

## **13 Appendices**

### **13.1 Lease Agreement**

DIVISION LEAD # 2114

AGREEMENT NUMBER 770-0002

AGREEMENT ROUTING REVIEW FORM

#97040

CONTRACTOR DEP / FWC

VENDOR ID NO. \_\_\_\_\_ PROCUREMENT METHOD\*/BID/RFP NO. \_\_\_\_\_

PROJECT TITLE ROTENBERGER WMA - LEASE 3581

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

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

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

AGREEMENT BEGINNING DATE 2/20/80 END DATE INDEFINITE OPTION FOR YEARS

TOTAL CONTRACT AMOUNT CONTRACT 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

Table with 8 columns: ORG. CODE, E.O., OBJECT CODE, CATEGORY, AMOUNT, PROJECT ID, FY. The table is currently empty.

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

Commodity Code Federal Funds: Agency CFDA

Routing Order for Approval table with columns: Routing Order for Approval, Approval (Signature), Date, Comments. Includes rows for Project Leader, Budget Director, Div./Reg./Inst./Off. Dir./Section Leader, Contracts Administrator, Legal, Accounting, and Exec./Div./Reg./Inst./Off. Dir. review.

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

\*See reverse for Codes/Definitions/Distribution

Handwritten signature and date 12/21/09

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

RECEIPTS SECTION  
 POST OFFICE BOX 3070  
 TALLAHASSEE, FL 32315-3070

**Invoice**

REMIT COPY  
 WITH PAYMENT

Date	Invoice #
7/5/2002	4974

<b>Bill To</b>
MR SCOTT SANDERS FFWCC 329 SOUTH MERIDIAN TALLAHASSEE, FLORIDA 32399-1600

<b>Lease #</b>
3581
<b>Due Date</b>
8/4/2002

*Scott Sanders 7/16/02*  
*WJW 7/16/02*

Description	Rate	Amount
AGENCY FEES-UPLANDS (001015) EWM	300.00	300.00
Date Goods Received _____		
Date Inspected & Approved _____		
Date Invoice Received <u>7/16/02</u>		
773020 <u>40100</u> EO <u>30</u>		
Object <u>409060</u> Equip # _____		
<u>9200</u> - <u>104</u> - <u>7293</u>		
(Species) (Act.) (Proj.)		
Cert. Minority Vendor <u>Yes</u> <u>No</u> <u>Not Avail</u> <u>N/A</u>		
<b>Subtotal</b>		\$300.00

Journal Transfer Instructions:  
 SAMAS CODE:  
 372024080013710030000

BF OBJ: BF CAT:  
 001000 000100

OBJECT CODE:  
 001015

F&A USE ONLY:  
 37101000000 K4

<b>Sales Tax (6.0%)</b>	\$0.00
<b>Total</b>	\$300.00

<b>Balance Due</b>	\$300.00
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INVOICE

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

INVOICE NO. 96 0575  
 INVOICE DATE 07/01/96  
 LEASE NO. 3581

TO: MR FRANK SMTH  
 PGFWFC  
 620 SOUTH MERIDIAN  
 TALLAHASSEE, FLORIDA 32399-1600

DUE DATE	DESCRIPTION	95/96 FEE	96/97 FEE	AMOUNT DUE
07/01/96	ROTENBERGER	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

*RCC 4715  
 Project 7296  
 Object 432000  
 Sean Sanders 6/17/96  
 Frank Smith 6/17/96*

INVOICE

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

INVOICE NO. 950575

INVOICE DATE 07/01/95

Telephone (904) 488-2291

LEASE NO. 3581 ✓

TO: MR FRANK SMTH  
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	ROTENBERGER	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: 4715  
Project: 7296  
Object: 432000  
Scott Sanders  
Frank H. Smith

OK

INVOICE

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

RECEIVED  
FISCAL OFFICE

INVOICE NO. 940575

'94 SEP 23 AM 8 50

INVOICE DATE 07/01/94

Telephone (904) 488-2291

LEASE NO. 3581

AMS

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

*BCC Proj Act*  
*4715 7296 0271*  
*Pay by Journal Transfer*  
*\$ 300*  
*Frank Smith*  
*J. Smith*

DUE DATE	DESCRIPTION	93/94 FEE	94/95 FEE	AMOUNT DUE
07/01/94	ROTENBERGER	0.00	300.00	300.00

TO INSURE PROPER CREDIT FOR PAYMENT

- 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.  
  
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- 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



7000 S.W. 11th Street  
Tallahassee, Florida 32304

State of Florida  
DEPARTMENT OF NATURAL RESOURCES

Marion S. Stevens, Logistics Building  
3901 Commonwealth House and  
Tallahassee, Florida 32304

ZCC

FHS

FILE  
WED 8-5-2  
ROTENBURGER WHA.

BOB MARTINEZ  
Governor  
GEORGE FIRESTONE  
Secretary of State  
BOB BUTTERWORTH  
Attorney General  
GERALD LEWIS  
Speaker of the House  
BILL WITTE  
Senate President  
DICK COUSINS  
Commissioner of Transportation  
JIM CASPARI  
Commissioner of Education

PLEASE ADDRESS REPLY TO:

July 15, 1988

Allen L. Echert, Ph.D.  
Assistant Executive Director  
Florida Game and Fresh Water Fish Commission  
Linnie Bryant Building  
677 North Meridian Street  
Tallahassee, Florida 32399-1600

Rotenburger CAM Accession Project

Dear Dr. Echert:

Thank you for your letter of June 29, 1988 regarding the purchase of mineral interests within subject project.

Please rest assured that we will attempt to obtain mineral interests with each parcel purchased within the project and mineral interests will be purchased in all situations when they can be acquired in a timely and cost efficient manner.

Your cooperation is genuinely appreciated.

Sincerely,  
1972

David L. Mallison, Jr., Director  
Division of State Lands

PWM/gkm

HAB

"Working hard to protect Florida's future"



TOM GARDNER  
Executive Director

WLD  
Lies  
9-5-83

**State of Florida**  
**DEPARTMENT OF NATURAL RESOURCES**

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399

June 28, 1988

BOB MARTINEZ  
Governor  
JIM SMITH  
Secretary of State  
BOB BUTTERWORTH  
Attorney General  
GERALD LEWIS  
State Comptroller  
BILL GUNTER  
State Treasurer  
DOYLE CONNER  
Commissioner of Agriculture  
BETTY CASTOR  
Commissioner of Education

PLEASE ADDRESS REPLY TO:

Frank Smith, Bureau Chief  
Florida Game and Fresh Water  
Fish Commission  
620 South Meridian Street  
Tallahassee, Florida 32399-1600

Dear Mr. Smith:

The following numbers identifying certain projects under your jurisdiction have been changed. The old and new numbers are as follows:

<u>Prior Number</u>	<u>Project</u>	<u>New Number</u>
770-0002	Rotenberger	3581
770-0003	Volusia Recharge	3582
770-0004	Browns Farm	3583
770-9003	Lower Apalachicola	3584
770-9006	Guana	3585
770-9007	Chassahowitzka	3586
770-0009	Andrews Tract	3587
770-0011	Big Bend	3588
770-0010	East Everglades	3589
770-0012	Wacissa-Aucilla	3590

Please utilize these new numbers when corresponding with this office relative to these projects.

Thank you.

Sincerely,

Deborah A. Hart  
Assistant Chief  
Bureau of State Lands Management

DAH/tc  
cc: Gary Bishop  
Division of Forestry  
Department of State

"Working together to protect Florida's future"

8-5-3

Rotenberger WMA  
DWR/GFC  
agreement

ROTENBERGER / HOLEY LAND

Landowners on  
Rotenberger

structure for database: A:RHL.dbf  
 number of data records: 47  
 date of last update : 09/15/86

for 46, 35  
 or 47, 35

Field	Field Name	Type	Width	Dec	
1	NAME	Character	20		Owner's name
2	TS	Numeric	3		Township + Section 6 or 7 → XXX - 1-36
3	PN	Numeric	3		Parcel No. in Books
4	MAP	Numeric	2		Page of Boundary map
5	ACRES	Numeric	6	2	Acres
6	T	Character	1		Title S= Sent for R=received A=approved
7	C	Character	1		Contract S= Sent R=received A=approved
8	D	Character	1		Deed R=received A=approved
9	AMT	Numeric	5		\$
10	R	Character	1		Recorded Y or N
11	P/Closed	Character	1		Paid for Y or N
* Total **			45		

File/CAT closed

TS is a 3 digit number for Township and Section  
 All parcels are either in 46S/35E or 47S/35E.  
 The first digit will be either 6 for 46/35 or 7 for 47/35.  
 The last two digits are the section.

RHL FROM  
 CLOSED FROM  
 RHL NDX closed - Eminent Domain  
 P/Closed - Deed  
 P/Closed - UNDER CONTRACT  
 HERE - closed

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PK	MAP	ACRES	T	C	D	AMT	R	P
AARON LILLIAN	703	306	5	5.00				0		
ABERNATHY HOBSON	728	679	7	2.50				0		
ABRAMS MORRIS	728	605	7	2.50				0		
ACEVEDO ANTONIO B	703	316	5	10.00				0		
ADAMS G J & DONNA	728	650	7	2.50				0		
ALBERT A & J	705	704	8	20.00				0		
ALLEGRO VIVIAN R	735	128	4	1.30				0		
ALLEN NATHAN C. ETAL	735	185	4	5.00				0		
ALLEN RUSSELL	720	1191	9	2.50				0		
ALLEY FOSTER B	720	1096	9	5.00				0		
ALLSBROOK RH&ELEANOR	703	326	5	1.30				0		
ALVEY JOANN&MIRIAM	718	1050	9	2.50				0		
ANDERSON ELIZABETH	704	441	5	2.50				0		
ANTHONY WILMA J	708	941	8	2.50				0		
ATHA FLOYD	704	380	5	2.50				0		
AVERY A J & D G	711	36	1	5.00				0		
<i>2A7</i> AYBAR VL & MARY B	704	418	5	2.50				0		
BABO VIDELIA ESTATE	720	1203	9	2.50				0		
BAILEY BELLA M	706	774	8	2.50				0		
BAINES E & LUCY	703	346	5	5.00				0		
BAKER M. DL & SA	718	1047	9	2.50				0		
BAKST DANIEL (TR)	703	307	5	1.30				0		
<i>2A7</i> BALDWIN FUNERAL HOME	704	396	5	2.50				0		
BALLARD WALLACE E	735	94	4	1.30				0		
BARBUTTI PAT&MARIE	728	686	7	2.50				0		
BARD W J JR	704	403	5	2.50				0		
BARETICH THOMAS	704	434	5	2.50				0		
BARETICH THOMAS	704	477	5	2.50				0		
<i>2A7</i> BARLAR TILLIE	704	376	5	2.50				0		
<i>2A7</i> BARLOW WC & VELMA	704	<del>471</del>	5	2.50				0		
<i>2A7</i> BARLOW WC & VELMA	704	<del>484</del>	5	2.50				0		
<i>2A7</i> BARLOW WC & VELMA	704	<del>486</del>	5	2.50				0		
BARON RONALD I (TR)	703	257	5	7.50				0		
BARON RONALD I (TR)	703	265	5	5.00				0		
<i>2A7</i> BARRETT SALLY G	704	<del>397</del>	5	2.50				0		
BARROS DOROTHY J	735	148	4	2.50				0		
BAXTER FL&GUILLERMA	704	463	5	2.50				0		
BECK DOROTHY	720	1120	9	2.00				0		
BEEB RR&FLORENCE	703	338	5	5.00				0		
<i>2A7</i> BELCHER ROGER&NANCY	711	<del>26</del>	1	5.00				0		
BELLEGGIA AUGUST J	704	536	5	2.50				0		
BELLEGGIA AUGUST J	704	543	5	2.50				0		
BENITEZ RAFAELA	703	226	5	2.50				0		
BERLETIC JOHN F	728	576	7	2.50				0		
BERNES SONNY & ELLEN	704	431	5	2.50				0		
BERNSTEIN LENORE	728	631	7	2.50				0		
BERTIN ARTURO P	728	685	7	2.50				0		
BEST K DONALD	703	260	5	2.50				0		
BETZ WJ & JULIA E	708	914	8	2.50				0		
BIGELOW FLORENTINE B	703	305	5	1.30				0		

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN MAP	ACRES	T	C	D	AMT	R	P
BILSING RUTHE M.	728	609	7	2.50				0	
BLACK SHIRLEY ET AL	703	236	5	2.50				0	
BLAND TIMOTHY F	728	667	7	2.50				0	
<i>used</i> BLANKINSHIP MARION H	703	<del>232</del>	5	2.50				0	
BLESER RICH&VYETTA M	706	<del>824</del>	8	2.50				0	
BLISS & ALLEGRETTI	732	1741	10	2.50				0	
BODENHAMER CHARLES W	703	253	5	2.50				0	
BOND PHYLLIS M	704	499	5	2.50				0	
<i>used</i> BOSETTI ANTHONY	706	<del>844</del>	8	2.50				0	
BOUVIER ART&SHARON	703	277	5	2.50				0	
BOWEN HOWARD G	735	141	4	5.00				0	
BOWLING JAMES	732	1225	10	2.50				0	
BOWMAN AUDREY B	708	895	8	2.50				0	
<i>MC</i> BOYD JAMES W (number)	703	<del>191</del>	5	2.50				0	
BRADY&WHITTINGTON	703	290	5	2.50				0	
BRAUN RW & ASTRA J	0	0	0	0.00				0	
BRITO CRISTOBAL	708	957	8	2.50				0	
BRITT CHARLES T	709	557	5	10.00				0	
<i>MC</i> BRITTAIN JOHN H	706	725	8	2.50				0	
BROWER MH & FRANCES	718	1055	9	2.50				0	
BROWN & GRATES	703	233	5	2.50				0	
BROWN DAVID P	706	841	8	2.50				0	
BROWN EDWARD L	706	830	8	2.50				0	
BROWN J M	708	875	8	2.50				0	
BROWN JOE & BETTY	728	632	7	2.50				0	
BROWN MARIANNA	703	303	5	1.30				0	
BROWN R E	728	612	7	2.50				0	
BROWNING T M	706	724	8	2.50				0	
<i>used</i> BROWNING THOMAS	706	<del>743</del>	8	2.50				0	
BURMAN MRS J H	703	275	5	2.50				0	
BUSH LEN & ROSANNE	703	283	5	2.50				0	
<i>MC</i> BUTLER GERALD J	633	1274	13	10.00				0	
<i>MC</i> EYARS L H	706	820	8	2.50				0	
<i>used</i> CALLIHAN J W	703	<del>355</del>	5	1.30				0	
CALVERT H AND FERN	725	67	3	10.00				0	
CAMBARERI JOSEPH	703	294	5	5.00				0	
CAMERON ALBERTA C	706	714	8	5.00				0	
CAMPBELL DT & ANNE M	704	374	5	2.50				0	
<i>MC</i> CAMPBELL RICHARD D	706	719	8	2.50				0	
CANAVERAL LAKE EST	703	259	5	2.50				0	
CANAVERAL LAKE EST	703	262	5	1.30				0	
CANAVERAL LAKES EST	703	198	5	2.50				0	
CANAVERAL LAKES EST	703	201	5	5.00				0	
CANAVERAL LAKES EST	703	204	5	5.00				0	
CANERO RAYMOND	720	1187	9	2.50				0	
CANERO WILLIAM	718	996	9	2.50				0	
<i>used</i> CAPAZ NELSON	703	<del>282</del>	5	2.50				0	
CAPPUCCIO MICHAEL	708	854	8	2.50				0	
CARMICHAEL WALDO S	711	9	1	2.50				0	
CARMICHAEL WALDO S	703	203	5	2.50				0	

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
<i>used</i> CASEY WILLIAM&ROBT	735	181	4	5.00				0		
CASTLE JOHN F.	735	163	4	2.50				0		
CAUFIELD GENEVIEVE	703	249	5	2.50				0		
CENTRAL PENN NAT BK	720	1184	9	2.50				0		
CERELLI GAIL&WILLIAM	706	742	8	2.50				0		
CERELLI&MARCHESANT	708	945	8	2.50				0		
CERLETTA JOSEPH R	704	391	5	2.50				0		
CERMENARO AL&DOM	703	205	5	2.50				0		
CERONE A J	720	1114	9	2.50				0		
CERWIN RE & NELLIE	703	351	5	1.30				0		
CHALFANT FRANCIS D	706	835	8	2.50				0		
CHAMBERLAIN PRESCOTT	708	928	8	2.50				0		
CHAPMAN JH&MARIAN F	720	1140	9	2.50				0		
CHEATWOOD LOWELL	703	269	5	2.50				0		
<i>used</i> CHIOFALO P&FRANCES	703	302	5	2.50				0		
CIRAMELLA FRANK & K	708	922	8	2.50				0		
<i>used</i> CLARK ARTHUR H	703	297	5	2.50				0		
<i>used</i> CLARK ORVILLE J	704	494	5	2.50				0		
COBB KENNETH R	725	68	3	1.90				0		
COCHRAN A B & PAT C	735	114	4	2.50				0		
CODY RAYMOND F	706	735	8	2.50				0		
COLACURCIO STEVE L	728	659	7	5.00				0		
COLE LESLIE	720	1205	9	2.50				0		
COLLINS CG&ALINE	703	221	5	2.50				0		
COLLINS GLADYS O	704	501	5	2.50				0		
COLLINS GREGOR O W	704	390	5	2.50				0		
COMER FRANK W	728	653	7	2.50				0		
CONDON THOMAS & M	735	117	4	1.30				0		
CONNECTICUT STATE OF	728	614	7	2.50				0		
<i>used</i> COOK RAY JR	704	550	5	2.50				0		
<i>used</i> COOK RAY JR	720	1189	9	2.50				0		
COOPER GROVER J	708	908	8	2.50				0		
COOPER JAMES L	718	970	9	1.30				0		
COPPOLA JOSEPH M	708	950	8	2.50				0		
CORDELL JL&KATHERINE	708	862	8	2.50				0		
COSTELLO PATRICK J	728	570	7	2.50				0		
COTT C M & MARIE J	735	126	4	1.30				0		
COURTS ROBERT B	708	944	8	2.50				0		
CRAWFORD TERRY A	735	116	4	1.50				0		
CRENSHAW KENNETH B	711	13	1	5.00				0		
CRESTANI GLADYS	703	279	5	2.50				0		
GULLEN AE & JV	703	276	5	2.50				0		
CUMMINGS SHIRLEY M	732	1218	10	2.50				0		
CVAR JENNIE	735	131	4	1.30				0		
DACHTLER RONALD	728	677	7	2.50				0		
DAINO S & GERALDINE	704	409	5	5.00				0		
DAINO STANLEY V (TR)	704	410	5	2.50				0		
DALEY EDWARD J	735	88	4	2.50				0		
DAMICO THOMAS C	703	210	5	2.50				0		
DARADICS GEORGE E	718	1067	9	2.50				0		

OWNERS OF THE ROTENBERGER/ROLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
DARMANIN L & MARY	708	898	8	2.50				0		
DAUGHTRY JO A ET AL	633	1271	13	10.00				0		
DAVIDSON MARGARET M	704	516	5	2.50				0		
DAVIS DORA C	720	1148	9	2.50				0		
DAVIS GENE P	720	1098	9	2.50				0		
DAVIS PATSY	704	432	5	2.50				0		
DAVIS RALPH & JOY	728	637	7	2.50				0		
DAVY J E	706	729	8	2.50				0		
DAWSON PAULINE B	720	1079	9	2.50				0		
DAYS FRANCIS E	704	506	5	5.00				0		
DAYS FRANCIS E	708	902	8	5.00				0		
DE BALZO MARY F	735	127	4	1.30				0		
DE BLASIO JOSEPH	720	1101	9	2.50				0		
DE LISA WILLIAM M	703	211	5	2.50				0		
DE LUCA JOSEPH P	708	940	8	2.50				0		
DE LUCCA ANTHONY J	703	199	5	2.50				0		
DE PAULA LUIZ	735	125	4	1.30				0		
DE STEFANO JJ & ROSE	708	855	8	5.00				0		
DEAN ALEXANDRA V	703	339	5	1.30				0		
DECHANT FLORENCE	735	93	4	2.50				0		
DEDONA ANNA R	708	856	8	2.50				0		
DELUCA B & CONCETTA	711	38	1	58.00				0		
DENENBERG HYMAN	735	149	4	2.50				0		
DESHAISE FELIX J	703	238	5	2.50				0		
DESORTE JULLIETTE	703	311	5	1.30				0		
DIAZ ROSARIO	711	18	1	1.30				0		
DILIBERTO JOSEPH A	703	299	5	5.00				0		
DIVERSIFIED LAND INV	728	633	7	2.50				0		
DIVERSIFIED LAND INV	728	634	7	2.50				0		
DIVERSIFIED LAND INV	728	665	7	5.00				0		
DIVERSIFIED LAND INV	728	687	7	2.50				0		
DIVERSIFIED LAND INV	706	746	8	2.50				0		
DIVERSIFIED LAND INV	706	751	8	2.50				0		
DIVERSIFIED LAND INV	706	797	8	2.50				0		
DIVERSIFIED LAND INV	708	853	8	7.50				0		
DIVERSIFIED LAND INV	708	859	8	5.00				0		
DIVERSIFIED LAND INV	708	933	8	2.50				0		
DIVERSIFIED LAND INV	718	1040	9	2.50				0		
DIVERSIFIED LAND INV	718	1065	9	2.50				0		
DIVERSIFIED LAND INV	720	1090	9	17.50				0		
DIVERSIFIED LAND INV	720	1178	9	2.50				0		
DIVERSIFIED LAND INV	720	1180	9	7.50				0		
DIVERSIFIED LAND INV	720	1194	9	2.50				0		
DIVERSIFIED LAND INV	732	1212	10	2.50				0		
DIVERSIFIED LAND INV	732	1239	10	5.00				0		
DIVERSIFIED LAND INV	732	1252	10	2.50				0		
DIX BJ&RUTHANN	703	291	5	2.50				0		
DIX GEORGE H	703	284	5	2.50				0		
DIXON CATHERINE I	706	762	8	2.50				0		
DODGSON WILLIAM ETUX	704	401	5	5.00				0		

OWNERS THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN MAP	ACRES	T	C	D	AMT	R	P
21056 DOLAN&QUACKENBUSH	703	327	5	1.30					0
DOMENECH J&MARGARET	703	341	5	1.30					0
DONALD P PRICF	720	1142	9	2.50					0
1056c DOWNS EDGAR S EXEC	621	1262	12	10.00					0
DOYLE RAY	720	1119	9	2.00					0
DRACOS WILLIAM G	704	475	5	2.50					0
DRETAR SYLVESTER S	708	924	8	2.50					0
DU MEE JACK JR	735	186	4	5.00					0
DUDZIK ANN K	728	601	7	2.50					0
DUNIFON GENE & RITA	728	639	7	2.50					0
1056d DURNELL CW & EVA L	706	327	8	2.50					0
11 DWYER GE&MARY ANN	703	263	5	1.30					0
DYESS EARL S ET AL	735	183	4	5.00					0
E J P INC	725	63	3	5.30					0
EABY WILLIAM D JR	718	1052	9	2.50					0
EARLE & MC DUFFIE	703	349	5	1.30					0
EBERHARDT MD&JANICE	621	1261	12	10.00					0
ECKSTEIN & HOPKINS	718	1031	9	2.50					0
ELSBERG F & HELEN	703	267	5	2.50					0
EISELE RJ & MARGARET	706	732	8	2.50					0
ELIAS K J	728	649	7	2.50					0
ELIOT GLENN P	732	1217	10	2.50					0
EMMA REY-BARREAU	703	347	5	1.30					0
ENFINGER JAMES R	708	948	8	2.50					0
ENGEL FA & MARY C	708	959	8	2.50					0
ENGEL THOMAS&NELLIE	728	596	7	5.00					0
1056e ENSIGN GEORGLIANNE	703	329	5	1.30					0
ERTEL WALTER	704	491	5	2.50					0
ESQUENAZI JULLIETTE	704	420	5	2.50					0
ETHRIDGE JAMES & B	621	1259	12	6.10					0
EUGENE ANNE	703	333	5	1.30					0
1056f FARRELL EDITH L	704	405	5	5.00					0
FARRINGTON JAMES W	703	343	5	1.30					0
1056g FEJGENBAUM DOLLY	704	415	5	5.00					0
FERNANDEZ PHILIP C	703	195	5	2.50					0
FERRI E C JR	730	1210	10	640.00					0
FIELD J & ROGER R	735	165	4	2.50					0
FIGUERADO JOHN&IRENE	718	991	9	2.50					0
FILLIOS TILDE	706	811	8	2.50					0
FINATRI IRENE F	728	695	7	2.50					0
FINNEAN RICHARD&CHAR	725	70	3	1.90					0
FISCHER JACK A	704	554	5	2.50					0
FISCHER JACK A (TR)	703	266	5	3.80					0
FISCHER JACK A (TR)	704	530	5	2.50					0
FLEMING R T	720	1085	9	2.50					0
FLEMING RAY A	718	975	9	2.50					0
FLEMMONS NAOMI	704	466	5	2.50					0
FLETCHER CHARLES H	720	1175	9	2.50					0
FLYNT GRIFFIN D	706	813	8	2.50					0
FORTE FILOMENA&FRANK	704	479	5	2.50					0

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
FOULARD EM&ANN MARIE	708	911	8	2.50					0	
FRANCISCO ED & C	708	949	8	2.50					0	
FRANKE WP & ERMA	720	1089	9	2.50					0	
FRANKLIN WILLIARD A	720	1121	9	1.90					0	
<i>used</i> FRED A MUELLER	703	<del>320</del>	5	2.50					0	
FREEMAN E C JR	732	1238	10	2.50					0	
FREEMAN ROLAND&MARY	732	1255	10	2.50					0	
<i>ICNC</i> FULLERTON CHERI LEE	706	851	8	2.50					0	
FUNDERBURK J M	703	288	5	2.50					0	
FURLONG WALTER ET UX	718	1022	9	5.00					0	
GALIZIA ALBERT J	703	363	5	2.50					0	
GANISH H & FERN	709	562	5	10.00					0	
GANNAWAY&STREVEL	735	172	4	5.00					0	
GATT JOSEPH	708	960	8	2.50					0	
GENOVESE NUNZIO N	703	367	5	1.30					0	
GENTILE AL & IRENE	704	493	5	2.50					0	
<i>used</i> GERARDINO MARGARET	703	<del>228</del>	5	2.50					0	
<i>used</i> GERTZ & FRANK	728	<del>645</del>	7	10.00					0	
GIATTINNI & DALTON	728	577	7	2.50					0	
GIATTINNI & DALTON	728	578	7	2.50					0	
GINO ANTHONY	728	615	7	2.50					0	
GIOIA ATELIO	735	160	4	2.50					0	
<i>ICNC</i> GLADES HOLDING CORP	629	1280	14	10.00					0	
<i>used</i> GLASGOW LE ROY K	728	<del>675</del>	7	2.50					0	
GODBY JACK E	720	1109	9	2.50					0	
GOLD HERBERT A	732	1237	10	2.50					0	
GOLLNER MARJORIE E	708	874	8	2.50					0	
GONZALEZ ALEX	735	142	4	2.50					0	
GOODMAN EVA	720	1131	9	2.50					0	
<i>used</i> GOODWIN ROGER J	704	<del>453</del>	5	2.50					0	
GORDEN BESSIE	706	812	8	5.00					0	
GORGAS LEO M	706	785	8	2.50					0	
<i>ED</i> GORHAM BEN W	701	<del>1</del>	1	10.00		S			0	
GORMAN ROBERT E	704	465	5	2.50					0	
GOULD BARBARA L	735	121	4	1.30					0	
GOULD LELAND E	718	1066	9	2.50					0	
GOVE BRUCE (EST)	709	558	5	10.00					0	
GOVOSTIS J & BETTY B	703	358	5	5.00					0	
GRAIKA CJ & JOAN P	728	672	7	2.50					0	
GRANNMAN JAMES E	728	673	7	2.50					0	
GREEN CLINTON C	720	1186	9	2.50					0	
<i>ICNC</i> GREEN FREEMAN J L	704	468	5	2.50					0	
GRIFFIN THOMAS H	720	1168	9	2.50					0	
GROSECLOSE M C JR	732	1243	10	2.50					0	
GRUBER WILLIAM	735	173	4	5.00					0	
GUILLOD BETTY	706	728	8	2.50					0	
HAGEN M & K L	629	1281	14	10.00					0	
HALL ALPHA	703	200	5	2.50					0	
HALL EDITH&WINSLOW	735	79	4	2.50					0	
HALL JOHN E	711	25	1	2.50					0	

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
HAMILTON ROBERT W	704	382		5	2.50				0	
HAMM & OSMAN	708	939		8	2.50				0	
HAMMER DOROTHY V	735	162		4	2.50				0	
HANNABASS JAMES R	706	833		8	2.50				0	
<i>used</i> HANSON J D & SANDRA	725	56		3	12.60				0	
HARDEN CHARLES E	720	1159		9	2.50				0	
HARDY V & STEPHANIE	703	352		5	1.30				0	
HARNISH JAMES F	735	188		4	5.00				0	
HARRIS JAMES C	703	309		5	2.50				0	
HARRIS ROY C	711	15		1	5.00				0	
HARRIS & FORMAN	703	219		5	2.50				0	
HARTMAN LEROY C	718	1032		9	2.50				0	
HATTON JOHN C	703	209		5	15.00				0	
HATTON JOHN G	703	319		5	1.30				0	
HAYSLIP JAMES	633	1269		13	10.00				0	
<i>used</i> HEMBREE JAMES F	703	193		5	0.60				0	
KEMINGS TERRI	735	84		4	5.00				0	
HENKION JOSEPH M	708	868		8	2.50				0	
HENSHAW D T	720	1134		9	2.50				0	
HENSLEY W D	720	1153		9	2.50				0	
HETRICK PAUL H	703	272		5	2.50				0	
<i>SD</i> NICKS NORMAN ET AL	725	71		4	4.10		S		0	
HIGGINBOTHAM J	704	408		5	5.00				0	
HILL S F	703	353		5	1.30				0	
HODNETT CARL D	706	737		8	2.50				0	
HOLDER JOHN S	725	57		3	7.90				0	
HOLDER ROBERT P	706	802		8	2.50				0	
HOLMES FRANCIS N	703	295		5	2.50				0	
HOLMES JACK B	706	744		8	2.50				0	
HOLPER JOHN S	725	65		3	46.90				0	
HOLPER MARY A	725	59		3	7.40				0	
HOMOLIK ALEX	704	446		5	2.50				0	
<i>used</i> HOMOLIK RONALD A	704	438		5	2.50				0	
HOPKINS LG & MN	720	1192		9	2.50				0	
HORNE TL A & R	718	1048		9	2.50				0	
HOWARD CLYDE	728	648		7	2.50				0	
HUGHES WL & DOROTHY	703	334		5	2.50				0	
HUGHESMAN ALICE	704	469		5	2.50				0	
HULL WILLIAM & JAMES	725	66		3	5.10				0	
HUTSDOS ROSE (ESTATE)	735	111		4	2.50				0	
HYLTON FRANCES E	704	472		5	2.50				0	
INCERTO FRANK	708	925		8	2.50				0	
LUDICA SABINA	720	1136		9	2.50				0	
IVY ELIZABETH C	725	62		3	5.90				0	
JACKLIN C V ET UX	728	662		7	2.50				0	
JACKSON DONALD R	708	921		8	2.50				0	
JACOB MEYER	720	1144		9	5.00				0	
JARMOL MRS S M	735	124		4	2.50				0	
JAROVITZKY SOPHIE	711	27		1	2.50				0	
JENKINS GEORGE T	706	831		8	5.00				0	

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN MAP	ACRES	T	C	D	AMT	R	P
JOB T J	728	693	7	2.50				0	
JOHNSON FREDERICK	728	590	7	2.50				0	
JOHNSON HARGIS&MARIA	728	635	7	2.50				0	
JONES EDWIN R	720	1206	9	2.50				0	
JONES LENORE&ROBERT	706	726	8	2.50				0	
<i>ED</i> JORDAN AND VEREEN	725	<del>48</del>	3	10.00	S			0	
JORDAN JAMES C JR	708	884	8	5.00				0	
JORDAN JE&VALIANCE E	728	694	7	5.00				0	
<i>ED</i> JORDAN LUTHER	703	<del>251</del>	5	2.50				0	
<i>ED</i> JORDAN LUTHER	703	<del>213</del>	5	2.50				0	
<i>ED</i> JORDAN LUTHER E	701	<del>2</del>	1	10.00				0	
JUHASZ GEORGE	706	837	8	2.50				0	
JULIANO FRANCIS A	718	982	9	2.50				0	
JUREWICZ BERNARD	711	31	1	2.50				0	
JUSTUS V & NORA	706	712	8	2.50				0	
KACEL LORETTA J	735	107	4	5.00				0	
<i>ED</i> KALUZNA J M & IDA	735	72	4	10.00				0	
KAUFMAN ALLEN I	728	587	7	5.00				0	
KAY CHRLES W	711	8	1	2.50				0	
KELLY WILLIAM D	703	235	5	2.50				0	
KEPLER BERNARD ET UX	735	97	4	2.50				0	
KING HARRY J	704	511	5	2.50				0	
KING J B	720	1118	9	2.00				0	
<i>ED</i> KING JESSE&LORRAINE	706	763	8	2.50				0	
KING MARY A	703	264	5	1.30				0	
KINSEY FS & FRANKIE	706	800	8	2.50				0	
KNISLEY KENNETH H	703	293	5	2.50				0	
KNOBLAUCH DEEMARGE	706	772	8	2.50				0	
KOEHLE CAROBEL M	704	512	5	2.50				0	
KOKENZIE N	732	1229	10	2.50				0	
KOTARA JESSICA	735	120	4	6.30				0	
KOVACS KI&MARIANNE	720	1157	9	5.00				0	
KOVALSKY GLADYS	704	384	5	2.50				0	
KOWALSKI CLAIRE C	720	1150	9	2.50				0	
KOWATCH DENNIS J	711	37	1	56.40				0	
KOWATCH DENNIS J	708	905	8	5.00				0	
KREDELL GJ & ANNA	703	315	5	1.30				0	
<i>ED</i> KRUGER WALTER&MARIE	704	549	5	2.50				0	
KRUPPA ROBERT N	735	167	4	5.00				0	
KUELER J F & FRANCES	711	33	1	2.50				0	
<i>ED</i> KUIKEN JOHN D	703	<del>435</del>	5	1.30				0	
LA FAUCI COS&MARY	703	231	5	2.50				0	
LA FAUCI COSMO&MARY	703	216	5	2.50				0	
LA VIGNE RAY&AGNES	703	197	5	1.30				0	
LAIN MAUNO W	728	588	7	2.50				0	
LAIRD MATHEWS DAVENP	735	122	4	5.00				0	
LAMP ARTHUR J	720	1074	9	2.50				0	
LAMPMAN DOMINIC J	706	755	8	2.50				0	
<i>ED</i> LANG RITA R (EST)	703	313	5	1.30				0	
LANKIEWICZ FRANK	703	281	5	2.50				0	

OWNERS IN THE ROTENBERGER/HOLFY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
<i>10/21/86</i> LAPP GEORGE L	704	546		5	2.50					0
<i>10/21/86</i> LASEPIN MADELINE&F	703	222		5	2.50					0
LECHER MICHAEL	732	1220		10	2.50					0
<i>10/21/86</i> LEMAL DENISE & L	703	328		5	1.30					0
LENDVAY ERMA & S	735	112		4	2.50					0
LENZ S M & DOROTHY	728	579		7	2.50					0
<i>10/21/86</i> LEONHARDT JOHN	703	357		5	1.30					0
LESCOVICH WALTER	704	424		5	2.50					0
LEWIS N & SELMA	703	345		5	10.00					0
LIPCON III & ROSE	706	801		8	5.00					0
LLER WH & DOLPH N	704	377		5	2.50					0
LOGETTE LILIA M	735	145		4	2.50					0
LONGER RICHARD M	732	1235		10	2.50					0
LOUGHLIN AGNES M	711	5		1	2.50					0
LOWE GISELE B	703	252		5	2.50					0
<i>10/21/86</i> LUBAR M & BEATRICE	704	526		5	2.50					0
LUBAR MARTIN&BEATRICE	732	1251		10	2.50					0
<i>10/21/86</i> LUCHAK LOUIS A	706	753		8	2.50					0
<i>10/21/86</i> LYNCH CATHERINE B	706	834		8	2.50					0
MACKAY JOSEPHINE D	703	286		5	2.50					0
MAGUIRE CHARLES J	728	599		7	2.50					0
MAILLERIE HARRIETT J	728	581		7	2.50					0
MAJOR REALTY CORP	708	877		8	2.50					0
MAJOR REALTY CORP	718	1071		9	2.50					0
MAJOR REALTY CORP	720	1204		9	2.50					0
MALCONIAN LUTHER	703	278		5	2.50					0
MALEY HUGH W	718	1026		9	2.50					0
MALLARD NC & NELLE	703	280		5	2.50					0
MANIERI M & ROSE	708	889		8	2.50					0
<i>10/21/86</i> MANTVANI ANNA	703	245		5	2.50					0
MAROTTA SALVATORE&BA	735	92		4	2.50					0
MARQUEZ RUBEN&NANCY	718	988		9	2.50					0
MARRAZZO MARY	704	388		5	2.50					0
MARSHALL GLORIETTA	706	739		8	2.50					0
MARSHALL GLORIETTA	706	764		8	2.50					0
MARSICK MARIE & E	735	113		4	2.50					0
MARTEN WILL&BARBARA	706	770		8	2.50					0
MARTIN & BARON	705	702		8	10.00					0
MARTIN ALBERT	711	17		1	3.80					0
MARTIN ALBERT	703	308		5	1.30					0
MARTIN ALBERT	718	1023		9	2.50					0
MARTIN ALBERT	720	1095		9	2.50					0
MARTIN KATHLEEN S	720	1117		9	2.50					0
MARTIN ROBERT E	704	522		5	2.50					0
MARTIN&PETERSON&BLAC	711	20		1	5.00					0
<i>10/21/86</i> MASCARI WANDA&JOHN	706	817		8	2.50					0
" MATHIEU RAYMOND	704	838		5	2.50					0
" MATHIEU RAYMOND W	706	740		8	2.50					0
MAURO MARY	735	166		4	5.00					0
MC CURRY & LIGOURI	735	169		4	5.00					0

OWNERS IN THE ROTENBERGER/BOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
MC CURRY JENNIE	735	170	4	5.00				0		
MC DONALD FRED	703	239	5	1.30				0		
MC LEOD DONALD R	706	711	8	2.50				0		
MCCAIN&MANNING&EST	720	1173	9	2.50				0		
MCCANN NANCY R	708	909	8	2.50				0		
MCCORD JAMES E	718	971	9	1.30				0		
MCDONALD GERALD J	704	387	5	2.50				0		
MCGLADE HELEN V	720	1115	9	2.50				0		
MCKEE EARL M	720	1193	9	2.50				0		
MENSINGER PAULA	735	119	4	1.30				0		
MERKEL & POIJARD	704	452	5	2.50				0		
MIERKEY HM & BETTE	708	864	8	5.00				0		
MIRALOW BARBARA L	732	1247	10	2.50				0		
MILBRATH MRS M	708	892	8	2.50				0		
MILLER AA&ARACELY	703	223	5	2.50				0		
MILLER BEULAH M	728	691	7	2.50				0		
MILLER IRENE C	708	916	8	2.50				0		
MILLER RA&JR JR	703	325	5	1.30				0		
MILLS BETH S	718	1053	9	2.50				0		
MINNIER DOLORES S	728	575	7	2.50				0		
MIRABILE DOMINIC(TR)	704	455	5	2.50				0		
MIRABILE DOMINIC(TR)	704	474	5	2.50				0		
MIRABILE DOMINIC(TR)	704	537	5	2.50				0		
MIRABILE DOMINIC(TR)	706	810	8	2.50				0		
MIRABILE DOMINIC(TR)	718	1043	9	2.50				0		
MIRABILE DOMINIC(TR)	720	1132	9	2.50				0		
MIRABILE DOMINIC(TR)	720	1170	9	2.50				0		
lost d MITCHELL MACK	703	<del>1194</del>	5	5.00				0		
MOLES EDWIN J JR	703	324	5	1.30				0		
MOLNAR JULIA & L	735	106	4	10.00				0		
MOORE & MATTSON	728	624	7	2.50				0		
MOORE MATTHEW D	720	1200	9	2.50				0		
MORALES MIGUEL A	720	1156	9	2.50				0		
MORGAN ESELINE	703	330	5	1.30				0		
MORRISSETTE ALCIDE J	718	1042	9	2.50				0		
MORRISSETTE ALCJDE J	718	1028	9	2.50				0		
lost d MOSES DOROTHY	706	<del>827</del>	8	2.50				0		
lost d MOSES MRS LEO	706	<del>849</del>	8	2.50				0		
MOUCHARD JOAN	706	806	8	5.00				0		
MRAZ JOHN N	735	115	4	2.50				0		
MUGNO WILLIAM	735	138	4	2.50				0		
lost d MILA JUDY	708	<del>881</del>	8	2.50				0		
MYERS RR & NORRINE	720	1130	9	2.50				0		
MYERS WILLIAM&SALLY	732	1240	10	2.50				0		
MYRICK ROBERT L JR	720	1081	9	2.50				0		
NACKER W & B	735	158	4	2.50				0		
NACKER W & L	735	159	4	2.50				0		
NAU EW&CHRISTIAN	728	616	7	2.50				0		
NAVEDO JOSE R	708	891	8	2.50				0		
NELLIGAR RONALD B	728	670	7	2.50				0		

