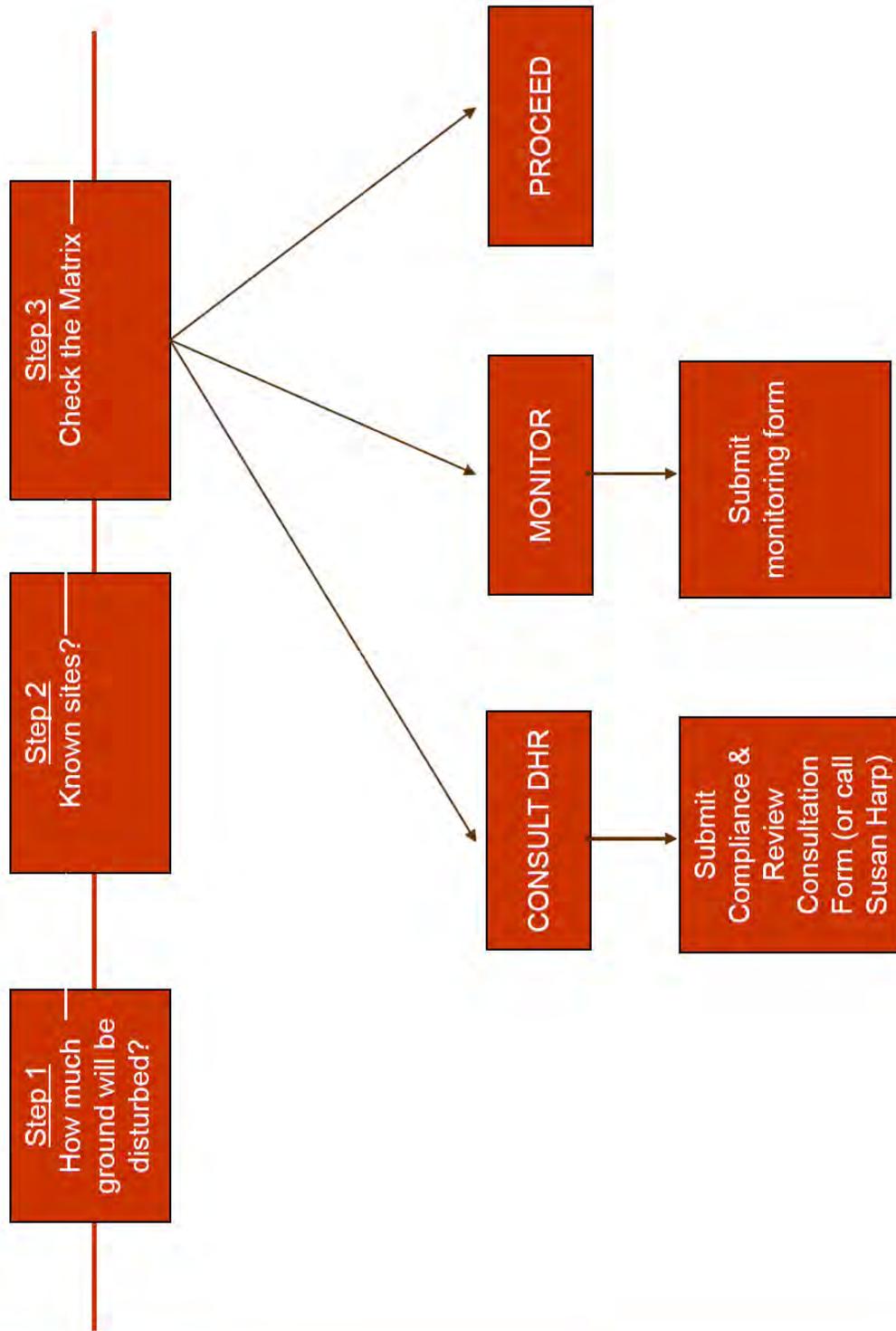
Recent Changes to the Matrix

- Simplification
- Eliminated shovel testing by land managers
- Increased consultation for known sites
- Decreased consultation for middle range projects

The Matrix

Extent of Disturbance	Known Sites	Un-surveyed Area	Surveyed Area, No Site
Major	Consult DHR	Consult DHR	Monitor
Minor	Consult DHR	Monitor	Proceed with Project

Flow Chart



Step 1:

Determine if a disturbance is:

☐ Minor

- little ground disturbed
- no new ground disturbed

☐ Major

- much ground disturbed
- new ground disturbed

Minor Disturbances

- ❑ Bicycle racks
- ❑ Cable burial with blade-type devices
- ❑ Campsite markers
- ❑ Emergency holes (for safety, accident or emergency repairs)
- ❑ Fireplaces/grills
- ❑ Flagpoles
- ❑ Garbage can or recycle bin posts
- ❑ Gardening (existing activity)
- ❑ Horse hitching posts
- ❑ Kiosks on post
- ❑ Lifeguard stands
- ❑ Lightning arresters
- ❑ Plantings (shrubbery, seedlings or plugs)
- ❑ Poles for utilities, lights, speakers
- ❑ **Prescribed burns (not initial)***
- ❑ Road/trail barriers & signs
- ❑ **Roller chopping (light-empty tank)**
- ❑ Sign posts
- ❑ Fire ring installation