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
NEUMAN NEILL F	708	936	8	2.50				0		
NEWBY FRANK E	728	611	7	2.50				0		
NEWMAN JAMES H	720	1097	9	2.50				0		
NOLE LEONARD J	708	934	8	2.50				0		
NOONAN JOHN J	718	1017	9	2.50				0		
NORRIS GW & EILEEN	706	787	8	2.50				0		
NOWAKOWSKI STAN	703	301	5	1.30				0		
NUNZIATO J ET UX	720	1198	9	2.50				0		
O TOOLE CHARLES F	728	676	7	2.50				0		
OLIVA CHARLES R	703	322	5	2.50				0		
OLIVA CHARLES R	703	336	5	5.00				0		
OLIVER NORM&RUTH&RAY	728	607	7	5.00				0		
ONCAVAGE DE & STASIS	708	901	8	2.50				0		
ORDERS W CARL	720	1149	9	2.50				0		
ORR MAXINE W	732	1211	10	5.00				0		
OSHIRO ADAM T	718	1036	9	2.50				0		
OSWALD LEWIS	703	361	5	1.30				0		
OUTLAW & SYKES	703	312	5	1.30				0		
OVERATH JC&THERESA	703	192	5	1.90				0		
PADGETT M & M	708	899	8	2.50				0		
PALM BEACH COUNTY	717	968	9	20.00				0		
PANGBURN CAMILLE	706	758	8	2.50				0		
PAPA ANTHONY	703	321	5	2.50				0		
PARKER ELMER&THELMA	622	1264	12	33.30				0		
PARKER ELMER&THELMA	627	1267	13	320.00				0		
PARKER ELMER&THELMA	626	1283	11	31.40				0		
PARKER ELMER&THELMA	635	1284	11	158.90				0		
PARKHURST BILLY G	629	1278	14	10.00				0		
PASCO LENORE	735	109	4	2.50				0		
PASCO LENORE	735	123	4	2.50				0		
PASCOE JOSEPH (EST)	703	360	5	2.50				0		
PATTERSON JL&MARGE	704	386	5	2.50				0		
PATTERSON JL&MARGE	704	487	5	2.50				0		
<i>used to</i> PEACE CONSTANCE L	703	<del>206</del>	5	2.50				0		
PEDDER REGINALD A	720	1169	9	2.50				0		
PEDERSEN OVE	703	337	5	1.30				0		
PEGG&KOWATCH	735	176	4	80.00				0		
PELTON KENNETH L	703	237	5	2.50				0		
PENA ALFREDO&BERTA	704	553	5	5.00				0		
PEREZ A & MERCEDES	708	896	8	2.50				0		
PERRY WILLIAM A JR	732	1231	10	2.50				0		
PETERSON DONALD W	708	962	8	2.50				0		
PHILLIPS BEN	720	1122	9	1.90				0		
<i>used to</i> PHILLIPS GEORGE M	704	427	5	5.00				0		
<i>used to</i> PHILLIPS JAMES	703	348	5	1.30				0		
PIEKOS ADOLPH P	718	1061	9	2.50				0		
PIENTKA E & LUCILLE	703	354	5	2.50				0		
PIETROWSKI PEARL	703	289	5	2.50				0		
PILAFIAN S & N	711	30	1	2.50				0		
PILIWALE SILVER K	728	594	7	5.00				0		

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN MAP	ACRES	T	C	D	AMT	R	P
PINTO VERNITA	725	64	3	5.30				0	
<i>used</i> BIROZZI AMERICO	711	7	1	2.50				0	
PITTS HUBERT&EDITH	706	845	8	2.50				0	
PLACE ELEANOR M	704	449	5	2.50				0	
PLATT F ARNOLD	703	342	5	1.30				0	
PLISHTIN NAT&MURRAY	703	344	5	2.50				0	
POLLOCK EMMA J	703	258	5	2.50				0	
PONSONBY H E	708	886	8	2.50				0	
PREUSKER H H&ELSIE	735	108	4	5.00				0	
<i>used</i> PRIESTLY CHARLES E	703	218	5	2.50				0	
<i>used</i> PRIESTLY VAN B	703	214	5	2.50				0	
<i>used</i> PUCO STEPHEN&MARIE	708	910	8	10.00				0	
PULEO FRANK	728	666	2	5.00				0	
PURDY JUNE L	711	28	1	2.50				0	
PUSZ RICHARD & MARY	706	843	8	2.50				0	
QUINCY EAJ	735	174	4	5.00				0	
RACHOW FRANKLIN	703	225	5	2.50				0	
RAEMER M B	732	1248	10	2.50				0	
RAESNER DON&KATHLEEN	728	630	7	2.50				0	
RAMPH B C & FLORENCE	735	95	4	2.50				0	
RATNER NAT J (TR)	735	103	4	5.00				0	
RAUCH&1STNATLBANKATL	718	1064	9	2.50				0	
RAUE MAX & RICHARD	708	955	8	2.50				0	
REECE & KEEN	718	1001	9	2.50				0	
REECE & KEEN	718	1068	9	2.50				0	
REEVES GARTH	735	100	4	5.00				0	
REGULA MICHAEL&MARY	725	58	3	1.00				0	
REIF MICHAEL	704	500	5	2.50				0	
REIF MICHAEL	704	535	5	2.50				0	
REPOSKEY JOSEPH A	728	603	7	2.50				0	
RICE JOYCE M	706	716	8	2.50				0	
RICHTELLI FRED & J	720	1092	9	2.50				0	
RICHWINE A L & M	706	710	8	2.50				0	
RICHWINE A L & M	706	734	8	2.50				0	
RICHWINE ARNOLD L	706	707	8	2.50				0	
RICHWINE ARNOLD L	706	709	8	2.50				0	
<i>used</i> RIEDINGER EDWARD J	706	760	8	2.50				0	
RIGGLES GLADYS C	708	866	8	2.50				0	
RILEA JUANITA	703	234	5	2.50				0	
RILEY D B & ALINE L	728	600	7	2.50				0	
RILEY R H	732	1249	10	2.50				0	
RJNI BARBARA A ET AL	735	129	4	1.30				0	
RIOS JULIO C	732	1253	10	2.50				0	
RITCH ADA	703	340	5	1.30				0	
RIVERO JERRY	735	101	4	2.50				0	
ROBERTS MERLYN F	728	598	7	2.50				0	
<i>used</i> ROCCO YOLANDA	704	507	5	2.50				0	
ROMAN SJ SR & F	732	1246	10	2.50				0	
ROOT SIDNEY W	720	1135	9	2.50				0	
ROPPOLO V.&LORRAINE	703	317	5	1.30				0	

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
ROSE ROBERT & NANCY	729	1209	10	20.00				0		
ROSELLI JOSEPH	735	155	4	5.00				0		
ROSENBERG R & VERA	735	146	4	2.50				0		
ROSS DONALD J	728	683	7	2.50				0		
ROSS DONALD J	728	696	7	2.50				0		
ROTHENBERG SAMUEL A	718	1038	9	2.50				0		
ROTHENBURG SAMUEL TR	718	1037	9	2.50				0		
ROTIERO EUGENE E	720	1201	9	2.50				0		
ROTIERO EUGENE E	720	1201	9	2.50				0		
ROWLEY GEORGE M	718	1007	9	2.50				0		
RUNNELS ARTHUR ET AL	720	1196	9	2.50				0		
RUSHING HOMER H	720	1143	9	2.50				0		
RUSSELL EVELYN H	735	91	4	2.50				0		
RUSSELL JACK D	708	952	8	2.50				0		
<i>used to</i> RUST HENRY JR	711	<del>39</del>	1	5.90				0		
SALSILLE JEANNIE B	703	296	5	2.50				0		
SALVATI F & MARY	704	481	5	2.50				0		
<i>used</i> SAMBOR HELENE A	728	<del>621</del>	7	2.50				0		
SANDERSON ALICE J	704	373	5	2.50				0		
SANDERSON REALICE J	704	371	5	2.50				0		
SARTOR DONNA L	706	752	8	2.50				0		
SCANDALE NICHOLAS C	706	713	8	2.50				0		
SCANDALE NICHOLAS C	706	720	8	2.50				0		
SCHADEMAN RAYMOND	720	1176	9	2.50				0		
SCHLACHTER AJ JR & B	728	593	7	2.50				0		
SCHRECKENGOST FJ & I	720	1126	9	2.50				0		
<i>used</i> SCHRETTNER MARY A	706	<del>75</del>	8	2.50				0		
SCOGGIN JL & DONNA B	704	451	5	2.50				0		
<i>used</i> SEIDLER EUGENE V	704	406	5	5.00				0		
SELLER & HARKINS	735	118	4	5.00				0		
SEITZ R E & DOROTHY	735	137	4	1.30				0		
<i>used</i> SEITZ RE&DOROTHY A	703	<del>364</del>	5	1.30				0		
SENENICH HE&MARTHA	704	462	5	2.50				0		
SENTENO MELCHIOR J	704	460	5	2.50				0		
SERGE ANTHONY J	728	680	7	2.50				0		
SEROTTA WILLIAM	704	520	5	2.50				0		
SEXTON JESSIE	711	29	1	2.50				0		
SHEPARD JF & DM	703	285	5	2.50				0		
SHERMAN WILLIAM D	706	741	8	2.50				0		
SHERRILL KELLY A JR	708	926	8	2.50				0		
SHORROCK HERBERT	703	254	5	2.50				0		
SHORROCK HERBERT	703	256	5	2.50				0		
<i>used to</i> SIMENDINGER HERMOINE	706	<del>848</del>	8	5.00				0		
SIMPSON JOHN I	708	929	8	2.50				0		
SKAGGS BUELL E	720	1127	9	2.50				0		
SKOLNICK I & MARY A	720	1165	9	2.50				0		
SLOVER CHARLES C	728	651	7	2.50				0		
SMAZENKO F & SEVERNA	708	937	8	2.50				0		
SMILEY HG ET UX	732	1227	10	5.00				0		
SMITH EDWARD JR	735	99	4	1.30				0		

OWNERS IN THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
SMITH HAROLD	704	505		5	2.50				0	
SMITH JOSEPH & OPAL	708	946		8	2.50				0	
SMITH MARIE	703	255		5	2.50				0	
SNELL A L & THELMA	711	41		1	5.70				0	
SNOUFFER CR&AURELIA	708	907		8	2.50				0	
<i>used</i> SNYDER RON&EILEEN	703	314		5	1.30				0	
<i>used</i> SOMBROVICH LOUIS	706	803		8	2.50				0	
SPEDDING JAMES&JOHN	720	1112		9	2.50				0	
STANHOPE SALLY ET AL	720	1160		9	2.50				0	
STANLEY WALTER&JOYCE	708	897		8	2.50				0	
STEELE BILLY R	708	900		8	2.50				0	
STEETS RITA & F	735	135		4	2.50				0	
STENTO & CARULLI	708	885		8	2.50				0	
STERN MILTON R	703	366		5	1.30				0	
STEWART LYMAN R	713	44		2	10.00	S			0	
STEWART TM&BD	703	362		5	2.50				0	
STIEREN C/O MANGAN	704	456		5	2.50				0	
STIEREN HILDA	704	370		5	7.50				0	
STILES VALERIE&ROBT	735	96		4	2.50				0	
STOFAL JAMES&GLORIA	704	490		5	2.50				0	
STONE FRED	718	969		9	5.00				0	
<i>used</i> STREETS JOHN H ET UX	720	1185		9	2.50				0	
STREETT ROBERT L	706	814		8	2.50				0	
STRONG MRS W C	728	638		7	2.50				0	
STUKEY LENNIE N	627	1266	13	40.00					0	
SUGAR LOUIS	704	450		5	2.50				0	
SUMNER ELIENE H	703	202		5	2.50				0	
<i>used</i> SURFACE KENNETH W	703	304		5	1.30				0	
SUTTON HENRIETTA T	704	547		5	2.50				0	
SWAN B L	708	919		8	2.50				0	
<i>used</i> SWIFT & NEDEAU	718	1000		9	2.50				0	
SWISHER LINDA	735	89		4	2.50				0	
SYNNOTT RUTH M	708	873		8	2.50				0	
SZCZEPANSKI EJ & S	720	1100		9	2.50				0	
TAIT & EARLE	720	1183		9	2.50				0	
TAKABAYASHI G & B	720	1195		9	2.50				0	
TALBOTT CHARLES ETUX	703	270		5	2.50				0	
TALIKKA & ULRICH	735	154		4	2.50				0	
TAMBORN JJ & ANN	708	942		8	2.50				0	
TAMBORSKI & ULMER	720	1182		9	2.50				0	
<i>used</i> TAO SY & MARY L H C	704	488		5	2.50				0	
<i>used</i> TAYLOR CHIYOKO K	704	508		5	2.50				0	
TAYLOR HENRY A	735	87		4	2.50				0	
TELL & FERN	728	617		7	2.50				0	
TERLIZZESE MIKE&RON	735	187		4	10.00				0	
<i>used</i> TEUFEL ROBERT	704	417		5	2.50				0	
TEUFEL ROBERT	718	1010		9	2.50				0	
THIELE ANTHONY J	728	572		7	2.50				0	
THOMPSON AND SLOAN	711	16		1	2.50				0	
THOMPSON AND SLOAN	711	19		1	2.50				0	

OWNERS OF THE ROTENBERGER/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
THOMPSON AND SLOAN	711	21	1	2.50				0		
THOMPSON CYRIL&JUNE	708	879	8	2.50				0		
TIERNAN ROBERT J	735	151	4	2.50				0		
TIFFE J & AGNES V	708	935	8	2.50				0		
TILLMAN DR&PATRICIA	704	467	5	2.50				0		
<i>used</i> TIPTON JOHN G	703	212	5	2.50				0		
TODD S & PAULINE	704	470	5	2.50				0		
TORRENCE ROSWITA	720	1102	9	2.50				0		
TORRES CANDELARIO	728	671	7	2.50				0		
TORRES VIOLET&DANIEL	703	240	5	2.50				0		
TREHEC STEVE JR	718	985	9	5.00				0		
TRUEBA FRANCISCO	708	923	8	2.50				0		
TUCKER G W ET UX	706	768	8	2.50				0		
TUDOR JAMES C	728	660	7	2.50				0		
TURDO R & JOSEPHINE	735	139	4	2.50				0		
TURK MRS JULE	735	130	4	1.30				0		
UDOVICH ANNA	708	893	8	2.50				0		
UDOVICH ANNA	720	1171	9	5.00				0		
VALERIO IDA	718	980	9	2.50				0		
<i>used</i> VAN BERGEYK W J	703	224	5	2.50				0		
VAN PELT FRED	703	268	5	2.50				0		
<i>used</i> VANCE A G	633	2270	13	10.00				0		
VARKONYI N T	720	1086	9	2.50				0		
VEITH WALTER E	735	179	4	2.50				0		
VENDITTELLI WILLIAM	708	863	8	2.50				0		
VENDITTI IDA M	708	906	8	2.50				0		
VERDURA ANDREW L	703	300	5	2.50				0		
VIVAR MANUEL	703	243	5	2.50				0		
VIVAR WILLIAM	703	244	5	2.50				0		
VOELKER JEANNETTE A	706	839	8	2.50				0		
VON ZAMFT LEVI&ETHAN	706	850	8	2.50				0		
VOORHIS JR & LILLIAN	704	379	5	2.50				0		
<i>used</i> WADE LUTHER & PAT	706	777	8	2.50				0		
<i>used</i> WADE LUTHER & PAT	706	791	8	2.50				0		
WALKER AND REISMAN	725	69	3	0.90				0		
WALKER JOHN L (TR)	735	73	4	2.50				0		
WALKER SUSANNA J	703	220	5	2.50				0		
WALLER KENNETH	720	1158	9	2.50				0		
<i>used</i> WARGELIN ELMER	703	658	5	1.30				0		
<i>used</i> WATSON L E	706	783	8	2.50				0		
WATTS JUNE	725	60	3	5.10				0		
WATTS JUNE	725	61	3	5.10				0		
WEAVER R C & EVELYN	711	11	1	5.00				0		
WEHRLE MARY&SANDRA	720	1080	9	2.50				0		
WENDORF HAROLD B	728	568	7	2.50				0		
WERCZLER CLARA	735	153	4	2.50				0		
WEST STEVE	735	85	4	2.50				0		
WESTCOTT & SMITH	720	1091	9	2.50				0		
WHITE OSCAR & SALLY	706	773	8	2.50				0		
WHITEHEAD FRANCES R	704	517	5	2.50				0		

OWNERS OF THE POTENBERGEN/HOLEY LAND  
IN ALPHABETICAL ORDER

NAME	TS	PN	MAP	ACRES	T	C	D	AMT	R	P
WILLIAMS MRS M	718	981	9	2.50				0		
WILLIAMS&HARRIS	735	180	4	5.00				0		
WILSON MARVIN E	708	965	8	2.50				0		
WINGFIELD&BRABBIOR	720	1087	9	2.50				0		
WISE CHARLES W	728	589	7	2.50				0		
WISH DANIEL P	703	241	5	2.50				0		
WOLF JE & LILLIAN R	720	1075	9	2.50				0		
WOLTER WILLIAM E	728	655	7	2.50				0		
WOOD ROBERT P	704	497	5	5.00				0		
WOODING J L & JANNLE	735	74	4	2.50				0		
WRIGHT H & LOGIE	706	749	8	2.50				0		
WURM ROBERT W	703	318	5	1.30				0		
YANDOLI JERRY	718	1041	9	2.50				0		
YANSEN GLENN&BONNIE	708	904	8	2.50				0		
YOUNG KG & MIRDIE	718	994	9	2.50				0		
ZANOLLE VALENTINE	704	436	5	2.50				0		
ZAPPULLA ANGELO	735	147	4	5.00				0		
ZARRELLA GENNARD	735	152	4	2.50				0		
*** Total ***	***	****	***	3813.4				0		

File: WWD B-5-2  
Holey Land  
Rotenberger  
WFS AND  
WWD B-5-3  
Rotenberger  
Holey Land  
5/12/83  
66/0408BBMA

MEMORANDUM OF AGREEMENT  
BETWEEN  
THE FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (DER)  
AND  
THE BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND (BTITF)  
AND  
THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD)  
AND  
THE FLORIDA GAME AND FRESH WATER FISH COMMISSION (G&FWC)  
CONCERNING  
THE HOLEY LAND AND ROTENBERGER PROJECT

1. Background:

Florida's "Everglades" is recognized as a unique and valuable wetland ecosystem in the world. Often referred to as the "river of grass," when healthy, the Everglades System can enhance water conservation, provide groundwater recharge, convert nutrients to peat and muck, provide habitat for fish and wildlife, and can provide numerous other benefits.

Because of over-drainage and other man-made structural modifications and natural disasters in the area, the Everglades habitats of the Holey Land and Rotenberger Tracts are stressed, subject to frequent fires, and are generally declining in terms of their natural resource value.

The Board of Trustees recognized the importance of and the threat to the Everglades System and in 1975, purchased 6,248 acres within the Rotenberger Township under the Environmentally Endangered Lands (EEL) program. Moreover, subsequent land exchanges with private landowners within the area placed additional Everglades resources in state ownership. Unfortunately, not all of the privately owned lands have been acquired and for a number of other reasons the lands have not been managed in such a way that maximum benefits are derived for the environment and the people of Florida.

2. Introduction

The purpose of this memorandum is to establish a general agreement as to the manner in which the state will proceed in implementing a Restoration Plan for the Holey Land and Rotenberger Tracts as well as a portion of the Seminole Indian Reservation.

Further, this agreement provides the basic framework and the specific responsibilities under which the agencies of this agreement shall be guided in this effort. It is the expressed intent of the agencies entering this Agreement that future policy decisions regarding these lands will reflect the objectives of this memorandum.

3. The Restoration Plan:

(a) Purpose:

The purpose of this Restoration Plan is to set forth a course of action which leads to the construction and operation of a water control system that attempts to restore and preserve natural Everglades habitat within a defined area. To accomplish this objective by January 1, 1988, the general and specific details outlined in this Agreement must be executed in a timely manner.

(b) Project Area:

The project area is located in the Everglades Agricultural Area (EAA) of Palm Beach County. For purposes of the Restoration Plan, the "Holey Land Tract" shall mean that area east of the Miami Canal which is presently designated the Holey Land Wildlife Management Area, Chapter 39, F. A. C. (Exhibit 1). The Holey Land Tract consists of 35,350 acres, --34,840 acres state-owned and 510 acres privately-owned.

The "Rotenberger Tract" shall mean that area west of the Miami Canal presently designated the Rotenberger Wildlife Management Area, Chapter 39, F. A. C. (Exhibit 2). The Rotenberger Tract consists of 25,280 acres -- 15,649 acres are state-owned and 9,631 acres privately-owned.

The "Seminole Indian Reservation" shall mean that area located to the south of the Rotenberger Township and north of the L-4 borrow canal--approximately 3,840 acres owned by the United States of America and held in trust for the use and benefit of the Seminole Tribe.

The "project area" shall mean those lands within the Holey Land Tract, Rotenberger Tract and the Seminole Indian Reservation. Combined, the project area shall initially consist of 64,470 acres (Exhibit 3).

(c) Consolidation:

In keeping with the policy direction of the Board of Trustees, (April 6, 1983 Board Meeting), all agencies support the consolidation of state lands within the project area under state title. All agencies agree that consolidation may best be accomplished through land exchanges. All agencies recognize that the boundaries of the project area may change if sufficient state lands outside the project area are unavailable or inadequate for exchange. This option shall be explored first before consideration is given to trading lands within the project area. Moreover, all agencies agree the consolidation of the Holey Land Tract (510

acres privately-owned within the Rotenberger Township, east of the Miami Canal) shall be given the first priority. Once the Holey Land Tract is consolidated, no lands inside this area may be exchanged for private or federal lands.

The DNR, on behalf of the Trustees, agrees to prepare a land consolidation plan by June 30, 1983, which shall address the objective of this paragraph. In addition, DNR shall seek an appropriation for acquisition staff to accomplish consolidation within the proposed time frame.

(d) Project Design:

Upon completion of consolidation, modifications to existing levees and construction of new levees (approximately 30 miles) will be required in order to protect adjacent private properties and to ensure control of desired water levels in the project area. Existing and new culverts will be designed and located to control water flow into the restoration area and out to Water Conservation Area 3A. Two new pump stations will be needed and designed with the capacity to discharge sufficient water quantities into the project area. Additional design features may be incorporated as necessary for the intended purpose of maintaining the desired performance of the restoration area.

(e) Water Level Schedules:

Water level schedules for the project area shall be established to simulate the natural hydroperiod for the purpose of restoring Everglades habitat.

A 0-2 foot hydroperiod for the Holey Land and a 0-1 foot hydroperiod for the Rotenberger Tract will be the initial reference levels for the proposed restoration. The District and the Commission will establish the final hydroperiods and schedules for each tract during the engineering design process. The schedule will be subject to change if the District and Commission agree that such change will contribute to the project purpose. The project shall be designed to allow sufficient flexibility to accommodate future changes agreed to by the Commission and the District.

(f) Project Schedule:

The following time schedule identifies the major project activities and target dates for completion. The goal is to finish the entire restoration project by January 1, 1988. Specific agency responsibilities for meeting this timetable are noted in Paragraph Five (5.) of this Agreement.

"Holey Land Tract"

- 1) Consolidation under state title privately-owned lands (510 acres) within the area.

Start July 1, 1983 Finish October 1, 1983

- 2) Establish water elevation measurement sites.  
Start July 1, 1983 Finish October 1, 1983
- 3) Inventory existing wildlife and map vegetation.  
Start July 1, 1983 Finish December 31, 1983
- 4) Design monitoring program for area.  
Start October 1, 1983 Finish February 1, 1984
- 5) Prepare engineering plans, construction specifications, operational plan and permit applications.  
Start October 1, 1983 Finish February 1, 1984
- 6) Process permit applications.  
Start February 1, 1984 Finish May 1, 1984
- 7) Construct levees, culvert system and pump station.  
Start May 1, 1984 Finish May 1, 1986
- 8) Obtain operational permit.  
Start July 1, 1984 Finish December 1, 1984

"Rotenberger Tract/Seminole Indian Reservation"

- 1) Consolidate under state title privately-owned lands (approximately 13,471 acres) within area.  
Start October 1, 1983 Finish June 30, 1986
- 2) Establish water elevation measurement sites.  
Start July 1, 1984 Finish October 1, 1984
- 3) Inventory existing wildlife and map vegetation.  
Start July 1, 1984 Finish December 31, 1984
- 4) Design monitoring program for area.  
Start October 1, 1984 Finish February 1, 1985
- 5) Prepare engineering plans, construction specifications, operational plan, and permit applications.  
Start July 1, 1986 Finish October 31, 1986
- 6) Process permit applications.  
Start November 1, 1986 Finish February 1, 1987
- 7) Construct levees, culvert system and pump station.  
Start February 1, 1987 Finish January 1, 1988
- 8) Obtain operation permits.  
Start July 1, 1986 Finish December 1, 1986

This timetable was developed and agreed upon in recognition of potential administrative, legal, or other delays associated with the project. If a party of this

Agreement is unable to complete an activity on schedule, it will be that agency's responsibility to prepare an amendment to this Agreement twenty-one (21) days prior to the task finish date, with a modified project schedule which is acceptable to all agencies of this Agreement.

(g) Costs:

Under the direction and supervision of the SFWMD, construction of the entire restoration project is estimated to cost \$6.3 million. This figure does not include any costs associated with acquiring privately owned lands within the project area. It is the expressed hope of all agencies that most of the in-holdings can be acquired through land exchanges on a value for value basis. Any land acquisition costs shall be borne by the state. Exhibit 4 provides a general breakdown of estimated project cost.

(h) Project Funding:

All agencies agree that the restoration project should be constructed, operated, and maintained with State and District funds. As such, the State agrees to provide an amount equal to 75% of the total project construction costs. The SFWMD agrees to provide an amount equal to 25% of the total project construction cost, not to exceed an amount equal to 33% of the amount appropriated annually by the State, however. In order to begin the project July 1, 1983, and complete it on schedule, State appropriations of \$1,000,000 for FY-84, \$2,500,000 for FY-85, and \$1,232,500 for FY-86 are needed. The Water Resources Development Account (Section 373.495, F. S.) is the appropriate account for the deposit and disbursement of state funds for the project. In addition, the SFWMD agrees to pay 100% of the annual maintenance costs associated with the levees, pump stations, and culvert system. The G&FWFC agrees to pay 100% of the operation costs provided general revenue is appropriated for this purpose or an alternative funding source is established. District funds earmarked for the project shall be managed by SFWMD in a separate account.

The parties to this Agreement, as governmental entities, are subject to the appropriation of funds by their respective legislative bodies in an amount sufficient to allow continuance of their performance in accordance with the terms and conditions of this Agreement for each fiscal year in which this Agreement is in effect. Each party agrees to use diligent efforts to secure the necessary funding to perform in accordance with the terms and conditions of this Agreement. If sufficient funds are not available for a party to this Agreement to reasonably comply with its terms and conditions, then this Agreement shall become void and of no further force and effect.

4. Responsibilities of All Agencies:

Each agency agrees to appoint a Restoration Project Coordinator (PC). The Project Coordinator from DER shall be the Restoration Project Leader (PL). The PL shall have

coordination responsibilities to ensure agency activities and decisions associated with the project are communicated to the other PC's in a timely manner. Quarterly, beginning October 1, 1983, each PC shall prepare a Project Status Report identifying agency progress in meeting scheduled tasks and responsibilities. Copies of the report shall be provided to the PL who in turn will circulate to the other parties of this Agreement and to the Governor's Office of Planning and Budgeting. To the extent possible, the PC's shall meet quarterly to discuss problems, project modifications, and other related matters.

All agencies agree to actively participate in seeking the necessary funding for the project. All agencies agree to review and approve an acceptable Monitoring Program and an Operational Plan for the project area.

5. Specific Responsibilities by Agency

The following section identifies the specific responsibilities of each agency. The target dates for completion of these tasks are noted in the Project Schedule (Paragraph 3.(f) of this Agreement) and the funding is noted in paragraph 3.(h) of this Agreement.

- (a) Florida Department of Environmental Regulation (DER):
  - 1) DER agrees to design the biological and water quality portion of the monitoring program.
  - 2) DER agrees to appoint a Restoration Project Leader (PL) who shall be responsible for overall project coordination.
  - 3) DER agrees to expedite the processing of all necessary permits associated with the project.
- (b) Florida Department of Natural Resources (DNR) on behalf of the Board of Trustees of the Internal Improvement Trust Fund (BTITF).
  - 1) DNR agrees to prepare a land consolidation plan.
  - 2) DNR agrees to expedite the land exchange/consolidation process.
- (c) South Florida Water Management District (SFWMD)
  - 1) SFWMD agrees to design, construct and maintain the restoration project.
  - 2) SFWMD agrees to obtain the necessary permits for construction of the project.
  - 3) SFWMD agrees to assist the G&FWFC in establishing the sites for measuring the maximum water levels.
  - 4) SFWMD agrees to expedite the processing of all operation permits.
  - 5) SFWMD agrees to develop, in cooperation with the G&FWFC, an operational plan for each tract.

(d) Florida Game and Fresh Water Fish Commission (G&FWFC).

- 1) G&FWFC agrees to identify the maximum water level measurement sites with the assistance of SFWMD.
- 2) G&FWFC agrees to develop a baseline inventory of existing wildlife and to map vegetation in the area.
- 3) G&FWFC agrees to develop the vegetation and wildlife portions of the monitoring program for the area.
- 4) G&FWFC agrees to assist SFWMD in developing an operational plan for each Tract.
- 5) G&FWFC agrees to obtain operation permits for the project.

6. Procedures for Agreement Modification

It is recognized that projects of this magnitude and complexity often require modifications. As such, this Agreement may be subject to amendments with the concurrence of all parties of this agreement.

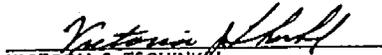
7. Prior Notice and Consultation

All parties agree to take no unilateral action which may interfere with the progress of this project prior to notice and consultation with the other parties of this agreement.

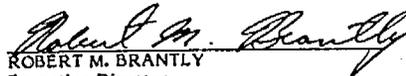
Executed this 10<sup>th</sup> day of June, 1983

  
ELTON J. GISSENDANNER  
Executive Director  
Board of Trustees of the Internal Improvement Trust Fund

Executed this 24 day of May, 1983

  
VICTORIA J. TSCHINKEL  
Secretary  
Department of Environmental Regulation

Executed this 27 day of May, 1983

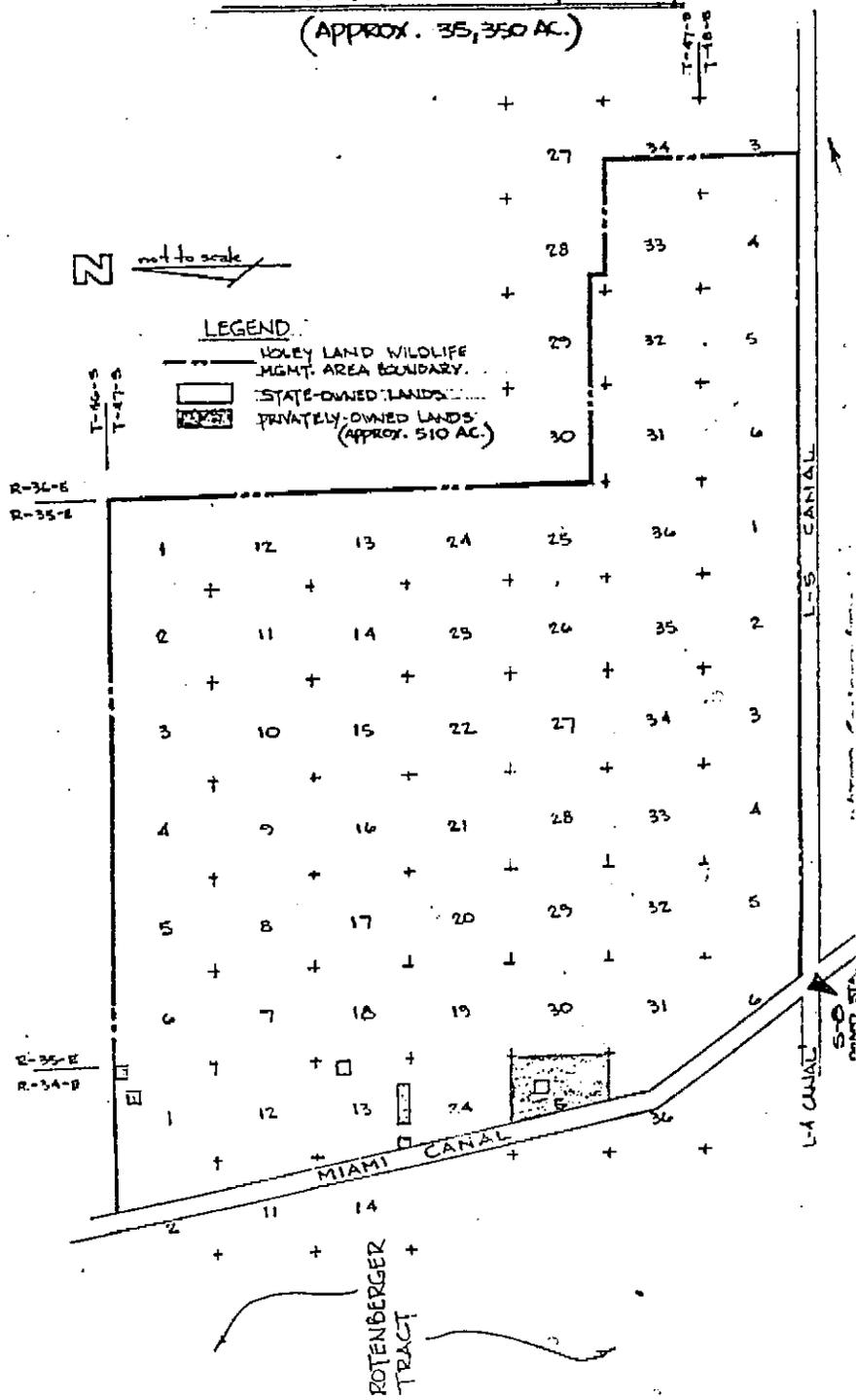
  
ROBERT M. BRANTLY  
Executive Director  
Florida Game and Fresh Water Fish Commission

Executed this 13<sup>th</sup> day of May, 1983

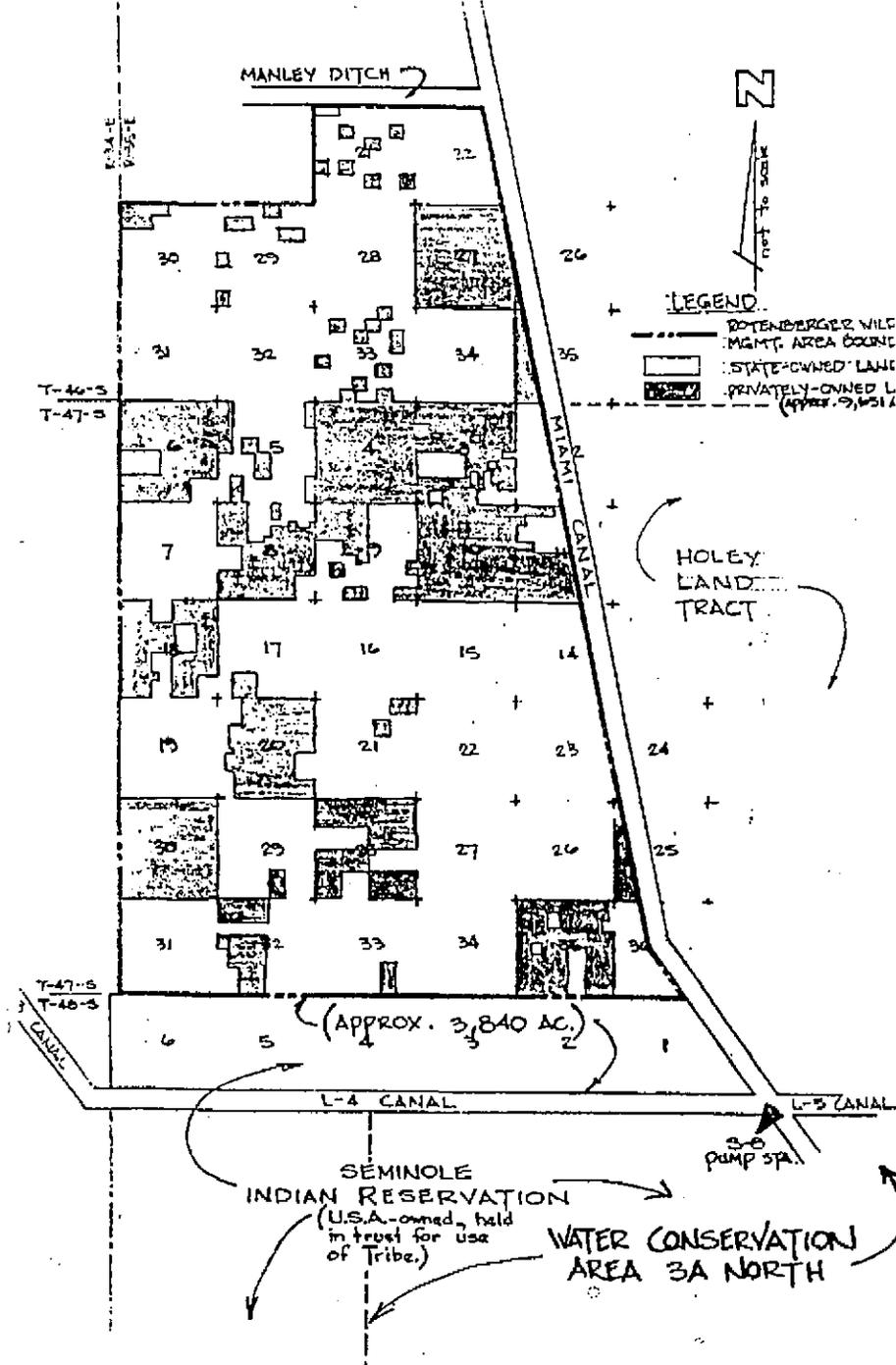
  
ROBERT L. CLARK, JR.  
Chairman, Governing Board  
South Florida Water Management District

EXHIBIT 1

# HOLEY LAND TRACT (APPROX. 35,350 AC.)



# ROTENBERGER TRACT (APPROX. 25,280 AC.)



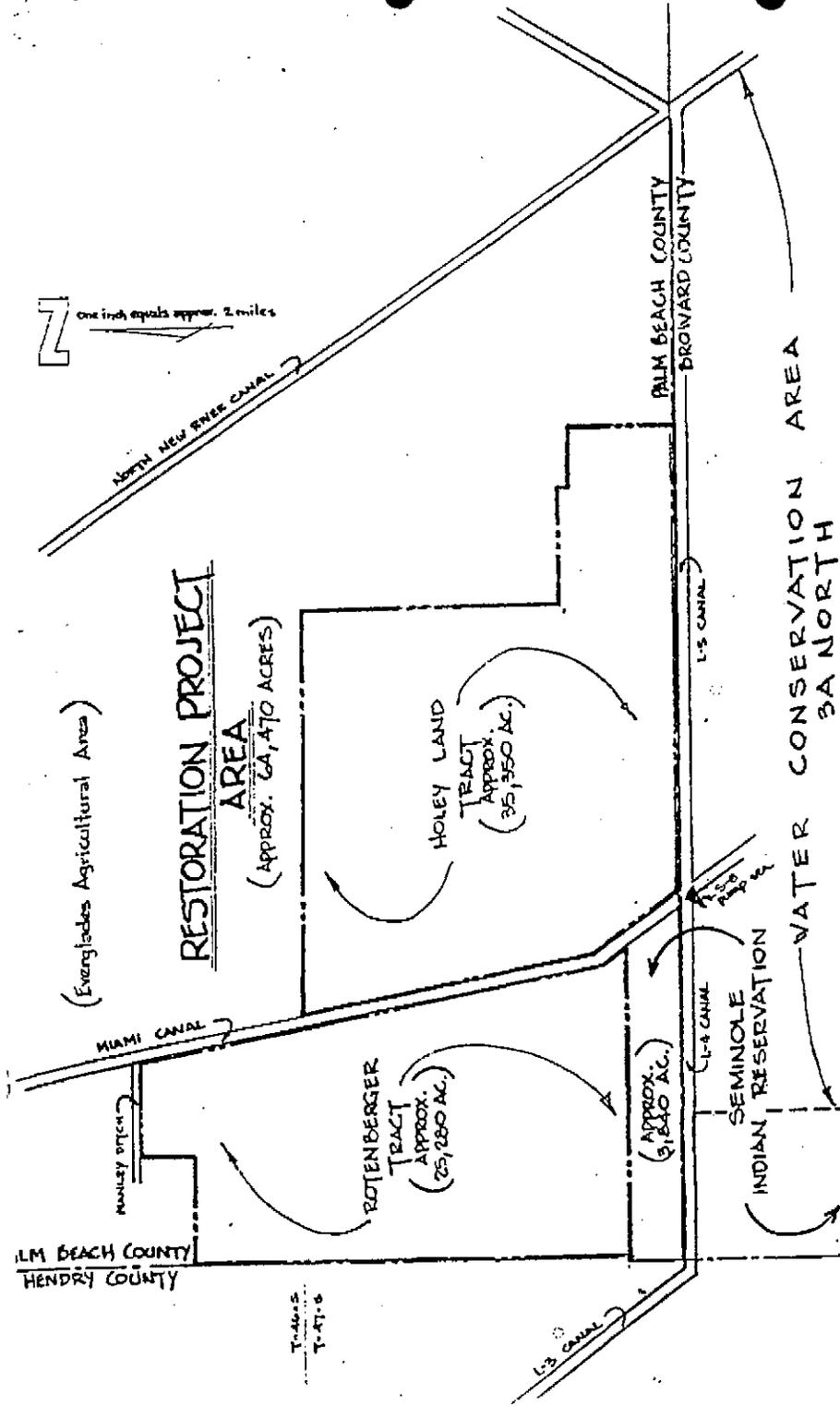


Exhibit 4

ESTIMATED PROJECT COSTS

"Holey Land Tract"	
Earth work	\$2,400,000
Pump system	1,200,000
Culvert work	250,000
Contingencies	<u>385,000<sup>(a)</sup></u>
	\$4,235,000
"Rotenberger Tract"	
Earth work	\$ 600,000
Pump system	600,000
Culvert work	<u>375,000</u>
	\$1,575,000
"Seminole Indian Reservation"	
Earth work	\$ 400,000
Culvert work	<u>100,000</u>
	\$ 500,000
Estimated Total Project Cost	\$6,310,000 <sup>(b)</sup>
Estimated Annual Operation Costs:	
Salaries	\$ 5,000
Utilities	<u>75,000</u>
Total	\$ 80,000 <sup>(c)</sup>
Estimated Annual Maintenance Costs:	
Salaries -	
Pumps	\$ 10,000
Levees - canal	25,500
Culverts	5,000
Parts, fittings, etc.	<u>5,000</u>
Total	\$ 45,500 <sup>(d)</sup>
Estimated Total Operation & Maintenance Costs:	<u>\$ 125,500</u>

Notes: (a) Accounts for inflation, innovative design technologies, (e.g., solar pumps, etc.), and other unforeseen costs.

(b) Figure does not include any land acquisition costs.

(c) State responsibility to pay costs.

(d) District responsibility to pay costs.

TRUSTEES, #13

June 7, 1983

MOTION:

Amend the Interagency Agreement, as follows:

(1) Page 1, paragraph 1, first sentence:

Florida's "Everglades" is recognized as ~~one-of-the-most~~  
a unique and valuable one of the most valuable wetland  
ecosystems in the world.

(2) Page 3, paragraph 2:

Delete second sentence which reads: "In addition, DNR  
shall seek an appropriation for acquisition staff to accomplish  
consolidation within the proposed time frame."

Insert: "The land consolidation plan shall be submitted  
to the Trustees for approval in July, 1983 and to the other  
parties of the agreement subsequent to June 30, 1983."

\*\*\*\*\*

The above motion was carried at the June 7, 1983, meeting of the  
Board of Trustees of the Internal Improvement Trust Fund of the  
State of Florida. Two minor changes to the Interagency Agreement  
for the restoration of the Rotenberger/Holey Land area of Palm  
Beach County were addressed. The first is a nonsubstantive  
grammatical change and the second affects only the DNR.

C90-1057

AGREEMENT  
BETWEEN THE  
SOUTH FLORIDA WATER MANAGEMENT DISTRICT  
AND THE  
FLORIDA GAME AND FRESH WATER FISH COMMISSION

This AGREEMENT made this 28<sup>th</sup> day of June, 1990 by and between the South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, Florida (District) and the Florida Game & Fresh Water Fish Commission, 620 South Meridian Street, Farris Bryant Building, Tallahassee, Florida (GFC).

WITNESSETH THAT

WHEREAS, the District is empowered to enter into contracts with public agencies, private corporations or other persons, pursuant to section 373.083, Florida Statutes; and

WHEREAS, Section 5 of the Holey Land and Rotenberger Project Memorandum of Agreement (MOA) specifies that the District and the GFC cooperatively develop an operational plan for each tract of land, and

WHEREAS, the District and the GFC have jointly developed an interim operational plan for the Holey Land pending final approval of the Everglades SWIM Plan pursuant to section 373.456(5), F.S., and the resolution of any appeals or review pursuant to section 373.114, F.S., and

WHEREAS, the construction of the Holey Land pump stations is complete and ready for operation;

NOW, THEREFORE, in consideration of the benefits to each of the parties, the District and the GFC agree to the following:

1. Unless extended or terminated by mutual consent of both parties, the period of performance of this Agreement shall commence immediately and terminate upon final approval of the Everglades SWIM Plan pursuant to section 373.456(5), F.S., and the resolution of any appeals or review pursuant to section 373.114, F.S.
2. The interim operational plan for the Holey Land is attached as Exhibit "A".
3. The use of this interim schedule in no way limits potential future operational plans that may be proposed as a result of on going District efforts to address the water and environmental resource issues of the Everglades region or GFC plans for restoration of the Holey Land.

Page 1 of 2

4. The District monitoring plan and reporting schedule for the Holey Land are attached as Exhibit "B". The GFC monitoring plan and reporting schedule for the Holey Land are attached as Exhibit "C". The purpose of the monitoring plans is to document conditions in the Holey Land during this initial period in order to better understand the hydrology and environmental resources associated with the Holey Land project.
5. This Agreement states the entire understanding between the parties and supersedes any written or oral representations, statements, negotiations, or agreements to the contrary. Notwithstanding the previous sentence, any conflicts between this Agreement and that certain Memorandum of Agreement Between The Florida Department of Environmental Regulation (DER) and The Board of Trustees of the Internal Improvement Trust Fund (BTITF) and The South Florida Water Management District (SFWMD) and The Florida Game and Fresh Water Fish Commission (G&FWFC) Concerning the Holey Land and Rotenberger Project, dated May 27, 1983, shall be resolved in favor of the latter.

IN WITNESS WHEREOF, the parties hereto have set their hands on the day, month and year first above written.

Legal Form Approved  
SFWMD Office of Counsel

TRW  
By: *Sam J. Quincy*  
Date: 6.14.90

SOUTH FLORIDA WATER MANAGEMENT DISTRICT,  
BY ITS GOVERNING BOARD

By: *Walter J. ...*  
Chairman

Approved As To Form and Legality

By: *James ...*  
ATTORNEY  
Date: 6/27/90

FLORIDA GAME AND FRESH WATER  
FISH COMMISSION

By: *Robert M. Beatty*  
Executive Director

EXHIBIT "A"  
HOLEY LAND WATER MANAGEMENT  
INITIAL OPERATIONAL PLAN

PROCEDURES

The Holey Land pump station will utilize runoff from the Miami Canal basin to maintain the stage in the Holey Land as close as possible to the schedule presented in Figure 1, subject to the availability of water. During the wet season, May 15 through October 31, the schedule rises linearly from average ground level (approximately +11.5 ft MSL) to +13.5 ft MSL. During the dry season, November 1 through May 14, the schedule descends linearly from +13.5 ft MSL to average ground level. Water levels and rainfall amounts will be monitored daily by the District. Daily operating decisions will be made by the Director of Operations for the South Florida Water Management District (District) in accordance with the strategy described herein.

The operational plan also includes maintaining a minimum ground water elevation to reduce marsh destruction due to fires.

WATER CONTROL FACILITIES

The 1983 Memorandum of Agreement called for the design and construction of water control facilities to achieve the restoration of Everglades habitat in the Holey Land. The facilities include a 17.5 mile perimeter levee with exterior seepage control canal, and the following water control structures (see Figure 2):

1. Inlet pump station, G-200A;
2. Seepage pump stations, G-200B, G-201; and,
3. Outlet culverts with risers and removable flashboards, G-204, G-205, G-206.

STAGE MONITORING STATION

For operational decisions, the average stage in the Holey Land will be defined as the water level in the interior pond at station G-203, located on the eastern boundary of Holey Land, 4 miles south of the north levee (see Figure 2). This location is far enough away from the inlet and outlets that it should not be significantly influenced by changes in inlet or outlet operations. Stage data will be collected remotely via the District's telemetry system.

In the event of data acquisition problems at G-203, the average stage will be determined by the District by averaging the available readings from gages at G-200A, G-201, G-204, G-205, and G-206, or by estimating the level based on the best available information.

## OPERATIONAL STRATEGY

### A. Pump Station Operations

1. In general, the inlet pump station, G-200A, will operate in response to rainfall, subject to the criterion that the average stage in the Holey Land is below schedule.
2. The inlet pump station will operate to supply water to the Holey Land when the average stage is below + 10.5 ft MSL if the water level in Lake Okeechobee is above the water shortage WATCH line specified in the District's Lake Okeechobee Water Supply Management Plan and there is sufficient conveyance capacity in the Miami Canal to move water to the Holey Land. When the lake level is below the WATCH line all water deliveries to the Holey Land will be considered by the District on a case-by-case basis. This operation is directed at minimizing marsh destruction resulting from muck fires.
3. If the water level in the Holey Land is below schedule, and the District desires to release water from Lake Okeechobee to reduce the need for regulatory releases to the St. Lucie estuary, then water may be moved from Lake Okeechobee to the Holey Land provided this does not cause the average stage in the Holey Land to exceed schedule.
4. The seepage pumps, G-200B and G-201, will be operated to control seepage from the Holey Land to avoid damage to adjacent agricultural land.

### B. Outlet Culverts Operations

#### 1. Wet season (May 15 - October 31) -

- a. During the transition from the dry season to the wet season, when the average stage in the Holey Land reaches + 11.5 ft MSL, flashboards at the outlet culverts will be fully removed. The boards will remain out for the remainder of the wet season.

#### 2. Dry season (November 1 - May 14) -

- a. Operations during the transition from the wet season to the dry season, will be based on the average stage in the Holey Land beginning on October 24.
  - i. If the average stage in the Holey Land is more than one foot below schedule, the flashboards will be placed to a crest elevation of + 13.5 ft MSL.
  - ii. If the average stage in the Holey Land is on or above schedule, flashboards will not be installed until the stage falls below the schedule, at which time the transition specified in the next paragraph will be initiated.
  - iii. If the average stage in the Holey Land is less than one foot below schedule, boards will be placed at elevation + 12.5 ft MSL for one week,

+ 13.0 ft MSL for one week and then + 13.5 ft MSL for the remainder of the dry season.

- b. If the average stage in the Holey Land exceeds the schedule by 1.0 ft, the flashboards will be removed to a crest elevation of + 11.5 ft MSL. The boards will be replaced to a crest elevation of + 13.5 ft MSL when the stage drops below the schedule.
- c. Use of Cattail Infestation as a Trigger to Alter the Pumping Schedule. If the annual vegetation of monitoring by GFC indicates that an increase of over 2,000 acres of cattails has occurred since pumping started, the boards will be installed at + 13.5 ft and pumping shall be reduced to that necessary to meet the 0-2 foot schedule (the 15% operation).

EXHIBIT "B"  
HOLEY LAND  
DISTRICT MONITORING PLAN

**OBJECTIVE**

The objective of the District monitoring plan is to collect data which are indicative of the performance of the initial operational plan in achieving the goals of the Holey Land Restoration Project.

**MONITORING ITEMS**

The following items will be monitored and reported periodically during the execution of the initial operational plan:

- a. Water stage data including continuous water level data.
- b. Water quality and sediments shall be monitored in accordance with the DER permit as summarized below:

Water Quality

Total phosphate, ortho-phosphate, TKN, ammonia, nitrates and nitrites, turbidity, dissolved oxygen, metals, purgeables, pesticide extractables, Base neutrals/acid extractables. Frequency: Quarterly for the first year, the frequency may be reduced to semi-annually pending DER's review of the first year's data. Samples shall encompass the wet season and the dry season. Sampling shall continue for a period of five years following the initial operation of Holey Land.

Water Quality Sampling Stations:

- Station 1: Discharge at G-200A from the Miami Canal.
- Stations 2 & 3: Discharge from G-200B and G-201 from the seepage canals
- Stations 4 & 5: Discharge from two of the three outlets from the Holey Land to WCA-3.
- Station 6: Discharge from the Miami Canal to the WCA-3 from the S-8 pump station

Sediments

Metals, purgeables, pesticide extractables, base neutrals/ acid extractables  
Frequency: Samples shall be collected and analyzed during the first year of operation semiannually at the four stations indicated in the DER permit. One or two of the sampling stations may be deleted by DER subject to the data collected in the first year.

- c. Rainfall shall be monitored by the District telemetry network along the Miami Canal at Pump Stations S-3, S-8, & G-200.

- d. Operation of the G-200A, G-200B, G-201, G-204, G-205 and G-206 structures will be recorded.

**REPORTING**

The District will provide monitoring reports as follows:

- a. Monthly Water Conditions Report, including stage and pumping data.
- b. Annual Water and Nutrient Budget including rainfall, pumping, gravity discharge and seepage.

**EXHIBIT "C"**  
**HOLEY LAND**  
**GFC MONITORING PLAN**

**OBJECTIVE**

The objective of the GFC monitoring plan is to collect data which are indicative of the effect of the operational plan on wildlife and vegetation communities in the Holey Land.

**MONITORING ITEMS**

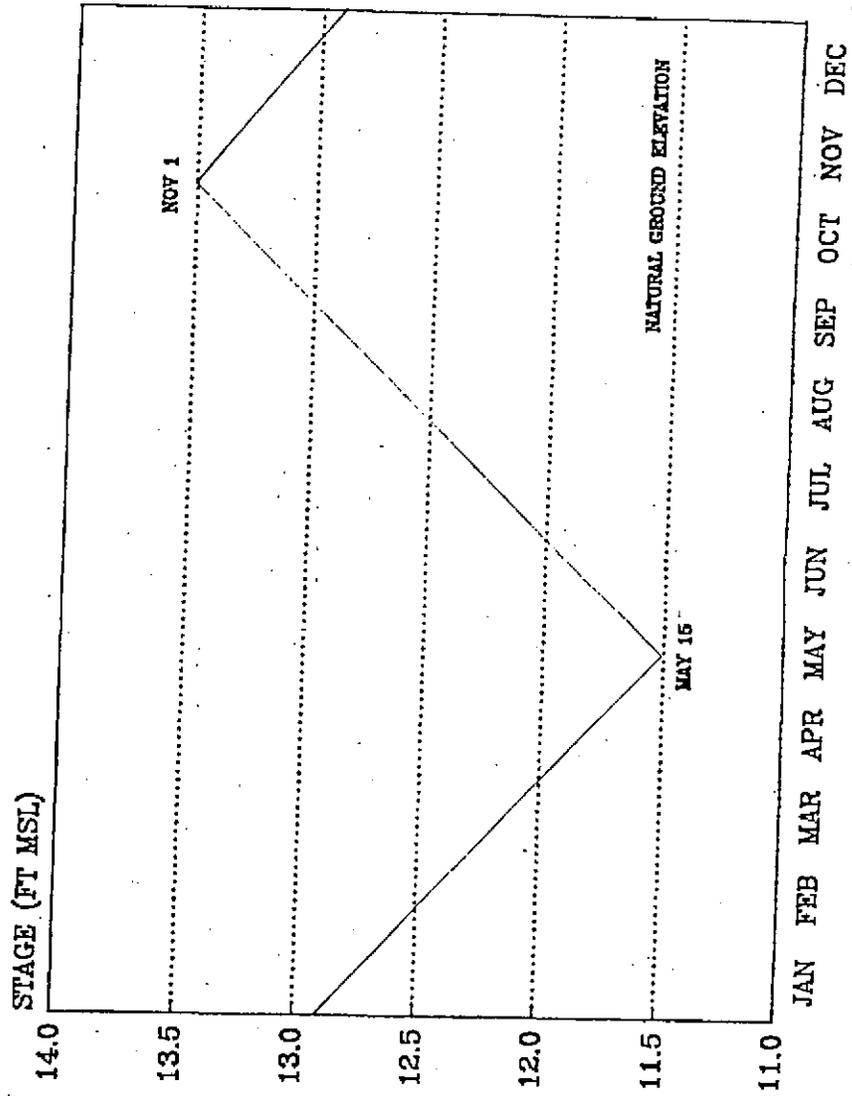
- a. Aerial photographs and ground truthing of the Holey Land will establish a vegetation baseline to define vegetative species and spatial extent. A combination of periodic aerial photographs and satellite images will be analyzed on an annual basis to monitor changes in vegetation, species and spatial extent.
- b. Various surveys will be conducted to establish a wildlife baseline for alligator nesting, wading birds, and wading bird forage. These wildlife surveys will be continued periodically to monitor changes in wildlife population.

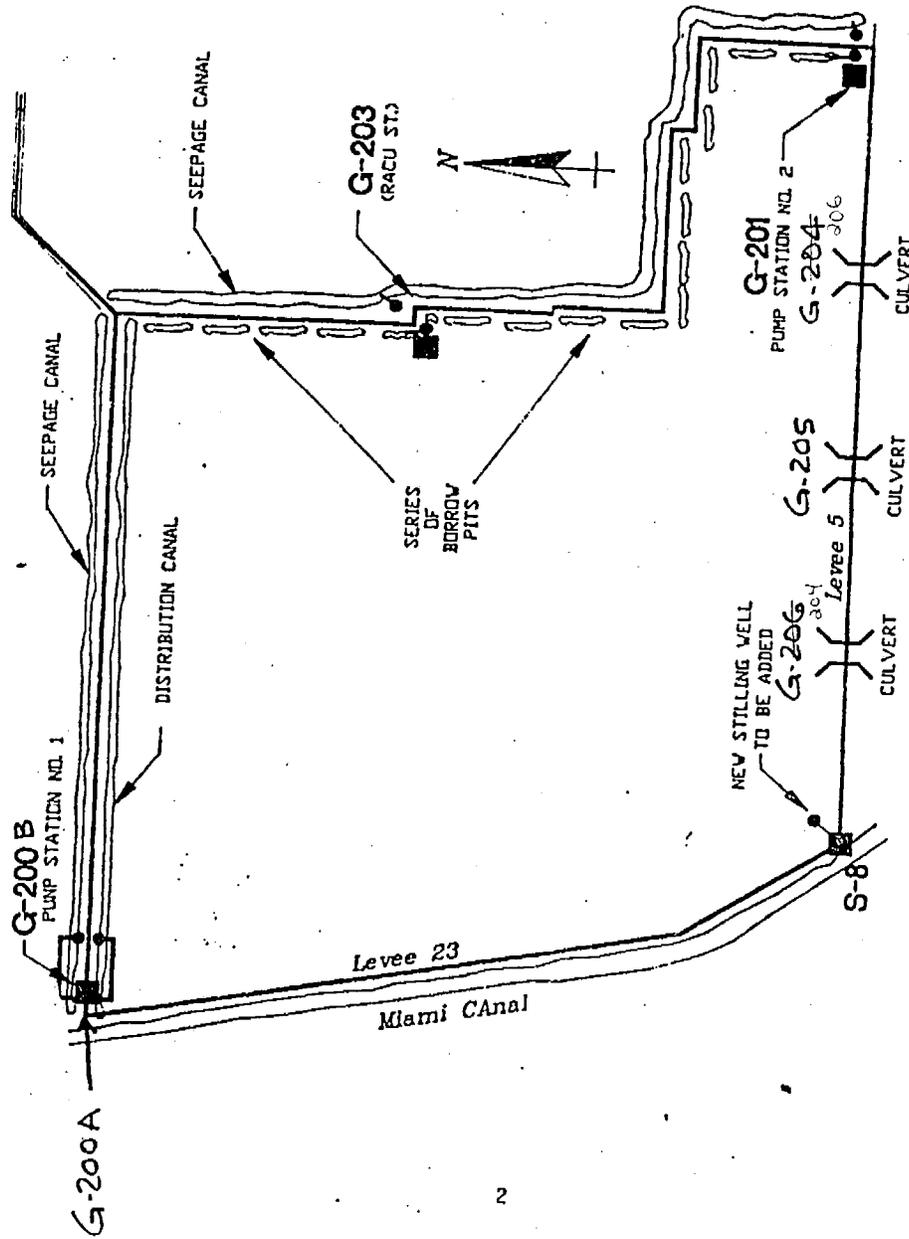
**REPORTING**

The GFC will provide monitoring reports as follows:

- a. Quarterly submission of any wildlife data collected during the quarter.
- b. Annual Wildlife and Vegetation Status Reports

FIG. 1 - HOLEY LAND OPERATIONAL SCHEDULE





**FIGURE 2**

**HOLEYLAND - GENERAL SITE MAP**  
( Water Conservation Area 3A )

RESOURCE OPERATIONS - ELECTRONICS DIVISION  
10-203 HOLEYLAND 2/16/88 (HJJ-FRB)

TO *Col. R. M. Brantly* <sup>Executive</sup> Director

SUBJECT *Exchange of Land - Seminole Indians* DATE *10-10-80*

MESSAGE

Attached letter re-exchange of ~~land~~ <sup>land</sup> on the  
6 sections (South end of Rotenberg) with the Toe  
of the Boat (Haley Land) - we are investigating the  
course & effect and will have an answer in a  
week or 10 days -

Signed *Fred Stuber*

TO DATE

REPLY

Signed \_\_\_\_\_

Reply Message

SENDER: DETACH AND FILE FOR FOLLOW UP

# SEMINOLE TRIBE OF FLORIDA

JAMES E. BILLIE  
Chairman

FRED SMITH  
Vice Chairman



PRISCILLA D. SAYEN  
Secretary-Treasurer  
8073 STIRLING ROAD  
HOLLYWOOD, FLORIDA 33024  
582-7112  
791-0920

October 1, 1980

Mr. Fred W. Stanberry, Director  
Division of Wildlife  
Florida Game and Fresh Water Fish Commission  
Farris Bryant Building  
620 South Meridian Street  
Tallahassee, Florida 32301

RE: Proposed Rotenberger/Holey Land Trade

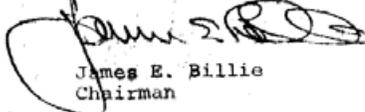
Dear Mr. Stanberry:

Subject to the concurrence of the lessee of the Seminole Tribe of Florida's six (6) sections in Palm Beach County, south of the Rotenberger Tract, Mr. Howard E. Tommie, the Seminole Tribe of Florida proposes the following:

- A. The Seminole Tribe of Florida (hereinafter called the Tribe) will give the Florida Game and Fresh Water Fish Commission (hereinafter called the Commission) an easement for fifty five (55) years giving the Commission the right to manage wildlife and water resources in the six sections, so long as those wildlife and water management activities of the Commission do not unduly interfere with lessee Howard E. Tommie's right to graze cattle in the six sections.
- B. The Commission will give the Tribe an agricultural lease to the approximately six sections known as "the toe of the Holey Land", which will allow the Tribe use of the "toe" for agricultural purposes only, and will reserve to the Commission the right to manage wildlife and water resources in "the toe".

We await your response.

Sho Naa Bish,

  
James E. Billie  
Chairman

JEB/cld

18" on Indian land - seasonal (at least six months)  
drops for remaining period to several inches of water

This does not sound very compatible to me

JHS

WILDLIFE
OCT 1 1980
DIR. <i>JHS</i>
ASST.
ADM. ASST.
CHIEF
ATTY.
PLANNING
GEN. MGR.
BU. CH. REG.
BU. CH. SA.
E. S. COOR.
E. S. BIO.
SECY.
FILE

*Rotenberger*

RESOURCE MANAGEMENT AGREEMENT  
FOR  
FISH AND WILDLIFE MANAGEMENT  
IN  
THE ROTENBERGER AREA

Agreement No. 770-0002

The BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND of the State of Florida, referred to herein as the "Board" and the STATE OF FLORIDA DEPARTMENT OF NATURAL RESOURCES, DIVISION OF STATE LANDS, hereby grants to the STATE OF FLORIDA GAME AND FRESH WATER FISH COMMISSION, referred to herein as the "Commission", fish and wildlife management responsibilities for the Rotenberger Area in Palm Beach County, Florida, described as follows:

(See Exhibit A, attached hereto and made a part hereof)

W I T N E S S E T H :

The Board and the Commission, for and in consideration of the covenants hereinafter contained, do hereby covenant as follows:

1. Subject to all existing encumbrances and the terms and conditions on the Rotenberger Area, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida and the State of Florida Department of Natural Resources, hereby grant to the Commission management responsibilities on the subject property for the purposes of fish and wildlife management which shall not conflict with the conservation, protection, and enhancement of environmentally unique and irreplaceable lands.

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

April 17, 1980

M E M O R A N D U M

TO: CARLEEN THIGPEN, CENTRAL FILES  
FROM: FRED W. STANBERRY, DIRECTOR, DIVISION OF WILDLIFE  
SUBJECT: CONTRACTS - ROTENBERGER/VOLUSIA RECHARGE/BROWN'S FARM

Attached for your files are copies of contracts between the Department of Natural Resources and the GFC for the following areas: Rotenberger, Volusia Recharge and Brown's Farm. All three contracts have an indefinite time-frame.

A copy of each of these contracts is being filed with the Division of Wildlife.

FWS/gg

Attachments

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of Florida Department of Natural Resources shall determine whether or not any proposed uses by a third party are in conflict with the

and unauthorized uses.

3. It is understood and agreed that in addition to the fish and wildlife responsibilities and the attendant activities thereto, the Commission will assist the State of Florida Department of Natural Resources in the development of a master plan for the management of this area which will address those appropriate elements of the State Lands Management Plan. A conceptual draft of said master plan for this area will be submitted to the head of the State of Florida Department of Natural Resources for approval by June 30, 1980. The master plan with necessary capital programs will be developed jointly and in as timely a manner as appropriated funds permit. Management activities shall be jointly reviewed for compliance with the conceptual plan on an annual basis until such time as the master plan is adopted by the Board. Subsequent to its adoption by the Board, the master plan shall be the directive for management activities which will be reviewed jointly by the State of Florida Department of Natural Resources and the Commission at no greater than five-year intervals.

4. The Commission shall not clear, plant, build, or alter the property except as provided for in the approved conceptual draft or master plan without the advance written approval of the Executive Director of the State of Florida Department of Natural Resources.

5. Upon execution of this Agreement, the Commission shall have the right to enter and occupy the property for the purposes necessary to fulfill the designated responsibilities.

6. The State of Florida Department of Natural Resources, or its duly authorized agent, shall retain the right to enter the property and engage in management activities not inconsistent with the plans provided for herein and shall retain the right to grant compatible uses of the property to third parties during the term of this Agreement. In the event of a possible conflict, the State of Florida Department of Natural Resources shall determine whether or not any proposed uses by a third party are in conflict with the

responsibilities of the Commission.

7. The Board or its duly authorized agent shall have the right at any time to inspect the works and operations of the Commission in any matter pertaining to this Agreement. Should the Commission fail to keep and perform any of the responsibilities designated in any plan provided for herein, the Board shall have the right to terminate this Agreement on the 90th day following written notice to the Commission, providing that complete correction of the deficiency has not been accomplished or justified to the Board in writing by the Commission within 60 days of receipt of such notice. In any event, the Board or the Commission shall have the right to terminate this Agreement at any time upon 60 days notification providing such notification is in writing from the Executive Director of the State of Florida Department of Natural Resources or the Executive Director of the State of Florida Game and Fresh Water Fish Commission. If said notification is not received prior to February 1 of any year, the termination date will be February 1 of the next calendar year rather than a 60-day period.

8. This Agreement and any rights and privileges contained herein are for the sole use of the Commission and shall not be assigned or transferred to any other party.

9. The Commission shall defend, hold and save the Board harmless from any and all liability or claims that may result from injuries to persons or damage to property arising out of the use of the property by the Commission, to the extent allowed by the laws of Florida.

10. Any inequities that may subsequently arise as a result of this Agreement 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 may be referred to the State of Florida Department of Natural Resources for final resolution.

IN TESTIMONY WHEREOF, the legally designated agent of the State of Florida Department of Natural Resources, and State

of Florida Game and Fresh Water Fish Commission have hereunto set their hands.

WITNESS:

STATE OF FLORIDA GAME AND FRESH WATER FISH COMMISSION

Jimmie C. Bessie

By: Robert M. Brantly  
Colonel Robert M. Brantly  
Executive Director

Date: February 20, 1980

WITNESS:

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

Violet Davis  
Mary H. Selcom

By: Elton J. Gissendanner  
Elton J. Gissendanner  
Executive Director  
Department of Natural Resources

Date: November 13, 1979



FLORIDA GAME AND FRESH WATER FISH COMMISSION  
W. G. ...

APPROVED AS NECESSARY AND BUDGETARILY SOUND  
James E. ...  
DIRECTOR

Agreement No. 770-0002

EXHIBIT A

PALM BEACH EVERGLADES ENVIRONMENTALLY ENDANGERED LANDS TRACT  
(ROTENBERGER TOWNSHIP)

PARCEL 1

All of Section 23, Township 47 South, Range 35 East, subject to the conditions as described in Official Records Book 2403, Page 301, Public Records of Palm Beach County, Florida.

PARCEL 2

All of Section 22, Township 47 South, Range 35 East, subject to the conditions as described in Official Records Book 2403, Page 302, Public Records of Palm Beach County, Florida.

PARCEL 3

All of Section 15, Township 47 South, Range 35 East, subject to the conditions as described in Official Records Book 2403, Pages 302-303, Public Records of Palm Beach County, Florida.

PARCEL 4

That part of the Northeast 1/4 of Section 11, Township 47 South, Range 35 East, lying East of the Miami Canal, said canal more particularly described in Deed Book 702, Page 18, and LESS the right of way of Central and Southern Florida Flood Control District, said right of way more particularly described in Deed Book 1155, Page 204, of the Public Records of Palm Beach County, Florida, subject to the conditions as described in Official Records Book 2403, Page 303, Public Records of Palm Beach County, Florida.

PARCEL 5

The East 1/4 of the Northeast 1/4 of the Northeast 1/4 of Section 35, Township 47 South, Range 35 East, subject to the conditions as described in Official Records Book 2403, Page 303, Public Records of Palm Beach County, Florida.

PARCEL 6

All of Section 2, Township 47 South, Range 35 East, less the South 50 feet of that portion of Section 2 West of the Miami Canal and less the 400 foot right of way of the Miami Canal. All of Section 12, Township 47 South, Range 35 East; All of Sections 14, 24 and 36, Township 47 South, Range 35 East, less the right of way of the Miami Canal. All of Section 26, Township 47 South, Range 35 East. The West 1/2 of Section 34, Township 47 South, Range 35 East, less the East 738.375 feet thereof; containing 230.5 acres, more or less, subject to the conditions as described in Official Records Book 2403, Page 303, Public Records of Palm Beach County, Florida.

EXHIBIT A

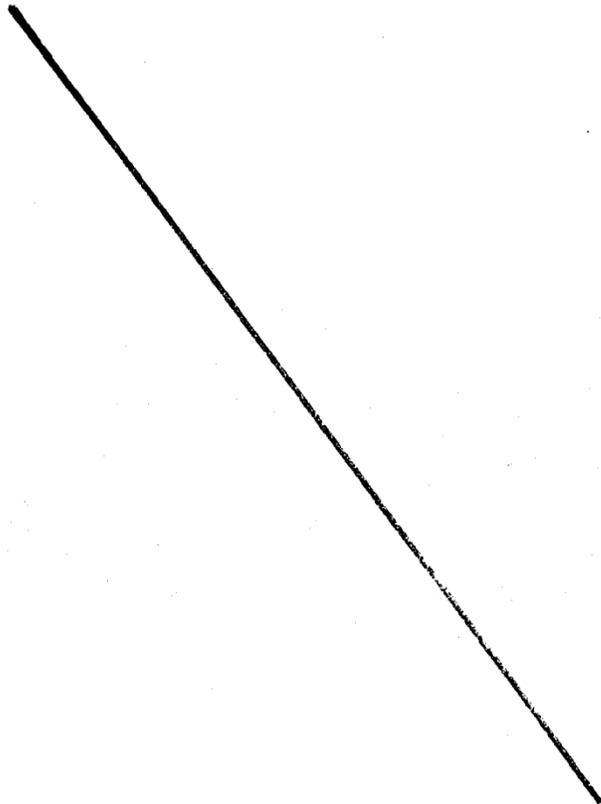
PALM BEACH EVERGLADES ENVIRONMENTALLY ENDANGERED LANDS TRACT  
(ROTENBERGER TOWNSHIP)

ALSO:

The East 1/2 and the East 338.25 feet of the West 1/2 of Section 34, Township 47 South, Range 35 East, containing 361 acres, more or less, subject to the conditions as described in Official Records Book 2403, Page 305, Public Records of Palm Beach County, Florida.

ALSO:

The West 400.125 feet of the East 738.375 feet of the West 1/2 of Section 34, Township 47 South, Range 35 East, containing 48.5 acres, more or less, subject to the conditions as described in Official Records Book 2403, Page 307, Public Records of Palm Beach County, Florida.



RESOLUTION #2 - Concerning Protection of the Rotenberger Tract

WHEREAS, that tract of land known as the Rotenberger tract located in Southwest Palm Beach County, Florida is an important parcel of the natural Everglades Eco System.

WHEREAS, this area is important as a habitat for mammals, birds, reptiles and amphibians native to the Everglades.

WHEREAS, this area supports one of the largest deer herds in Florida.

WHEREAS, the people of Florida enjoy the assets inherent in the habitat provided by the Rotenberger tract.

WHEREAS, private landowners within this area have expressed a desire and have indeed begun drainage of the area, causing adverse environmental effects.

Now be it resolved that the Game and Fresh Water Fish Commission commends and endorses the Governor and the Cabinet of the State of Florida for their actions in declaring a moratorium on granting drainage permits on the "Rotenberger" tract in Palm Beach County and their subsequent actions directing the D.N.R. to acquire the private lands within the Rotenberger tract.

MEMORANDUM

January 11, 1980

TO: Commission Members and Staff  
FROM: Fred Stanberry, Director, Division of Wildlife  
SUBJECT: Land Acquisition on the Rotenberger Wildlife Management Area

The present Rotenberger Wildlife Management Area land ownership consists of land in State ownership, land purchased with Environmentally Endangered Lands funds, Big Cypress Indian reservation land and private land. The total acreage is 29,440 acres--6,400 belong to the Big Cypress Indian Reservation, 6,211 acres are in private ownership in the Rotenberger township west of the Miami Canal and 1,180 acres are in private ownership lying north of the Rotenberger township and south of the Manley Ditch, all inholdings totaling 13,791 acres which need to be acquired or leased to the Game and Fresh Water Fish Commission. The present State ownership, under management by the Game and Fresh Water Fish Commission, is approximately 15,649 acres.

Your approval is solicited to request that the Division of State Lands, Department of Natural Resources acquire the 6,400 acres now in the Big Cypress Indian Reservation, the remaining 5,711 acres of private land within the boundary of the Rotenberger Wildlife Management Area, the 680 acres lying east of the Miami Canal in the Rotenberger township, and part of the Holeyland Wildlife Management Area. The attached map indicates the location of the land ownerships described above.

The Commission was designated as the managing agency in 1974 and directed to manage the area under a management concept established by the Florida Cabinet. The management concept endorsed by the interagency committee and established by the Executive Board of the Department of Natural Resources (Governor and Cabinet) was, in summary, to reestablish the natural water regime in order to prevent further deterioration of the natural Everglades sawgrass marsh ecosystem and to protect and manage the native wildlife associated with the plant communities.

The Rotenberger area acquisition has been controversial from the beginning because of conflicts between agricultural interests, environmentalists, hunters and water managers in general. The agricultural interests want the land for growing sugar cane; the environmentalists question the use of the land for hunting; the hunter has a primary interest of maintaining a large deer herd and water managers desire the area to be used primarily for water management in the Lake Okeechobee-Everglades Water Management System. As the agency designated to manage the property, the Commission is not likely to satisfy all interests with its future water management decisions. Although the management concept is directed by the Florida Cabinet, it remains broad enough to allow for pressures from other interests to modify our plans to serve their diverse needs.

The Game and Fresh Water Fish Commission is currently developing a comprehensive management plan for the Rotenberger/Holeyland area in

southwest Palm Beach County. At the present time the lower six sections of the Rotenberger area are a part of the Big Cypress Indian Reservation and this land is leased to the State on a short-term basis for inclusion in the Rotenberger Wildlife Management Area.

Even at this early planning stage, it is obvious that these six sections should be included in the Rotenberger Wildlife Management Area on a permanent basis. Inclusion of these lands will eliminate the need for a six-mile dike along the southern boundary of the area which would be necessary for proper water level management on the Rotenberger area, since the existing L-4 levee can be utilized for this purpose. In addition, the existing levees and roads provide excellent access at the present time and if these lands are included in the management area, they will continue to provide this access.

The State of Florida should negotiate an agreement with the Seminole tribe of Florida to protect this land and manage it as part of the Rotenberger Wildlife Management Area. The State should seek either a long-term commitment or lease to accomplish this or they should swap other State lands for these key sections in the Rotenberger tract.

Based on the last estimate made in November, 1977, the costs of restoring the Rotenberger area were \$1,112,413. These costs include water pumps, pipes, culverts, dike construction, dike repair, engineering fees and operational costs for ten years; the costs are subject to inflation and do not include the additional land acquisition costs which are necessary before construction can begin.

The Division of Wildlife will prepare a wildlife and water management plan which will be commensurate with the management concept. Funds are also budgeted to obtain engineering assistance for developing the coordinated Wildlife-Water Management plan. The objective is to have a complete plan with updated construction costs to present to the 1981-82 Legislature for funding.

Staff requests approval by the Commission to negotiate with the DNR and its Division of State Lands, seeking their active assistance in acquiring the six sections of Indian lands and other private holdings located within the Rotenberger tract.

7007/mms5/8-9  
Attachment

April 17, 1980

M E M O R A N D U M

TO: CARLEEN THIGPEN, CENTRAL FILES  
FROM: FRED W. STANBERRY, DIRECTOR, DIVISION OF WILDLIFE  
SUBJECT: CONTRACTS - ROTENBERGER/VOLUSIA RECHARGE/BROWN'S FARM

Attached for your files are copies of contracts between the Department of Natural Resources and the GFC for the following areas: Rotenberger, Volusia Recharge and Brown's Farm. All three contracts have an indefinite time-frame.

A copy of each of these contracts is being filed with the Division of Wildlife.

FWS/gg

Attachments



State of Florida



REUBIN O'D. ASKEW  
Governor  
BRUCE A. SMATHERS  
Secretary of State  
ROBERT L. SHEVIN  
Attorney General  
GERALD A. LEWIS  
Comptroller  
PHILIP F. ASHLER  
Treasurer  
DOYLE CONNER  
Commissioner of Agriculture  
RALPH D. TURLINGTON  
Commissioner of Education

DEPARTMENT OF NATURAL RESOURCES

HARMON W. SHIELDS  
Executive Director

CROWN BUILDING / 202 BLOUNT STREET / TALLAHASSEE 32304

March 29, 1976

MEMORANDUM

TO : Dr. O. E. Frye, Jr., Director  
Game and Fresh Water Fish Commission

Mr. Charles M. Sanders, Director  
Division of Resource Management

FROM: Ney C. Landrum, Director  
Division of Recreation and Parks

*Game*

GAME MGT.
MAR 30 1976
CHIEF _____
ASST. _____
STATIS. _____
PROJ. LDR. _____
SECT'Y _____
FILE _____

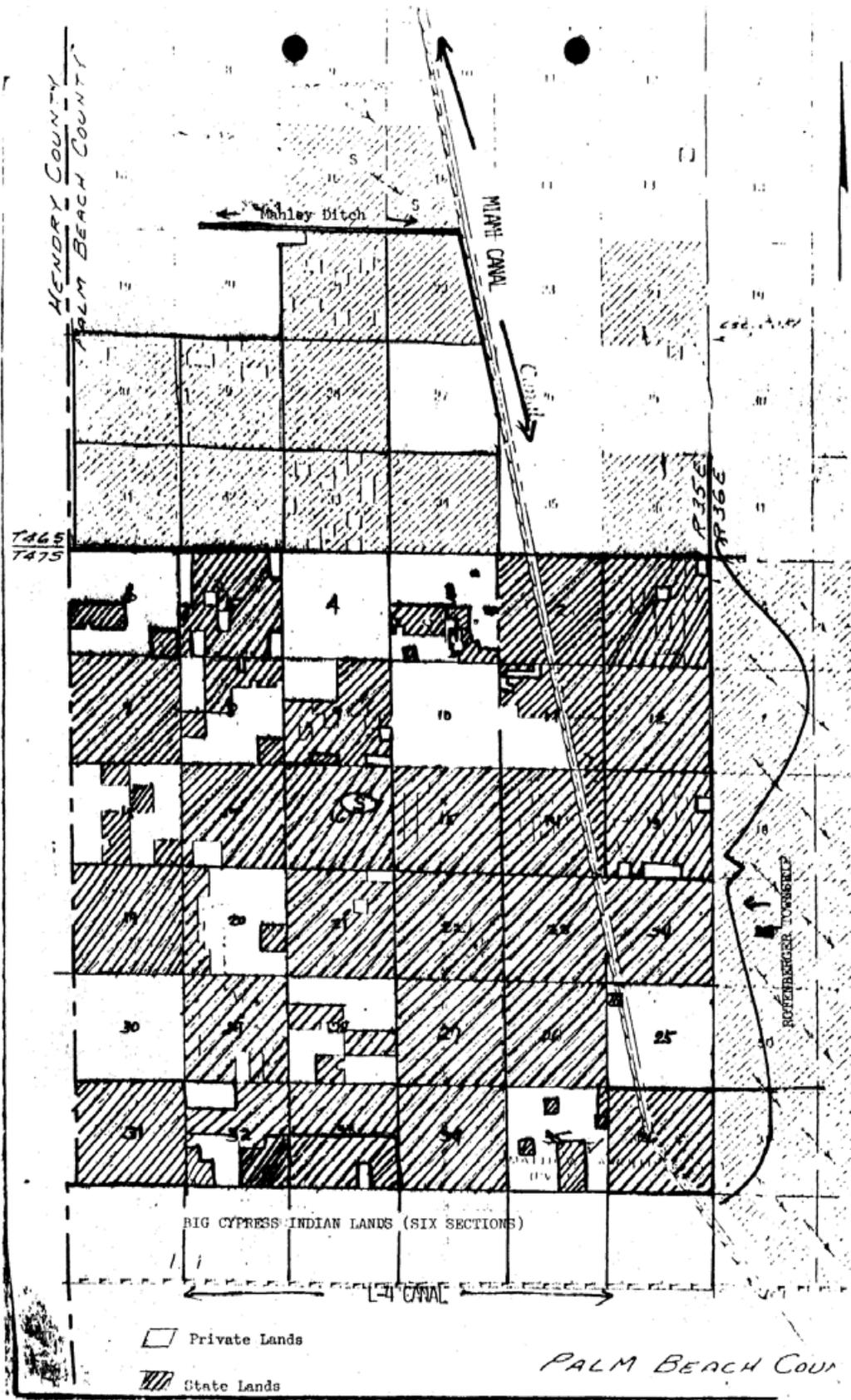
Attached for your review is the Lease Agreement form we propose to use for the Lower Apalachicola River and Palm Beach Everglades tracts purchased under the Environmentally Endangered Lands program. The Governor and Members of the Cabinet, sitting as the Head of the Department of Natural Resources, previously approved placement of these two properties under the jurisdiction of the Game and Fresh Water Fish Commission for appropriate protection and management.

In the spaces provided in paragraph two on the second page, we propose the insertion of six months and twelve months for Lower Apalachicola River and twelve months and eighteen months for Palm Beach Everglades.

We would appreciate hearing from you at an early date so that we may complete the processing necessary to place these two properties under effective management. Subsequent handling would be by Mr. Sanders' staff.

NCL/dso  
Attachment

DIVISIONS / ADMINISTRATIVE SERVICES • LAW ENFORCEMENT • MARINE RESOURCES  
RECREATION AND PARKS • RESOURCE MANAGEMENT



INTERAGENCY AGREEMENT  
FOR  
FISH AND WILDLIFE REGULATION AND ENHANCEMENT PROGRAM  
IN  
ROTENBERGER TOWNSHIP AREA

The STATE OF FLORIDA BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND and the DEPARTMENT OF NATURAL RESOURCES, DIVISION OF RESOURCE MANAGEMENT, referred to herein as the "Board," hereby delegate to the STATE OF FLORIDA GAME AND FRESH WATER FISH COMMISSION, referred to herein as the "Commission," certain specified land and wildlife management responsibilities for the Rotenberger area property in Palm Beach County, Florida, described as follows:

(See Exhibit A, attached hereto and made a part hereof.)

W I T N E S S E T H:

The Board and the Commission, for and in consideration of the covenants hereinafter contained, do hereby covenant as follows:

1. Subject to all existing encumbrances and the terms and conditions of the Endangered Land Purchase authorized February 17, 1975, and by exchange of Everglades Agricultural Area land November 4, 1975, and September 6, 1977, by the Department of Natural Resources and between the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida as the Board and the State of Florida Department of Natural Resources and its Division of Resource Management, the Board hereby delegates to the Commission management responsibilities on the Rotenberger Area property for purposes of fish and wildlife management, water management and the protection of the property until March 31, 1988. This term shall be automatically renewed for a ten year period of the expiration date of this instrument and the expiration date of each ten year extension thereof.

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

property degradation and unauthorized uses upon notice of such uses.

3. The aforementioned management responsibilities and the associated programs of the Commission on the subject property shall be carried out in accordance with a Management Plan adopted by the Commission with concurrence by the Board and upon legislative appropriations of personnel and funds necessary to fulfill the requirements of the plan. Prior to adoption, the Commission shall present the proposed Management Plan to the Executive Director of the State of Florida Department of Natural Resources for concurrence to insure compliance with Chapter 253, Florida Statutes, a continuing responsibility of the Department of Natural Resources. The Management Plan will be completed on or before July 1, 1978.

4. Persons using the property under the Commission's public program shall engage in hunting activities only within area(s) of the property specifically agreed to in the approved Management Plan for the area.

5. The Commission shall not clear, plant or alter the property except as provided for in the approved Fish and Wildlife Management Plan without the advance written approval of the Executive Director of the Department of Natural Resources.

6. Upon execution of this Agreement, the Commission shall have the right to enter and occupy the property for the purposes necessary to fulfill the designated responsibilities.

7. The Board, or its duly authorized agent, shall retain the right to enter the property and engage in projects for purposes of property enhancement, and shall retain the right to grant compatible uses of the property to third parties during the term of this Agreement, provided such uses shall not supersede nor conflict with the Management Plan programs and regularly established hunting seasons. In all such events, the Board, or its duly authorized agent, shall consult with and receive the Commission's written

concurrence in advance. In the event of a possible conflict, the Cabinet shall determine whether or not any proposed uses by a third party are in conflict with the fish and wildlife responsibilities of the Commission.