* = IF the matrix calls for monitoring, do a walkover of the area after the undertaking. (Large or long, linear projects)



Minor Disturbances

- Boardwalks, catwalks or piers
 - Equipment racks
 - **Fire lane maintenance***
 - Playground equipment installation
 - Temporary open shelter construction
 - Septic tank/drainage (replacement, no enlargement)
 - Stabilizing existing unpaved roads (**not historic roads**)*
 - Unpaved road maintenance (disking, harrowing, plowing, etc.)
- Decks or Platforms
 - Drainage swale **maintenance***
 - Fence posts and railings
 - Parking lot boundary posts
 - Monument construction
 - Tower construction
 - Well drilling (includes catchment basins)

Major Disturbances

- ❑ **Prescribed burns (initial)**
- ❑ Mechanized exotic plant removal (not hand pulling)
- ❑ Concrete slab installation
- ❑ Docks
- ❑ Dredging
- ❑ Public utilities (trenched)
- ❑ **New fire line construction**
- ❑ Beach construction
- ❑ **Initial roller chopping**
- ❑ Sewage treatment plant construction
- ❑ **Water/sewer line installation**
- ❑ Tree trunk removal (big trees)
- ❑ Tree or big plant planting or root ball removal
- ❑ **Drainage swale construction**
- ❑ Foundation repair or stabilization
- ❑ Mobile home installation
- ❑ Telephone lines (trenched)
- ❑ Terracing for erosion control
- ❑ Water retention area construction
- ❑ Septic tank/drain field installation (new or enlargement)
- ❑ Bridge Construction
- ❑ Garden installation (new areas)
- ❑ Animal burials
- ❑ Trenching
- ❑ Clivis (restroom) installation
- ❑ Sidewalk installation
- ❑ Picnic shelter with slab
- ❑ Borrow pits



Step 2:

Check for the presence of known archaeological sites and whether or not an archaeological survey has been conducted in your project area. Use the following sources:

- **Managed area's management plan**
- **Florida Master Site File**
- **Personal and local knowledge of site locations**

Step 3:

Based on information obtained in steps 1 and 2, determine the category in which the project falls on the Compliance Review Matrix Table (below).

Extent of Disturbance	Known Sites	Un-surveyed Area	Surveyed Area, No Site
Major	Consult DHR	Consult DHR	Monitor
Minor	Consult DHR	Monitor	Proceed with Project

Step 4:

Compliance Review Matrix category guidelines. “Consult DHR” (Page 70) “Monitor” (Page 71)

DHR Compliance Review Consultation Form
(Complete this form and email a copy to Ms. Susan Harp at susan.harp@doh.florida.com)

District (FPS): _____ Contact: _____
 Date: _____ Address: _____
 Mgt. Area: _____
 Need for project: _____

Nature of Project Activities (Especially ground-disturbing activities): _____

Township: _____
 Range: _____
 Section: _____

Description of Project Area: Historic Building (Identify location of nearby structures or landmarks): _____

For a known site, indicate why impact may not be avoided: _____

Florida Site File Numbers of Archaeological or Historic Sites affected: _____

Sites or Structures listed on National Register or designated as National Landmarks?
 Attachments Provided: Photographic: Yes No Location Map: Yes No
 Base Map: Yes No Drawings: Yes No
 Park Brochure: Yes No

Florida Park Server Only
 or: Bureau of Natural and Cultural Resources, Title Link from TitleLinkfrom@dep.state.fl.us

ARCHAEOLOGICAL MONITORING RESULTS LETTER OF TRANSMISSION

Name of Park/Management Area: _____ Country: _____
 Date of this form: / / _____
 Project Name/Activities: _____
 Project Undertaken Because of: Compliance Review Letter or because of _____ Matrix (check appropriate one)
 Archaeological Monitor(s): _____

Large Scale Plans of Site & Project attached? (Yes or no)
 Copy of USGS Map (other maps if applicable) indicating precise project location attached: (Yes or no)
 Section, Township, Range: _____

Were Artifacts Excavated? Yes No
 If Yes: 1) DHR verified and permission to proceed obtained? Date and Contact Person: _____
 2) Florida Master Site File form completed and attached (either an update form or a form for a new site) (Yes or no) _____
 3) All artifacts must be maintained in situ, along with the appropriate Monitoring Maintenance Field Sheet unless other arrangements have been made by contacting BNR, Collections & Conservation Lab. Data collected: _____

Description and Dates of Monitoring Activities: _____

Methods Employed: _____
 Pedestrian Survey _____ Shovel Test _____ Pot-holes _____
 Local Informant _____ Monitoring Heavy Equipment _____
 Other (describe): _____

Remarks: (use additional sheet if necessary): _____

What to send if an artifact collected:

- Project Maps
- USGS 7.5' plot of Project area
- Large scale map with test excavations and negative areas of surface collection plotted

What to send if artifact collected:

- Attach the form with site plotted on attached USGS map
- Artifact properly packaged
- FFS Monitoring Field Sheet(s)
- Excavation/Collection Sheet(s)
- USGS 7.5' plot of project area
- Large scale map with test excavations and areas of surface collection plotted