8. The Board or its duly authorized agent shall have the right at any time to inspect the works and operations of the Commission in any matter pertaining to this Agreement. Should the Commission fail to keep and perform any of the responsibilities designated in the Management Plan for which full legislative funding has been received, the Board shall have the right to terminate the Agreement on the 90th day following written notice to the Commission, providing that complete correction of the deficiency has not been accomplished or justified in writing by the Commission within 60 days of receipt of such notice. In any event, the Board or the Commission shall have the right to terminate this Agreement at any time upon 60 days notification prior to February 1 of any year, providing such notification is in writing from the Executive Director of the Department of Natural Resources or the Executive Director of the Game and Fresh Water Fish Commission. If notification is not received by February 1, the effective date of the termination will not be until sixty (60) days following February 1 of the next calendar year.

9. This Agreement and any rights and privileges contained herein are for the sole use of the Commission and shall not be assigned or transferred to any other party.

10. The Commission shall defend, hold and save the Board harmless from any and all liability or claims that may result from injuries to persons or damage to property arising out of the use of the property by the Commission, to the extent allowed by the laws of Florida.

11. Any inequities that may subsequently appear in this Agreement 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 will be referred to the Executive Director of the Department of Natural Resources and the Executive Director of the Commission for joint final resolution.

12. This Agreement is executed in duplicate, each copy of which shall for all purposes be considered as an original.

IN TESTIMONY WHEREOF, the legally designated agents of the State of Florida Department of Natural Resources, and State of Florida Game and Fresh Water Fish Commission have hereunto set their hands.

WITNESS:

\_\_\_\_\_  
\_\_\_\_\_

STATE OF FLORIDA GAME AND  
FRESH WATER FISH COMMISSION

By: Robert M. Brantley  
Colonel Robert M. Brantley  
Executive Director

WITNESS:

\_\_\_\_\_  
\_\_\_\_\_

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

By: \_\_\_\_\_  
Harmon W. Shields  
Executive Director  
Department of Natural  
Resources

1161pamS4/2

APPROVED AS TO FORM  
AND LEGAL SUFFICIENCY

Harmon W. Shields 10/14/77  
Commission Attorney

DIVISION LOG # NA AGREEMENT NUMBER 97040 ADDENDUM 1

**AGREEMENT ROUTING REVIEW FORM**

CONTRACTOR DEP **HISTORY UPDATE**

VENDOR ID NO \_\_\_\_\_ PROCUREMENT METHOD\*/BID/REF NO. \_\_\_\_\_

PROJECT TITLE: ROTENBERGER WMA - DEEDS TO COMMISSION - OWNED LAND

ORIGINATOR/CONTACT DALE 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 10/4/10 END DATE 10/4/10 OPTION FOR \_\_\_\_\_

TOTAL CONTRACT AMOUNT \_\_\_\_\_ PAYMENT AMOUNT \_\_\_\_\_

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

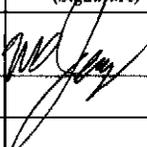
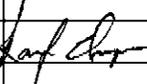
BUILDING INSURANCE TO BE INCURRED BY THE COMMISSION (LEASES)  **NO**  **YES** (Notify Property Administrator)

**\*\*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: Agency \_\_\_\_\_ CFDA \_\_\_\_\_

Routing Order for Approval	Approval (Signature)	Date	Comments
1. Project Leader		<u>4/19/11</u>	Budget Sheet is available upon request by external sources. <input type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>No</b>
2. Budget Director (Expenditure Only)			Budget Authority: <input type="checkbox"/> <b>Existing</b> <input type="checkbox"/> <b>New</b>
3. Div./Reg./Inst./Off. Dir./Section Leader			
4. Contracts Administrator			
5. Legal			
6. Accounting			Funds Availability: <input type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>No</b>
7. Exec./Div./Reg./Inst./Off. Dir. <b>review (check below).</b>			
<input type="checkbox"/> <b>Expenditure Contracts:</b> Return to Originator for Contractor signature. <input type="checkbox"/> <b>Other documents:</b> Send to (circle) Exec./Div./Reg./Inst./Off. Dir. for signature.			<b>Expenditure Contracts:</b> After Contractor signs, send to Exec./Div./Reg./Inst./Off. Director for signature and dating.
8. Exec./Div./Reg./Inst. Dir. <b>execute</b>			
Originator Copy to Accounting*			Send a complete copy of the Contract & Routing Form
Originator to Contracts Administrator*		<u>4/20/11</u>	Send executed Original Contract & Original Routing Form
Originator to OIG FSAA Originals			Send to OIG: Mail Code 1E

FWC 167/rev. 01/08 /SHAREFORMS/CONROUTE.167

\*See reverse for Codes/Definitions/Distribution



Job Bush  
Governor

## Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

February 6, 2002

Preston T. Robertson, Esq.  
Florida Fish & Wildlife Conservation Commission  
620 South Meridian Street  
Tallahassee, FL 32399-1600

Re: Board of Trustees acceptance of State Agency owned property

Dear Mr. Robertson,

In response to recent attempts to convey property from state agencies to the Board of Trustees, the Department determined that the procedures and requirements should be outlined to avoid any misunderstandings.

Section 253.03(6), Florida Statutes, states that commencing September 1, 1967, all land held in the name of the state or any of its boards, departments, agencies or commissions shall be deemed to be vested in the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida for the use and benefit of the state." This statute prohibits other state agencies from holding title to state-owned lands. Thus, it is the Department's position that the deed from DOT to the Commission, which was executed on or about March 15, 1995, is an invalid conveyance since it does not comply with the requirements of Section 253.03(6), Florida Statutes. As a result, the Department, as staff to the Board of Trustees, cannot accept delivery of a deed which purports to convey the subject lands from the Commission to the Board of Trustees.

If your agency presently holds title to property it acquired before September 1, 1967, we will be glad to assist you in preparing deeds to transfer these lands to the Board of Trustees. In order to accept property on behalf of the Board of Trustees, there are due diligence requirements and although some there is some flexibility, there are certain requirements that must be met. We will be more than happy to review and make decisions on a case-by-case basis with a goal of trying to accommodate the needs of your agency along with the best interest and protection of the Board of Trustees.

If you have any questions please feel free to contact me at (850) 488-2351. I will be glad to assist you.

Sincerely,

Adrienne Bellflower  
Land Acquisition Agent  
Bureau of Land Acquisition

cc:file

"Water Protection, Less Process"

Printed on recycled paper.

(2) It is the intent of the Legislature that the Board of Trustees of the Internal Improvement Trust Fund continue to receive proceeds from the sale or disposition of the products of lands and the sale of lands of which the use and possession are not subsequently transferred by appropriate lease or similar instrument from the board of trustees to the proper using agency. Such using agency shall be entitled to the proceeds from the sale of products on, under, growing out of, or connected with lands which such using agency holds under lease or similar instrument from the board of trustees. The Board of Trustees of the Internal Improvement Trust Fund is directed and authorized to enter into leases or similar instruments for the use, benefit, and possession of public lands by agencies which may properly use and possess them for the benefit of the state. The board of trustees shall adopt by rule an annual administrative fee for all existing and future leases or similar instruments, to be charged agencies making leases and for all similar administrative assessments for all leases or similar instruments to be made by the board for fees incurred in the administration and management of such leases or similar instruments.

(3) The provisions of s. 270.11, requiring the board of trustees to receive unto itself certain oil and mineral interests in all deeds of conveyances executed by the board of trustees, shall not have application to any lands that inure to the board of trustees from other state agencies, departments, boards, or commissions under the terms and provisions of this act.

(4) It is the intent of the Legislature that, when title to any lands in the state, with no specific agency authorized by the Legislature to convey or otherwise dispose of such lands, the Board of Trustees of the Internal Improvement Trust Fund be vested with such title and hereafter be authorized to exercise over such lands such authority as may be provided by law.

(5) It is the intent of the Legislature that this act repeat any provision of state law which may require the Board of Trustees of the Internal Improvement Trust Fund to purchase or otherwise acquire any land in any state or the public domain of lands which are registered upon the public domain of the United States and hereafter be authorized to exercise over such lands such authority as may be provided by law.

(6) Commencing on January 1, 1967, all lands in the state, in the state or so, of the board, department, agency, or commissions shall be deemed to be vested in the Board of Trustees of the Internal Improvement Trust Fund for the use and benefit of the state. By October 1, 1967, any board, commission, department, or agency holding title to any state lands used for public purpose shall execute all instruments necessary to transfer such title to the Board of Trustees of the Internal Improvement Trust Fund for the use and benefit of the state, except lands which reverted to the state under the provisions of chapter 18296, Laws of Florida, 1937, commonly known and referred to as the "Murphy Act."

*Does not apply to land purchased with federal funds.*

(7)(a) The Board of Trustees of the Internal Improvement Trust Fund is hereby authorized and directed to administer all state-owned lands and shall be responsible for the creation of an overall and comprehensive plan of development concerning the acquisition, management, and disposition of state-owned lands so as to ensure maximum benefit and use. The Board of Trustees of the Internal Improvement Trust Fund has authority to adopt rules pursuant to ss. 120.533(1) and 120.54 to implement the provisions of this act.

(b) With respect to administering, controlling, and managing sovereignty submerged lands, the Board of Trustees of the Internal Improvement Trust Fund also may adopt rules governing all uses of sovereignty submerged lands by vessels, floating homes, or any other watercraft, which shall be limited to regulations for anchoring, mooring, or otherwise attaching to the bottom; the establishment of anchorages and the discharge of sewage, dump-out requirements, and fees associated with anchorages. The regulations shall not interfere with commerce or the transitory operation of vessels through navigable water, but shall control the use of sovereignty submerged lands as a place of business or residence.

(c) Structures which are listed in or are eligible for the National Register of Historic Places or the State Inventory of Historic Places which are over the waters of the State of Florida and which have a submerged land lease, or have been grandfathered in to use sovereignty submerged lands until January 1, 1996, pursuant to rule 18-21.00405, Florida Administrative Code, shall have the right to continue such submerged land leases, regardless of the fact that the present landholder is not an adjacent riparian landowner, so long as the owner maintains the structure in a good state of repair consistent with the guidelines for listing. If the structure is damaged or destroyed, the lessee shall be allowed to reconstruct, so long as the reconstruction is consistent with the integrity of the listed structure and may not include the footprint of the structure. If a structure is listed falls into disrepair and the owner is not willing to repair and maintain it consistent with the guidelines, then they cannot use the submerged land for the structure and the structure is property of the state. The state may then remove the structure from the submerged land.

(d) Structures which are listed in or are eligible for the National Register of Historic Places or the State Inventory of Historic Places which are over the waters of the State of Florida and which have a submerged land lease, or have been grandfathered in to use sovereignty submerged lands until January 1, 1996, pursuant to rule 18-21.00405, Florida Administrative Code, shall have the right to continue such submerged land leases, regardless of the fact that the present landholder is not an adjacent riparian landowner, so long as the owner maintains the structure in a good state of repair consistent with the guidelines for listing. If the structure is damaged or destroyed, the lessee shall be allowed to reconstruct, so long as the reconstruction is consistent with the integrity of the listed structure and may not include the footprint of the structure. If a structure is listed falls into disrepair and the owner is not willing to repair and maintain it consistent with the guidelines, then they cannot use the submerged land for the structure and the structure is property of the state. The state may then remove the structure from the submerged land.

*Handwritten notes:*  
 1. Structures which are listed in or are eligible for the National Register of Historic Places or the State Inventory of Historic Places which are over the waters of the State of Florida and which have a submerged land lease, or have been grandfathered in to use sovereignty submerged lands until January 1, 1996, pursuant to rule 18-21.00405, Florida Administrative Code, shall have the right to continue such submerged land leases, regardless of the fact that the present landholder is not an adjacent riparian landowner, so long as the owner maintains the structure in a good state of repair consistent with the guidelines for listing. If the structure is damaged or destroyed, the lessee shall be allowed to reconstruct, so long as the reconstruction is consistent with the integrity of the listed structure and may not include the footprint of the structure. If a structure is listed falls into disrepair and the owner is not willing to repair and maintain it consistent with the guidelines, then they cannot use the submerged land for the structure and the structure is property of the state. The state may then remove the structure from the submerged land.

2.5 acres  
\$750.00

*Seymour Land in  
Rollenberger W/L Area*

*B4202-07  
142*



CERTIFIED FLORIDA APPRAISER

REBECCA E. WALKER, CFA, CRA  
PALM BEACH COUNTY PROPERTY APPRAISER

5TH FLOOR, GOVERNMENTAL CENTER  
301 NORTH OLIVE AVENUE  
WEST PALM BEACH, FLORIDA  
33401



PHONE: 837-2866

April 20, 1984

Florida Game & Fresh Water Fish Commission  
Farris Bryant Building  
620 S. Meridian Street  
Tallahassee, Florida 32307

Attn: Tom Shifflett

RE: PC# 00-42-43-36-00-000-3240 Parcel #1  
PC# 00-35-47-04-00-000-1290 Parcel #2

Dear Mr. Shifflett:

Per your request of April 13, 1984, the assessed value of parcel #2, acquired September 22, 1978 was \$750. Please be advised that this office is unable to supply the assessment information on parcel #1 since the 1958 tax roll is in the possession of the Clerk of the Circuit Court, John B. Dunkle. He may be contacted at Palm Beach County Courthouse, Room 201-C, West Palm Beach, Fl., 33401. His staff will be able to assist you with your request.

If we may be of further assistance, please do not hesitate to contact this office.

Very truly yours,

REBECCA E. WALKER, CFA, CRA  
Palm Beach County Property Appraiser

C. H. Stahman, CFE  
Department Head  
Land Department

CHS/gd

RECEIVED  
PROPERTY

APR 23 1984

GAME & FRESH WATER FISH  
COMMISSION

instrument, and acknowledged before me that he did execute the same.

Witness my hand and official seal in the county and state of Florida last aforesaid this 22nd day of September, 1978.



*Richard W. Penn*  
Notary Public, State of Ohio  
Lifetime Commission

*Resort Verified  
Palm Beach County, Fla.  
John B. Dunkle  
Clerk Circuit Court*

2991 PAGE 232

Florida Fish and Wildlife Conservation Commission | ECWMA Management Plan  
THIS INSTRUMENT PREPARED BY RICHARD W. PENN. ATTORNEY AT LAW

Rotenberger  
10 Acres  
\$5000.00

Property #L4202-01  
George Matthews

L 4202-01 5000.0

Harrison K. Chauncey, Jr.  
ALLEY, MAASS, ROGERS, LINDSAY & CHAUNCEY  
321 Royal Poinciana Plaza, Box 431  
PALM BEACH, FLORIDA 33480

# Warranty Deed

(STATUTORY FORM—SECTION 689.02 F.S.)

121876

This Indenture, Made this 19 83, Between

GEORGE G. MATTHEWS

83

of the County of Palm Beach, State of Florida, grantor, and  
FLORIDA GAME AND FRESH WATER FISH COMMISSION

whose post office address is 620 South Meridian Street, Tallahassee, Florida 32301

83

of the County of Palm Beach, State of Florida, grantee,

Witnesseth, That said grantor, for and in consideration of the sum of TEN AND NO/100ths-----

1983 JUN 27 PM 1:56

----- Dollars,  
and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby  
acknowledged, has granted, bargained and sold to the said grantee, and grantee's heirs and assigns forever, the following  
described land, situate, lying and being in Palm Beach County, Florida, to-wit:

W. 1/2 of the W. 1/2 of the NW 1/4 of the SW 1/4 of Section 35, Township 47  
South, Range 35 East, Palm Beach County, Florida.

SUBJECT to a 20 foot wide easement over the easterly portion of said land for  
ingress, egress and public utilities.

SUBJECT TO: easements, reservations, restrictions and limitations of record  
and taxes for the year 1983 and subsequent years.

580  
45



and said grantor does hereby fully warrant the title to said land, and will defend the same against the lawful claims of all  
persons whatsoever.

\* "Grantor" and "grantee" are used for singular or plural, as context requires.

In Witness Whereof, Grantor has hereunto set grantor's hand and seal the day and year first above written.  
Signed, sealed and delivered in our presence:

*Mary D. Hendrickson*

*George G. Matthews*  
GEORGE G. MATTHEWS (Seal)

*Patty L. Weishaart*

\_\_\_\_\_  
(Seal)

\_\_\_\_\_  
(Seal)

83975 P2000

STATE OF Florida  
COUNTY OF Palm Beach

I HEREBY CERTIFY that on this day before me, an officer duly qualified to take acknowledgments, personally appeared

GEORGE G. MATTHEWS

to me known to be the person described in and who executed the foregoing instrument and acknowledged before me that  
he executed the same.

WITNESS my hand and official seal in the County and State last aforesaid this 7th day of June  
19 83.

My commission expires:

*Patty L. Weishaart*  
Notary Public

Notary Public, State of Florida at Large  
My Commission expires July 20, 1984  
Bonded through Cornelius, Johnson & Clark, Inc.

RECORD VERIFIED  
PALM BEACH COUNTY, FLA  
JOHN B. DUNKLE  
CLERK CIRCUIT COURT

0 2 PD. FD. JAN 12 79 11150 U. S. U. 107

QUITCLAIM DEED

79 007583  
1979 JAN 12 PM 3:23

THIS INDENTURE made this 22nd day of September, 1978, between Ross Seymour of Route #1, Williamsport, Ohio, party of the first part, and the Game and Fresh Water Fish Commission of the State of Florida whose address is Tallahassee, Florida, 32304, party of the second part, witnesseth

That said party of the first part, for and in consideration of the sum of Ten Dollars and other good and valuable consideration to him in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, has remised, released and quitclaimed and sold to said party of the second part its successors and assigns forever the following described land situate, lying and being in the County of Palm Beach, State of Florida to wit:

The Southeast 1/4 of the Northeast 1/4 of the Northwest 1/4 of the Northeast 1/4, Section 4, Township 47 South, Range 35 East, lying and being in Palm Beach County, Florida.

2.5A

IN WITNESS WHEREOF the party of the first part, Ross Seymour has hereunto set his hands the day and year above written.

Signed and acknowledged in the presence of

*Richard W. Penn*  
*Sally Anderson*

*Ross Seymour*  
ROSS SEYMOUR

*St. Robert E. Burleson  
Game & Fresh Water Fish Commission  
551 N. MILITARY TRAIL  
WEST PALM BEACH 33446*

STATE OF OHIO, COUNTY OF PICKAWAY, SS:

I hereby certify that on this day before me, an officer duly authorized in the state aforesaid and in the county aforesaid to take acknowledgments, personally appeared Ross Seymour, to me known to be the person described in and who executed the foregoing instrument, and acknowledged before me that he did execute the same.

Witness my hand and official seal in the county and state last aforesaid this 22nd day of September, 1978.



*Richard W. Penn*  
Notary Public, State of Ohio  
Lifetime Commission

Record Verified  
John B. Dantle  
Mark Garza

PALM BEACH OFF REC 2991 PAGE 232

DIVISION LOG # 2050

AGREEMENT NUMBER 98055

**AGREEMENT ROUTING REVIEW FORM**

CONTRACTOR DEP / FWC

VENDOR ID NO. \_\_\_\_\_ PROCUREMENT METHOD\*/BID/RFP NO. \_\_\_\_\_

PROJECT TITLE HOLLY LAND WMA - MANAGEMENT AGREEMENT LEASE NUMBER 2343

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 7/30/68 \_\_\_\_\_ END DATE INDEFINITE \_\_\_\_\_ OPTION FOR \_\_\_\_\_ YEARS

TOTAL CONTRACT AMOUNT \_\_\_\_\_ CONTRACT 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	<i>[Signature]</i>	<u>12/11/09</u>	Budget Sheet is available upon request by external sources. <input type="checkbox"/> Yes <input type="checkbox"/> No
2. Budget Director (Expenditure Only)	<i>[Signature]</i>		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. <b>review (check below).</b>			
<input type="checkbox"/> <b>Expenditure Contracts:</b> Return to Originator for Contractor signature. <input type="checkbox"/> <b>Other documents:</b> Send to (circle) Exec./Div./Reg./Inst./Off. Dir. for signature.			<b>Expenditure Contracts:</b> After Contractor signs, send to Exec./Div./Reg./Inst./Off. Director for signature and dating.
8. Exec./Div./Reg./Inst. Dir. <b>execute</b>			
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 \SIHAREFORMS\CONROUTE.167

\*See reverse for Codes/Definitions/Distribution

*[Signature]* 12/11/09

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

**Invoice**

RECEIVED

Date	Invoice #
7/15/2003	9487

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

DEPARTMENT OF  
 WILDLIFE MANAGEMENT

Lease #	Due Date
2343	7/30/2003

Description	Rate	Amount
ANNUAL LEASE FEE - UPLANDS 2003/2004 (001015) AGENCY FEE	300.00	300.00
	BWM	
	Date Goods Received _____	
	Date Inspected & Approved _____	
PROJECT NAME	Date Invoice Received <u>7/24/03</u>	
SCOTT SANDERS	773020 <u>40400</u> • EO <u>20</u>	
	Object <u>49900</u> Equip # _____	
	<u>9200</u> - <u>200</u> - <u>7294</u>	
	(Species) (Act.) (Proj.)	
REMIT COPY WITH PAYMENT	Cert. Minority Vendor <u>Yes</u> <u>No</u> <u>Not Avail</u> <u>N/A</u>	
	<b>Subtotal</b>	\$300.00
	<b>Sales Tax (6.0%)</b>	\$0.00
	<b>Total</b>	\$300.00
	<b>Balance Due</b>	\$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. Brown*  
 7-25-03  
*Scott Sanders*  
 7-25-03

DEPARTMENT OF ENVIRONMENTAL PROTECTION

RECEIPTS SECTION  
 POST OFFICE BOX 3070  
 TALLAHASSEE, FL 32315-3070

Invoice

REMIT COPY  
 WITH PAYMENT

Date	Invoice #
7/5/2002	4554

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

Lease #
2343
Due Date
8/4/2002

*Scott Sanders 7/16/02*  
*Scott Sanders 7/16/02*

Description	Rate	Amount
AGENCY FEES-UPLANDS (001015) <i>BWM</i>	300.00	300.00
Date Goods Received _____ Date Inspected & Approved _____ Date Invoice Received <u>7/16/02</u> 773020 <u>40400</u> • EO <u>20</u> Object <u>499060</u> Equip # _____ <u>9200</u> • <u>104</u> • <u>7294</u> (Species) (Act.) (Proj.) Cert. Minority Vendor <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not Avail <input type="checkbox"/> N/A		
<b>Subtotal</b>		\$300.00

Journal Transfer Instructions:  
 SAMAS CODE:  
 372024080013710030000

BF OBJ: BF CAT:  
 001000 000100

OBJECT CODE:  
 001015

F&A USE ONLY:  
 3710100000 K4

Sales Tax (6.0%)	\$0.00
<b>Total</b>	\$300.00

<b>Balance Due</b>	\$300.00
--------------------	----------

**INVOICE**

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

INVOICE NO. 98 0009  
 INVOICE DATE 07/01/98  
 LEASE NO. 2343

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

DUE DATE	DESCRIPTION	97/98 FEE	98/99 FEE	AMOUNT
07/01/98	HOLEY LAND	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

*Scott Sanders 7/10/98*  
*Steve Whitey 7/14/98*

BWM

DATE GOODS RECEIVED	6/24/98
DATE INSPECTED & APPROVED	11
DATE INVOICE RECEIVED	
DIV 30 RCC	2036 EO 20
OBJECT	432000 EQUIP #
PROJECT#	3000 - 113 - 7294
PROG(4)	ACT(3) PROJ(4)
Cert. Minority Vendor Yes No Not Avail. N/A	

INVOICE

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

INVOICE NO. 96 0009  
INVOICE DATE 07/01/96  
LEASE NO. 2343

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	HOLEY LAND	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:  
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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 4036  
Project 7294  
Object 432000  
J Scott Sanders 6/17/96  
Frank Smith 6/17/96*

INVOICE

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

INVOICE NO. 950009

INVOICE DATE 07/01/95

Telephone (904) 488-2291

LEASE NO. 2343 ✓

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	HOLEY LAND	0.00	300.00	300.00

TO INSURE PROPER CREDIT FOR PAYMENT

1. DEP Divisions- Please send copy of payment request to attention of:  
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Bonnie Roberts, Department of Environmental Protection, Bureau of Finance and  
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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

*RCC: 4715*

*Project: 7294*

*Object: 432000*

*Scott Sanders  
Frank Smith*

*OK*

INVOICE

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

RECEIVED  
FISCAL OFFICE

INVOICE NO. 940009

INVOICE DATE 07/01/94

'94 SEP 23 AM 8 51

Telephone (904) 488-2291

LEASE NO. 2343

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

9/15  
ACC Proj Act  
9715 7290 0271  
Pay by Journal Transfer  
\$ 300

*Frank Smith*  
*Scott Sanders*

DUE DATE	DESCRIPTION	93/94 FEE	94/95 FEE	AMOUNT DUE
07/01/94	HOLEY LAND	0.00	300.00	300.00

TO INSURE PROPER CREDIT FOR PAYMENT

- 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.
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- 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

TRUSTEES OF THE INTERNAL IMPROVEMENT FUND  
OF THE STATE OF FLORIDA

GAME MANAGEMENT LEASE

No. 2343

13

THIS INDENTURE made and entered into this 30th day of July, 1968, by and between the Trustees of the Internal Improvement Fund of the State of Florida, Lessor, and the Game and Fresh Water Fish Commission of the State of Florida, Lessee.

WITNESSETH:

That for and in consideration of One Dollar (\$1.00) and other good and valuable consideration to them in hand paid, the Lessor does hereby grant, lease, and let to the Lessee the following described property, situate, lying and being in Palm Beach County, Florida; to-wit:

All of Township 47 South, Range 36 East;  
S $\frac{1}{4}$  and S $\frac{1}{2}$  of N $\frac{1}{2}$  of Section 16, All of  
Sections 17 through 21 of Township 47  
South, Range 37 East;

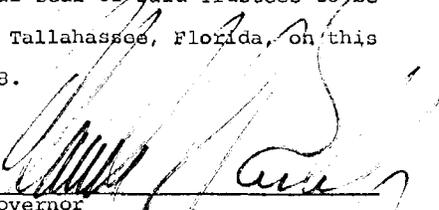
All of Sections 1 through 5 and all of  
Section 6 lying east of Miami Canal in  
Township 48 South, Range 36 East.

TO HAVE AND TO HOLD the above described lands subject to the following terms and conditions:

1. The Lessee shall have the exclusive supervision and control of all public hunting and fishing in and on the above described property.
2. This lease is for the exclusive purpose of supervising and controlling hunting and fishing, and the Lessor reserves the right to grant other leases covering the same area, not inconsistent with the terms and conditions of this lease.
3. This lease and permit is for a public purpose and is to run for an indefinite period without the necessity of renewal or additional consideration; however, the Lessor reserves the right to terminate this lease at its option at any time upon a determination that the lands are no longer needed for the above purpose, and by giving sixty (60) days notice of such intent to the Lessee.
4. This lease may also be cancelled at the option of the Lessor in the event the premises are needed for any other State purpose.
5. This lease does not cover petroleum or petroleum products or minerals and does not give the right to Lessee to drill for or develop the same and Lessor specifically reserves the right to lease said lands for purposes of exploring and recovering oil and minerals by whatever means appropriate; provided, however, that Lessee named herein shall be fully compensated for any and all damages that might result to said Lessee by reason of such exploration and recovery operations.

6. The Lessee agrees that it will not cause or permit any waste, misuse or neglect of the above described property.

IN WITNESS WHEREOF the Trustees of the Internal Improvement Fund of the State of Florida have hereunto subscribed their names and have caused the Official Seal of said Trustees to be hereunto affixed, in the City of Tallahassee, Florida, on this the 22nd day of August, A.D. 1968.

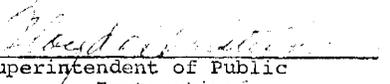
  
Governor

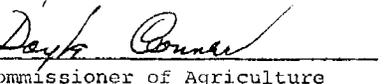
  
Secretary of State

  
Attorney General

  
Comptroller

  
Treasurer

  
Superintendent of Public Instruction

  
Commissioner of Agriculture

As and Constituting the Trustees of the Internal Improvement Fund of the State of Florida.

(SEAL)

Trustees of the  
I. I. Fund

LESSOR

  
Chairman, State Game and Fresh  
Water Fish Commission

LESSEE

ATTEST:

  
Director

PALM BEACH

RESOLUTION - Lease - Florida Game and Fresh Water  
Fish Commission. Request to enlarge the Everglades Wildlife  
Sanctuary Area located in Conservation Areas 2 and 3 in Broward  
and Dade Counties by acquisition of a large tract of uncommitted  
land owned by E. J. ... containing approximately 30,320 acres  
described as follows:

- All of Section 41, T. 36 N., Range 36 East; 2
- Sections 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

... in a better position to supervise  
and control the ... fishing for the benefit of the public  
addition of the ... land. Staff recommended leave for an  
... reserving the right to terminate  
... adequate notice as to any of all  
... state purpose, and reserving the  
... in the area for purposes not incon-  
... management program.

... seconded by Mr. Christine and  
... of the 30,320 acres be granted  
... commission on the recommended

*Minutes*  
JUL 30 1968

DIVISION LOG # 2050

AGREEMENT NUMBER 98055 A-1

**AGREEMENT ROUTING REVIEW FORM**

CONTRACTOR DEP / FWC \_\_\_\_\_

VENDOR ID NO. \_\_\_\_\_ PROCUREMENT METHOD\*/BID/RFP NO. \_\_\_\_\_

PROJECT TITLE HOLLY LAND WMA - MANAGEMENT AGREEMENT LEASE NUMBER 2343 AMENDMENT 1.

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  LEASEMENT/DEED  LEASE (INCLUDES WMA OR FMA LEASES)

AGREEMENT BEGINNING DATE/EXECUTION 12/22/98 END DATE INDEFINITE  OPTION FOR \_\_\_\_\_ YEARS

TOTAL CONTRACT AMOUNT \_\_\_\_\_ CONTRACT 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

ORC 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	<i>[Signature]</i>	12/09/09	Budget Sheet is available upon request by external sources. <input type="checkbox"/> Yes <input type="checkbox"/> No
2. Budget Director (Expenditure Only)	<i>[Signature]</i>		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. <b>review (check below).</b>			
<input type="checkbox"/> Expenditure Contracts: Return to Originator for Contractor signature. <input type="checkbox"/> Other documents: Send to <b>(circle)</b> 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. <b>execute</b>			
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

*[Signature]* 12/11/09

CONTRACT ROUTING REVIEW FORM

CONTRACT NUMBER 98055 BID/RFP NUMBER (If applicable) \_\_\_\_\_

CONTRACTOR GFC and TITF  
 BRIEF TITLE HOLEY LAND, LEASE NO. 2343, AMENDMENT 1, 3,680 ACRES  
 ( ) NEW ( ) RENEWAL ( ) EXTENSION (X) AMENDMENT (See Reverse for Definitions)  
 CONTRACT BEGIN DATE EXECUTION END DATE INDEFINITE OPTION FOR -0- YEARS  
 ORIGINATOR/CONTACT ROLANDO GOMEZ PHONE 488-3831 DIV/OFF WILDLIFE  
 TOTAL CONTRACT AMOUNT \$ N/A PAYMENT AMOUNT \$ N/A  
 BILLING PERIODS: ( ) MONTHLY ( ) QUARTERLY ( ) ANNUALLY ( ) OTHER \_\_\_\_\_

( ) EXPENDITURE ( ) REVENUE (X) AGREEMENT ( ) EASEMENT/DEED

BUILDING INSURANCE TO BE INCURRED BY THE COMMISSION YES X NO (NOTIFY PROPERTY ADMINISTRATOR)  
 RCC CODE 4036 CATEGORY \_\_\_\_\_ OBJECT CODE \_\_\_\_\_ PROJECT 7294  
 FUND SGTF MINORITY CATEGORY \_\_\_\_\_ (See reverse side for options)  
 CERTIFIED MINORITY: ( ) YES ( ) NO ( ) NOT AVAILABLE (X) NOT APPLICABLE

ROUTING ORDER FOR APPROVAL	CONCUR/INITIALS	DATE	COMMENTS
1. PROJECT LEADER**	<u>EWG</u>	<u>12-7-98</u>	
2. DIV/REGIONAL DIRECTOR**	<u>JAS</u>	<u>12-10-98</u>	
3. PURCHASING**	<u>AK</u>	<u>12-17-98</u>	
4. LEGAL	<u>PR</u>	<u>12-21-98</u>	
5. AD SERVICES			
CHIEF OF ACCOUNTING			
FEDERAL AID			
ACCOUNTANT*			
BUDGET REVIEW			
AD SERVICES DIRECTOR			
6. EXEC/DIV/REGION DIRECTOR**	<u>AR</u>	<u>12-22-98</u>	
7. RETURN TO PURCHASING			
PURCHASING TO	<u>AR</u>	<u>12-24-98</u>	
ORIGINATOR			
ORIGINATOR TO	<u>3/8/99</u>	<u>RG</u>	
PURCHASING			
COPY TO ACCOUNTING			
PURCH. TO CENT. FILES			

\*ROUTING OF FEDERAL AID DOCUMENTS ONLY  
 ♦ROUTING OF EASEMENTS/DEEDS

\_\_\_\_\_  
 DIVISION/OFFICES ARE TO FORWARD COMPLETED ORIGINAL CONTRACT AND ROUTING SLIP TO THE PURCHASING OFFICE.

CLASS/GROUP CODE \_\_\_\_\_ SACSS YES \_\_\_\_\_ NO \_\_\_\_\_  
 g:\share\bwmi\rolando\2343#1.fm

## MEMORANDUM

TO: Allan I. Egbert Ph.D., Executive Director  
FROM: *Frank* Frank Montalbano, Director, Division of Wildlife  
SUBJECT: *AM* Amendment 1 to Lease Number 2343, Holey Land WMA.

---

Attached are two originals of Amendment 1 to Lease Number 2343 between the Board of Trustees of the Internal Improvement Trust Fund and the Florida Game and Fresh Water Fish Commission.

This Amendment adds 3,680 acres to Lease Number 2343, Holey Land WMA.

Thank you for your consideration of this matter.

LEG 8-5  
rrg/RRG/FM  
g:\share\bw\rolando\2343#1.mem



**From:** STEVEN COUGHLIN  
**To:** POINDEXTER, DONALD  
**Date:** Mon, Nov 23, 1998 1:43 PM  
**Subject:** Re: Holey Land, Toe of the Boot

I would recommend we amend the establishment order for Holey Land WMA to include the "toe of the boot". This land parcel was included in a prior establishment order for the area and was subsequently taken out of the management area at a later time. This area has been utilized by sportsmen as part of the Holey Land WMA as there is no clear boundary between the established management area and the "toe of the boot". Accordingly, we have treated this property as part of the management area for quite a few years using our existing Holey Land budget. It would be to our benefit to amend the establishment order to reflect the addition of this property to the Holey Land WMA. If you have any additional questions, please give me a call. Thanks, Steve.

**From:** DONALD POINDEXTER  
**To:** STEVEN COUGHLIN  
**Subject:** Holey Land, Toe of the Boot

*cc Mike*

Over the past year we have talked about adding these 3,680 acres back to the Holey Land. We have a note from Blake, he said he wanted to add it back. Mike Brooks said he preferred a recommendation from you. Could you talk to Mike and decide if it should be added, State Lands is agreeable.

Please note you will not get management money for the land if it is added.

**CC:** MICHAEL BROOKS

**From:** SASSE, BLAKE (BLAKE)  
**To:** DONP  
**Date:** Wednesday, June 3, 1998 9:03 am  
**Subject:** holey land -Reply -Reply -Reply -Reply

Don,

Please put as much as a rush as you can (Although I know that last time we spoke you said it was in DEI's lap at the moment) on getting the Toe of the Boot of Holey Land back in our lease for that area. Some of our friends in the sugar industry have been making noises again and it certainly couldn't hurt to make sure we have control of this section in particular as soon as possible. Thanks.

- ① This land does not qualify for measurement money.
- ② IT contains 3680 acres.
- ③ BLAKE told me he would check with Mike Bruts to see if we needed the property.
- ④ Do WE?

DF 6-8-98

scott SS

Mike MRE

Nick Stute - Logerwil  
mlra

BLAKE HAS NOT contacted me  
lately, I would provide a  
recommendation from S. Coughlin.

ATL1

3,680 Acres (approximately)

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT

TRUST FUND

---

AMENDMENT NUMBER 1 TO LEASE NUMBER 2343

(HOLEY LAND)

THIS LEASE AMENDMENT is entered into this 20<sup>th</sup> day of January, 1999, by and between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA, hereinafter referred to as "LESSOR" and the 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 July 30, 1968, LESSOR and LESSEE entered into Lease Number 2343; and

WHEREAS, LESSOR and LESSEE desire to amend the lease to add land to the leased property.

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

1. The legal description of the leased premises set forth in Exhibit "A" of Lease Number 2343 is hereby amended to include the real property described in Exhibit "A", attached hereto, and by reference made a part hereof.

2. It is understood and agreed by LESSOR and LESSEE that in each and every respect the terms of the Lease Number 2343 except as amended hereby, shall remain unchanged and in full

Page 1 of 4

Amendment No. 1 to Lease No. 2343

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

Karen Lee Beery  
Witness

Karen Lee Beery  
Print/Type Witness Name

Gayle H. Brett  
Witness

Gayle H. Brett  
Print/Type Witness Name

By: Daniel T. Crabb (SEAL)  
DANIEL T. CRABB, CHIEF,  
BUREAU OF PUBLIC LAND  
ADMINISTRATION, DIVISION  
OF STATE LANDS, DEPARTMENT OF  
ENVIRONMENTAL PROTECTION

"LESSOR"

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 20<sup>th</sup> day of January, 1999, by Daniel T. Crabb, as Chief, Bureau of Public Land Administration, Division of State Lands, 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. He is personally known to me.

Gayle H. Brett  
Notary Public, State of Florida

Print/Type Notary Name

(SEAL)



Gayle H. Brett  
MY COMMISSION # CC781236 EXPIRES  
October 6, 2002  
BONDED THRU TROY FAIR INSURANCE, INC.

Commission Number:

Commission Expires:



GAYLE H. BRETT  
MY COMMISSION # CC382215 EXPIRES  
July 13, 1998  
BONDED THRU TROY FAIR INSURANCE, INC.

Approved as to Form and Legality

By: Laura M. Hesi  
DEP Attorney

GAME AND FRESH WATER  
FISH COMMISSION

Rosemary Mara  
Witness

By: Allan L. Egbert (SEAL)

Rosemary Mara  
Print/Type Witness Name

Allan L. Egbert  
Print/Type Name

Ken Wright  
Witness

Title: Executive Director

KWright  
Print/Type Witness Name

"LESSEE"

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this  
24<sup>th</sup> day of December, 1998, by Allan L. Egbert  
as Executive Director, of the Game and Fresh Water Fish  
Commission. He/~~she~~ is personally known to me.

(SEAL)

Jimmie C. Bevis  
Notary Public, State of Florida

JIMMIE C. BEVIS  
Print/Type Notary Name

Commission Number:  Jimmie C. Bevis  
MY COMMISSION # CC702862 EXPIRES  
December 28, 2001  
BONDED THROUGH FAIR INSURANCE, INC.

Commission Expires:

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



Jeb Bush  
Governor

## Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

David B. Struhs  
Secretary

February 1, 1999

Mr. Don Poindexter  
Florida Game and Fresh Water Fish Commission  
Division of Wildlife Management  
620 South Meridian Street  
Tallahassee, Florida 32399-1600

Re: Amendment 1 to Lease Number 2343- Holey Land

Dear Don:

Enclosed for your records is an executed original of the above-referenced amendment between the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida and the Florida Game and Fresh Water Fish Commission.

If you have any questions, feel free to call me at (850)488-2291.

Sincerely,

GAYLE H. BRETT  
Bureau of Public Land  
Administration  
Division of State Lands

GB/  
Enclosure

RECEIVED

FEB 02 1998

BUREAU OF  
WILDLIFE MANAGEMENT

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

*Printed on recycled paper.*



# Department of Environmental Protection

Lawton Chiles  
Governor

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Virginia B. Wetherell  
Secretary

April 24, 1998

Mr. Don Poindexter  
Florida Game and Fresh Water Fish Commission  
Division of Wildlife  
620 South Meridian Street  
Tallahassee, Florida 32399-1600

Re: Amendment 1 to Lease Number 2343, Holey Land

Dear Don:

Enclosed for execution are originals of the above-referenced amendment between the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida and the Florida Game and Fresh Water Fish Commission.

Please have all both original amendments signed, witnessed, sealed, and notarized by your agency and returned to me for further processing. Upon execution by this Department, a fully executed amendment will be returned to you for your records.

If I can provide additional information or assistance, please let me know.

Sincerely,

GAYLE H. BRETT  
Bureau of Public Land Administration  
Division of State Lands  
Mail Station 130

gb/  
Enclosures

**RECEIVED**

APR 28 1998

BUREAU OF  
WILDLIFE MANAGEMENT

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

*Printed on recycled paper.*



FLORIDA GAME AND FRESH WATER FISH COMMISSION



QUINTON L. HEDGEPEETH, DDS MRS. GILBERT W. HUMPHREY THOMAS B. KIBLER JAMES L. "JAMIE" ADAMS JR. JULIE K. MORRIS  
Miami Miccosukee Lakeland Bushnell Sarasota

ALLAN L. EGBERT, Ph.D., Executive Director  
VICTOR J. HELLER, Assistant Executive Director

DIVISION OF WILDLIFE  
FRANK MONTALBANO, Director  
TIM BREAULT, Assistant Director  
FARRIS BRYANT BUILDING  
620 South Meridian Street  
Tallahassee, FL 32399-1600  
(850) 488-3831  
TDD (850) 488-9542  
FAX (850) 921-7743

December 31, 1998

Mr. David Stevenson  
Department of Environmental Protection  
Bureau of Public Land Administration  
Mail Station 130  
3900 Commonwealth Boulevard  
Tallahassee Florida 32399

RE: Amendment Number 1 to Lease Number 2343, Holey Land Wildlife Management Area (WMA)

Dear Mr. Stevenson:

Attached are two originals, which have been executed by the Florida Game and Fresh Water Fish Commission, of Amendment 1 to Lease Number 2343, Holey Land (WMA).

When the amendment is fully executed, please mail one original to me for my records. If you have any questions, feel free to call me at 488-3831.

Sincerely,

Rolando Gómez  
Bureau of Wildlife Management

rrg/RRG  
LEG 8  
G:\share\bwrm\rolando\stevens  
ATTACHMENT

www.state.fl.us/gfc/  
ONE OF "FLORIDA'S BEST" WEB SITES



# Department of Environmental Protection

Lawton Chiles  
Governor

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Virginia B. Wetherell  
Secretary

April 24, 1998

Mr. Don Poindexter  
Florida Game and Fresh Water Fish Commission  
Division of Wildlife  
620 South Meridian Street  
Tallahassee, Florida 32399-1600

Re: Amendment 1 to Lease Number 2343, Holey Land

Dear Don:

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Please have all both original amendments signed, witnessed, sealed, and notarized by your agency and returned to me for further processing. Upon execution by this Department, a fully executed amendment will be returned to you for your records.

If I can provide additional information or assistance, please let me know.