Please submit completed form along with project maps, and if applicable, site file form, Letter of Transmittal and artifact to:

Susan Harp
 Bureau of Historic Preservation
 Division of Historical Resources
 100 Gray Building
 305 S. Gandy Blvd.
 Tallahassee, FL 32309-0250

Contact numbers: Bureau of Archaeological Research: (850) 345-6444
 For project planning adequacy - Compliance & Review: (850) 245-6333
 For questions concerning forms - Florida Master Site File: (850) 345-6440
 For artifact, excavation - Collections Lab: (850) 345-6444

FOR DHR USE ONLY

Accession # _____
 Date of Report _____
 This form copied to BHP _____
 Excavation to Recorder _____

13.12 Timber Assessment

**TIMBER ASSESSMENT
LITTLE GATOR CREEK
WILDLIFE & ENVIRONMENTAL AREA
PREPARED BY
BUTCH MALLETT
SENIOR FORESTER, OTHER PUBLIC LANDS REGION 4
FLORIDA FOREST SERVICE
MARCH 2012**

- **PURPOSE**

This document is intended to fulfill the timber assessment requirement for the Little Gator Creek Wildlife and Environmental Area (WEA) as required by Section 253.036, Florida Statutes. The goal of this *Timber Assessment* is to evaluate the potential and feasibility of managing timber resources for conservation and revenue generation purposes.

- **BACKGROUND**

Twentieth century uses of this tract include cattle grazing and occasional timber harvests. A wildfire in the 1980's severely reduced the stocking of pines in some areas. As a result, there were not enough seed trees left to regenerate the stands.

This property was acquired from Mr. C. M. Overstreet in 1982 under the Conservation and Recreation Lands Program (CARL). The primary reason for the purchase was to protect an active wading bird rookery.

In addition to protecting the rookery, FWC personnel instituted a program to restore the upland portions of the tract to a pre-Columbian condition. Management treatments included a heavy thinning of slash pine trees that had invaded the uplands due to fire exclusion. This timber sale generated almost \$ 40,000 for agency management trust funds. Also removed were hardwoods that had encroached on these upland sites. Periodic prescribed fire has been used to reduce fuel loads and stimulate native grass restoration.

- **GOALS AND OBJECTIVES**

The primary management goal for the Little Gator Creek WEA is to preserve the wading bird rookery and conserve fish and wildlife resources.

TIMBER MANAGEMENT

General Management Guidelines:

The following describes basic southern pine culture and timber management guidelines used to maximize stand health and growth. Basal Area per acre (BA) is the primary measurement tool in providing management recommendations for thinning of pine stands. Basal area is the cross sectional area (in square feet) of a tree measured four and one-half feet above the ground.

(Diameter of trees measured at this height is referred to as its diameter at breast height or DBH). BA can be used to define stocking rates in determining the timing and rate of a thinning treatment. Fully-stocked pine stands have enough trees per acre of a size or sizes large enough to utilize growing space without causing over-crowding. Over-crowding can lead to an increased risk of insect and disease mortality and can shade out desirable ground cover. Longleaf and slash pine stands with 70 to 100 square feet of BA are considered fully stocked. It requires more, smaller diameter trees than larger diameter trees to equal one square foot of BA. For example: It takes 357 evenly spaced six-inch DBH trees to equal 70 sq. ft. of BA, whereas only 89 twelve-inch DBH trees per acre equal the same 70 sq. ft. of BA.

Basal area can be roughly correlated to crown density, and therefore to needle-cast. The annual shedding of pine needles is an important component of fine fuels in fire adapted ecosystems. Generally 40 to 60 sq. ft. of BA should provide enough needle-cast to carry prescribed fire and adequate sunlight for maintenance of natural grass communities. Higher densities tend to shade out ground cover grasses. Therefore, timber thinning operations can be used to balance the number of pines for the most ecosystem benefit.

Natural forest communities are dynamic, going through many stages of succession before reaching a climax or old-growth condition. The amount of time needed for stands to reach a climax condition is influenced by the life expectancy of a stand's dominant tree species. For example: Loblolly and slash pine have an average life span of 80-100 years, whereas longleaf pine has been found to live up to 300 years. Natural disturbances such as bark beetle infestations, diseases, wildfires, and windstorms are instrumental in creating multi-age stands. This is accomplished by various sized gaps continually being created in the canopy layer, which allows unfiltered sunlight to reach the forest floor. If these gaps are large enough, shade intolerant species like southern pines will seed into these gaps, providing a new generation of pines to reach the forest canopy.

Where naturally occurring fire has kept the understory open, pine seedlings become established at very high densities. It is not uncommon to have five to ten thousand seedlings per acre in scattered openings. Frequent wildfires and competition for sunlight, water, and nutrients favor the healthiest, fastest growing pine saplings. Attrition continues over the life of the stand until the residual trees mature and more canopy openings are created to perpetuate the natural regeneration of the stand. This cycle results in uneven-aged stand structure where each group of trees created by a canopy opening are a similar age, but the entire stand will have mosaic of clusters of various sizes and shapes with different age classes and tree densities. The long-term BA will fluctuate around a constant figure depending on the soil productivity (as low as 20 sq. ft. on extremely poor sites, and up to 80 sq. ft. on highly productive sites).