Sincerely,

GAYLE H. BRETT  
Bureau of Public Land Administration  
Division of State Lands  
Mail Station 130

gb/  
Enclosures

**RECEIVED**

**APR 28 1998**

**BUREAU OF  
WILDLIFE MANAGEMENT**

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

*Printed on recycled paper.*

AGREEMENT NUMBER 98055  
Amend #2

**AGREEMENT ROUTING REVIEW FORM**

CONTRACTOR BOT OF IITF AND FWC

VENDOR ID NO. N/A PROCUREMENT METHOD\*/BID/RFP NO. N/A

PROJECT TITLE AMENDMENT #2 TO LEASE #2343 COVERING 168.49 ACRES - HOLEY LAND WMA

ORIGINATOR/CONTACT RICH MOSPENS PHONE 488-3831, x17289 DIV./OFFICE/MAIL HSC/THCR

\_\_\_ NEW\*\*  AMENDMENT \_\_\_ RENEWS OR EXTENDS  
 \_\_\_ EXPENDITURE\*\* \_\_\_ REVENUE \_\_\_ AGREEMENT \_\_\_ EASEMENT/DEED  LEASE (INCLUDES WMA OR FMA LEASES)  
 AGREEMENT BEGINNING DATE/EXECUTION 7/27/2011 DATE EXECUTION INDEFINITE - 60 DAY IITF NOTICE OPTION FOR \_\_\_ YEARS  
 TOTAL CONTRACT AMOUNT \$0.00 PAYMENT AMOUNT \$0.00  
 \_\_\_ BILLING PERIODS: \_\_\_ MONTHLY \_\_\_ QUARTERLY \_\_\_ ANNUALLY \_\_\_ OTHER N/A  
 BUILDING INSURANCE TO BE INCURRED BY THE COMMISSION (LEASES)  NO \_\_\_ YES (Notify Property Administrator)

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

ORG. CODE	E.O.	OBJECT CODE	CATEGORY	CAT YEAR	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 N/A

Routing Order for Approval	Approval (Signature)	Date	Comments
Project Leader	<i>[Signature]</i>	6/29/11	Budget Sheet is available upon request by external sources. <input type="checkbox"/> Yes <input type="checkbox"/> No <u>N/A</u>
Budget Director (Expenditure Only)	<u>N/A</u>		Budget Authority: <input type="checkbox"/> Existing <input type="checkbox"/> New <u>N/A</u>
Div./Reg./Inst./Off. Dir./Section Leader	<u>N/A</u>		
Enter Contract into SCMS system	Entered: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<u>N/A</u>	If applicable, enter contract into SCMS system in "Draft" status, as required
Asst. Chief Financial Officer - FSAA Originals	<u>N/A</u>		Send to: Mail Code ID
Contracts Administrator	<i>[Signature]</i>	7/12/11	
Legal	<i>[Signature]</i>	7/20/11	
Accounting	<i>[Signature]</i>	7/21/2011	Funds Availability: <input type="checkbox"/> Yes <input type="checkbox"/> No <u>(N/A) Dmt 7-21-11</u>
Exec./Div./Reg./Inst./Off. Dir. review (check below).	<i>[Signature]</i>	7/22/11	
___ Expenditure Contracts: Return to Originator for Contractor signature. Other documents: Send to (circle) Exec./Div./Reg./Inst./Off. Dir. for signature.	<u>N/A</u>		Expenditure Contracts: After Contractor signs, send to Exec./Div./Reg./Inst./Off. Director for signature and dating.
Excc./Div./Reg./Inst. Dir. <u>execute</u>	<i>[Signature]</i>	7/22/11	NOTE: If not executed for any reason please notify the Contract Administrator and Accounting
<b>WITHIN THREE (3) DAYS OF CONTRACT EXECUTION THE FOLLOWING STEPS MUST BE DONE:</b>			
Originator to FWC Contract Office	Sent: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8/15/11	Email electronic (.pdf) copy of Contract & Routing Form or send hard copy
Contract Administrator	Updated: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8/15/11	Update status in SCMS system from "Draft" to "Active"
Contract Administrator	Reported: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8/15/11	Report non-competitively procured contracts in excess of Category 2 to DFS
Originator or Contract Administrator to Accounting	Sent: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<u>N/A</u>	Mail one (1) hard copy of Contract & Routing Form

FWC 167/rev. 04/11 \SHARE\FORMS\CONROUTE.167 See reverse for Codes/Definitions/Distribution  
*[Signature]* 8/15/2011

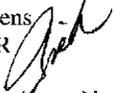
**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION  
DIVISION OF HABITAT AND SPECIES CONSERVATION**

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**MEMORANDUM**

Date: June 30, 2011

To: Contract Reviewers

From: Rich Mospens  
HSC/THCR 

RE: Lease Amendment No 2 to Lease #2343 between the Board of Trustees of the Internal Improvement Trust Fund and the Florida Fish and Wildlife Conservation Commission, covering 168.49 Acres, Hole Land Wildlife Management Area, Palm Beach County, Florida

Included herewith please find three originals of the referenced lease amendment for review and execution. This lease amendment covers 168.49 acres within the WMA. For whatever reason, the land apparently was not added to the lease upon the creation of the WMA lease. The accompanying aerial from FNAI's website shows the areas within which the concerned land is located. Note that the aerial seems to indicate that all of the land within that area is already considered as being managed as state conservation land under the WMA. Also included is a copy of the original lease, a Partial Release of Lease and Amendment #1 which added back in the land released in the Partial Release. The previous amendments can be made available upon request or may be found under "Lease Agreements and Contracts" at <http://portal.fwc.state.fl.us/DOI/Divisions/HSC/THCR/default.aspx>

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.

LAND LEASE  
Holley Land WMA

AMEND #2

The Basic Contract Elements

For a written Contract to be enforceable, it must at a minimum include these critical basic elements:

- Identify the Parties
- Describe the Service
- State the Term
- Include signatures of all parties

When reviewing a Contract ask yourself the following questions and fill in the answers below:

Yes/No/NA

- yes Is the Contract Review Sheet filled out completely and accurately?
- NA Is the procurement method listed on the routing form? Is that documentation attached? If exempt is the exemption listed on the routing form?
- yes Is the Contract Routing memo attached to the Contract Review Sheet? Does it clearly identify what the ~~Contract~~ Amendment will be doing?
- YES Are all references to the parties to the Contract, including the abbreviations and the signature blocks, accurate, complete and consistent?
- yes Does the Contract clearly state the beginning or effective date and the ending or expiration date? *OF: 4.1.10 to 6 Dec 2011*
- yes Does the Contract clearly state: what is to be done, who is going to do it, and how much it will cost? Are all duties and obligations of FWC and the Contractor clearly stated so that all parties know: (1) what the duties and obligations of each party are, (2) how those duties and obligations will be performed, and (3) when those duties and obligations will be performed? *NO COST*
- NA Does the Contract clearly and accurately state the maximum amount that FWC will be obligated to pay under the Contract? Are the invoicing and payment procedures clearly set forth?
- NA Are State or Federal project dollars being used to pay for the Contract? Is so, has the Federal or Florida Single Audit Act (FSAA) checklist been provided?
- NA Does the Contract require the Contractor's employees, agents, suppliers or subcontractors to be present on FWC property? If so, does the Contract require the Contractor to have applicable licenses and all necessary insurance including Workmen's Compensation?
- NA Does the Contract contain procedures for managing disputes, their remedies and the termination of the Contract?
- yes Does the Contract contain some language to the effect that the terms contained in the Contract are the only terms agreed to between the parties? The language could be as simple as stating "This Contract constitutes the whole Contract of the parties." *AS A LAND LEASE GOV.*
- yes Is the ~~Contract~~ <sup>lease</sup> complete (i.e., are all pages accounted for all have all exhibits and attachments been provided)?
- NA Is the formatting of the document correct? Are all the paragraphs evenly spaced? Is the punctuation and capitalization throughout the document correct? Are the attachments labeled in accordance with how they are referred to in the Contract?
- yes If it's an Amendment is a copy of the original ~~Contract~~ <sup>lease</sup> attached? If it is an extension, is it before the term of the original ~~Contract~~ <sup>lease</sup> has expired? Additionally, if it is an Amendment, does the information in the Amendment accurately cross-reference and identify the information in the original agreement?

If the answer is "NO" on any of these questions call the Contact Person listed on the routing sheet and discuss with them why it's not included and have them make needed changes. Keep in mind that some of these won't apply to all Contracts. Example: No cost Agreements won't have payment language etc., these should be marked "NA".

Karl E. Chapman  
Signature of Contract Administration Office Reviewer

7/11/11  
Date

ATL1

168.49 Acres

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

AMENDMENT NUMBER TWO TO LEASE NUMBER 2343  
ROTENBERGER - HOLEY LAND

THIS LEASE AMENDMENT is entered into this 27<sup>th</sup> day of July  
2011, by and between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT  
TRUST FUND OF THE STATE OF FLORIDA, hereinafter referred to as "LESSOR" and  
the FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION, successor in  
interest to the FLORIDA GAME AND FRESH WATER FISH COMMISSION, 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 July 30, 1968, LESSOR and LESSEE entered into Lease  
Number 2343; and

WHEREAS, LESSOR and LESSEE desire to amend the lease to add land to  
the leased premises.

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

1. The legal description of the leased premises set forth in Exhibit "A"  
of Lease Number 2343 is hereby amended to include the real property  
described in Exhibit "A," attached hereto, and by reference made a part  
hereof.
2. It is understood and agreed by LESSOR and LESSEE that in each and  
every respect the terms of the Lease Number 2343, 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 as of the date of  
this amendment.
3. It is understood and agreed by LESSOR and LESSEE that this Amendment  
Number TWO to Lease Number 2343 is hereby binding upon the parties hereto  
and their successors and assigns.

Rev. 3/07

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

Dave Fumelle  
Witness

DAVE FEWELL  
Print/Type Witness Name

T.J. Lewis  
Witness

T.J. Lewis  
Print/Type Witness Name

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 27<sup>th</sup> day of JULY, 2011, 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.

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

"LESSOR"



David L. Fewell  
Notary Public, State of Florida

Print/Type Notary Name

Commission Number:

Commission Expires:

Approved as to Form and Legality

By: [Signature]  
DEP Attorney

FLORIDA FISH AND WILDLIFE  
CONSERVATION COMMISSION

[Signature]  
Witness

Richard C. Mesjens  
Print/Type Witness Name

[Signature]  
Witness

Matthew Matlock  
Print/Type Witness Name

By: Thomas H. Eason (SEAL)

Thomas H. Eason  
Print/Type Name

Title: Dep. Director, HSC

"LESSEE"

STATE OF FLORIDA  
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 22 day of July, 2011, by Thomas H. Eason as Dep. Director, HSC, on behalf of the FLORIDA FISH and WILDLIFE CONSERVATION COMMISSION. He/she is personally known to me.

[Signature]  
Notary Public, State of Florida

Jamie C. Sorin  
Print/Type Notary Name

Commission Number:

Commission Expires:



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

EXHIBIT "A"

PI ID's: 00500289.1, 00500289.2, 00500289.3, 00500289.4 & 00500289.5

SECTION 1:

Northeast quarter of Southwest quarter of Southwest quarter; Southwest quarter of Northwest quarter of Southeast quarter; West half of the Southeast quarter of Northwest quarter; Northeast quarter of Northwest quarter of Northeast quarter; Northwest quarter of Southeast quarter of Northeast quarter.

AND

PI ID's: 00500315.2

SECTION 11:

That part of Southeast quarter lying East of Easterly right-of-way of Miami Canal.

All of said lands lying and being in Township 47 South, Range 35 East, Palm Beach County, Florida.

BSM APPROVED  
By   11   Date   3-3-11  

Page 4 of 4 Pages  
Amendment Number *TWO* to Lease No. 2343



## Florida Department of Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Rick Scott  
Governor

Jennifer Carroll  
Lt. Governor

Herschel T. Vinyard, Jr.  
Secretary

July 28, 2011

Richard Mospens  
Florida Fish and Wildlife Conservation Commission  
FFWCC, Room 321  
620 South Meridian Street  
Tallahassee, Florida 32399-1600

**RE: Amendment Number 2 to Lease Number 2343  
*Rotenberger Holey Land***

Dear Mr. Mospens:

Enclosed is a fully executed original for amendment number 2 to lease number 2343 for your records. If you have any questions, please contact me at (850) 245-2720 extension 4752 or by emailing me at [david.fewell@dep.state.fl.us](mailto:david.fewell@dep.state.fl.us).

Sincerely,

A handwritten signature in cursive script that reads "David Fewell".

David Fewell  
Land Acquisition Agent  
Bureau of Public Land Administration  
Division of State Lands

dlf/  
Enclosures (Instrument)  
**#16407**

*"More Protection, Less Process"*  
[www.dep.state.fl.us](http://www.dep.state.fl.us)



Florida Department of  
Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Rick Scott  
Governor

Jennifer Carroll  
Lt. Governor

Herschel T. Vinyard, Jr.  
Secretary

March 8, 2011

*FIVE CONTRACT #98055*

State of Florida Fish and Wildlife Conservation Commission  
Attn: Richard Mospens  
FFWCC, Room 321  
620 South Meridian Street  
Tallahassee, Florida 32399-1600

RE: Amendment Number **TWO** to Lease Number **2343**  
Rotenberger – Holey Land

Dear Mr. Mospens.:

Enclosed are three (3) original amendments that require acceptance by notarized signature by the appropriate party (two witnesses required). Pursuant to Chapter 695, Florida Statutes, the name of the person executing the instruments, the two witnesses, and the notary public must be legibly printed or typewritten directly below that person's signature.

Please have the enclosed amendments executed and return all originals to my attention at the letterhead address above, Mail Station 130. Upon receipt and acceptance, we will transmit the amendments for final departmental execution and a fully executed copy will be provided to you for your records.

Thank you for your assistance. If you have any questions, feel free to give me a call at (850) 245-2720, extension 4752 or e-mail me at [david.fewell@dep.state.fl.us](mailto:david.fewell@dep.state.fl.us).

Sincerely,

David Fewell  
Land Acquisition Agent  
Bureau of Public Land Administration  
Division of State Lands

dlf/  
Enclosures (Instruments)  
**RE: 16407**

"More Protection, Less Process"  
[www.dep.state.fl.us](http://www.dep.state.fl.us)



July 27, 2011

**Florida Fish and Wildlife Conservation Commission**

Commissioners  
**Kathy Barco**  
Chairman  
Jacksonville

**Kenneth W. Wright**  
Vice Chairman  
Winter Park

**Rodney Barreto**  
Miami

**Ronald M. Bergeron**  
Fort Lauderdale

**Richard A. Corbett**  
Tampa

**Dwight Stephenson**  
Delray Beach

**Brian S. Yablonski**  
Tallahassee

Executive Staff  
**Nick Wiley**  
Executive Director

**Greg Holder**  
Assistant Executive Director  
**Karen Ventimiglia**  
Chief of Staff

Office of the  
Executive Director  
**Nick Wiley**  
Executive Director

(850) 487-3796  
(850) 921-5786 FAX

*Managing fish and wildlife resources for their long-term well-being and the benefit of people.*

620 South Meridian Street  
Tallahassee, Florida  
32399-1600  
Voice: (850) 488-4676

Hearing/speech-impaired:  
(800) 955-8771 (T)  
(800) 955-8770 (V)

MyFWC.com

Mr. David Fewell  
Department of Environmental Protection  
Division of State Land  
Bureau of Public Land Administration  
3900 Commonwealth Boulevard  
Tallahassee, FL 32399-3000

RE: Lease Amendment No 2 to Lease #2343 between the Board of Trustees of the Internal Improvement Trust Fund and the Florida Fish and Wildlife Conservation Commission, covering 168.49 Acres, Holey Land Wildlife Management Area, Palm Beach County, Florida

Dear Dave:

Included herewith please find three originals of the referenced lease amendment that has been executed by FWC and are now ready for execution on behalf of IITF:

Upon the originals being fully executed, please return one fully executed original of the lease amendment to me for our files. Thank you.

Sincerely,

Richard C. Mospens  
Conservation Land Manager

RCM/  
Enclosures

**Mospens, Richard**

**From:** Chapman, Randy  
**Sent:** Friday, July 08, 2011 9:37 AM  
**To:** Mospens, Richard  
**Subject:** FWC #98055 Amendment #2 BOT of IITF And FWC

*Haley Land*

Richard,

I need for you to type up on a white piece of paper for this document to be routed stating the location of support documents for Jeri and Legal to be able to go to and look at if needed. Dale had done this on some of his documents where he insisted they were too large to print out and attaché to amendments to his files. This should be placed on a white piece of paper and placed in the document folder to the left of the amendment. Thanks.

Statement could be as simple as:

**Original document and Amendment #1 for this document can be located in Contracts Archive File as support documents are too large to print out and attaché to this document for processing with Amendment #2.**

*Randy K. Chapman, FCCM  
Purchasing Specialist/Contracts  
Florida Fish & Wildlife Conservation Commission  
(850) 410-0656 Ext. 17367 Fax: (850) 921-2500*

*Please help us improve our services by completing the following simple [Customer Survey](#).*



**Florida Fish and Wildlife Conservation Commission**

MyFWC.com

*7/11/11 - 7:40  
Randy had left  
The package on my desk  
The package contained I had in  
The lease Amendment #1 & Partial Release  
was long of Amendment #2  
Visited Randy & showed it to him - He then  
raised this needed routing form for these docs -  
Had him do for Amendment #1 - I pre-ordered the  
use of routing forms.*

## **13.2 Public Input**

### **13.2.1 Management Advisory Group Meeting Results**

**Everglades Complex of Wildlife Management Areas (ECWMA)  
Management Advisory Group (MAG)  
Consensus Meeting Results**

*April 23, 2013 in Coconut Creek, Florida*

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 does this by asking spokespersons for these stakeholders to participate in a half-day meeting to provide ideas about how FWC-managed lands should be protected and managed.

The MAG consensus meeting was held on the morning of April 23, 2013 at the Fern Forest Nature Center, in Coconut Creek, Florida in Broward County. The ideas found below were provided by stakeholders for consideration in the 2013 - 2023 Management Plan (MP) with priority determined by vote. These ideas represent a valuable source of information to be used by biologists, planners, administrators, and others during the development of the MP. Upon approval by FWC, the Acquisition and Restoration Council (ARC), and the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), the MP will guide the activities of FWC personnel over the ten-year duration of the management plan and will help meet agency, state, and federal planning requirements.

Numbers to the left of **bold-faced ideas** listed below represent the total number of votes and the score of each idea. Rank is first determined by the number of votes (vote cards received for each idea) and then by score. Score is used to break ties when two or more ideas have the same number of votes. A lower score indicates higher importance because each voter’s most important idea (recorded on card #1) received a score of 1, and their fifth most important idea (recorded on card #5) received a score of 5. Ideas not receiving any votes are listed, and were considered during the development of the MP, but carry no judgment 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 priority order:

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
1.	[11]	[20]	9. <b>Control invasive exotic plant and animal species.</b> Exotic plant and animal species cause a lot of damage to the area and we need to continue to control them if are going to maintain the wildlife habitat.

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
2.	[11]	[27]	15. <b>Advocate and continue upland habitat/tree island restoration activities.</b> We need to continue efforts to remove exotic species such as Brazilian pepper on the tree islands and to continue to restore them in order to provide habitat to maintain the wildlife species on the area.
3.	[10]	[24]	3. <b>Maintain balance and use of habitat/access with planned hydrology restoration.</b> Tree islands will disappear with high water. The management plan needs to help protect the tree islands.
4.	[7]	[21]	20. <b>Create, establish inland land patrol law enforcement units.</b> There are currently not enough law enforcement officers available for inland patrols to effectively provide law enforcement on a consistent basis.
5.	[5]	[19]	43. <b>Monitor and survey for common and imperiled species.</b> It is very important to continue to do in order for us to be able to manage and conserve.
6.	[4]	[9]	39. <b>Continue improvement and cooperation between all managing agencies.</b> Self explanatory.
7.	[4]	[12]	11. <b>Maintain and enhance public access to all areas.</b> Self explanatory.
8.	[4]	[16]	30. <b>Continue prescribed burning activities.</b> Extremely important to maintain the habitats and to help manage the areas.
9.	[3]	[8]	12. <b>Provide meaningful and participatory public educational opportunities.</b> We need to develop and have information geared toward new users who do not have an understanding and appreciation of the importance of these areas. We need to find a way to market the wilderness. How do we break the barrier between people in the urban areas and their fear of the wilderness?

**Two Items of Equal Rank:**

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
10.	[3]	[11]	8. <b>Incorporate future urbanization and climate change forecast into the plan.</b> We need to make sure that we are looking toward the future in terms of the potential impacts of climate change and planning for the combined effects of more urbanization and climate change effects on the area.
10.	[3]	[11]	48. <b>Increase eco-tourism activities in water conservation areas to generate additional revenue to enhance management and stimulate education and responsible access.</b> We need to do more promoton of the area to bring the public out to the area and to promote a better overall understanding of the water conservation areas and their purposes; generate additional revenue; to stimulate more education; and more responsible use and public access.
12.	[3]	[15]	49. <b>Increase staff funding and equipment to improve management of the area.</b> Self explanatory.
13.	[2]	[6]	29. <b>Establish and create liaison position to work with all agencies for/representing common goals and responsibilities.</b> If the public wants to call someone for an answer to a question about a particular use or regulation on the area, too often they are passed off to several agencies without getting a clear answer from one person or source. Appointing a liaison person or an ombudsman that represents all agencies would aid in a better overall understanding and communication for the public.
14.	[1]	[1]	4. <b>Try to balance competing needs for water.</b> Too often the public gets minimized in water uses and restrictions. People need water for lawns and other uses too so we need to remember the human aspect of water use.

**Two Items of Equal Rank:**

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
15.	[1]	[3]	26. <b>Consider and develop alternative/local funding sources to enhance management in and adjacent to the area.</b> For example, we could provide special opportunity hunts, ask for people to come out and help, and consider establishing volunteer organization groups to aid in fundraising to generate more revenue for restoration and management of the area.
15.	[1]	[3]	34. <b>Restore and maintain sloughs.</b> The slough system throughout the area provides an important function for wildlife species and it should be maintained and restored as a part of the overall restoration efforts.
17.	[1]	[4]	53. <b>Acknowledge increased pressure for fishing opportunities and continue to advocate for enhanced fishing opportunities.</b> Self explanatory.
<b>Six Items of Equal Rank:</b>			
18.	[1]	[5]	5. <b>Account and plan for adaptive management impacts of hydrology restoration on habitats and public use.</b> We need to monitor the actual effects of the hydrology restoration and incorporate adaptive management techniques to maintain habitats and public use.
18.	[1]	[5]	16. <b>Develop real time comprehensive and interactive water level mapping with seasonal risk assessment.</b> This would allow recreational users to obtain water level information prior to going out on the area and might prevent people from becoming stranded as recently occurred. We need to use the technology we have on hand.
18.	[1]	[5]	19. <b>Identify, understand, and manage the human vs. natural ecosystem changes.</b> If we can do a better job of understanding and balancing/managing the impacts of human uses of the ecosystem vs. only looking at the natural ecosystem, we can do a better job in conserving the ecosystem.

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
18.	[1]	[5]	35. <b>Increase and maintain cooperation between FWC and the South Florida Water Management District (SFWMD) to maintain and restore tree islands and deep water refugia.</b> FWC needs to work closely with the SFWMD to insure that tree island habitats and deep water refugia are not "lost" through the restoration.
18.	[1]	[5]	44. <b>Restore and enhance native fish assemblages.</b> In some cases, there may more exotic fish than natives, so we need to restore and enhance the native fish populations.
18.	[1]	[5]	54. <b>Ensure and provide for progressive proactive endangered and threatened species management.</b> Start programs that will allow us to use emerging technologies like genetic engineering to help restore and maintain listed species. We need to be more proactive in using progressive techniques instead of waiting until a species is threatened or endangered.

**Items That Received No Votes\*:**

24.	[]	[]	1. <b>Provide effective and applied wildlife restoration.</b> We can only enhance the habitat if we have a comprehensive knowledge and understanding of the ecological composition and function of the ecosystem. We need to know what is on the tree islands from the macro to micro invertebrate level and understand how it all functions together in order to provide effective and applied wildlife restoration on the tree islands. This will help us to detect and understand ongoing changes in the environment allowing for more effective restoration.
25.	[]	[]	22. <b>Provide for monitoring and assessment of the management plan actions.</b> We need to have a process that monitors and assesses the effectiveness of ongoing management actions to better manage the area and promote adaptive management actions.

<u>Rank</u>	<u># of Votes</u>	<u>Score</u>	<u>Idea</u>
26.	[]	[]	24. <b>Consider land acquisition and cooperation on adjacent land uses for enhanced conservation, management, and public use.</b> Additional acquisitions through fee and especially less-than-fee acquisitions or conservation easements and cooperation on adjacent land uses can help enhance wildlife corridors, improve resource management, and provide better public access.
27.	[]	[]	36. <b>Incorporate county comprehensive plans into our management plan.</b> We need to make sure that the county comprehensive use plans are consistent with our land management plans to avoid conflicting uses.
28.	[]	[]	38. <b>Restore water quality in order to maintain habitats.</b> If we are unable to pump water onto the area because it is too polluted, we need to do a better job of improving the water quality so there will be water available to restore the hydroperiod on the area.
29.	[]	[]	40. <b>Develop a volunteer program.</b> We should involve the community more in aiding with ongoing educational and management efforts.
30.	[]	[]	52. <b>Ensure fair and balanced regulations and enforcement for all leased camps.</b> What's good for one should be good for all. We shouldn't have one set of rules for the tribes and their leases and another set for leases that are not on tribal lands.

\*All ideas represent valuable input, and are considered in development of the MP, but carry no rank with regard to the priority perceptions of the MAG.

**Everglades Complex of Wildlife Management Areas  
MAG Meeting Participants**

**Name**

**Affiliation**

**Active Participants**

Susanna Toledo	FWC Area Biologist
Melissa Juntunen	FWC Area Biologist
Lt. Lindsay McDonald	FWC Law Enforcement
Linda Briggs	Broward County Parks and Recreation
Newton Cook	United Waterfowlers of Florida
Heather Cunniff	Broward County Planning Department
John Marshall	Florida Forest Service
Gary Matthews	Private Property Adjoining Owner
Jerilyn Ashworth	Florida Department of Environmental Protection
Ester Luft	South Florida Kayak Fishing Club
Rebekah Gible	U.S. Fish and Wildlife Service – Loxahatchee NWR
Steve Traxler	U.S. Fish and Wildlife Service
John Rosien	Everglades Coordinating Council
Adam Tarplee	U.S. Army Corps of Engineers
Jason Smith	South Florida Water Management District
Gintas	Miccosukee Tribe

**Supportive Participants**

Michael Anderson	FWC Division of Habitat and Species Conservation (HSC), Regional Biologist
Marsha Ward	FWC HSC, District Biologist
Tim Towles	FWC HSC, Landowner Assistance Program
Rich Noyes	FWC Office of Public Access and Wildlife Viewing Services (OPAWVS)
Tom M. Matthews	FWC OPAWVS
Wesley Seitz	FWC Division of Hunting and Game Management
Lindsay Nester	FWC HSC Conservation Biologist
Barron Moody	Division of Freshwater Fisheries Management
Jennifer Eckles	FWC Exotic Species
Don Fox	FWC Aquatic Habitat Conservation and Restoration

**Invited but Unable to Attend**

Pedro Ramos	Big Cypress National Preserve
Bryon Maharrey	Hunting Stakeholder
Brett Darmody	Everglades Bassmasters
Jorge Gutierrez Jr.	Hunting Stakeholder
Cynthia Plockelman	Audubon Society of the Everglades
Xavier Falconi	Everglades Bicycle Club

Andy Jackson  
Ernie Marks  
Commissioner Diaz  
Lorenzo Aghemo  
Jack Osterholt  
Julie Hill-Gabriel  
Commissioner Santamaria  
Mary Ann Westwood  
Tommy Strowd  
Mike Wisenbaker  
Dan Hipes  
Damon Carroll

Mary Ann Westwood  
Rory Feeney  
Craig Tepper  
James Clauson

**FWC Planning Personnel**

Gary Cochran  
Susie Nuttall  
Tom Houston Recorder

Soil Conservation District  
Department of Environmental Protection  
Miami-Dade County Commissioner  
Palm Beach County Planning Department  
Miami-Dade County Planning Department  
Audubon of Florida  
Palm Beach County Commissioner  
Airboat and halftrack Clubs  
South Florida Water Management District  
Division of Historical Resources  
Florida Natural Areas Inventory  
Broward County Airboat and Half-Track and  
Conservation Club, Inc.  
Palm Beach County Airboat and Halftrack Club  
F.K. Jones Miccosukee Tribe of Indians  
Bo Young Seminole Tribe of Florida  
Okeelanta Sugar Corp.

Land Conservation and Planning  
Administrator, Facilitator  
Recorder

### **13.2.2 Public Hearing Notice and Press Release**

# NOTICE

The Florida Fish and Wildlife Conservation Commission (FWC)  
Announces a

## PUBLIC HEARING

for the

## Everglades Complex of Wildlife Management Areas

(Everglades and Francis S. Taylor, Holey Land, and Rotenberger  
WMAs)

### Management Plan

Broward County, Florida

7:00 P.M. Thursday, July 11<sup>th</sup>, 2013

Ft. Lauderdale Research and Education Center  
Administration Building, Room 130  
3205 College Ave.  
Davie, FL 33314

**PURPOSE:** To receive public comment regarding considerations for the FWC ten-year Land Management Plan for the Everglades Complex of Wildlife Management Areas (ECWMAs). This hearing is being held **EXCLUSIVELY** for discussion of the **DRAFT** Everglades Complex of WMAs Management Plan. This meeting is not being held to discuss area hunting or fishing regulations. For more information on the process for FWC rule and regulation development go online to: [myfwc.com/about/rules-regulations/rule-changes/](http://myfwc.com/about/rules-regulations/rule-changes/) or call (850) 487-1764.

A Management Prospectus for the Everglades Complex of WMAs is available upon request. For a copy, please contact Diana Kilgore, Florida Fish and Wildlife

Conservation Commission, Land Conservation and Planning, 620 South Meridian Street, Tallahassee, Florida 32399-1600. Telephone: (850) 487-7063.

For immediate release: June 25th, 2013

Contact: Diane Hirth, (850) 410-5291

## Public hearing to outline ten-year management plan for the FWC Lead Managed Portions of the Everglades Complex of Wildlife Management Areas (Everglades and Francis S. Taylor, Holey Land, and Rotenberger)

The Florida Fish and Wildlife Conservation Commission (FWC) will hold a public hearing in Broward County to present the draft ten-year land management plan for the FWC Lead Managed Portions of the Everglades Complex of Wildlife Management Area (WMAs). The meeting will be held on July 11<sup>th</sup>, 2013 starting at 7 p.m. at the Ft. Lauderdale Research and Education Center, 3205 College Ave., Davie, FL 33314.

After the presentation, the public is encouraged to ask questions and comment on the specifics in the draft plan.

All lands purchased with public funds must have a management plan that ensures the property will be managed in a manner that is consistent with the intended purposes of the purchase.

“The Everglades Complex of WMAs was purchased in order to ensure the preservation of fish and wildlife resources, other natural and cultural resources, and for fish and wildlife-based public outdoor recreation,” said Rebecca Shelton, FWC land conservation biologist. “This draft plan will specify how we intend to do that.”

She added that hunting and fishing regulations are not included in this plan or meeting; those are addressed through a separate public process.

To obtain a copy of the draft land management prospectus for the Everglades Complex of WMAs please call Diana Kilgore at 850-487-7063 or David Alden at 850-487-9588, or email [Diana.Kilgore@myfwc.com](mailto:Diana.Kilgore@myfwc.com).

For background on [management plans](#) and their goals, visit [MyFWC.com/Conservation](http://MyFWC.com/Conservation) and select “Terrestrial Programs” then “Management Plans” for more information.

RS/HSC

### **13.2.3 Public Hearing Report**

**PUBLIC HEARING REPORT**  
**FOR THE**  
**EVERGLADES COMPLEX OF WILDLIFE MANAGEMENT AREAS**  
**MANAGEMENT PLAN**  
**HELD BY THE**  
**EVERGLADES COMPLEX OF WILDLIFE MANAGEMENT AREAS**  
**MANAGEMENT ADVISORY GROUP**  
**AND THE**  
**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION**  
**JULY 11, 2013 – BROWARD COUNTY, FLORIDA**

The following report documents the public input that was received at the Everglades Complex of Wildlife Management Areas (ECWMA) Management Advisory Group's (MAG) Public Hearing for the Draft Management Plan for ECWMA that was held at 7:00-9:00 PM, on July 11, 2013, at the Broward County Research and Education Center in Ft. Lauderdale, Florida.

**ECWMA Management Advisory Group Introduction:**

The meeting was introduced by Mr. Gary Matthews, an ECWMA MAG participant, who represented the adjacent landowners to the area. Mr. Matthews indicated that he was one of thirteen stakeholders that attended the Florida Fish and Wildlife Conservation Commission (FWC) facilitated MAG meeting held on April 23, 2013. Mr. Matthews stated that the Draft Management Plan was being presented tonight by FWC staff, and that hardcopies of the draft plan and the ECWMA MAG Meeting Report were available at the front door for the public's review. Mr. Matthews thanked everyone for attending and then introduced Mr. Gary Cochran, Land Conservation and Planning Administrator, FWC, to facilitate and coordinate the presentation of an overview of ECWMA; FWC's planning process, and the draft components of the Management Plan.

**Presentation on an Overview of ECWMA and the FWC Planning Process:**

Mr. Cochran welcomed everyone and thanked the public for their attendance. Mr. Cochran 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 ECWMA, and not hunting and fishing regulations, indicating there is a separate public input process for FWC hunting and fishing rule and regulation development. Mr. Cochran then described the materials that were

available at the door for public review, including the Draft Management Plan, the ECWMA MAG Meeting Report, Accomplishment Report and ECWMA management Prospectus. Mr. Cochran then presented the agenda for the public hearing and facilitated the introduction of all FWC staff in attendance to the audience. Mr. Cochran then presented an overview and orientation of ECWMA, 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. He also explained FWC's planning process and asked if there were any questions regarding that process.

**Questions, Answers and Discussion on the ECWMA Overview and FWC's Planning Process:**

Mr. Cochran facilitated an informal question and answer session where members of the public in attendance, without necessarily identifying themselves, could ask questions of the FWC staff, and discuss the answers. Mr. Cochran again emphasized that the exclusive purpose for the public hearing was to collect public input regarding the Draft Management Plan for ECWMA, 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. No questions or comments were received from the public in attendance during this part of the Public Hearing.

**Presentation of the ECWMA Draft Management Plan**

At this point in the Public Hearing, Ms. Melissa Juntunen, the ECWMA Area Biologist/Manager began the presentation of the Draft Management Plan. Ms. Juntunen, the Area Biologist then completed and concluded the presentation of the ECWMA Draft Management Plan.

**Questions and Comments on the ECWMA Draft Management Plan Presentation**

Mr. Cochran encouraged everyone to fill out a speaker card for public testimony. He informed them that all cards will be considered equally. Then he opened the floor for comments and questions from the public attendees regarding the ECWMA Draft management plan.

**Public Question:** An anonymous member of the public audience asked how the black bear was doing in this particular area (the eastern areas).

FWC Response: Ms. Marsha Ward, District Biologist, FWC, explained that most of the black bear sightings that they have are of black bears dispersing from the west. She said that this is more of a transitioning zone where they are dispersing.

Public Comment: An anonymous member of the public audience made the comment that they were a little concerned about the piece in the plan that talked about increasing recreational access. They also asked if FWC was aware that when the J. Lloyd State Park cut out all the Australian pines, it cut public attendance in half. He added that this is a large burning area and that birds of prey love these tall trees (referring to the Australian Pines). He added that science should set priorities about what is the most and least harmful and determine the impacts of picking these trees out.

Public Question: An anonymous member of the public audience asked why Water Conservation Area 2, within the ECWMA Complex, is not included in this Plan.

FWC Response: Mr. Cochran and other FWC staff responded by informing them that Water Conservation Area 2, within the ECWMA Complex, is included in the Draft Management Plan.

Public Question: An anonymous member of the public audience asked if FWC had a list of the controlled burns, where it's happening, and how long it's been since the last burns. They were asking specifically about Water Conservation Area 2A within the ECWMA Complex, Plan.

FWC Response: Ms. Juntunen informed the audience that FWC currently schedules prescribed burns on at least 10 thousand acres a year and whether or not we meet that objective depends on hydrology, weather, and staff. She added that most of the time, FWC is burning in Water Conservation Area 3N, within the ECWMA Complex, Plan, (which is the area North of I-75), Conservation Area 3S and 3B. She also informed him that Water conservation Area 2A, within the ECWMA Complex, is currently not as high of a priority as other units within this 737,000 acres within ECWMA Complex, but that FWC has conducted some prescribed burns in Area 2 A, in cooperation with the South Florida Water Management District (SFWMD). She added that the last time that FWC conducted a burn on Area 2 A was in January 2013. In addition, she indicated that FWC has had a lot of staff turnover so short staffing has also been an issue lately.

Public Question: An anonymous member of the public audience asked what was causing the tree islands to become destroyed and also why the water levels are getting too high. They added that they have been living there since 1966 and have

been there to see the big kills come when water got too high. He added that he used to go out there and fish all the time and that it's just not like that anymore. He also added that he keeps hearing people say that they're restoring it and that he is not seeing any improvements. He added that it seems like they're keeping people out of the area. The individual also added that the Fakahatchee is like that, there are so many potholes there that unless someone wants to walk it, they can't see it. He said it's the same with the Loxahatchee, he tried to get in there for public use and wasn't able to. He also mentioned that he'd like to see some camping areas out there.

FWC Response: Mr. Michael Anderson, FWC Regional Biologist/Manager for the FWC South Region, which includes the ECWMA Complex, informed the individual that it's both high and low water that is causing the tree islands to become destroyed. He added that in water Conservation Area 3A North there has been very low water levels which has caused some of the tree islands to burn away, which is why it's a priority to burn over there. When it gets too dry, fires sweep through and destroy those areas and then they are difficult, if not impossible to restore. Mr. Anderson added that in the southern part of the area, there is a lot of flooding that is destroying those tree islands (in Water Conservation Area 3A South). Ms. Juntunen, FWC, added that as far as public access on our areas, they're open all year unless there is an emergency that forces public access to close.

Public Question: An anonymous member of the public audience first specified that there were 9 people assigned to the land management and that there are 786,000 acres and asked if they have made an effort to increase the number of employees? They also asked what an adequate number of employees would be (to keep up with burns, etc).

FWC Response: Mr. Cochran informed the audience that they do have a state-wide staffing ratio, which is 1 Full time equivalent (FTE) employee per each 5000 acres. Mr. Cochran informed her that this is a very minimal level of staffing and that it is subject to change depending on the needs of a specific area. They realize that more staffing is needed if they're going to efficiently manage this area in particular. Mr. Cochran also added that requests are made to the legislature for increased funding for staff and they have to await approval. Mr. Cochran added that over the past 5 years due to the economy, FWC has had substantial funding cuts due to general economic conditions and that this has affected staffing as well as other aspects of FWC management capabilities. Mr. Anderson, FWC, added that the goal in regards to the staff they currently have was for what they could do with the 10000 acres/year that FWC schedules to conduct prescribed burning on and that we do the best with what we have but that what we should be doing is much different if we had full staffing under the FWC staffing ratio for management of wildlife areas.

Public Comment: An anonymous member of the public audience made the comment that they feel that area 2A has been neglected for a while (in regards to burns), that the cattails have overrun the saw grass. They added that they do not believe that there has been a good burn up in that area for around twenty years.

FWC Response: Mr. Cochran, FWC, informed him that it's not their intent to neglect any area and that if there has not been a burn recently it's not because anyone selected to neglect it, it's just due to the size of the area and the staffing available.

Public Question: An anonymous individual of the public audience asked what the nature of the poaching situation is and if it is getting worse?

FWC Response: Ms. Juntunen, FWC, informed the individual that she is not aware that poaching has increased on the area and that generally it has gotten better. She also said FWC doesn't really have a huge problem with that and that she does check in with law enforcement.

Public Comment: An anonymous member of the public audience said that they had worked a long time in state government and has learned to follow the legislature closely. They said that even if things (economy) do begin to get better, FWC still may not see much more revenue come through so they may need to look for revenue elsewhere. They added that they go by Holey Land and always see tour busses, even in the summer, so it seems like that area is continually staying busy. The individual added that every other large park in the nation will charge the operators a head or seat tax (for large parties) and that there's an opportunity there for FWC to generate addition income. They added that when they see tour busses pull in, it's great for the economy and they feel like this area is getting 'short changed.'

FWC Response: Mr. Cochran thanked him for his comment and informed him that FWC does look for every revenue-generating source that they can within the parameters that they need to manage the areas under because their primary purpose for being out there is to preserve and protect the fish and wildlife resources and to provide the public outdoor recreation. He added that the Commission and the Legislature set any sort of fees that FWC is allowed to charge for entrance upon any areas and their determination so far has been to only allow the fees that are currently being charged which is primarily the WMA Stamp fee; some areas have additional fees or permit fees, but that this is primarily it. He added that they've made recommendations for increases, but the decision so far is that the Commission does not want to charge additional fees to the visiting public.

Public Question: An anonymous member of the public audience had a couple questions: the first one was on page 35 of the draft plan where it says that the short and long-term goals are ‘to continue to maintain white-tailed deer populations at or below high water carrying capacity,’ and asked if FWC could elaborate on that a little bit because they added that at high capacity, all the deer are drowning so it sounded like they were trying to maintain zero. And their second question was about their university research projects that they have out there, especially in Water Conservation Area 2. They added that universities have come in there over the years and put up all sorts of research stations which aren’t marked, and then they finish with their projects and just leave the stations there. The individual asked who was keeping up with the students and their projects to make sure that they clean up after themselves, especially since the unmarked stations can be a navigation hazard for boaters at night. They added that if you’re on your airboat at night and accidentally go off the trail that you’ll run into them.

FWC Response: Ms. Juntunen, FWC, informed the public that if they do have high water event, that they won’t have a large die-off of deer. She added that they still have deer and that they can handle a short duration of high water event (usually around thirty days). She added that the population is smaller now than it was in 1994 and can withstand the high water events better. In regards to the second questions, Mr. Cochran informed the individual that if they do have an issue where they’re running into abandoned stations, to contact FWC and law enforcement and let them know. Ms. Juntunen added that there are many different people who do research in the area and that most do a very good job of cleaning up after themselves. She added that there are research projects that do get left though and FWC works with the SFWMD to try to figure where those are and to try to get them cleaned up and that some of the stakeholder groups have approached her wanting to help with that. The SFWMD usually gives them permission on the research projects and they had no exit plan. She added that anytime anyone asks to use the property, they always try to make sure that there is nothing that is left.