Thinning type harvests in pines help maintain the health and vigor of the stands by removing diseased, severely suppressed, and deformed trees. Creating open spaces in the canopy layer allows residual trees crowns to expand, and eventually provide sufficient seed trees for natural generation. Properly applied thinning is also useful in enhancing the development of understory and groundcover communities which can provide a diversity of habitat for a wide variety of wildlife species. Stand BA's should be reduced to approximately 40-50 sq. ft. per acre (dependent on BA before treatment) during initial treatment. As residual trees continue to grow,

BA will gradually increase. Stands should be thinned again whenever BA approaches 80 to 100 sq. ft per acre.

Prescribed Burning:

Prescribed fire is an important management tool in pine ecosystems. It reduces fuel loads, thereby reducing the frequency and severity of wildfires, reduces competition and helps maintain desirable ground cover conditions. Fire return intervals of 2-3 years are needed to optimize these benefits.

Slash pine seedlings are more susceptible to mortality from fire than longleaf pine seedlings. Therefore, burning this often tends to favor more fire tolerant longleaf pine over the more prolific seeder, slash pine. In flatwoods ecosystems there will usually be a mix of the two species. But, where frequent, periodic fire is maintained, longleaf will be the dominant species.

- **EXISTING TIMBER RESOURCES**

Present Condition:

A timber harvest in 2009 removed most of the slash pines that had seeded into the upland since the last tree harvest. As a result, the overstory on the 315 acres of uplands consists primarily of scattered, mature longleaf pine and occasional slash pines. Some areas have a sufficient number of mature longleaf pines (>20 sq. ft. BA) to insure future regeneration of the species. There are approximately 50 acres with insufficient native seed source (<20 sq. ft. BA) to regenerate future longleaf pine stands.

Recommendations:

Initiate a longleaf pine reforestation program in areas with less than 20 sq. ft. BA of healthy, mature trees. (See attached map for possible planting areas.)

Saw palmettos are the biggest impediment to successfully reestablishing longleaf pines on these sites. Pines seedlings planted too close to palmettos will either not grow due to shading or be killed by the intense heat the burning fronds generate during prescribed burns. Roller-drum chopping is usually used to reduce the palmetto dominance and facilitate planting with machinery. However, this method is impractical in such rocky terrain. Burning and hand planting will likely be the only replanting option.

Prepare to plant the longleaf seedlings by first burning the area to be planted. Try to select areas that have not been burned within the last two years. It takes approximately 3 years for enough dead fronds to accumulate at the base of a saw palmetto to insure a good prescribed burn. Burns can be accomplished up to a couple of months prior to planting. Spring to early summer fires yield the best hardwood control. In addition, summer (rainy season) planting of containerized seedlings can increase survival rates.

Normally, 600 or more longleaf seedlings would be planted per acre. However, in most areas of LGCWEA the palmettos are too thick to allow that many to be planted evenly. Instead, plant seedlings in openings between saw palmetto clumps. In small openings (5 to 6' across?) plant 2 seedlings at least 5' apart and at least 2-3' from the nearest palmetto frond if possible. Openings greater than 6' should have as many seedlings planted as will fit while maintaining about 5' spacing. These spacing recommendations assume a 50% survival rate and should result in a very natural looking stand of young longleaf.

Seed source for reforestation can be critical. If possible, it is recommended that seedlings be derived from trees native to a 50 mile radius of LGCWEA. The Florida Forest Service's Andrews Nursery has seedlings available from nearby Withlacoochee State Forest seed. NOTE: Contact the nursery well in advance (September for summer or March for winter planting) of expected planting dates to insure seedling availability.

It is a waste of money and resources to plant seedlings under existing longleaf pine trees. Only plant seedlings outside of the drip-line of existing pine trees.

When hand planting of containerized seedlings (tubelings), it is recommended to use a round dibble the same size as the seedling root mass. Also, have the planter scrape all loose soil and debris away from the planting spot prior to insertion of the dibble. This helps insure the seedling can be inserted fully into the hole and increases the chances of survival.

Once a majority of the seedlings have entered the "grass stage" of longleaf development (usually 18 to 30 months after planting and preferably in the winter), burn the stand again. This will help reduce fuel loads for subsequent fires, control hardwood competition, and stimulate height growth in the longleaf seedlings. Return to a normal periodic burn rotation of hopefully 2-4 years.

Soil survey maps indicate a site index of about 80 for slash pine (although not listed for Paisley fine sands, longleaf pine should be about 70). Total volume per acre for a fully stocked stand would be about 50 tons per acre at age 20. The planting method described will not result in a fully stocked stand in the near future. Therefore, the next commercial thinning on LGCWEA will probably not be needed until 20 to 30 years after reforestation. Timing of this harvest will depend on seedling survival and growth rates, but generally be needed once BA reaches 70 to 80 sq. ft. per acre.