Public Question: An anonymous member of the public audience had a question in regards to a section of the overview which had to do with endangered species utilizing those areas. This was specifically in regards to the species that are listed with an asterisk (Burrowing owl, Crested caracara, and the Florida panther). They added that they have not seen panthers but have seen their tracts on the area and want to know what it means when the plan says that ‘there is potential habitat, or existing habitat, or an existing use of an endangered species but that there’s little opportunity to manage for the species’ and that the species should not influence management. They just wanted to know what exactly that means. They added that this seems at odds with the reason that these lands were acquired in the first place,

which was to maintain healthy populations and ecosystems. They also wanted to know why the area cannot be managed for the species. The individual also explained that there are primary zones that are suitable for the panther, and that panthers do actually use some of those areas. They added that the National Panther Wildlife Refuge is managed for panthers and that what they do is manage it for their prey, that way they ensure there is plenty of prey available in the area for the panther to feed on and added that this would be one way to manage for the panther. They also added that adequate prey has been a major issue for the panther.

FWC Response: Ms. Lindsay Nester, FWC Regional Conservation Biologist, explained that a lot of the area on ECWMA is just not the best habitat for the burrowing owl or crested caracara. The area is, however, suitable habitat for the panther and there are areas set up for panther conservation. Ms. Lindsay explained that they do not feel that there are many places on the area that they will have panther dens and that usually when managing for panthers, they try to get denser habitats so that they can use the area for dens.

Public Comment/Question: An individual added that while it may be possible to manage for that species, the area is in Rotenberger right next to a reservation and that Rotenberger doesn't really have a lot of prey, but that right next to it there is deer and the panther do go there and just don't stay there. He then brought up the high water carrying capacity of the deer and added that if they wanted to manage for prey then they'd drain the area so it would be accessible to more deer. He added that they're looking at ecosystem management across the board.

FWC Response: Mr. Cochran, FWC, added that there are areas west of the Everglades Complex WMAs where FWC and other conservation agencies spend considerable energy and resources managing for panthers, for example, the Panther Glades. There, the habitat conditions are more optimal for the Panther to survive and thrive. He added that historically, the Everglades would not have had high Panther usage even when the Panther population was higher in the State, given the overall habitat characteristics of the area. Panthers still would not generally use the area for denning much in this particular area.

Public Comment/Question: An anonymous member of the public audience made the comment that since the hunter and the panther are competing for the same prey, and there's not enough of that prey in the area then how can they consider hunting in these areas.

FWC Response: Mr. Michael Anderson, FWC, informed the public that this is part of the reason why they are not managing specifically for the panther because that lack

of prey given the habitat is a major consideration. He added that panthers are not in this area all that often. He added that sometimes the panthers do follow prey in but that they're not there in the same numbers or same amount of time as they are in the southwest part of the State so that's why the plan is worded this way in regards to managing for panther. Mr. Cochran added that they have a wide focus of what they need to be responsible for in the area and that includes the citizens and they have to balance it for the public as well as the wildlife and this can become difficult sometimes to balance.

Public Question: An anonymous member of the public audience asked if they had the numbers for the south Florida panther population. He also asked if they're starting to come back or if their numbers have stabilized.

FWC Response: Mr. Michael Anderson, FWC, informed the public that they do not have specific numbers but that years ago their numbers were around 30 and now they have substantially more, especially since they've introduced the Texas cougar.

Public Comment: Mr. Matthew Schwartz, Director of the South Florida Wild Lands Association, added that the population seems to have stabilized around 100-120 and that they are mating. The mating of the panther with the Texas cougar has helped their numbers. He added that part of the problem is that the habitat is shrinking so it makes it difficult to maintain a stable population.

Public Question: An anonymous member of the public audience asked about adding a facility out there and said that FWC having a presence out there would be very important in regards to vandalism and poaching. They added that they understand that this can be a bit of a money issue. They asked if FWC owns the levees and the other high level lands out there and what the relationship is between FWC and the SFWMD, in regards to building on areas with higher ground.

FWC Response: Mr. Cochran informed the public that this has been identified as a critical need and that they will be putting that in their budget and cost estimate of the plan. He added that it may require the acquisition of additional lands. Mr. Cochran informed the individual that yes, the SFWMD does generally hold the title to most of those high level grounds, so it depends on whether that agency has lands that would be suitable for what it is that they're trying to build on. He added that they have not approached those agencies yet about this issue and that they will if the plan gets approved. Mr. Cochran added that if those aren't available then they're going to look at some of the private lands around that area and they also will need additional money to do that.

Public Question: An anonymous member of the public audience asked why FWC can't use the land that they already own to do some building on instead of acquiring more land. They added that most of the boat ramps are next to the highway which would be ideal to build a facility on.

FWC Response: Mr. Cochran informed the individual that the main issue is that most of the land is wetlands and are unsuitable for filling and developing for infrastructure. He added that they're going to evaluate all the land on the area and determine if any of it is appropriate for building on. He added that FWC is not excluding their lands. Mr. Cochran added that if you look at the overview, a majority of the vegetation is saw grass and marsh community and they're not going to propose to fill in or develop on the saw grass marshes. In regards to building by the boat ramps, Mr. Cochran added that they'll evaluate that if that if there is room or if it impacts public use and access and that all those factors need to be weighed.

Public Question: An anonymous member of the public audience asked what exactly FWC was looking for, if it's land for a campground, a facility, or what?

FWC Response: Mr. Cochran informed them that what they're looking for is an area to build an operation facility, an equipment storage shed, maintenance shed, and a staff residence. He added that they're not really talking about recreational facilities and that those are a much more complex issue and costs more money. Ms. Juntunen added that they currently use the Florida Forest Service's Everglades field station.

Public Question: An anonymous member of the public audience wanted to know if FWC has considered the cost to build what they need there. And wants to know about what it would cost.

FWC Response: Mr. Cochran informed the individual that they do have an analysis of the cost to build those facilities and added that they have this in the cost estimate of the Management Prospectus (pg 32). Mr. Cochran added that FWC has a very systematic way that they do these facility construction estimates, and that they're similar across the state so they have an idea of about how much it would cost to build the facilities. Mr. Cochran added that the current estimate is \$1,719,319 which is based upon the square footage of all the facilities that they're talking about.

Public Question: A member of the public audience asked if the nine staff includes law enforcement, and if it doesn't, how many law enforcement officers worked there.

FWC Response: Mr. Cochran explained that no, the nine staff does not include law enforcement. He said that he's not entirely sure what the number is and would ask

FWC law enforcement if they were there, but that there are very few of them who worked up at the Everglades.

Public Comment: An anonymous member of the public audience made the comment that a couple years ago they merged Motor Carrier Compliance into FHP, and asked if there was any talk of moving FWC's law enforcement into FHP.

FWC Response: Mr. Cochran informed the individual that he's not aware of anything like that and probably wouldn't be involved in those discussions.

Public Question: An anonymous member of the public audience asked if FWC has volunteers like the Park Service does to get help out in some of these areas every now and then.

FWC Response: Ms. Juntunen, FWC, informed the individual that they do have some volunteers and that one program that they have is an intern program with the University of Florida. Each year they have an intern that helps out in their region. She added that they also take volunteers as they are contacted. Ms. Juntunen added that the problem with volunteers in their area is that you really need specialized equipment to access the areas where they could use a lot of help. She added that it's a lot easier if someone can just drive up to an area and start helping out and that they don't really have that there at the Everglades. She added that this past summer she had one volunteer as well as one intern. Mr. Cochran added that they do have a state-wide volunteer program which is administered by our office of public access and wildlife viewing. He added that this area is different than their other areas because you do need specialized equipment to access it. Mr. Cochran added that the volunteer programs also require a lot of supervision. FWC has to balance the amount of time they have with all the activities that are on the plan with how much time it would actually take to administer and provide oversight to volunteers. Ms. Juntunen added that a lot of volunteers aren't willing to use their own vehicles and gas to get out to some of the levee check stations.

**Public Testimony on the ECWMA Draft Management Plan:** Five members of the public audience submitted speaker cards indicating their intention to provide formal public testimony. Mr. Cochran again emphasized that the public hearing was for taking input regarding the ECWMA Draft Management Plan, and called the first speaker to the podium.

Public Testimony Comment: R. Stephen Mahoney: Informed the public that he represents the Sierra Club Miami Group and Florida Chapter on Everglades Issues as well. Mr. Mahoney said that their group has a couple comments about the plan:

one of the things that they were a bit confused about was that the plan states that Holey Land has bomb craters but then in the next sentence it says that this may be a natural phenomena. He added that they're not sure how they can be either or. He asked how they are supposed to interpret that it is a natural phenomena when they know that historically, this area was a bombing range. Mr. Mahoney's second comment was that the list of Florida Forever projects in the vicinity of ECWMA includes Lee and Collier County but that there is no mention of the western everglades area anywhere in the documents. His third comment was that they disagree with some of the projections on Florida's human population which is projected to double by 2050. He added that the statement about continued development to the east is also a concern. They think that south Florida is already under pressure from population growth and that the carrying capacity for their natural resources (especially water) is particularly limited and that we wouldn't be able to support double the population – space or water-wise. Mr. Mahoney added that the population estimates should be turned down particularly because of the economic situation. His other comment had to do with climate change: he said there was mention of climate change but that it didn't take into account the sea level rise issue and possible factors that might arise from that. He added that one of his colleagues was a former federal biologist and that they had a particular concern about how accurate the FNAI survey data was, particularly in regards to the part about the natural communities there. Mr. Mahoney also made a comment about the Florida panther and about how it was mentioned, in the plan, as having potential habitat on the eastern end of the WMA yet the assessment shows that there is little opportunity to manage for these species on the area (he added that he's aware that FWC has addressed some of that already). He said the ECWMA is comprised almost entirely of primary and secondary panther habitat and that they're concerned about the statement in the Plan discussed earlier regarding the suitability of the habitat for panthers. Mr. Mahoney said that they wanted to know more about the threatened species rules implemented on June 13<sup>th</sup> but that there's not a lot of public awareness about that. His final comment was about the allowance of off-road vehicle use in the recreational public access part of the plan. He added that he knows ATVs can be devastating to natural habitats.

Public Testimony Comment: Mr. Matthew Schwartz, Director of the South Florida Wild Lands Association. Mr. Schwartz began by informing the public that he encouraged a lot of people to make it out to the meeting tonight and that this particular area is very large area of land, it goes from Miami all the way up to Palm Beach County. He said that when you look at a map you see the large metropolitan area east of the Everglades and added that this is the largest metropolitan area in the Southeast and he believes it's the seventh largest in the Country and that it's still growing, although he's not sure if it'll double by 2050 as was projected. Mr.

Schwartz said that he read that Florida is still the number one destination for people who retire across state lands, adding that the baby-boomers are retiring and you can see the population growth because of it. Mr. Schwartz also made the comment that he thinks FWC made a mistake in their original stakeholder meeting because he'd only just heard about that meeting and because of that, he does not feel like that meeting was very well represented. He added that there are thousands of people that are part of environmental groups that were not even invited to the stakeholder meeting in April. Mr. Schwartz added that he wants to know how FWC is planning to manage this truly for multiple uses so everyone can use it. Mr. Schwartz also made the comment that there are problems that are caused by motorized recreation and you can see the impacts of the ATVs on those lands. He added that ATVs remove surface vegetation, damage/remove the roots, compact the soil, and they do impact imperiled species. He also added that how that particular use is managed needs to be addressed for both airboats and ATVs. Mr. Schwartz added that he believes that there needs to be non-consumptive areas where people can go out there and enjoy the peace and quietness. Mr. Schwartz also made a comment about Big Cypress National Preserve and the 146,000 acres that FWC is pushing to open up for hunting and ATVs. Mr. Schwartz then brought up the issue of development and the future of the Panther Glades. Mr. Schwartz informed the public that Florida Power & Light (FP&L) has bought up to 3,000 acres of it and it's about to buy up to 20,000 acres of it to build the largest power plant in the country, and that this is going to be just west of these large conservation lands. He asked if anyone knew about this and what impact this is going to have on the Everglades. He added that he does not do a lot of hunting but does do a lot of hiking and he sees that a lot of the wildlife is dying out (the wildlife that people hunt) even in the most protected areas. He concluded by letting everyone know that he's glad this meeting is taking place and that he will be sending extensive comments.

Public Testimony Comment: Mr. John Rosier: Representing the Everglades Coordinating Council and the Full Track Conservation Club of Dade County, as well as the Broward County Airboat Club. Mr. Rosier began by saying that ATVs are banned from the tree areas and have been banned since 2005 (addressing Mr. Matthew Schwartz's last comment). Mr. Rosier made the comment that he wants FWC to maintain management of the area because he believes that they're doing a good job managing the area. He mentioned that FWC really needs to emphasize, in the plan, that this particular area (ECWMA) is the Everglades also. He said that at a lot of the meetings he's been to people keep referring to the area as 'water retention ponds.' He added that they do not begin talking about the Everglades until they get to the other side of the Tamiami Trail. He said that there needs to be a push from FWC to educate people that this is also part of the Everglades and to treat it like that. In regards to the short-term goals about rest areas: he said that

they've already spoken to the SFWMD about incorporating them into the plan at Buggy Bridge and making that a rest area. Mr. Rosier added that it's been there since the 1960's which makes it historical, so it would be a good place for a rest area. Another thing he would like to see incorporated into the plan would be the Gladesman Culture, as it is a recognized culture and to make sure stakeholders from that group are included in future meetings on the area. And finally, Mr. Rosier wanted to make a comment about law enforcement, by saying that they want more law enforcement on ECWMA. He understands that they only have so many hours that they need to spend on the water but still feels that there need to be more inland.

Public Testimony Comment: Bob Hartmann: Informed the group that he was not representing any groups, but rather, that he was a wildlife photographer. He said that there is a litter problem everywhere from Palm Beach and ending at Big Cypress and that he's not sure if that's FWC's problem or if it's the SFWMD's problem. He added that many of the places he pulls over at to take photos have litter problems and that he's never seen any signs about fines for littering in the area. Mr. Hartmann added that this is something that keeps getting worse and needs to be addressed. Another comment Mr. Hartmann had was in regards to opening up tourism. He's not suggesting it be opened up for vehicular traffic because he believes that this would be a bigger problem, but suggests that FWC should get some tour busses back there. He suggested that they come up with a licensing model to let companies go in there, and within certain zones to allow certain registered vehicles, just to get people in and educate them about the area. He'd like to see more public outreach and business/recreational opportunities and to try to find a way to get the public into the area and educate them on the area in a controlled fashion.

Public Testimony Comment: Mr. Sean Litalien: Speaking for himself and is a member of the Broward County Airboat Club. Mr. Litalien began by saying that if the true goal is to restore the Everglades, then he suggests that FWC work really hard to focus on the water levels right now. He said to give people Tom Shirley's documents and added that Mr. Shirley was in the Game Commission for 30 years monitoring water levels. He added that the documents will show the public the damage that the water level did to the tree islands. Mr. Litalien added (reading from Tom's document) that 15 inches for six weeks kills the deer and kills the tree islands. Mr. Litalien also added that FWC should not forget about Area 2 because he thinks it is a wasteland and added that there's nothing left (to poach) out in Area 2 because of the water levels. He told FWC to not let Area 3 become like Area 2 because if they do, it'll be gone and it won't come back again. Mr. Litalien closed by saying that he really appreciates and supports what FWC is doing.

**Adjournment:** Mr. Cochran asked if there were any other members of the public that wished to give public testimony. No other speakers offered further comments. Then Mr. Cochran declared the public hearing adjourned.

### **ADDITIONAL WRITTEN COMMENTS BELOW**

Sorry I couldn't stick it out for the whole day on Tuesday. Hopefully, a few comments now will be helpful in your work.

I'm not sure the stakeholder group assembled was really all that representative of actual users of the management areas. So regardless of what consensus was generated, I am a little cautious about how much we should rely on it. There was not anyone there that I would have described as representing fishing, although our surveys have estimated up to 80,000 angler-hours of fishing effort in the L-67A Canal alone in a six month period. Of course, other canals in the complex are also popular fishing locations. Just as there were representatives from two kinds of hunting there could have been multiple fishing aspects included. Unfortunately, we always struggle to get any kind of stakeholder participation from casual, non-organized, or sustenance fishing participants. Bass tournament types however, are reasonably engaged.

I also started getting the feeling that the time management issue and pushing on through the normal lunch hour was contributing to participants not giving full effort.

I'd like to comment direct on a couple of items I captured in my notes:

- FWS (Steve Traxler) brought up MAP – most agencies are looking for MAP to support their

activities, yet he seems to be suggesting that FWC provide activities that support MAP.

- Tribe says we need more exotic fish management – FWC has no capability to enhance/produce native fish

I would proceed with caution on getting involved in the CERP Monitoring and Assessment Plan that Steve Traxler mentioned. With many agencies looking to MAP to provide them revenue/support (including FWS in my opinion), I don't see why we should be committing in our management plan to do work to primarily benefit MAP. They are, of course, welcome to data we generate in our work that we see as important to management of these areas.

FWC's hatcheries are fully capable of producing native fish; I do not believe there is currently need in the EWMA complex for stocking. Perhaps I misunderstood the comment from the tribe. I believe that whatever the management plan states regarding exotic fish should be consistent with other agency policy/position, like the Canal Issue Paper, e.g. "exotic fishes currently inhabiting the ridge and slough systems of the Everglades do not pose a sufficiently serious threat to native Everglades species to justify filling canals" and "The occurrence of an exotic fish does have an inherent ecological effect in that it alters the energy flow and takes up space in the resource, but current data indicate that such changes can be, and often are, innocuous."

My staff and I remain committed to conducting fisheries sampling and management in the complex. Regional fisheries staff will continue to sample, at a minimum, the L-67A Canal in EWMA. This sampling is currently planned to include annual electrofishing for a community wide sample, annual largemouth bass specific sampling in the spring, and periodic creel survey (which currently includes questions specific to native and exotic species).

Best, Barron

Barron Moody  
Regional Fisheries Administrator  
FWC, Division of Freshwater Fisheries Management

### **13.2.4 Management Prospectus**

**EVERGLADES COMPLEX OF WILDLIFE MANAGEMENT  
AREAS**  
**Management Prospectus**  
**Florida Fish and Wildlife Conservation Commission**  
**June 2013**

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- **Introduction**

The Everglades ecosystem, at the southern tip of Florida, contains the largest mangrove ecosystem in the western hemisphere, the largest continuous stand of sawgrass prairie and the most significant breeding ground for wading birds in North America. Historically, the Everglades covered almost 3 million acres. Emanating from a system of wetlands, lakes and rivers fed by rain water that begins with the Kissimmee chain of lakes south of Orlando and flows through Lake Okeechobee, Everglades National Park (ENP) designated as a World Heritage Site by the United Nations, the Big Cypress National Preserve (BCNP), and south to the tip of the Florida peninsula, as well as east and west towards the coasts, this landscape, often referred to as the “River of Grass”, has been the focus of both intensive development and conservation during much of Florida’s history.

The Everglades Complex of Wildlife Management Areas (ECWMA) is comprised of approximately 736,881 acres and includes Everglades and Francis S. Taylor Wildlife Management Area (EWMA), Holey Land Wildlife Management Area (HWMA), and Rotenberger Wildlife Management Area (RWMA). Conserving critically important elements of the Everglades ecosystem, the ECWMA is managed by the Florida Fish and Wildlife Conservation Commission (FWC) for land stewardship, fish and wildlife conservation, and fish and wildlife based public outdoor recreation. The ECWMA stretches over 50 miles from southern Palm Beach County, through western Broward County, and northwestern Miami-Dade County (Figure 1). Additionally, FWC maintains a cooperative agreement with the South Florida Water Management District (SFWMD) for wildlife and recreational management to provide recreational hunting opportunities on lands titled to the SFWMD within the ECWMA.

The EWMA, is comprised of areas within Water Conservation Areas (WCA) 2 and 3, and is the northern and central core of the ECWMA. The EWMA is comprised of 671,831 acres and is characterized by sawgrass marsh, freshwater slough, wet prairie, and upland tree island habitat. Situated above the northwest corner of EWMA, the RWMA is comprised of 29,700 acres of Everglades ecosystem, and includes sawgrass marsh, freshwater slough, cattail, wet prairie, shrubs, and upland tree island habitat. The RWMA was named for Ray Rotenberger who constructed a small camp and airfield there during the late 1950s or early 1960s. The final unit of the complex, HWMA, lies directly to the east of RWMA and is composed of

approximately 35,350 acres of Everglades ecosystem, characterized by a marsh of dense sawgrass with scattered shrubs, upland tree islands, wet prairie, cattail marsh, and freshwater sloughs. The HWMA derived its name from reports that it was used as a practice bombing range during World War II and is pocked with bomb craters. However, these depressions may also be the result of natural phenomena.

Through its management of the ECWMA FWC works to conserve and restore natural wildlife habitat for an array of endemic, imperiled, and other native wildlife including the Florida panther, snail kite and wood stork, among others, while also providing high-quality opportunities for hunting, fishing, hiking, wildlife viewing, camping, and other fish and wildlife-based public outdoor recreation opportunities.

As previously noted, the ECWMA consists of three separate WMAs distributed over roughly 50 miles of southern Palm Beach, western Broward, and northwestern Miami-Dade counties. The EWMA is located in southern Palm Beach, western Broward, and northwestern Miami-Dade counties approximately 15 miles east of Miami, 10 miles east of Ft. Lauderdale and 10 miles northeast of Boca Raton. The HWMA is in southwestern Palm Beach County, north of WCA 3 and on the eastern side of the Miami Canal. The HWMA is adjacent to the RWMA and to the northern boundary of the EWMA. Fort Lauderdale is located 40 miles southeast, Boca Raton is 30 miles east, and both the cities of South Bay and Belle Glade are 12 miles north. The RWMA is adjacent to the HWMA and to the northern boundary of the EWMA, and is on the western side of the Miami Canal. The RWMA is located in southwestern Palm Beach County. The cities of South Bay and Belle Glade are situated 50 miles to the north of ECWMA (Figure 2).

The ECWMA is part of an extensive network of conservation lands, including lands managed by the Miccosukee Tribe of Indians of Florida and by the Seminole Tribe of Florida. Federal properties adjacent to the ECWMA include BCNP to the west, ENP to the south and Arthur R. Marshall Loxahatchee National Wildlife Refuge (WCA 1) to the northeast. The ECWMA also borders land managed by the SFWMD, including several stormwater treatment areas (STAs). A number of smaller parcels in public ownership, managed by cities and counties, are scattered to the east. Other surrounding lands include the Everglades Agricultural Area, additional agricultural areas, and significant urban development to the east.

- **Adjacent Public and Private Conservation Lands and Florida Forever Projects**

As noted above, the ECWMA is located in the vicinity of a large number of publicly owned conservation areas. There are also several Florida Forever projects located nearby (Figure 3). Tables 1 and 2 list the Florida Forever projects and conservation lands within a 15-mile radius of the ECWMA, and includes lands managed by public and private entities that conserve cultural and natural resources within this region

of Florida. Most of the conservation lands listed in Table 2 are owned in full-fee by a public entity. However, some of these areas fall within a less-than-fee ownership classification where the land is owned and managed by a private landowner, while a public agency or not-for-profit organization holds a conservation easement on the land.

**Table 1.** Florida Forever Projects in the Vicinity of ECWMA

Map Label	Project Name	GIS Acres
A	Caloosahatchee Ecoscape	18,455
B	Corkscrew Regional Ecosystem Watershed	67,936
C	Devil's Garden	82,995
D	Half Circle L Ranch	11,182
E	Panther Glades	64,809
F	Twelvemile Slough	15,967

**Table 2.** Conservation Lands in the Vicinity

Map Label	Federal Government	Managing Agency
1	Arthur R. Marshall Loxahatchee National Wildlife Refuge	US FWS
3	Everglades National Park	US NPS
8	Big Cypress National Preserve	US NPS
Map Label	State of Florida	Managing Agency
4	Okaloacoochee Slough State Forest	FFS
10	Fakahatchee Strand Preserve State Park	DEP
6	Okaloacoochee Slough WMA	FWC
Map Label	Water Management District	Managing Agency
2	Everglades Agricultural Area	SFWMD
5	Deer Fence Canal	SFWMD
7	Miccosukee Indian Water Conservation Area	SFWMD
9	River of Grass	SFWMD
12	Stormwater Treatment Areas	SFWMD
Map Label	Private/Public Conservation Organization	Managing Agency
11	Big Cypress Mitigation Bank	Earthmark Companies, LLC

Acronym Key	Agency Name

<b>DEP</b>	Florida Department of Environmental Protection
<b>FFS</b>	Florida Forest Service
<b>FWC</b>	Florida Fish and Wildlife Conservation Commission
<b>SFWMD</b>	South Florida Water Management District
<b>USFWS</b>	United States Fish and Wildlife
<b>USNPS</b>	United States National Park Service

- **Acquisition History and the Purpose for Acquisition**

The State of Florida acquired title to much of the public land encompassed within the ECWMA and WCAs 2, and 3, under the federal Swamp and Overflowed Lands Act of 1850. The WCAs were constructed primarily to provide flood protection to adjacent agricultural and urban areas, and to serve as a source of fresh water for the heavily populated Gold Coast. Secondary considerations included the need to manage the area to benefit fish and wildlife, and to provide public recreation.

In 1973, the Florida Legislature passed the Big Cypress Conservation Act (F.S. 380.055), which contributed 40 million dollars for acquisition within the Big Cypress National Preserve which lies adjacent to ECWMA. In 1983, Governor Bob Graham initiated the "Save Our Everglades" program. This program was designed to improve environmental conditions in the Everglades ecosystem through hydrologic restoration.

Additional lands acquired by the State within the ECWMA have been acquired through the Environmentally Endangered Lands (EEL) Program (Land Conservation Act of 1972) and through the ongoing Conservation and Recreation Lands (CARL) Program, the Preservation 2000 Program and its successor the Florida Forever Program (Chapters 253 and 259, Florida Statutes). The first portion of the RWMA (6,300 acres) was purchased by the State under the EEL program in 1975. Subsequent acquisitions by the State were acquired under the CARL program.

In conjunction with these programs, the Save Our Rivers Program (SOR) legislation calls for the management and maintenance of lands acquired with SOR funds in an "environmentally acceptable manner, and to the extent practicable, in such a way as to restore and protect their natural state and condition." This legislation encourages the use of SOR lands for public outdoor recreational activities compatible with the primary goal of environmental protection and enhancement.

Three of the several initiatives of the SOR program directly affected the management of the ECWMA: (1) Initiative 3 required hydrologic restoration of the Holey Land and Rotenberger Tracts; (2) Initiative 4 required FWC to manage the ECWMA deer herd at a level that could survive moderate flooding conditions; and (3) Initiative 5 incorporated hydrological improvements in the conversion of State Road 84 to Interstate 75 (Alligator Alley). In continuation of these previous actions

regarding acquisition and restoration within the Everglades Ecosystem, the Florida Legislature passed the "Everglades Forever Act" in 1994. This legislation [Chapter 373.4592(1) (a), Florida Statutes] states: "The Legislature finds that the Everglades ecological system not only contributes to South Florida's water supply, flood control, and recreation, but serves as the habitat for diverse species of wildlife and plant life. The system is unique in the world and one of Florida's great treasures. The Everglades ecological system is endangered as a result of adverse changes in water quality, and in the quantity, distribution, and timing of flows, and, therefore, must be restored and protected." The act provided for land acquisition in support of ecosystem restoration initiatives. Among these are: (1) the creation of STAs; (2) establishment of water quality standards for water entering the Everglades ecosystem; and (3) implementation by the agricultural community of best management practices (BMPs) to reduce phosphorous inputs into the Everglades drainage basin.

Collectively, the Save Our Everglades program, the Everglades Forever Act, along with Chapters 259 and 253, F. S., as outlined above, set forth the purposes for which lands within the ECWMA are to be restored and managed. Accordingly, the ECWMA is managed by FWC for the purpose of operating a Wildlife Management Area, providing ecological diversity, providing managed habitat for both common and imperiled wildlife, and for providing the public with fish and wildlife-oriented outdoor recreational opportunities.

- **Topography, Soils and Hydrology**

The ECWMA is part of the Kissimmee-Okeechobee-Everglades basin. There is minimal topographic relief, with gradually decreasing elevations from north to south (approximately 0.2 feet per mile). The ECWMA is interspersed with tree islands with elevation that range from a few inches to three or four feet above the surrounding ground. These tree islands range in size from a few square feet to 300 acres.

Much of the topography of HWMA and RWMA has been changed by the subsidence of organic peat soils caused by oxidation and combustion of the dry muck. Muck fires have caused localized areas of low elevation and in some areas the limestone substrate has been exposed. These areas also create a ponding effect whenever the area is saturated by rainfall. A variety of soil types make of the immediate substrate of the area. The soils types are displayed in Figure 7.

The hydrology of the ECWMA, like the Everglades as a whole, is an oligotrophic wetland where relatively low concentrations of nutrients often have significant ecological impacts. Already, nutrients from human activities have caused adverse changes in vegetation, water quality and community metabolism in all of the lands and waters comprising the ECWMA. Such changes may cause nuisance species to

overtake or eliminate native flora and fauna. Adequate timing, distribution and flow of rainfall-quality water are necessary to maintain and perpetuate natural Everglades habitats and a functional ecosystem. Water quality in the ECWMA has been degraded due to large inputs of nitrogen and phosphorus from surrounding areas. Increased nutrient levels have altered plant communities and promoted the growth of cattails in the area. To preserve and improve the integrity of natural resources in the ECWMA, the FWC provides technical assistance and support to the U. S. Army Corps of Engineers (COE), SFWMD, and other responsible agencies in their efforts to improve the quantity and quality of water entering the ECWMA. The distribution of cattails and their expansion will be mapped to monitor the effectiveness of water quality improvement programs.

The ECWMA is not within or adjacent to any aquatic preserves or a designated area of critical state concern, nor is it under study for such designation. The ECWMA does not contain beaches, dunes, or virgin timber. However, there are extraordinary scenic vistas within this vast landscape of marshes and tree islands that are distinctively unique to the Everglades.

- **Natural and Anthropogenic Communities**

Most of the ECWMA is a graminoid wetland interspersed with tree islands (hammocks) and willow strands. Tree islands are a unique feature of the Everglades ecosystem. Tropical hardwoods are found on some of the relatively unaltered tree islands in the southern portion of the area. Some of the communities are dominated by early successional plant species that developed following recent disturbance. Plant communities that occurred historically in the ECWMA underwent marked changes in the past due to increased drainage, decreased hydroperiod, drought and fire. The area is now beginning to recover from this damage in response to restoration projects, but much remains to be done in order to remedy those impacts and continue restoration of the area.

Through the services of the Florida Natural Areas Inventory (FNAI), FWC has mapped the natural communities within the ECWMA. The FNAI has documented six natural and anthropogenic community types existing on the ECWMA. These include hydric hammock, prairie hammock, ruderal, slough, strand swamp, and swale (Table 3, Figure4).

FWC area biologists, along with contracted surveys through FNAI, have documented a variety of rare (Table 4) and invasive exotic plant species (Table 5) as occurring on the ECWMA.

**Table 3.** Natural Community Types of the ECWMA

Community Type	GIS Acres	Percentage
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Hydric hammock	317.9	0.04%
Prairie Hammock	11,984.8	1.63%
Ruderal	18,441.2	2.51%
Slough	1,715.1	0.23%
Strand swamp	2,817.4	0.38%
Swale	700,106.4	95.20%

**Table 4.** Rare Plant Species of the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
Banded wild-pine	<i>Tillandsia flexuosa</i>
Florida royal palm	<i>Roystonea elata</i>
Hoop vine	<i>Trichostigma octandrum</i>
Meadow jointvetch	<i>Aeschynomene pratensis</i>
Satinleaf	<i>Chrysophyllum oliviforme</i>

**Table 5.** Exotic Invasive Plant Species Known to Occur on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
Alligator weed	<i>Alternanthera philoxeroides</i>
Arrowhead vine	<i>Syngonium podophyllum</i>
Australian pine	<i>Casuarina equisetifolia</i>
Bischofia	<i>Bischofia javanica</i>
Bottlebrush	<i>Callistemon viminalis</i>
Bowstring hemp	<i>Sansevieria hyacinthoides</i>
Brazilian pepper	<i>Schinus terebinthifolius</i>
Burma reed	<i>Neyraudia reynaudiana</i>
Caesar's weed	<i>Urena lobata</i>
Carrotwood	<i>Cupaniopsis anacardioides</i>
Castorbean	<i>Ricinus communis</i>
Climbing cassia	<i>Senna pendula</i>
Day jessamine	<i>Cestrum diurnum</i>
Earleaf acacia	<i>Acacia auriculiformis</i>
Green shrimp plant	<i>Blechum pyramidatum</i>
Guava	<i>Psidium guajava</i>
Hydrilla	<i>Hydrilla verticillata</i>
Japanese climbing fern	<i>Lygodium microphyllum</i>
Java plum	<i>Syzygium cumini</i>
Lantana	<i>Lantana camara</i>
Laurel fig	<i>Ficus microcarpa</i>
Lobate lac scale	<i>Paratachardina lobata</i>
Mahoe	<i>Talipariti tiliaceum</i>
Melaleuca	<i>Melaleuca quinquenervia</i>

Napier grass	<i>Pennisetum purpureum</i>
Natal grass	<i>Rhynchelytrum repens</i>
Old World climbing fern	<i>Lygodium microphyllum</i>
Schefflera	<i>Schefflera actinophylla</i>
Strawberry guava	<i>Psidium cattleianum</i>
Surinam cherry	<i>Eugenia uniflora</i>
Torpedo grass	<i>Panicum repens</i>
Tropical soda apple	<i>Solanum viarum</i>
Water-hyacinth	<i>Eichhornia crassipes</i>
Waterlettuce	<i>Pistia stratiotes</i>
Wild taro	<i>Colocasia esculenta</i>

**Table 6. Native Plant Species Known to Occur on the ECWMA**

<b>Common Name</b>	<b>Scientific Name</b>
Airplant	<i>Tillandsia</i> sp.
Alligatorflag	<i>Thalia geniculata</i>
Amaranth	<i>Amaranthus</i> sp.
American burnweed	<i>Erechtites hieraciifolius</i>
American pokeweed	<i>Phytolacca americana</i>
American white waterlily	<i>Nymphaea odorata</i>
Ballmoss	<i>Tillandsia recurvata</i>
Balsampear	<i>Momordica charantia</i>
Banana	<i>Musa</i> sp.
Bandana-of-the-Everglades	<i>Canna flaccida</i>
Beaksedge	<i>Rhynchospora</i> sp.
Beggarticks	<i>Bidens alba</i> var. <i>radiata</i>
Big floatingheart	<i>Nymphoides aquatica</i>
Bighead rush	<i>Juncus megacephalus</i>
Black olive	<i>Bucida buceras</i>
Bladderwort	<i>Utricularia</i> sp.
Blue mistflower	<i>Conoclinium coelestinum</i>
Blue porterweed	<i>Stachytarpheta jamaicensis</i>
Bog hemp	<i>Boehmeria cylindrica</i>
Bottlebrush	<i>Callistemon viminale</i>
Bracken fern	<i>Pteridium aquilinum</i>
Brake fern	<i>Pteris</i> sp.
Bristly greenbrier	<i>Smilax tamnoides</i>
Broadleaf cattail	<i>Typha latifolia</i>

Broomsedge bluestem	<i>Andropogon virginicus</i>
Browne's blechum	<i>Blechnum pyramidatum</i>
Bulltongue arrowhead	<i>Sagittaria lancifolia</i>
Bunched beaksedge	<i>Rhynchospora microcephala</i>
Burrmarigold	<i>Bidens laevis</i>
Bushy bluestem	<i>Andropogon glomeratus</i>
Butterweed	<i>Packera glabella</i>
Cabbage palm	<i>Sabal palmetto</i>
Calloose grape	<i>Vitis shuttleworthii</i>
Camphorweed	<i>Pluchea</i> sp.
Canadian germander	<i>Teucrium canadense</i>
Capeweed	<i>Phyla nodiflora</i>
Carolina ash	<i>Fraxinus caroliniana</i>
Carolina redroot	<i>Lachnanthes caroliniana</i>
Carolina willow	<i>Salix caroliniana</i>
Chapman's arrowhead	<i>Sagittaria graminea</i> var. <i>chapmanii</i>
Cinnamon fern	<i>Osmunda cinnamomea</i>
Climbing aster	<i>Symphyotrichum carolinianum</i>
Climbing hempvine	<i>Mikania scandens</i>
Clustered beaksedge	<i>Rhynchospora glomerata</i>
Clustered bushmint	<i>Hyptis alata</i>
Coast cockspur	<i>Echinochloa walteri</i>
Coco plum	<i>Chrysobalanus icaco</i>
Coconut palm	<i>Cocos nucifera</i>
Common arrowhead	<i>Sagittaria latifolia</i>
Common buttonbush	<i>Cephalanthus occidentalis</i>
Common ragweed	<i>Ambrosia artemisiifolia</i>
Common reed	<i>Phragmites australis</i>
Common wild pine	<i>Tillandsia fasciculata</i>
Coralbean	<i>Erythrina herbacea</i>
Corkystem passionflower	<i>Passiflora suberosa</i>
Creeping cucumber	<i>Melothria pendula</i>
Creeping primrosewillow	<i>Ludwigia repens</i>
Cretan brake	<i>Pteris cretica</i>
Crownbeard	<i>Verbesina</i> sp.
Crowngrass	<i>Paspalum</i> sp.
Dahoon	<i>Ilex cassine</i>
Dayflowering jessamine	<i>Cestrum diurnum</i>
Dock	<i>Rumex</i> sp.
Dogwood	<i>Cornus</i> sp.
Dotted smartweed	<i>Polygonum punctatum</i>

Duckweed	<i>Lemna</i> sp.
Durban crowfootgrass	<i>Dactyloctenium aegyptium</i>
Eastern gamagrass	<i>Tripsacum dactyloides</i>
Eastern poison ivy	<i>Toxicodendron radicans</i>
Elderberry	<i>Sambucus nigra</i> subsp. <i>canadensis</i>
Elephantgrass	<i>Pennisetum purpureum</i>
Enangle pipewort	<i>Eriocaulon decangulare</i>
False mastic	<i>Sideroxylon foetidissimum</i>
False nettle	<i>Boehmeria cylindrica</i>
Fanpetals	<i>Sida</i> sp.
Fewflower beaksedge	<i>Rhynchospora rariflora</i>
Firebush	<i>Hamelia patens</i>
Fireflag	<i>Thalia geniculata</i>
Fireweed	<i>Erechtites hieraciifolius</i>
Flatsedge	<i>Cyperus</i> sp.
Flattened pipewort	<i>Eriocaulon compressum</i>
Florida butterfly orchid	<i>Encyclia tampensis</i>
Florida fishpoison tree	<i>Piscidia piscipula</i>
Florida pellitory	<i>Parietaria floridana</i>
Florida royal palm	<i>Roystonea regia</i>
Florida yellow bladderwort	<i>Utricularia floridana</i>
Fourleaf vetch	<i>Vicia acutifolia</i>
Gallberry	<i>Ilex glabra</i>
Giant airplant	<i>Tillandsia utriculata</i>
Giant bulrush	<i>Scirpus californicus</i>
Giant leather fern	<i>Acrostichum danaeifolium</i>
Golden polypody	<i>Phlebodium aureum</i>
Goldenrod	<i>Solidago</i> sp.
Grapevine	<i>Vitis</i> sp.
Grassy arrowhead	<i>Sagittaria graminea</i>
Green arrow arum	<i>Peltandra virginica</i>
Groundnut	<i>Apios americana</i>
Groundsel tree	<i>Baccharis halimifolia</i>
Gulf Coast spikerush	<i>Eleocharis cellulosa</i>
Gumbo limbo	<i>Bursera simaruba</i>
Hackberry	<i>Celtis laevigata</i>
Hairy pod cowpea	<i>Vigna luteola</i>
Hedge false bindweed	<i>Calystegia sepium</i> subsp. <i>limnophila</i>
Herb-of-grace	<i>Bacopa monnieri</i>
Hottentot fern	<i>Thelypteris interrupta</i>
Illinois pondweed	<i>Potamogeton illinoensis</i>

Indian laurel	<i>Ficus microcarpa</i>
Jamaica swamp sawgrass	<i>Cladium jamaicense</i>
Javanese bishopwood	<i>Bischofia javanica</i>
Jointed spikerush	<i>Eleocharis equisetoides</i>
Jungleflame	<i>Ixora</i> sp.
Knotted spikerush	<i>Eleocharis interstincta</i>
Knotweed	<i>Polygonum</i> sp.
Laurel greenbrier	<i>Smilax laurifolia</i>
Lawn orchid	<i>Zeuxine strateumatica</i>
Leafy bladderwort	<i>Utricularia foliosa</i>
Lemon bacopa	<i>Bacopa caroliniana</i>
Littlewoman	<i>Salvia serotina</i>
Live oak	<i>Quercus virginiana</i>
Lizard's tail	<i>Saururus cernuus</i>
Maidencane	<i>Panicum hemitomon</i>
Mangrove spiderlily	<i>Hymenocallis latifolia</i>
Manyflower marshpennywort	<i>Hydrocotyle umbellata</i>
Marsh fern	<i>Thelypteris palustris</i> var. <i>pubescens</i>
Marsh mermaidweed	<i>Proserpinaca palustris</i>
Marsh seedbox	<i>Ludwigia palustris</i>
Marsh St. John's-wort	<i>Triadenum</i> sp.
Meadow jointvetch	<i>Aeschynomene pratensis</i>
Milkweed	<i>Asclepias</i> sp.
Mock bishopsweed	<i>Ptilimnium capillaceum</i>
Morning glory	<i>Ipomoea</i> sp.
Muscadine	<i>Vitis rotundifolia</i>
Myrsine	<i>Rapanea punctata</i>
Narrowfruit horned beaksedge	<i>Rhynchospora inundata</i>
Narrowleaf yellowtops	<i>Flaveria linearis</i>
Nettletree	<i>Trema micranthum</i>
Nightshade	<i>Solanum</i> sp.
Northern needleleaf	<i>Tillandsia balbisiana</i>
Nuttall's thistle	<i>Cirsium nuttallii</i>
Oakleaf fleabane	<i>Erigeron quercifolius</i>
Octopus tree	<i>Schefflera actinophylla</i>
Panicgrass	<i>Panicum</i> sp.
Papaya	<i>Carica papaya</i>
Paradisetree	<i>Simarouba glauca</i>
Passionflower	<i>Passiflora</i> sp.
Peppervine	<i>Ampelopsis arborea</i>
Peruvian primrosewillow	<i>Ludwigia peruviana</i>

Pickerelweed	<i>Pontederia cordata</i>
Pigeon plum	<i>Coccoloba diversifolia</i>
Pinebarren flatsedge	<i>Cyperus retrorsus</i>
Pineland heliotrope	<i>Heliotropium polyphyllum</i>
Pineland pimpernel	<i>Samolus valerandi</i> subsp. <i>parviflorus</i>
Pineland waterwillow	<i>Justicia angusta</i>
Pond apple	<i>Annona glabra</i>
Pondcypress	<i>Taxodium ascendens</i>
Pony tail palm	<i>Nolina recurvata</i>
Poor joe	<i>Diodia teres</i>
Pop ash	<i>Fraxinus caroliniana</i>
Possum grape	<i>Cissus verticillata</i>
Primrosewillow	<i>Ludwigia</i> sp.
Punktrees	<i>Melaleuca quinquenervia</i>
Purple thistle	<i>Cirsium horridulum</i>
Ragweed	<i>Ambrosia</i> sp.
Red maple	<i>Acer rubrum</i>
Red mulberry	<i>Morus rubra</i>
Resurrection fern	<i>Pleopeltis polypodioides</i> var. <i>michauxiana</i>
River sage	<i>Salvia misella</i>
Rosy camphorweed	<i>Pluchea rosea</i>
Rougeplant	<i>Rivina humilis</i>
Roughhair witchgrass	<i>Dichanthelium strigosum</i> var. <i>glabrescens</i>
Royal fern	<i>Osmunda regalis</i> var. <i>spectabilis</i>
Royal poinciana	<i>Delonix regia</i>
Saltmarsh fingergrass	<i>Eustachys glauca</i>
Sand cordgrass	<i>Spartina bakeri</i>
Satinleaf	<i>Chrysophyllum oliviforme</i>
Saw greenbrier	<i>Smilax bona-nox</i>
Sawgrass	<i>Cladium jamaicense</i>
Sedge	<i>Carex</i> sp.
Septicweed	<i>Senna occidentalis</i>
Shore rush	<i>Juncus marginatus</i>
Shortbristle horned beaksedge	<i>Rhynchospora corniculata</i>
Simpleleaf bushweed	<i>Flueggea virosa</i>
Sixangle foldwing	<i>Dicliptera sexangularis</i>
Slash pine	<i>Pinus elliottii</i>
Smutgrass	<i>Sporobolus indicus</i>
Snow squarestem	<i>Melanthera nivea</i>
Soapberry	<i>Sapindus saponaria</i>
Soapwort	<i>Saponaria officinalis</i>

Soft rush	<i>Juncus effusus</i> subsp. <i>solutus</i>
Sour orange	<i>Citrus x aurantium</i>
Southern balsampear	<i>Momordica balsamina</i>
Southern beaksedge	<i>Rhynchospora microcarpa</i>
Southern cattail	<i>Typha domingensis</i>
Southern cutgrass	<i>Leersia hexandra</i>
Southern needleleaf	<i>Tillandsia setacea</i>
Southern shield fern	<i>Thelypteris kunthii</i>
Spadeleaf	<i>Centella asiatica</i>
Spanish moss	<i>Tillandsia usneoides</i>
Spanish sage	<i>Salvia hispanica</i>
Spatterdock	<i>Nuphar advena</i>
Spiny waternymph	<i>Najas marina</i>
Spreading beaksedge	<i>Rhynchospora divergens</i>
Spurge	<i>Poinsettia</i> sp.
St. Augustine grass	<i>Stenotaphrum secundatum</i>
Starrush whitetop	<i>Rhynchospora colorata</i>
Stiff marsh bedstraw	<i>Galium tinctorium</i>
Stiff-leaved wild pine	<i>Tillandsia fasciculata</i> var. <i>densispica</i>
Strangler fig	<i>Ficus aurea</i>
String lily	<i>Crinum americanum</i>
Sugarcane plumegrass	<i>Saccharum giganteum</i>
Summer grape	<i>Vitis aestivalis</i>
Swamp bay	<i>Persea palustris</i>
Swamp dock	<i>Rumex verticillatus</i>
Swamp fern	<i>Blechnum serrulatum</i>
Swamp rosemallow	<i>Hibiscus grandiflorus</i>
Sweetbay	<i>Magnolia virginiana</i>
Sweetgum	<i>Liquidambar styraciflua</i>
Sword fern	<i>Nephrolepis exaltata</i>
Senangle pipewort	<i>Eriocaulon decangulare</i>
Shistle	<i>Cirsium</i> sp.
Shreadleaf arrowhead	<i>Sagittaria filiformis</i>
Toothed midsorus fern	<i>Blechnum serrulatum</i>
Turkey tangle fogfruit	<i>Phyla nodiflora</i>
Umbrella sedge	<i>Fimbristylis</i> sp.
Vervain	<i>Verbena</i> sp.
Virginia buttonweed	<i>Diodia virginiana</i>
Virginia chain fern	<i>Woodwardia virginica</i>
Virginia creeper	<i>Parthenocissus quinquefolia</i>
Washington fan palm	<i>Washingtonia robusta</i>

Water cowbane	<i>Oxypolis filiformis</i>
Water spangles	<i>Salvinia minima</i>
Waterlily	<i>Nymphaea</i> sp.
Watermeal	<i>Wolffia</i> sp.
Wax myrtle	<i>Myrica cerifera</i>
West Indian mahogany	<i>Swietenia mahagoni</i>
Whisk fern	<i>Psilotum nudum</i>
White stopper	<i>Eugenia axillaris</i>
White twinevine	<i>Sarcostemma clausum</i>
Whitemouth dayflower	<i>Commelina erecta</i>
Whorled marshpennywort	<i>Hydrocotyle verticillata</i>
Wild coffee	<i>Psychotria nervosa</i>
Wild lime	<i>Zanthoxylum fagara</i>
Willdenows fern	<i>Thelypteris interrupta</i>
Woodsage	<i>Teucrium canadense</i>
Woodsgrass	<i>Oplismenus hirtellus</i>
Yankeeweed	<i>Eupatorium compositifolium</i>
Yellow pondlily	<i>Nuphar advena</i>
Yelloweyed grass	<i>Xyris</i> sp.

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- **Natural and Anthropogenic Communities Descriptions**

### **Hydric Hammock**

Hydric Hammocks are characterized as well developed hardwood and cabbage palm forests that occur on low, flat, and wet sites where limestone is close to the soil surface. The hydrology, in combination with a sparsely developed understory, prevents fire from entering this community except under extreme drought conditions.

The hydric hammocks of ECWMA represent the advanced stage of succession of a swale community. Although this community is composed of native species, it is not believed to be a historically occurring natural community on this site. Nor is it believed to be a former tree island. Occurrences of hydric hammock on ECWMA are found in close proximity to road and canal constructions. This landscape position creates a relatively short hydroperiod and limits fire from affecting the community. Although assumed not to be naturally occurring in this area, it has not been managed in the past to return it to a Swale.

This community provides difficulties in classification due to its unnatural formation. The canopy also lacks the traditional cabbage palm component. It is unclear what the climax plant assemblage will develop into if left to fully mature. The current canopy is dominated by younger mature to mature red maples with a subcanopy of younger red maple. The shrub layer includes swamp bay, wax myrtle, Carolina willow,

dahoon, and common buttonbush. The sparse herbaceous layer is dominated by Willdenows fern and marsh fern. Common forbs in the herbaceous layer are manyflower marshpennywort, royal fern, maidencane, green arrow arum, dotted smartweed, pickerelweed, starrush whitetop, common arrowhead, lizard's tail, sedge, and Jamaica swamp sawgrass. Vines are often infrequent in this community consisting of climbing hempvine and white twinevine. Despite the shaded, moist conditions that prevail within this community very few epiphytes are present. Only a few individuals of resurrection fern and ballmoss were observed in the Hydric Hammock community.

### **Prairie Hammock**

Prairie hammocks, commonly known as tree islands, are isolated areas of woody vegetation surrounded by the herbaceous dominated wetlands slough and/or swale. Prairie hammocks often consist of a head on their northern extreme and grade into a long tail to their southern tip. Prairie hammocks would naturally experience frequent fires ignited during lightning storms in late spring and early summer and spreading from the surrounding swale/slough. There is great variability in species composition among prairie hammocks and this variability can be attributed to differences in relative elevation, depth of limestone from surface, fire frequency in area, and hydrologic regime of the conservation area. Prairie hammocks occur on slight rises in the underlying limestone or on thicker deposits of peat. Islands that develop in areas where limestone is closer to the surface tend to harbor a greater diversity of plant species while islands occurring on thicker peat deposits are generally low in species diversity. For this project, prairie hammocks were classified as two subtypes: tree islands and willowhead. Tree islands are usually above the water level and at least parts of them, typically the head, are dry for part of the year. Willowheads are not elevated above the surrounding landscape and are inundated for most of the year. Willowheads can even form in small depressions caused by fire reducing the peat depth, alligator activity, and various other forms of disturbance. Tree islands vary greatly in species composition because of depth to limestone, fire history, and past disturbances.

The tree island subtype of prairie hammock consists of a canopy of red maple, pond apple, bottlebrush, hackberry, strangler fig, Indian laurel, dahoon, sweetbay, swamp bay, cabbage palm, coastalplain willow, gumbo limbo, sweetgum, live oak, Florida royal palm, soapwort, punktree, pigeon plum, Brazilian pepper, mahoe, Javanese bishopwood, and pond cypress. The tropical species gumbo-limbo and pigeon plum are found in the southern and typically the westernmost portions of the area, where limestone is at or near the surface. The western portion of the property also contains the tree islands that contain a pond cypress canopy. Canopy species found in willowheads include Carolina willow, pond apple, and red maple. Species found in the subcanopy of the tree island subtype of prairie hammock include pond apple, papaya, sour orange, hackberry, strangler fig, dahoon, swamp bay, cabbage palm,

coastalplain willow, Java plum, and Brazilian pepper. Species found in the subcanopy of willowhead prairie hammocks include pond apple and Carolina willow.

## **Ruderal**

Sites classified as ruderal are areas that have undergone anthropogenic disturbances to such an extent that they no longer resemble their natural state. Ruderal areas include airboat trails, canals, developed areas, exotic monocultures, impoundments or artificial ponds, roads, spoil areas, and utility corridors.

- **Slough**

Sloughs of ECWMA are defined as inundated depressions found within swale communities. They differ from surrounding swale by having slightly deeper water levels, longer hydroperiod and unique plant compositions. Sloughs are generally characterized as the deepest drainage ways within a swale community. Sloughs have no canopy or tall shrub strata. Sloughs that have been allowed to develop a large woody or cattail component due to fire suppression are indistinguishable from fire suppressed swale systems. Due to surrounding land use, water flow has been greatly altered at ECWMA, thus preventing traditional sheet flows. Water exits and enters by a series of perimeter canals and ditches. The existing areas identified as slough may be remnants of historical watercourses that have had their hydrologic processes altered. Sloughs can also develop in areas where fire events have lowered peat elevations in a swale community

## **Strand Swamp**

Strand swamps are irregular, forested wetlands that occur in areas where the underlying limestone is at or near the surface of the substrate. On EWMA, strand swamps are restricted to the western edge of the boundary in WCA 3A south. As one progresses from east to west, the tree islands typically change from willowheads to classic bayheads, into pond cypress dominated tree islands and then into strand swamps. It appears that the limestone provides better growing conditions for pond cypress to proliferate. With a decrease in the depth to limestone, cypress dominated tree islands slowly become more numerous to the west. The landscape surrounding these islands also changes from a swale/slough dominated matrix into a dwarf cypress community and finally into a cypress strand swamp. Although strand swamp areas have the same formation characteristics as tree islands, they are classified differently because of landscape context. Typically, tree island-like areas located within strand swamps blend together to form a community that reduces fire frequency, removes much of the graminoid vegetation, and reduces light penetration. Pond cypress is the dominant canopy species. Subcanopy species include pond apple, strangler fig, dahoon, sweetbay, and swamp bay. Shrubs are the dominant understory vegetation and include pond apple, common buttonbush, coco plum, strangler fig, wax myrtle, swamp bay, coastalplain willow, and pond cypress.

Herbaceous species include giant leather fern, alligator weed, amaranth, lemon bacopa, toothed midsorus fern, false nettle, Gulf Coast spikerush, tenangle pipewort, creeping primrosewillow, snow squarestem, climbing hempvine, yellow pondlily, royal fern, maidencane, Florida pellitory, green arrow arum, pickerelweed, water spangles, white twinevine, hottentot fern, southern shield fern, southern cattail, and leafy bladderwort. Epiphytes are common and include northern needleleaf, common wild pine, ballmoss, southern needleleaf, and Spanish moss. Vines are common and include Virginia creeper, laurel greenbrier, and climbing aster.

**Swale**

- Swales are marshes situated in broad shallow channels with flowing water and characterized by emergent grasses, sedges, and herbs up to ten feet tall. Swale soils are peat, unless removed by severe fire and are generally located over linear depressions in the underlying limestone. The natural hydrology consists of sheet flow that may be maintained on the order of 250 days per year. Natural, light ground fires occurring every 1 to 5 years are typical in late spring when the ground surface is dry. Shrubs are generally infrequent but do occur, sometimes quite abundantly in areas of disturbance and/or fire suppression. Where fire is relatively infrequent, shrub thickets will develop and displace the dominant Jamaica swamp sawgrass.

- **Fish and Wildlife**
- **Rare and Imperiled Species**

The ECWMA has a variety of natural communities and currently supports many wildlife species. Active wildlife management practices and a diversity of natural communities make the ECWMA an excellent place to view wildlife. The ECWMA has a variety of wildlife indigenous to the hydric prairie, seasonal ponds, sloughs, and swamps. Table 7 lists some of the more prominent rare and imperiled wildlife species that have been documented as occurring on or in the vicinity of the ECWMA.

**Table 7.** Rare and Imperiled Wildlife Species Occurring on or near the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
American alligator	<i>Alligator mississippiensis</i>	FT(S/A)
Audubon's crested caracara	<i>Polyborus plancus audubonii</i>	FT
Brown pelican	<i>Pelecanus occidentalis</i>	SSC
Everglade snail kite	<i>Rostrahamus sociabilis plumbeus</i>	FE
Everglades mink	<i>Mustela vison evergladensis</i>	ST

Florida Fish and Wildlife Conservation Commission | ECWMA Management Plan

**Table 7.** Rare and Imperiled Wildlife Species Occurring on or near the ECWMA

Common Name	Scientific Name	Status
Florida black bear	<i>Ursus americanus floridanus</i>	NL
Florida panther	<i>Puma concolor coryi</i>	FE
Florida sandhill crane	<i>Grus Canadensis pratensis</i>	ST
Limpkin	<i>Aramus guarauna</i>	SSC
Little blue heron	<i>Egretta caerulea</i>	SSC
Roseate spoonbill	<i>Ajaia ajaia</i>	SSC
Snowy egret	<i>Egretta thula</i>	SSC
Southeastern American kestrel	<i>Falco sparverius paulus</i>	ST
Tricolored heron	<i>Egretta tricolor</i>	SSC
White ibis	<i>Eudocimus albus</i>	SSC
Wood stork	<i>Mycteria americana</i>	FE

Acronym	Status
FE	Federal Endangered
FT(S/A)	Federal Threatened due to Similarity of Appearance
FT	Federal Threatened
SSC	State Species of Special Concern
ST	State Threatened
NL	Not Listed

Alligators, snail kites, white-tailed deer, and wading birds are common. The ECWMA has potential habitat for the Florida black bear, Florida panther, and bald eagle. The area hosts one of the top 10 wading bird colonies in the nation, in addition to several other consistently active wading bird colonies. The FWC wildlife observations and FNAI element occurrences are shown in Figure 5. The dispersal zones for the Florida panther are shown in Figure 6. An FWC Wildlife Conservation Prioritization and Recovery (WCPR) strategy was completed for the ECWMA in 2012. A standardized focal species list by area is shown in Table 8. Of the 60 focal species, 12 were modeled to have potential habitat on the ECWMA. Occasionally, models indicate a species has potential habitat on the area when using statewide

data; however, the local assessment indicates there is little opportunity to manage for the species on the area and the species should not influence management. These species are identified with an “\*”.

**Table 8.** Focal Species Identified as having Potential Habitat on the ECWMA

Common Name	Scientific Name	Status
American swallow-tailed kite <sup>1</sup>	<i>Elanoides forficatus</i>	NL
Burrowing owl*	<i>Athene cunicularia</i>	SSC
Crested caracara*	<i>Caracara plancus audubonii</i>	FT
Florida black bear	<i>Ursus americanus floridanus</i>	NL
Florida mottled duck	<i>Anas fulvigula</i>	NL
Florida panther*	<i>Felis concolor coryi</i>	FE
Limpkin	<i>Aramus guarauna</i>	SSC
Northern bobwhite	<i>Colinus virginianus</i>	NL
Short-tailed hawk	<i>Buteo brachyurus</i>	NL
Snail kite	<i>Rostrhamus sociabilis plumbeus</i>	FE
Southern bald eagle	<i>Haliaeetus leucocephalus</i>	NL
Wading birds (multiple species)		NL

Abbreviation	Status
FE	Federal Endangered
FT	Federal Threatened
SSC	State Species of Special Concern
NL	Not Listed

All abbreviations and status determinations were derived from *Florida’s Endangered and Threatened Species* published by FWC in October 2012. 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, of the Florida Administrative Code <https://www.flrules.org/>.

In January, 2013, new threatened species rules approved by the FWC 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 and given a management plan or removed from the list. More detailed descriptions and management prescriptions are available on the FWC website: <http://www.myfwc.com/wildlifehabitats/profiles/>.

Table 9 lists the exotic animal species on ECWMA. Table 10 lists mammalian species occurring on ECWMA, Table 11 lists reptile and amphibian species occurring on ECWMA, Table 12 lists fish species occurring on ECWMA, and Table 13 lists bird species occurring on ECWMA.

**Table 9.** Exotic Fauna Species Documented on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
<b>Amphibians</b>	
Cane toad	<i>Rhinella marina</i>
Cuban treefrog	<i>Osteopilus septentrionalis</i>
Greenhouse frog	<i>Eleutherodactylus planirostris</i>
<b>Birds</b>	
Common myna	<i>Acridotheres tristis</i>
Egyptian geese	<i>Alopochen aegyptiacus</i>
Eurasian collared-dove	<i>Streptopelia decaocto</i>
European starling	<i>Sturnus vulgaris</i>
House sparrow	<i>Passer domesticus</i>
Monk parakeet	<i>Myiopsitta monachus</i>
Muscovy duck	<i>Cairina moschata</i>
Purple swamphen	<i>Porphyrio porphyrio</i>
Rock dove	<i>Columba livia</i>
White-winged dove	<i>Zenaida asiatica</i>
<b>Fish</b>	
Black acara	<i>Cichlasoma bimaculatum</i>
Blue tilapia	<i>Oreochromis aureus</i>
Brown hoplo	<i>Hoplosternum littorale</i>
Bullseye snakehead	<i>Channa marulius</i>
Butterfly peacock bass	<i>Cichla ocellaris</i>
Grass carp	<i>Ctenopharyngodon idella</i>
Mayan cichlid	<i>Cichlasoma urophthalmus</i>
Mozambique tilapia	<i>Oreochromis mossambicus</i>
Orinoco sailfin catfish	<i>Pterygoplichthys multiradiatus</i>
Oscar	<i>Astronotus ocellatus</i>
Pike killifish	<i>Belonesox belizanus</i>
Spotted tilapia	<i>Tilapia mariae</i>
Vermiculated sailfin catfish	<i>Pterygoplichthys disjunctivus</i>

Walking catfish	<i>Clarias batrachus</i>
Yellowbelly cichlid	<i>Cichlasoma salvini</i>
<b>Invertebrates</b>	
Ants	<i>several</i>
Banded caracol	<i>Caraculus marginella</i>
Island applesnail	<i>Pomacea maculata</i>
Redbay ambrosia beetle	<i>Xyleborus glabratus</i>
<b>Mammals</b>	
Black rat	<i>Rattus rattus</i>
Feral hog	<i>Sus scrofa</i>
House mouse	<i>Mus musculus</i>
Norway rat	<i>Rattus norvegicus</i>
<b>Reptiles</b>	
Brown anole	<i>Anolis sagrei</i>
Brown basilisk	<i>Basiliscus vittatus</i>
Burmese python	<i>Python molurus bivittatus</i>
Common house gecko	<i>Hemidactylus frenatus</i>
Green iguana	<i>Iguana iguana</i>
Indo-Pacific gecko	<i>Hemidactylus garnotii</i>
Mediterranean gecko	<i>Hemidactylus turcicus</i>
Red-eared slider	<i>Trachemys scripta elegans</i>
Tropical house gecko	<i>Hemidactylus mabouia</i>

**Table 10.** Mammal Species Documented on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
Bobcat	<i>Lynx rufus</i>
Cotton mouse	<i>Peromyscus gossypinus</i>
Coyote	<i>Canis latrans</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>
Eastern gray squirrel	<i>Sciurus carolinensis</i>
Everglades mink	<i>Mustela vison evergladensis</i>
Florida black Bear	<i>Ursus americanus floridanus</i>
Florida panther	<i>Puma concolor coryi</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Hispid cotton rat	<i>Sigmodon hispidus</i>
Least shrew	<i>Cryptotis parva</i>
Marsh rabbit	<i>Sylvilagus palustris</i>
Marsh rice rat	<i>Oryzomys palustris</i>
Nine-banded armadillo	<i>Dasypus novemcinctus</i>
Raccoon	<i>Procyon lotor</i>

River otter	<i>Lutra canadensis</i>
round-tailed muskrat	<i>Neofiber alleni</i>
Striped skunk	<i>Mephitis mephitis</i>
Virginia opossum	<i>Didelphis virginiana</i>
White-tailed deer	<i>Odocoileus virginiana</i>

**Table 11.** Reptile and Amphibian Species Documented on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
American alligator	<i>Alligator mississippiensis</i>
Barking tree frog	<i>Hyla gratiosa</i>
Blue-striped garter snake	<i>Thamnophis sirtalis similis</i>
Bluetail mole skink	<i>Eumeces egregius lividus</i>
Bullfrog	<i>Rana catesbeiana</i>
Chicken turtle	<i>Deirochelys reticularia</i>
Common musk turtle	<i>Sternotherus oderatus</i>
Corn snake	<i>Pantherophis guttatus</i>
Cuban brown anole	<i>Anolis sagrei</i>
Cuban tree frog	<i>Osteopilus septentrionalis</i>
Dusky pygmy rattlesnake	<i>Sistrurus miliarius barbouri</i>
Dwarf salamander	<i>Eurycea quadridigitata</i>
Eastern box turtle	<i>Terrapene carolina carolina</i>
Eastern coachwhip	<i>Masticophis flagellum flagellum</i>
Eastern coral snake	<i>Micrurus fulvius</i>
Eastern cottonmouth	<i>Agkistrodon piscivorus piscivorus</i>
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>
Eastern garter snake	<i>Thamnophis sirtalis</i>
Eastern garter snake	<i>Thamnophis sirtalis</i>
Eastern glass lizard	<i>Ophisaurus ventralis</i>
Eastern indigo snake	<i>Drymarchon couperi</i>
Eastern kingsnake	<i>Lampropeltis getula getula</i>
Eastern mud snake	<i>Farancia abacura</i>
Eastern narrow-mouthed toad	<i>Gastrophryne carolinensis</i>
Eastern slender Glass lizard	<i>Ophisaurus attenuatus longicaudus</i>
Eastern smooth Earth snake	<i>Virginia valeriae valeriae</i>
Eastern spadefoot toad	<i>Leptobrachium</i>
Florida box turtle	<i>Terrapene carolina bauri</i>
Florida brown snake	<i>Storeria victa</i>
Florida chorus frog	<i>Pseudacris nigrita verrucosa</i>
Florida cottonmouth	<i>Agkistrodon piscivorus conanti</i>
Florida cricket frog	<i>Acris gryllus dorsalis</i>
Florida green water snake	<i>Nerodia floridana</i>

**Table 11.** Reptile and Amphibian Species Documented on the ECWMA

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Florida leopard frog	<i>Rana sphenoccephala utricularia</i>
Florida mud turtle	<i>Kinosternon subrubrum steindachneri</i>
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>
Florida redbelly turtle	<i>Pseudemys nelsoni</i>
Florida scarlet snake	<i>Cemophora coccinea coccinea</i>
Florida scrub lizard	<i>Sceloporus woodi</i>
Florida snapping turtle	<i>Chelydra serpentina</i>
Florida softshell turtle	<i>Apalone ferox</i>
Florida water snake	<i>Nerodia fasciata pictiventris</i>
Florida worm lizard	<i>Rhineura floridana</i>
Gopher frog	<i>Rana capito</i>
Gopher tortoise	<i>Gopherus polyphemus</i>
Greater siren	<i>Siren lacertina</i>
Green anole	<i>Anolis carolinensis</i>
Green house frog	<i>Eleutherodactylus planirostris</i>
Green tree frog	<i>Hyla cinerea</i>
Green treefrog	<i>Hyla cinerea</i>
Green water snake	<i>Nerodia cyclopion</i>
Ground skink	<i>Scincella lateralis</i>
Indo-Pacific gecko	<i>Hemidactylus garnotii</i>
Island glass lizard	<i>Ophisaurus compressus</i>
Little grass frog	<i>Pseudacris ocularis</i>
Mediterranean gecko	<i>Hemidactylus turcicus</i>
Northern black racer	<i>Coluber constrictor constrictor</i>
Oak toad	<i>Anaxyrus quercicus</i>
Peninsula cooter	<i>Pseudemys peninsularis</i>
Peninsula crowned snake	<i>Tantilla relicta relicta</i>
Peninsula newt	<i>Notophthalmus viridescens</i>
Peninsula ribbon snake	<i>Thamnophis sauritus sackenii</i>
Pig frog	<i>Rana grylio</i>
Pinewoods tree frog	<i>hyla femoralis</i>
Pygmy rattlesnake	<i>Sistrurus miliarius</i>
Red-bellied slider	<i>Trachemys scripta scripta</i>
Rough green snake	<i>Opheodrys aestivus</i>
Sand skink	<i>Neoseps reynoldsi</i>
Scarlet kingsnake	<i>Lampropeltis elapsoides</i>
Short-tailed snake	<i>Lampropeltis extenuatum</i>
Six-lined racerunner	<i>Cnemidophorus sexlineatus</i>
Soft shell Florida snake	<i>Apalone ferox</i>
South Florida black swamp snake	<i>Seminatrix pygaea</i>

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**Table 11.** Reptile and Amphibian Species Documented on the ECWMA

Southeastern five-lined skink	<i>Eumeces inexpectatus</i>
Southern black racer	<i>Coluber constrictor priapus</i>
Southern five-lined skink	<i>Eumeces inexpectatus</i>
Southern ringneck snake	<i>Diadophis punctatus punctatus</i>
Southern toad	<i>Anaxyrus terrestris</i>
Squirrel treefrog	<i>Hyla squirella</i>
Striped crayfish snake	<i>Regina alleni</i>
Striped mud turtle	<i>Kinosternon baurii</i>
Two-toed amphiuma	<i>Amphiuma means</i>
Two-toed amphiuma	<i>Amphiuma means</i>
Yellow rat snake	<i>Elaphe obsoleta quadrivittata</i>
Yellow rat snake turtle	<i>Elaphe obsoleta obsoleta</i>

**Table 12.** Fish Species Documented on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
American eel	<i>Anguilla rostrata</i>
Bigmouth sleeper	<i>Gobiomorus dormitor</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
Bluefin killifish	<i>Lucania goodei</i>
Bluegill	<i>Lepomis macrochirus</i>
Bluespotted sunfish	<i>Enneacanthus gloriosus</i>
Bowfin	<i>Amia calva</i>
Brook silverside	<i>Labidesthes sicculus</i>
Brown bullhead	<i>Ameiurus nebulosus</i>
Chain pickerel	<i>Esox niger</i>
Channel catfish	<i>Ictalurus punctatus</i>
Common snook	<i>Centropomus undecimalis</i>
Dollar sunfish	<i>Lepomis marginatus</i>
Everglades pygmy sunfish	<i>Elassoma evergladei</i>
Flagfish	<i>Jordanella floridae</i>
Florida gar	<i>Lepisosteus platyrhincus</i>
Gizzard shad	<i>Dorosoma cepedianum</i>
Golden shiner	<i>Notemigonus crysoleucas</i>
Golden topminnow	<i>Fundulus chrysotus</i>
Lake chubsucker	<i>Erimyzon sucetta</i>
Largemouth bass	<i>Micropterus salmoides</i>
Least killifish	<i>Heterandria formosa</i>
Lined topminnow	<i>Fundulus lineolatus</i>

Longnose gar	<i>Lepisosteus osseus</i>
Marsh killifish	<i>Fundulus confluentus</i>
Mosquitofish	<i>Gambusia holbrooki</i>
Pirate perch	<i>Aphredoderus sayanus</i>
Redear sunfish	<i>Lepomis microlophus</i>
Redfin pickerel	<i>Esox americanus</i>
Sailfin molly	<i>Poecilia latipinna</i>
Seminole killifish	<i>Fundulus seminolis</i>
Sheepshead	<i>Archosargus probatocephalus</i>
Spotted sunfish	<i>Lepomis punctatus</i>
Starhead topminnow	<i>Fundulus notti</i>
Striped mullet	<i>Mugil cephalus</i>
Swamp darter	<i>Etheostoma fusiforme</i>
Tadpole madtom	<i>Noturus gyrinus</i>
Taillight shiner	<i>Notropis maculatus</i>
Threadfin shad	<i>Dorosoma petenense</i>
Warmouth	<i>Lepomis gulosus</i>
White catfish	<i>Ameiurus catus</i>
Yellow bullhead	<i>Ameiurus natalis</i>

**Table 12.** Observed Bird Species on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
American avocet	<i>Recurvirostra americana</i>
American bittern	<i>Botaurus lentiginosus</i>
American coot	<i>Fulica americana</i>
American crow	<i>Corvus brachyrhynchos</i>
American goldfinch	<i>Spinus tristis</i>
American redstart	<i>Setophaga ruticilla</i>
American robin	<i>Turdus migratorius</i>
American swallow-tailed kite	<i>Elanoides forficatus</i>
American white pelican	<i>Pelecanus erythrorhynchos</i>
American wigeon	<i>Anas americana</i>
Anhinga	<i>Anhinga anhinga</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Baltimore oriole	<i>Icterus galbula</i>
Barn owl	<i>Tyto alba</i>
Barn swallow	<i>Hirundo rustica</i>
Barred owl	<i>Strix varia</i>
Belted kingfisher	<i>Ceryle alcyon</i>

**Table 12.** Observed Bird Species on the ECWMA

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<b>Common Name</b>	<b>Scientific Name</b>
Black rail	<i>Laterallus jamaicensis</i>
Black vulture	<i>Coragyps atratus</i>
Black-and-white warbler	<i>Mniotilta varia</i>
Black-crowned night-heron	<i>Nycticorax nycticorax</i>
Black-necked stilt	<i>Himantopus mexicanus</i>
Blackpoll warbler	<i>Dendroica striata</i>
Black-throated blue warbler	<i>Dendroica caerulescens</i>
Black-throated green warbler	<i>Dendroica virens</i>
Blue jay	<i>Cyanocitta cristata</i>
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>
Blue-winged teal	<i>Anas discors</i>
Blue-winged warbler	<i>Vermivora cyanoptera</i>
Boat-tailed grackle	<i>Quiscalus major</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Broad-winged hawk	<i>Buteo platypterus</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Brown thrasher	<i>Toxostoma rufum</i>
Brown pelican	<i>Pelecanus occidentalis</i>
Burrowing owl	<i>Athene cunicularia</i>
Cape May warbler	<i>Dendroica tigrina</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Cattle egret	<i>Bubulcus ibis</i>
Cedar waxwing	<i>Bombycilla cedrorum</i>
Chestnut-sided warbler	<i>Dendroica pensylvanica</i>
Chimney swift	<i>Chaetura pelagica</i>
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>
Clapper rail	<i>Rallus longirostris</i>
Common grackle	<i>Quiscalus quiscula</i>
Common ground-dove	<i>Columbina passerina</i>
Common loon	<i>Gavia immer</i>
Common moorhen	<i>Gallinula chloropus</i>
Common nighthawk	<i>Chordeiles minor</i>
Common snipe	<i>Gallinago gallinago</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Cooper's hawk	<i>Accipiter cooperii</i>

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**Table 12.** Observed Bird Species on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
Coot	<i>Fulica americana</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Eastern meadowlark	<i>Sturnella magna</i>
Eastern phoebe	<i>Sayornis phoebe</i>
Eastern screech-owl	<i>Megascops asio</i>
Eastern towhee	<i>Pipilo erythrophthalmus</i>
Eastern wood pewee	<i>Contopus virens</i>
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>
Fish crow	<i>Corvus ossifragus</i>
Florida sandhill crane	<i>Grus canadensis</i>
Forster's tern	<i>Sterna forsteri</i>
Gadwall	<i>Anas strepera</i>
Glossy ibis	<i>Plegadis falcinellus</i>
Gray catbird	<i>Dumetella carolinensis</i>
Gray kingbird	<i>Tyrannus dominicensis</i>
Great blue heron	<i>Ardea herodias</i>
Great egret	<i>Casmerodius albus</i>
Great horned owl	<i>Bubo virginianus</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Great-crested flycatcher	<i>Myiarchus crinitus</i>
Green heron	<i>Butorides striatus</i>
Hairy woodpecker	<i>Picoides villosus</i>
Hermit thrush	<i>Catharus guttatus</i>
Herring gull	<i>Larus smithsonianus</i>
Hooded warbler	<i>Wilsonia citrina</i>
Horned grebe	<i>Podiceps auritus</i>
House wren	<i>Troglodytes aedon</i>
Indigo bunting	<i>Passerina cyanea</i>
Kentucky warbler	<i>Oporornis formosus</i>
Killdeer	<i>Charadrius vociferus</i>
King rail	<i>Rallus elegans</i>
Laughing gull	<i>Leucophaeus atricilla</i>
Least bittern	<i>Ixobrychus exilis</i>

**Table 12.** Observed Bird Species on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
Least sandpiper	<i>Calidris minutilla</i>
Least tern	<i>Sternula antillarum</i>
Lesser scaup	<i>Aythya affinis</i>
Lesser yellowlegs	<i>Tringa flavipes</i>
Limpkin	<i>Aramus guarauna</i>
Little blue heron	<i>Egretta caerulea</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Louisiana waterthrush	<i>Seiurus motacilla</i>
Magnolia warbler	<i>Dendroica magnolia</i>
Mallard duck	<i>Anas platyrhynchos</i>
Marian's marsh wren	<i>Cistothorus palustris</i>
Marsh wren	<i>Cistothorus palustris</i>
Merlin	<i>Falco columbarius</i>
Mottled duck	<i>Anas fulvigula</i>
Mourning dove	<i>Zenaida macroura</i>
Nothern bobwhite	<i>Colinus virginianus</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Northern flicker	<i>Colaptes auratus</i>
Northern harrier	<i>Circus cyaneus</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Northern parula	<i>Parula americana</i>
Northern pintail	<i>Anas acuta</i>
Northern rough-winged swallow	<i>Stelgidopteryx ruficollis</i>
Northern shoveler	<i>Anas clypeata</i>
Northern waterthrush	<i>Seiurus noveboracensis</i>
Orange-crowned warbler	<i>Vermivora celata</i>
Orchard oriole	<i>Icterus spurius</i>
Osprey	<i>Pandion haliaetus</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Painted bunting	<i>Passerina ciris</i>
Palm warbler	<i>Dendroica palmarum</i>
Peregrine falcon	<i>Falco peregrinus</i>
Pied-billed grebe	<i>Podilymbus podiceps</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Pine warbler	<i>Setophaga pinus</i>

**Table 12.** Observed Bird Species on the ECWMA

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<b>Common Name</b>	<b>Scientific Name</b>
Prairie warbler	<i>Dendroica discolor</i>
Prothonotary warbler	<i>Protonotaria citrea</i>
Purple martin	<i>Progne subis</i>
Purple gallinule	<i>Porphyryula martinica</i>
Red-eyed vireo	<i>Vireo olivaceus</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Red-breasted merganser	<i>Mergus serrator</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Ring-billed gull	<i>Larus delawarensis</i>
Ring-necked duck	<i>Aythya collaris</i>
Roseate spoonbill	<i>Ajaia ajaja</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Ruby-throated hummingbird	<i>Archilochus colubris</i>
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
Savannah sparrow	<i>Passerculus sandwichensis</i>
Sedge wren	<i>Cistothorus platensis</i>
Sandhill crane	<i>Grus canadensis</i>
Scarlet tanager	<i>Piranga olivacea</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Short-tailed hawk	<i>Buteo brachyurus</i>
Smooth-billed Ani	<i>Crotophaga ani</i>
Snowy egret	<i>Egretta thula</i>
Sora	<i>Porzana carolina</i>
Southeastern American kestrel	<i>Falco sparverius</i>
Swainson's thrush	<i>Catharus ustulatus</i>
Swainson's warbler	<i>Limnothlypis swainsonii</i>
Swallow-tailed kite	<i>Elanoides forficatus</i>
Swamp sparrow	<i>Melospiza georgiana</i>
Tree swallow	<i>Tachycineta bicolor</i>
Tricolored heron	<i>Egretta tricolor</i>
Tufted titmouse	<i>Baeolophus bicolor</i>
Turkey vulture	<i>Cathartes aura</i>
Veery	<i>Catharus fuscescens</i>

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**Table 12.** Observed Bird Species on the ECWMA

<b>Common Name</b>	<b>Scientific Name</b>
Whip-poor-will	<i>Caprimulgus vociferus</i>
Whistling duck	<i>Dendrocygna bicolor</i>
White ibis	<i>Eudocimus albus</i>
White-eyed vireo	<i>Vireo griseus</i>
White-tailed kite	<i>Elanus leucurus</i>
White-winged dove	<i>Zenaida asiatica</i>
Wigeon	<i>Anas americana</i>
Wilson's snipe	<i>Gallinago delicata</i>
Wood duck	<i>Aix sponsa</i>
Wood stork	<i>Mycteria americana</i>
Worm-eating warbler	<i>Helmitheros vermivorus</i>
Yellow warbler	<i>Dendroica petechia</i>
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Yellow-breasted chat	<i>Icteria virens</i>
Yellow-crowned night-heron	<i>Nyctanassa violacea</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>
Yellow-throated warbler	<i>Dendroica dominica</i>

- **Management Intent**

The ECWMA is managed by FWC as a Wildlife Management Area in conformance with the original purposes for acquisition to ensure the preservation of fish and wildlife resources, other natural and cultural resources, and to provide for fish and wildlife-based public outdoor recreation. 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 Vegetation 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. Due to the composition and characteristics of habitats within the ECWMAs, FWC will continue to determine how and if OBVM will be utilized on the natural communities of the ECWMA.

In addition, FWC uses the 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 FWC-managed areas to enhance management of focal species and recovery of imperiled species. The WCPR program objectives include prioritizing what FWC does for imperiled and focal species on FWC-managed areas; ensuring the actions taken on these areas are part of statewide conservation programs and priorities; and informing others about the work accomplished on lands FWC manages.

- **Conditions Affecting Intensity of Management**

Resources described in this management prospectus are indicative of the conditions that affect the intensity of FWC's 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, outstanding natural areas, and wetlands shall continue to be identified, appropriately managed and protected.

When necessary, the FWC conducts analysis of historic vegetation of natural community types to determine appropriate desired future conditions. 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-scale 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**

A management plan has been developed by FWC describing the management goals and objectives, along with short-term (2 years) and long-term (3-10 years) completion timelines, necessary to implement future resource and operational management of the ECWMA. The management plan also establishes the current and future roles of cooperating entities including governmental agencies, non-governmental organizations, and other stakeholders.

Long-range plans will stress ecosystem management and the protection and management of focal species, species of special concern, rare and imperiled species. The FWC shall continue to assess the condition of wildlife resources and provide planning support to enhance management of these species on the ECWMA. To maintain and restore natural communities and vegetation types to benefit native

wildlife resources, the use of prescribed fire and other essential resource management activities will continue to be implemented.

- **Revenue Generating Potential**

Visitation and public use of the area for fish and wildlife based public outdoor recreational opportunities is the primary source of economic impacts from ECWMA for this region of Florida. In Fiscal Year 2011-12, an estimated 1,384,972 people visited the ECWMA. FWC economic analysis estimates, from the Office of Public Access and Wildlife Viewing Services, indicate that the ECWMA generated an estimated annual economic impact of \$ 268,655,778 for the State and Southeast Florida region. This estimated annual economic impact has aided in the creation of an estimated 2,734 jobs.

Further revenue generating potential of the ECWMA will depend upon future uses to be approved in the management plan. Additional revenue from environmental lands such as the ECWMA might include sales of various permits and recreational user fees and ecotourism activities, if such projects could be feasibly developed. The annual area regulations can be consulted to clarify the necessary and required permits, fees, and regulations. Additionally, the long-term values of ecosystem services to local and regional land and water resources from air and water quality functions of the area, among others, and to human health, are considered to be significant. The legislature appropriates funds for land management.

- **Recommendations for Other Governmental Agency Involvement**

FWC will continue to cooperate with other state and local governmental agencies including Palm Beach, Broward, and Miami-Dade counties, DEP, ACOE, SFWMD, DOD and FFS in the continuing management of the ECWMA.

- **Estimate of Costs**

Following is an estimate of costs to operate and manage the ECWMA as outlined in the ECWMA Management Plan. Based on the staffing recommendations, optimal management of the ECWMA would require 12 full-time equivalent (FTE) positions. Salary requirements for these FTE positions, as well as those of other needed FWC staff, and costs to operate and manage the ECWMA are reflected in the cost estimates below. All land management funding is dependent upon annual legislative appropriations.

Salary requirements for these FTE positions, as well as those of other needed FWC staff, and costs to operate and manage the ECWMA are reflected in the cost

estimates below. All land management funding is dependent upon annual legislative appropriations.