- **SUMMARY**

Environmentally responsible timber management on Little Gator Creek WEA is compatible with the primary goals for which the property was acquired. However, since the pine stands are already very thin, it may be decades before any additional thinning will be necessary or any revenue can be generated. In fact, a program of artificial reforestation should be implemented to accelerate longleaf pine reintroduction in areas where there are insufficient seed trees.

Reestablishment of a longleaf pine overstory along with careful use of prescribed fire summary will enhance uplands restoration efforts on this property. Healthy uplands also help provide a buffer and retain rainwater retention for wetlands such as the wading bird rookery.

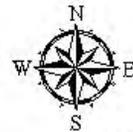


Legend

-  POTENTIAL PLANTING AREAS
-  WEA BOUNDARY



Created By: Butch Mallett
Senior Forester, OPL Reg 4
March 8, 2012



DISCLAIMER

This map is the product of the Florida Division of Forestry. No warranties are provided for data therein, its use, or its interpretation.

13.13 Operation Plan Fiscal Year 2013 – 2014

Land Management Uniform Accounting Council Categories and Subcategories

1. Resource Management

- a. Exotic Species Control. -- Invasive exotic plant and animal removal activities and costs for inventorying, planning, preparing, executing, evaluating, monitoring and reporting. Also includes equipment, chemicals, protective clothing and supplies. Includes nuisance native feral animal and plant control.
- b. Prescribed Burning. -- Prescribed burning activities and costs for assessing, planning, preparing, executing, evaluating and reporting. Also includes equipment, protective clothing and supplies.
- c. Cultural Resource Management. -- Management activities and costs for assessing, planning, executing, evaluating and reporting, and for all maintenance, restoration or monitoring activities for prehistoric and historic sites, features and collection objects.
- d. Timber Management. -- Activities and costs related to the establishment of a stand of potentially merchantable timber, harvest of merchantable timber, and cultural treatments intended primarily to improve the growth and overall health of a stand of merchantable timber. Also includes activities and costs related to the cutting of merchantable timber in natural community and habitat restoration projects.
- e. Hydrological Management. -- Hydrological management and restoration activities and costs for assessing, monitoring, planning, preparing, executing, evaluating and reporting. Includes water level management, repair, removal or back-filling of ditches, canals, berms and dams. Also includes water quality and water quantity monitoring.
- f. Other. -- All other resource management activities and costs not captured in other specific subcategories. Examples include natural community and habitat restoration through other techniques; plant, animal or biological community survey, monitoring and research; listed species management; technical assistance; and evaluating and commenting on resource impacts to parks.

2. Administration

- a. Central Office/Headquarters. -- Headquarters units conducting general administration of land under management by the agency. Includes upper management direction, administration and fiscal, budget, personnel, purchasing and record keeping required for operations oversight and specific programs. Includes all duties unless they specifically relate to other categories or subcategories.
- b. Districts/Regions. -- Sub-state administrative districts or regions conducting general administration of the properties under their management. Includes all duties, unless they specifically relate to other categories or subcategories.

General operating costs of district or region administrative facilities are included.

- c. Units/Projects. -- Conducting general administration duties at a specific management unit (state park, state forest, state wildlife management area, etc.). Includes supervisory duties, fiscal and record keeping duties, and any other duties that do not specifically relate to other categories or subcategories. General operating costs for the property, such as utilities, telephones and garbage collection, are included.

3. Support

- a. Land Management Planning. -- Developing land management plans required by Sec. 253.034, F.S. Includes researching and compiling plan information, materials and maps, coordinating planning activities, conducting review activities (internal reviews, public meetings, advisory group meetings, ARC, etc.), and promulgating draft plans and final plans.
- b. Land Management Reviews. -- Planning, organizing and conducting land management reviews by teams created under Sec. 259.036, F.S. Includes preparing and responding to land management review reports. Also includes similar work conducted as part of internal agency land management reviews.
- c. Training/Staff Development. -- Staff training and development costs incurred in any facet of the agency's land management activities.
- d. Vehicle Purchase. -- Acquisition of any vehicle purchased primarily for land management purposes or to support any category of land management activity by the agency.
- e. Vehicle Operation and Maintenance. -- Costs of operating and upkeep of any vehicle used by the agency to support any category of land management activity.
- f. Other. -- Any other support activity or cost not captured by other categories or subcategories.

4. Capital Improvements

- a. New Facility Construction. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all new facility design and construction activities. Includes new roads, parking and all other infrastructure.
- b. Facility Maintenance. -- Use of Fixed Capital Outlay (FCO) or other budget authority for all repairs or renovations to existing facilities, roads or other infrastructure. Also includes ADA accessibility improvements and renovations.

5. Visitor Services/Recreation

- a. Information/Education Programs. -- Interpretive, environmental education and marketing programs that explain or promote the agency's mission or instill in visitors an understanding and appreciation for Florida's natural and cultural resources and their proper use and care. Includes signs, brochures, maps and other public information materials that are produced or disseminated.
- b. Operations. -- Includes the non-administrative and non-support costs involved in providing public access to lands. Includes all actions required to manage visitor activities in a way to ensure safe and enjoyable use by the public. Includes routine maintenance, cleaning and other work required to provide safe and efficient utilization of facilities and resources that support visitor use and recreation. Includes protection activities required by staff to safeguard natural and cultural resources, facilities, material, staff and visitors.

6. Law Enforcement

The provision of all activities for enforcing criminal, conservation and boating laws on land, freshwater and marine environments and all costs associated with these services. Includes the provision of uniform patrol. Includes overt and covert criminal investigations. Includes regulation of commercial wildlife trade. Also includes the direction and administration of all law enforcement programs and activities, and all associated costs.

Land Management Uniform Accounting Council Categories and FWC Activity Codes

Resource Management

Exotic Species Control

- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)

Prescribed Burning

- 205 Prescribed burning
- 206 Prescribed burning C growing season (April 1 to September 30)
- 207 Prescribed burning C dormant season (October 1 to March 31)
- 208 Firebreaks

Cultural Resource Management

- 201 Cultural resource management

Timber Management

- 202 Timber management

Hydrological Management

- 215 Hydrology management
- 216 Dams, dikes, levees
- 217 Canals
- 218 Water level management
- 194 Lake restoration

Other

- 185 GIS
- 186 Biometrics

200	RESOURCE MANAGEMENT
203	Tree and shrub planting
213	Wildlife management
214	Listed Species management
219	Upland restoration
282	Herbaceous seeding
283	Clearings
289	Native vegetation management (mechanical)
290	Native vegetation management (chemical)
221	Animal surveys
228	Inland aerial surveys
235	Vegetation and plant surveys
250	MONITORING AND ASSESSMENTS
252	Biomedical monitoring
253	Ecological monitoring
256	Habitat monitoring analysis
263	Nest box monitoring
264	Population demographics
295	Biological data collection, analysis, and reporting
275	Permits and authorizations
276	Commission rule development and review
277	Relocation
278	CITES tags
281	Other resource management
284	Feeding/watering
285	Nest structures
286	Population control
287	Stocking enhancements/population augmentation
288	Nuisance animal complaints
293	Mortality investigations
294	Program coordination and implementation C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
296	Habitat protection technical assistance
750	URTD assessment
789	Site Preparation – GCR
790	Irrigation – GCR
791	Seed Collection – Hand
792	Seed Collection – Mechanical
793	Herbicide Maintenance Treatment

Administration

Central Office/Headquarters

100	ADMINISTRATION C administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
104	Budget/purchasing/accounting

Support

Land Management Planning

- 103 Meetings C includes workshops, conferences, staff, and other meetings.
- 204 Resource planning

Land Management Reviews

- 209 Land Management Reviews
- 101 Project inspection C field inspections of projects.

Training/Staff Development

150 PERSONNEL MANAGEMENT C recruitment, hiring, training, counseling, and supervising.

Vehicle Purchase

- 128 New Vehicle and Equipment Purchase

Vehicle Operation and Maintenance

- 923 FEM C vehicles/equipment

Other

- 140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
- 141 Grant applications
- 180 SYSTEMS ADMINISTRATION AND MANAGEMENT
- 182 Data management
- 184 Metadata development and management
- 187 IT
- 188 Web development
- 721 Geospatial analysis techniques
- 191 Stamp design coordination
- 226 Human dimensions surveys

Capitol Improvements

New Facility Construction

- 910 New facility construction C buildings/structures
- 912 New construction C roads/bridges
- 913 New construction C trails
- 914 New construction C fences

Facility Maintenance

- 920 Facility and equipment maintenance (FEM) C buildings/structures
- 921 FEM C utilities
- 922 FEM C custodial functions
- 925 FEM C boating access
- 926 FEM C roads/bridges
- 927 FEM C trails
- 928 FEM C fences

Visitor Services/Recreation

Information/Education Programs

- 145 Technical bulletin

Operations

- 311 Boundary signs
- 312 Informational signs
- 320 Outreach and education C attending or developing educational or informational materials or events for the public
- 327 Becoming an Outdoor Woman C enhancement
- 331 Wings Over Florida

- 339 Range safety operations
- 341 Public use administration (hunting)
- 342 Public use administration (non-hunting)
- 350 Customer service support C disseminating written or verbal information or assistance to the public
- 700 STUDIES
- 740 EVALUATIONS AND ASSESSMENTS

Law Enforcement

FWC Activity Code Numeric Listing

- 100 ADMINISTRATION C administrative tasks, including preparation of forms, word processing, photocopying, filing, and other clerical/secretarial duties.
- 101 Project inspection C field inspections of projects.
- 103 Meetings C includes workshops, conferences, staff, and other meetings.
- 104 Budget/purchasing/accounting
- 128 New Vehicle and Equipment Purchase
- 140 REPORT WRITING/EDITING/MANUSCRIPT PREPARATION
- 141 Grant applications
- 145 Technical bulletin
- 150 PERSONNEL MANAGEMENT C recruitment, hiring, training, counseling, and supervising.
- 180 SYSTEMS ADMINISTRATION AND MANAGEMENT
- 182 Data management
- 184 Metadata development and management
- 185 GIS
- 186 Biometrics
- 187 IT
- 188 Web development
- 191 Stamp design coordination
- 194 Lake restoration
- 200 RESOURCE MANAGEMENT
- 201 Cultural resource management
- 202 Timber management
- 203 Tree and shrub planting
- 204 Resource planning
- 205 Prescribed burning
- 206 Prescribed burning C growing season (April 1 to September 30)
- 207 Prescribed burning C dormant season (October 1 to March 31)
- 208 Firebreaks
- 209 Land Management Reviews
- 210 Exotic species control
- 211 Exotic plant control (mechanical)
- 212 Exotic plant control (chemical)
- 213 Wildlife management
- 214 Listed Species management
- 215 Hydrology management
- 216 Dams, dikes, levees

217	Canals
218	Water level management
219	Upland restoration
221	Animal surveys
226	Human dimensions surveys
228	Inland aerial surveys
235	Vegetation and plant surveys
250	MONITORING AND ASSESSMENTS
252	Biomedical monitoring
253	Ecological monitoring
256	Habitat monitoring analysis
263	Nest box monitoring
264	Population demographics
275	Permits and authorizations
276	Commission rule development and review
277	Relocation
278	CITES tags
281	Other resource management
282	Herbaceous seeding
283	Clearings
284	Feeding/watering
285	Nest structures
286	Population control
287	Stocking enhancements/population augmentation
288	Nuisance animal complaints
289	Native vegetation management (mechanical)
290	Native vegetation management (chemical)
293	Mortality investigations
294	Program coordination and implementation C inter- and intra-agency coordination and program implementation at the section, bureau, or division level
295	Biological data collection, analysis, and reporting
296	Habitat protection technical assistance
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312	Informational signs
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339	Range safety operations
341	Public use administration (hunting)
342	Public use administration (non-hunting)
350	Customer service support C disseminating written or verbal information or assistance to the public
700	STUDIES
721	Geospatial analysis techniques 740 EVALUATIONS AND ASSESSMENTS
750	URTD assessment
789	Site Preparation – GCR
790	Irrigation – GCR
791	Seed Collection – Hand

- 792 Seed Collection – Mechanical
- 793 Herbicide Maintenance Treatment
- 910 New facility construction C buildings/structures
- 912 New construction C roads/bridges
- 913 New construction C trails
- 914 New construction C fences
- 920 Facility and equipment maintenance (FEM) C buildings/structures
- 921 FEM C utilities
- 922 FEM C custodial functions
- 923 FEM C vehicles/equipment
- 925 FEM C boating access
- 926 FEM C roads/bridges
- 927 FEM C trails
- 928 FEM C fences

Little Gator Creek WEA Operational Plan Cost Estimate – Fiscal Year 2013-2014

Activity	Title	Staff Days	Salary	Fuel Cost	Other	Total
100	Administration	4.00	\$801.76	\$52.96	\$0.00	\$854.72
200	Resource Management	3.00	\$601.32	\$39.72	\$500.00	\$1,141.04
204	Resource planning	10.00	\$2,004.40	\$132.40	\$0.00	\$2,136.80
206	Prescribed burning - growing season	5.00	\$1,002.20	\$66.20	\$0.00	\$1,068.40
207	Prescribed burning - dormant season	0.00	\$0.00	\$0.00	\$0.00	\$0.00
208	Firebreaks	6.00	\$1,202.64	\$79.44	\$0.00	\$1,282.08
212	Exotic plant control (chemical)	7.00	\$1,403.08	\$92.68	\$5,500.00	\$6,995.76
216	Dams, dikes, levees	0.00	\$0.00	\$0.00	\$0.00	\$0.00
218	Water level management	12.00	\$2,405.28	\$158.88	\$85,000.00	\$87,564.16
250	Monitoring and assessments	7.00	\$1,403.08	\$92.68	\$0.00	\$1,495.76
289	Native vegetation management (mechanical)	5.00	\$1,002.20	\$66.20	\$0.00	\$1,068.40
342	Public use administration (non-hunting)	0.00	\$0.00	\$0.00	\$0.00	\$0.00
920	FEM -- buildings/structures	2.00	\$400.88	\$26.48	\$250.00	\$677.36
923	FEM -- vehicles/equipment	6.00	\$1,202.64	\$79.44	\$1,750.00	\$3,032.08
926	FEM -- roads/bridges	15.00	\$3,006.60	\$198.60	\$0.00	\$3,205.20
927	FEM -- trails	0.00	\$0.00	\$0.00	\$0.00	\$0.00
928	FEM -- fences	10.00	\$2,004.40	\$132.40	\$20,000.00	\$22,136.80
All	totals	92.00	\$18,440.48	\$1,218.08	\$113,000.00	\$132,658.56

13.14 Arthropod Control Plan



ADAM H. PUTNAM
COMMISSIONER

Florida Department of Agriculture and Consumer Services
Division of Agricultural Environmental Services

ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS

Section 385.4111, F.S.
Telephone: (850) 617-7997

Return to:
Bureau of Entomology and Pest
Control
3125 Corner Blvd, Suite N,
MS C-41
Tallahassee, Florida 32319-1630

For use in documenting an Arthropod Control Plan for lands designated by the State of Florida or any political subdivision thereof as being environmentally sensitive and biologically highly productive therein. Fill this form out if control work is necessary or planned.

Name of Designated Land:
Little Gator Creek Wildlife and Environmental Area

Is Control Work Necessary: Yes No

Location:
Two miles north of the intersection of U.S. 98 and State Road 471, two and one half miles south of the intersection of the Withlacoochee River and State Road 471, and approximately 14 miles south of the Withlacoochee State Forest's southwestern corner. The WEA is located along the southeast boundary of Pasco County, nine miles northeast of Zephyrhills.

Land Management Agency:
Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary? Yes No

If "Yes", please explain:

Although it is not likely that mosquito control applications will be necessary, there are several residents just north of the Little Gator Creek Wildlife Area boundaries. In the event of arbovirus activity it may be necessary to conduct surveillance and treat both larvae and adult mosquitoes on the Wildlife property and areas north. Additionally, as the private parcels just north of the Wildlife property are developed, mosquito larvae from surrounding areas may need to be treated to prevent large numbers of adult mosquitoes from invading these residents.

Which Surveillance Techniques Are Proposed?
Please Check All That Apply:

- Landing Rate Counts
- Light Traps
- Sentinel Chickens
- Citizen Complaints
- Larval Dips
- Other

If "Other", please explain:

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Arthropod Species for Which Control is Proposed
Culex nigripalpus, Aedes infirmatus, Psorophora ferox and other floodwater species.

Proposed Larval Control:

Proposed larval monitoring procedure
Are post treatment counts being obtained: Yes No

Biological Control of Larvae:

Might predacious fish be stocked: Yes No
Other biological controls that might be used:

Material to be Used for Larvaciding Applications:

(Please Check All That Apply.)

- Bti
- Bs
- Methoprene
- Non-Petroleum Surface Film
- Other, please specify:

Please specify the following for each larvicide:

Chemical or Common name:

Ground Aerial

Rate of application:

Method of application:

Aerially applied by label rate via helicopter and/or on the ground by hand broadcast, truck or ATV mounted spray equipment.

Proposed Adult Mosquito Control:

Aerial adulticiding Yes No

Ground adulticiding Yes No

Please specify the following for each adulticide:

Chemical or common name:

Rate of application:

Method of application:

Proposed Modifications for Public Health Emergency Control: Arthropod control agency may request special exception to this plan during a threat to public or animal health declared by State Health Officer or Commissioner of Agriculture. In the event of a public health emergency PCMCD will contact FDACS for approval for control activities.

Proposed Notification Procedure for Control Activities:

Via email, fax or phone call to the Public Land manager for any activities within the Little Gator Creek Wildlife Area.

Records:

Are records being kept in accordance with Chapter 388, F.S.:

Yes No

Records Location: Pasco County Mosquito Control District, 2308 Marathon Road, Odessa, FL 33556

How long are records maintained. Records are maintained a minimum of 3 years.

Vegetation Modification:

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?
None

Proposed Land Modifications:

Is any land modification, i.e., rotary ditching, proposed?
No

Include proposed operational schedules for water fluctuations:
NA

List any periodic restrictions, as applicable, for example peak fish spawning times:
NA

Proposed Modification of Aquatic Vegetation:
None

Land Manager Comments:
No vegetation modifications will be done for arthropod control.

Arthropod Control Agency Comments:
The PCMCD requests that Florida Fish and Wildlife notify PCMCD of any changes to the boundaries where mosquito control operations may be conducted.

 5/12/2014
Signature of Lands Manager or Representative Date

 5-6-2014
Signature of Mosquito Control Director / Manager Date

13.15 Pasco County Letter of Compliance with Local Government Comprehensive Plan



PASCO COUNTY, FLORIDA

"Bringing Opportunities Home"

DADE CITY (352) 523-2411
LAND O' LAKES (813) 996-2411
NEW PORT RICHEY (727) 847-8193
FAX (727) 847-8084

PLANNING AND GROWTH MGMT. DEPT.
WEST PASCO GOVERNMENT CENTER
8731 CITIZENS DRIVE, SUITE 320
NEW PORT RICHEY, FL 34654-5598

March 27, 2015

Mr. Peter van de Burgt
Florida Fish and Wildlife Conservation Commission
Bryant Building
620 South Meridian Street
Tallahassee, FL 32389-1600

RE: Management Plan for Little Gator Creek Wildlife and Environmental Area

Dear Mr. Peter van de Burgt:

Pasco County staff has reviewed the Management Plan for Little Gator Creek Wildlife and Environmental Area and finds that the goals and objectives within the Management Plan are aligned and consistent with the Pasco County's Chapter 3 Conservation Goals, Objectives, and Policies. We have no comments related to this Management Plan.

Should you have any questions, please contact me at 727-847-8198 or via email at jbuszewski@pascocountyfl.net

Sincerely,

A handwritten signature in cursive script that reads "Justyna Buszewski".

Justyna Buszewski
Planner II
Planning and Development

cc: Matthew J. Armstrong, Executive Planner, Planning and Development
Keith L. Wiley, Program Manager, Pasco County Environmental Lands Division
Melissa Charbonneau, Biologist, Pasco Environmental Lands Division

Page 1 of 1

Pasco County—Florida's premier county for balanced economic growth, environmental sustainability, and first-class services.