**Everglades Complex WMAs Management Plan Cost Estimate**  
***Maximum expected one year expenditure***

<b><u>Resource Management</u></b>	<b><u>Expenditure</u></b>	<b><u>Priority</u></b>	<b><u>Priority schedule:</u></b>
Exotic Species Control	\$762,255	(1)	(1) Immediate (annual)
Prescribed Burning	\$115,121	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$1,252	(1)	(3) Other (5+ years)
Timber Management	\$0	(1)	
Hydrological Management	\$6,259	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$513,607	(1)	
<b>Subtotal</b>	<b>\$1,398,493</b>		
<b><u>Administration</u></b>			
General administration	\$227,248	(1)	
<b><u>Support</u></b>			
Land Management Planning	\$45,933	(1)	
Land Management Reviews	\$0	(3)	
Training/Staff Development	\$10,014	(1)	
Vehicle Purchase	\$0	(2)	
Vehicle Operation and Maintenance	\$101,340	(1)	
Other (Technical Reports, Data Management, etc.)	\$3,753	(1)	
<b>Subtotal</b>	<b>\$161,040</b>		
<b><u>Capital Improvements</u></b>			
New Facility Construction	\$910,421	(2)	
Facility Maintenance	\$91,323	(1)	
<b>Subtotal</b>	<b>\$1,001,745</b>		
<b><u>Visitor Services/Recreation</u></b>			
Info./Education/Operations	\$69,085	(1)	
<b><u>Law Enforcement</u></b>			
Resource protection	\$529,306	(1)	

**Total** **\$3,386,918** \*

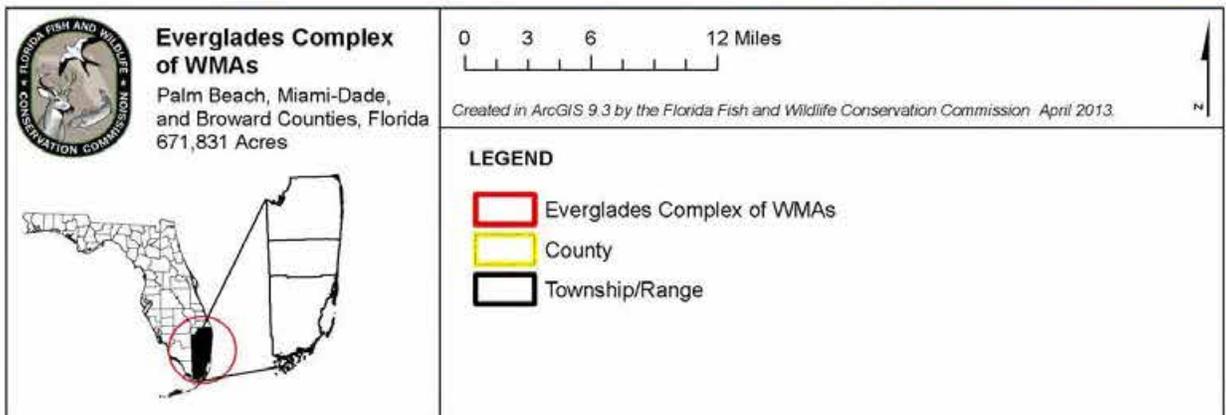
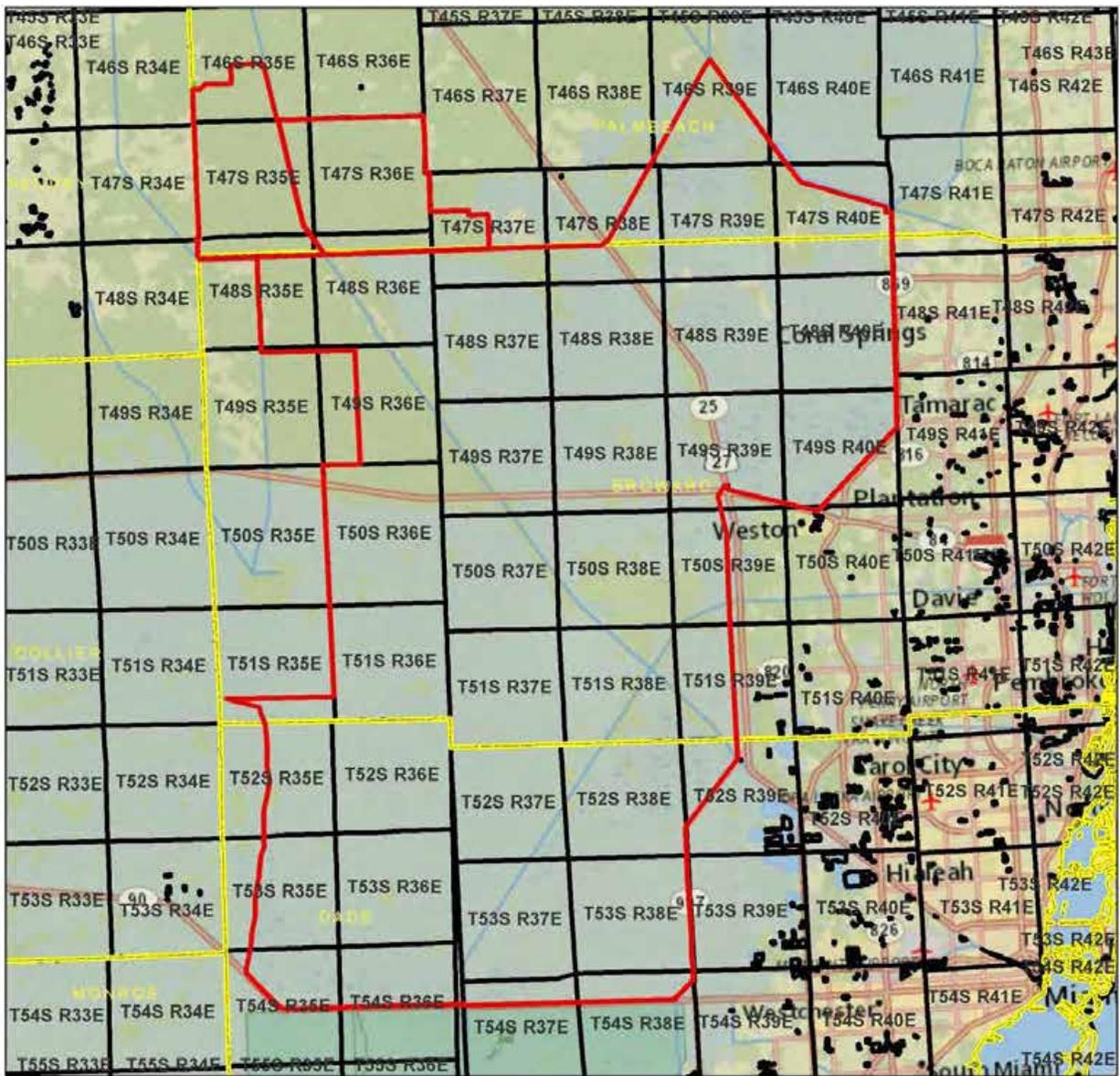
\* Based on the characteristics and requirements of this area, 12 FTE positions would be optimal to fully manage this area. All land management funding is dependent upon annual legislative appropriations.

**Everglades Complex WMAs Management Plan Cost Estimate**  
***Ten-year projection***

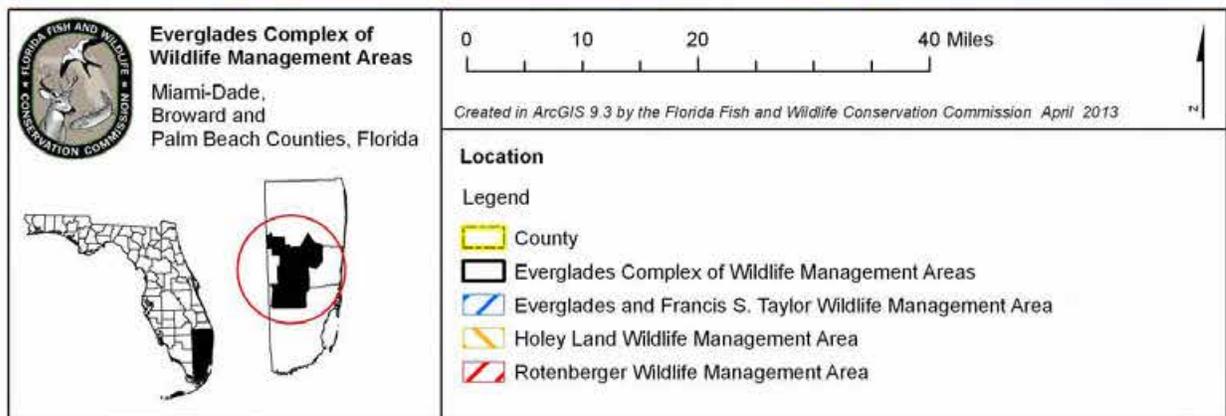
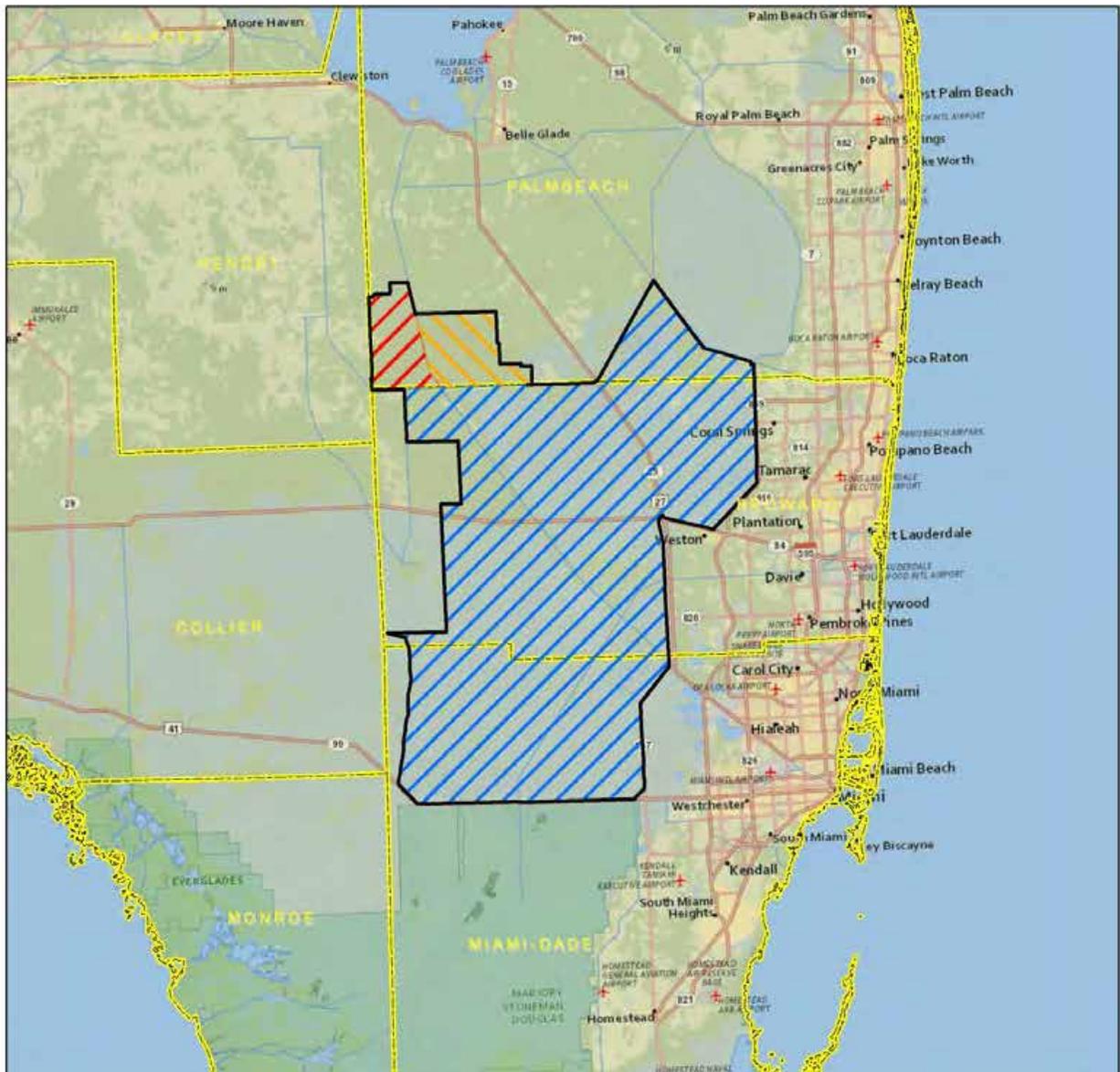
<b><u>Resource Management</u></b>	<b><u>Expenditure</u></b>	<b><u>Priority</u></b>	<b><u>Priority schedule:</u></b>
Exotic Species Control	\$7,763,956	(1)	(1) Immediate (annual)
Prescribed Burning	\$1,172,562	(1)	(2) Intermediate (3-4 years)
Cultural Resource Management	\$12,750	(1)	(3) Other (5+ years)
Timber Management	\$0	(1)	
Hydrological Management	\$63,751	(1)	
Other (Restoration, Enhancement, Surveys, Monitoring, etc.)	\$5,231,347	(1)	
<b>Subtotal</b>	<b>\$14,244,366</b>		
<b><u>Administration</u></b>			
General administration	<b>\$2,314,640</b>	(1)	
<b><u>Support</u></b>			
Land Management Planning	\$467,851	(1)	
Land Management Reviews	\$7,205	(3)	
Training/Staff Development	\$102,001	(1)	
Vehicle Purchase	\$902,005	(2)	
Vehicle Operation and Maintenance	\$1,032,199	(1)	
Other (Technical Reports, Data Management, etc.)	\$38,228	(1)	
<b>Subtotal</b>	<b>\$2,549,488</b>		
<b><u>Capital Improvements</u></b>			
New Facility Construction	\$1,719,319	(2)	
Facility Maintenance	\$930,175	(1)	
<b>Subtotal</b>	<b>\$2,649,494</b>		
<b><u>Visitor Services/Recreation</u></b>			
Info./Education/Operations	<b>\$703,669</b>	(1)	
<b><u>Law Enforcement</u></b>			

Resource protection	\$5,391,253	(1)
<b>Total</b>	<b>\$27,852,909</b>	*

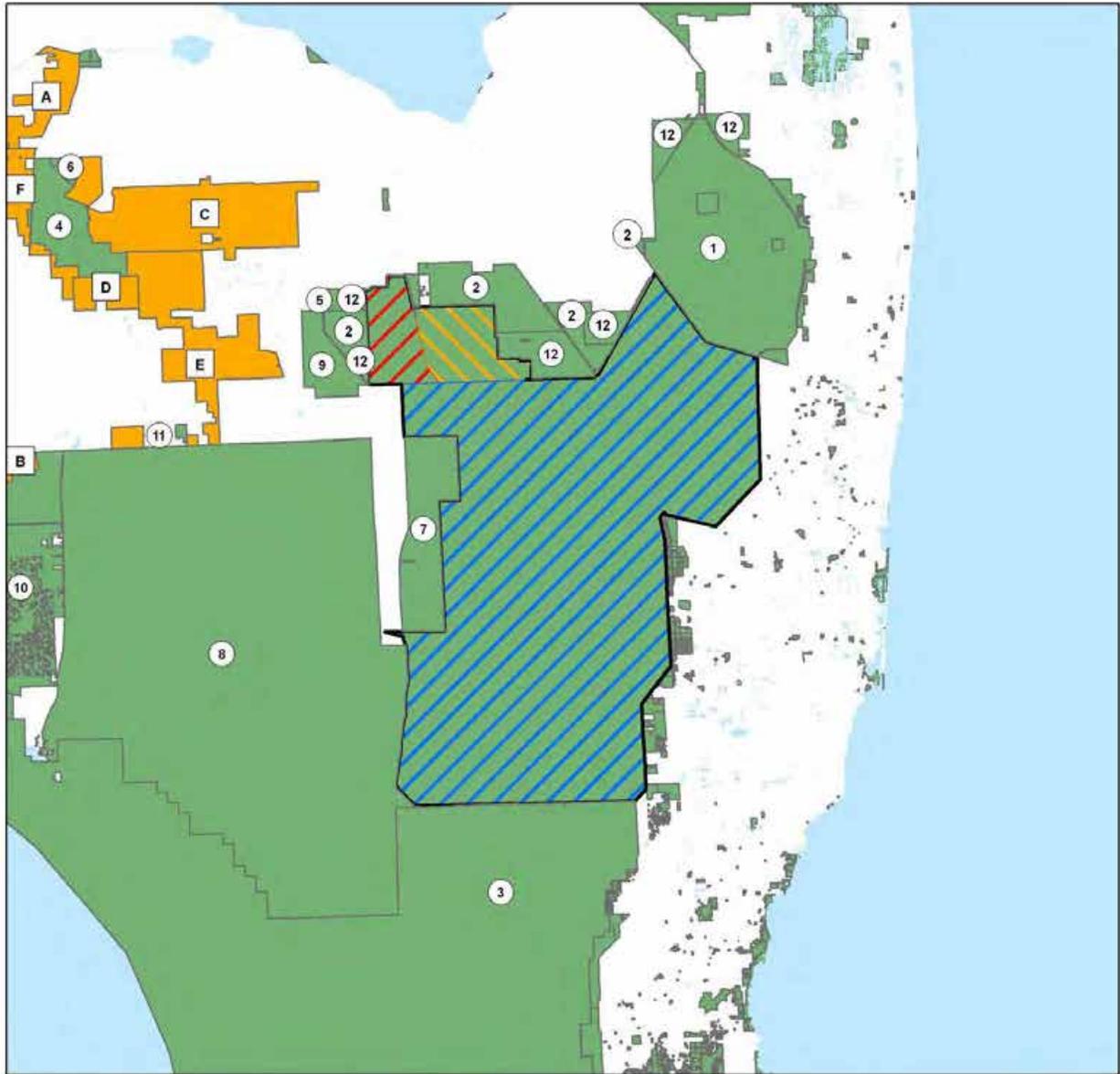
\* Based on the characteristics and requirements of this area, 12 FTE positions would be optimal to fully manage this area. All land management funding is dependent upon annual legislative appropriations.



**Figure 1. Proximity Map with Township and Range**  
 Florida Fish and Wildlife Conservation Commission | ECWMA Management Plan



**Figure 2.** Locator Map with WMA Breakdown of the ECWMA



**Figure 3.** Proximate Conservation Lands and Florida Forever Projects

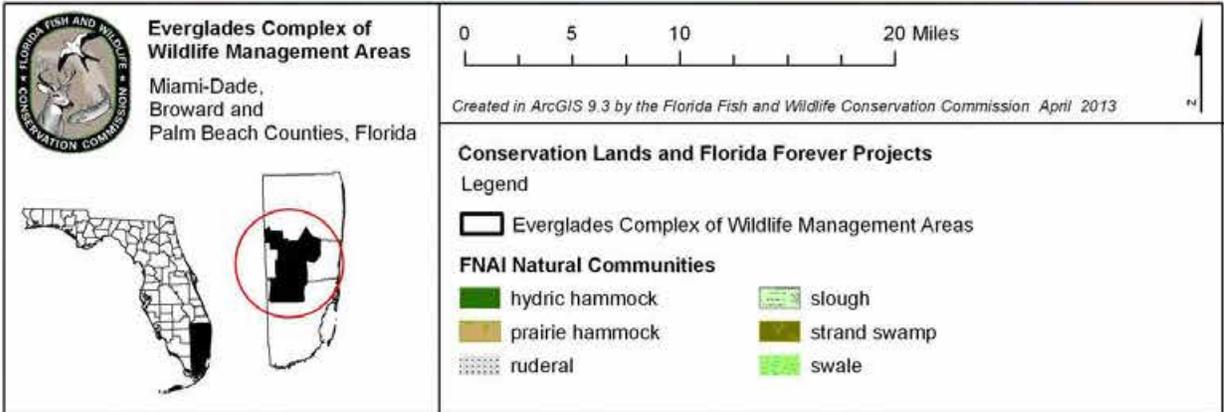
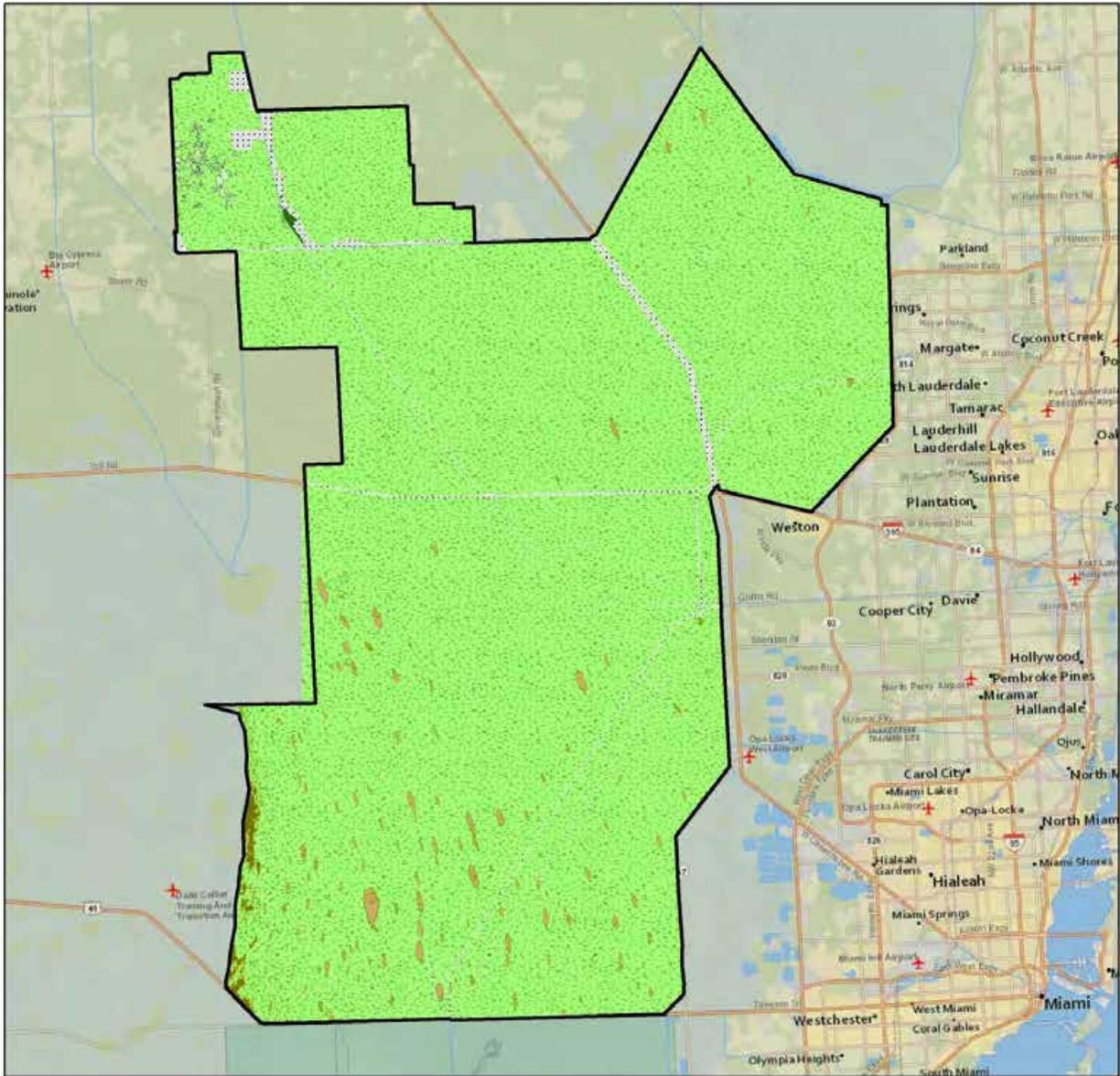
**Map Legend for Figure 3.**

<b>Map Label</b>	<b>Florida Forever Project Name</b>	<b>GIS Acres</b>
A	Caloosahatchee Ecoscape	18,455
B	Corkscrew Regional Ecosystem Watershed	67,936
C	Devil's Garden	82,995
D	Half Circle L Ranch	11,182
E	Panther Glades	64,809
F	Twelvemile Slough	15,967

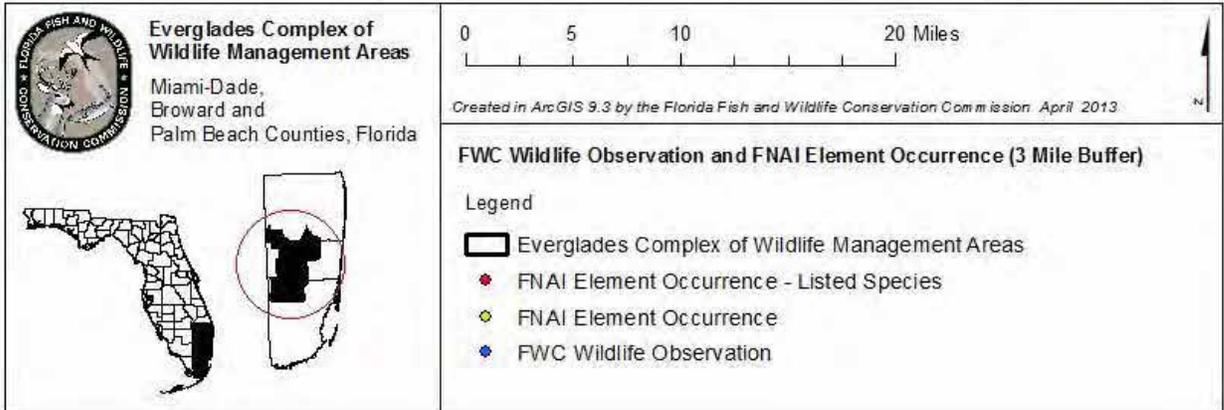
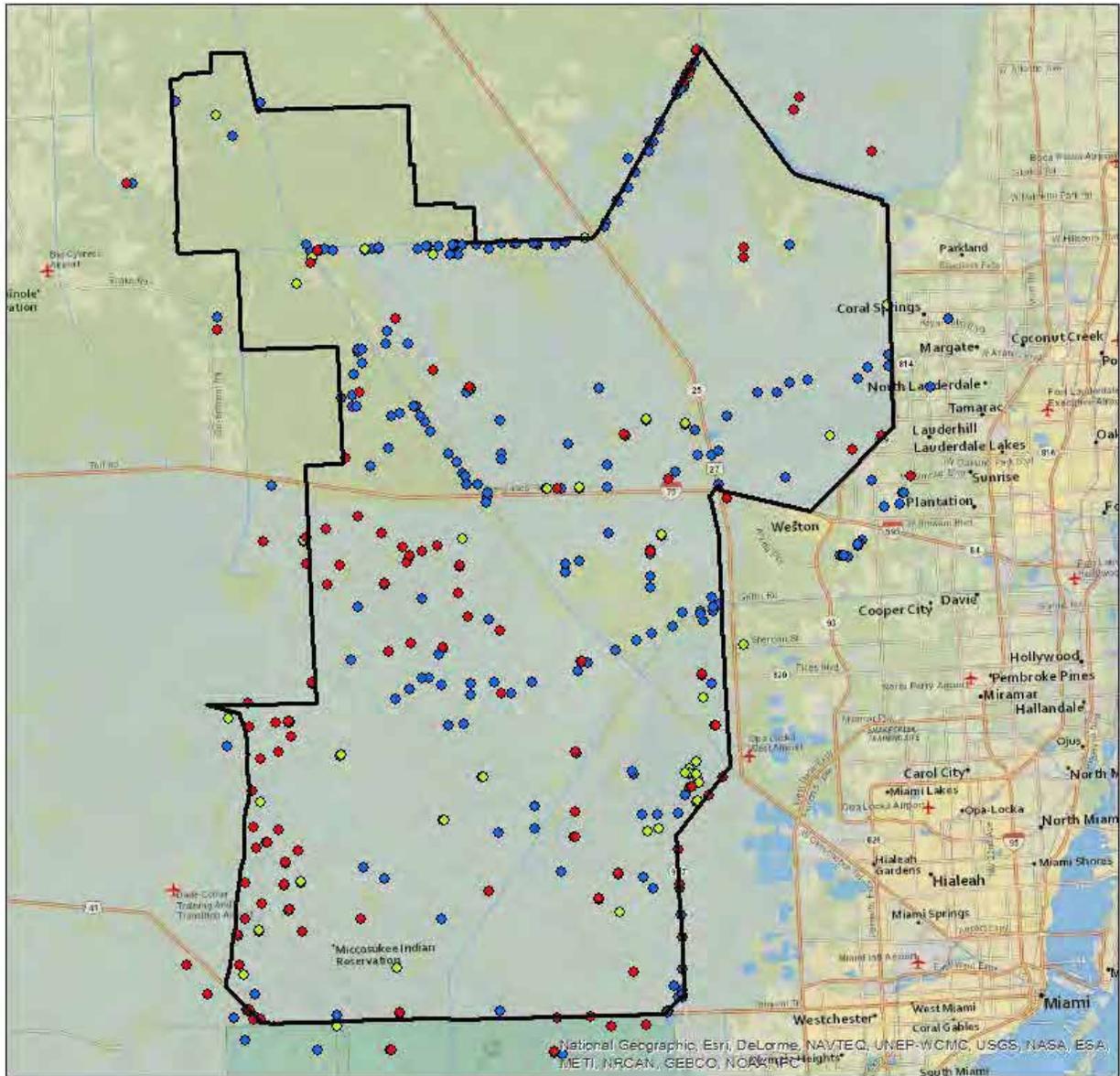
  

<b>Map Label</b>	<b>Conservation Area Name</b>	<b>Managing Agency</b>
1	Arthur R. Marshall Loxahatchee National Wildlife Refuge	US FWS
2	Everglades Agricultural Area	SFWMD
3	Everglades National Park	US NPS
4	Okaloacoochee Slough State Forest	FFS
5	Deer Fence Canal	SFWMD
6	Okaloacoochee Slough Wildlife Management Area	FWC
7	Miccosukee Indian Water Conservation Area	SFWMD
8	Big Cypress National Preserve	US NPS
9	River of Grass	SFWMD
10	Fakahatchee Strand Preserve State Park	DEP Earthmark Companies, LLC
11	Big Cypress Mitigation Bank	Earthmark Companies, LLC
12	Stormwater Treatment Areas	SFWMD

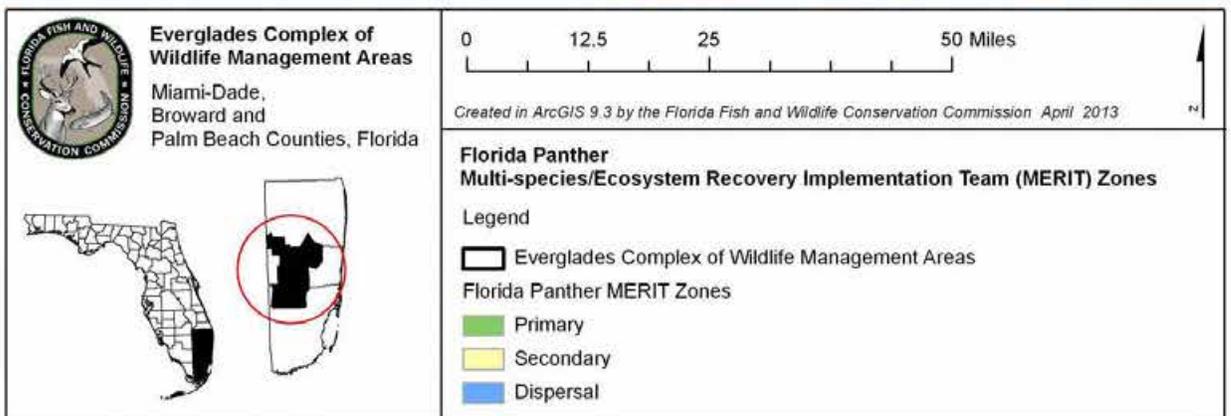
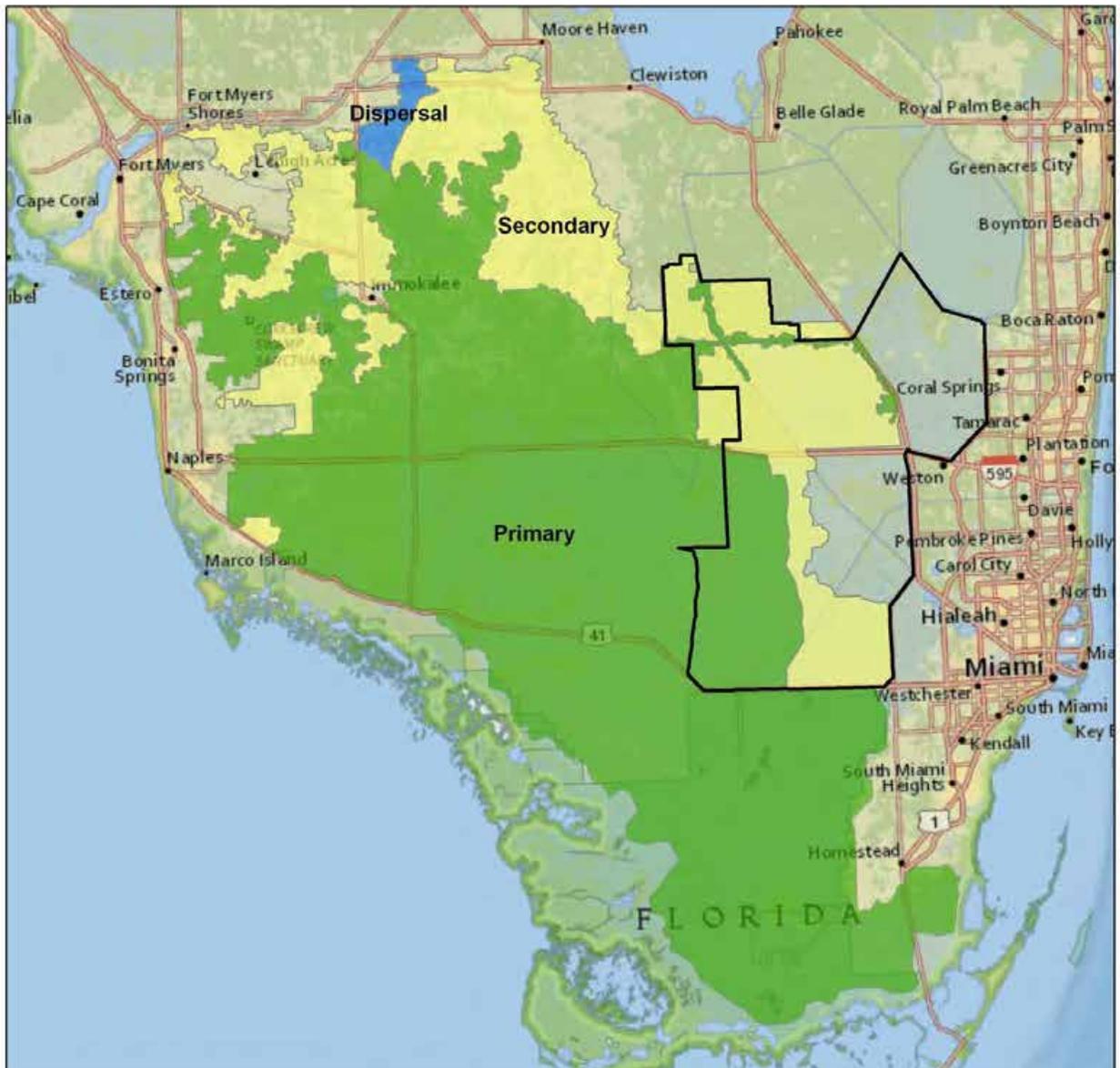
<b>Acronym Key</b>	<b>Agency Name</b>
<b>DEP</b>	Florida Department of Environmental Protection
<b>FFS</b>	Florida Forest Service
<b>FWC</b>	Florida Fish and Wildlife Conservation Commission
<b>SFWMD</b>	South Florida Water Management District
<b>USFWS</b>	United States Fish and Wildlife
<b>USNPS</b>	United States National Park Service



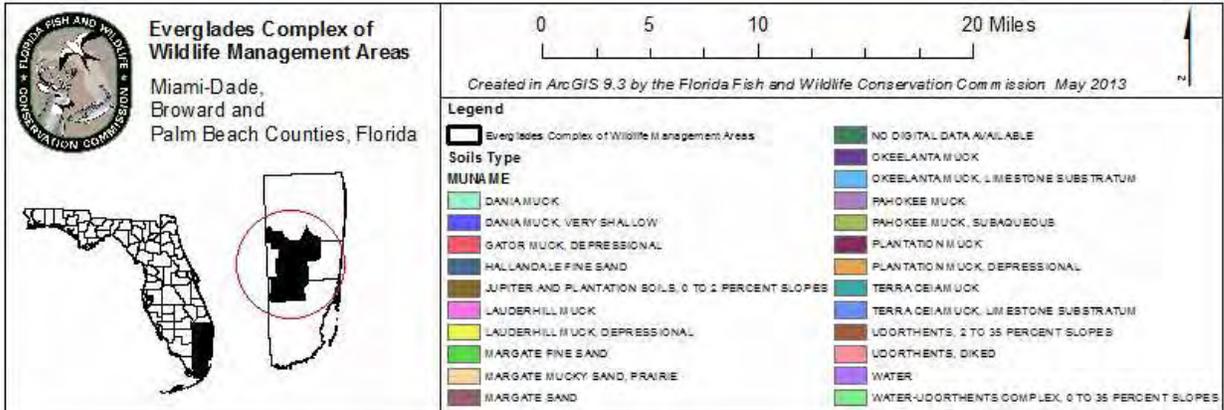
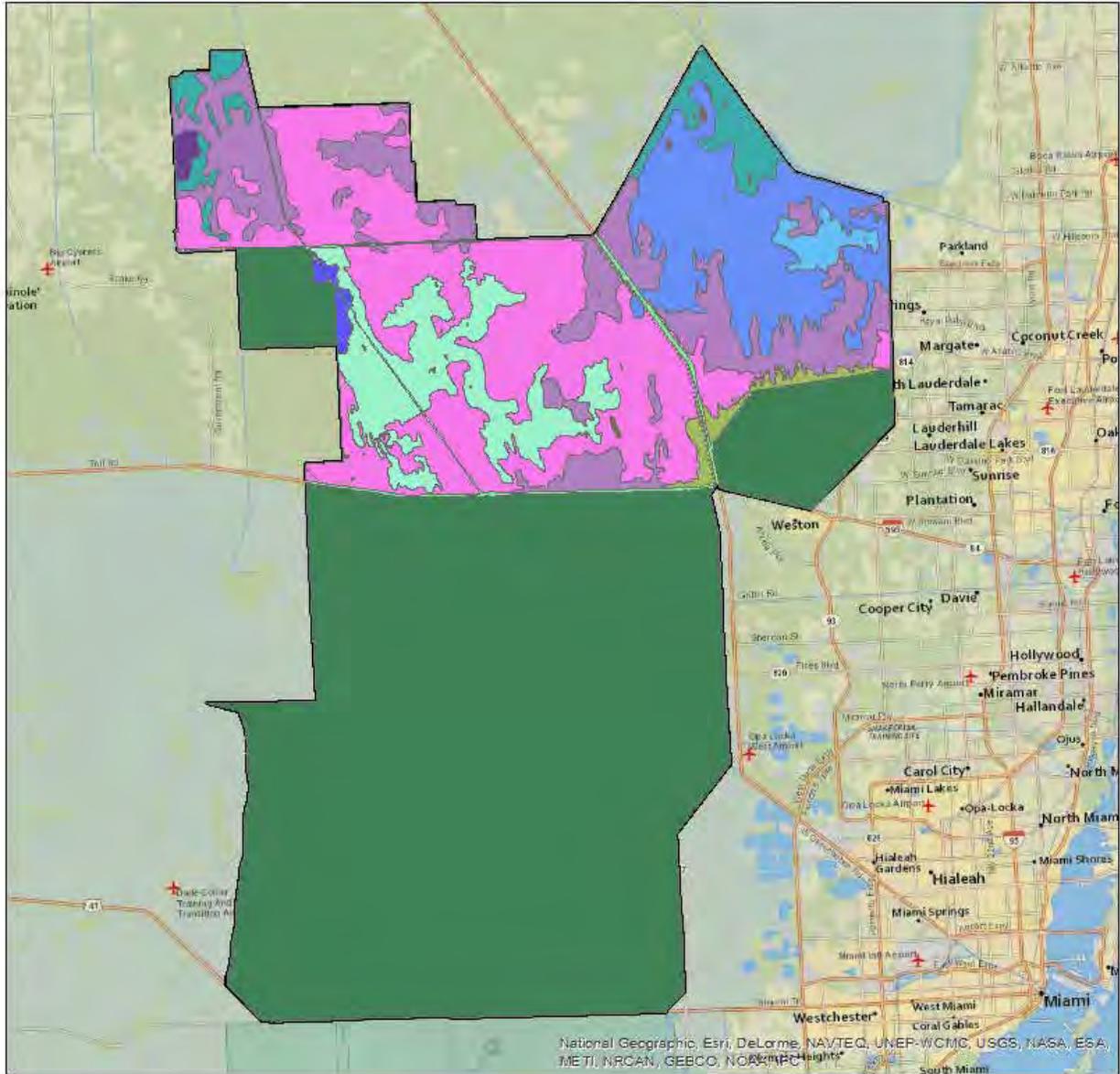
**Figure 4.** FNAI Natural Communities-ECWMA



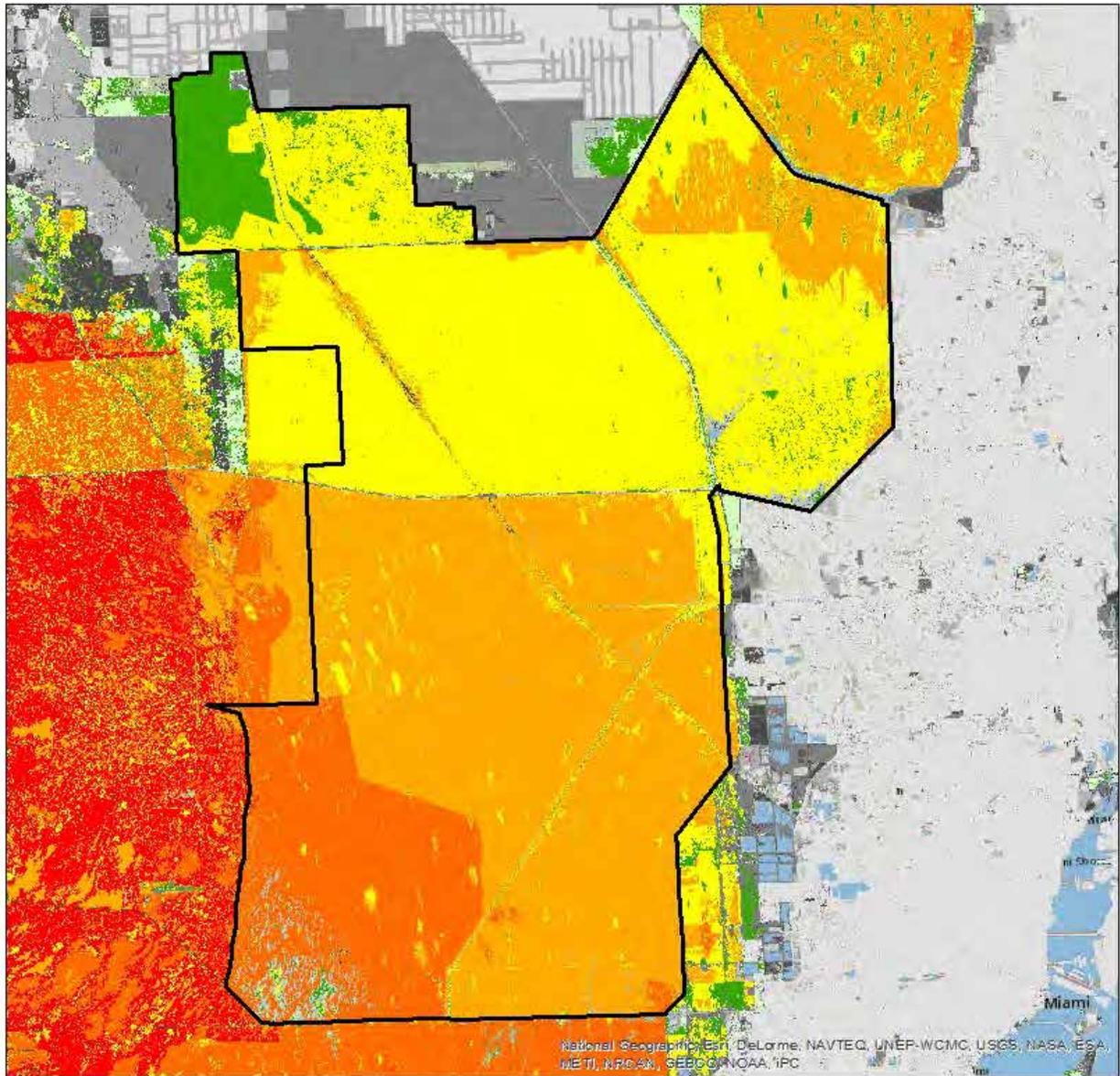
**Figure 5.** FWC Wildlife Observations and FNAI Element Occurrences-ECWMA



**Figure 6.** Florida Panther Dispersal Zones-ECWMA



**Figure 7. Soils Map-ECWMA**



National Geographic, Esri, DeLorme, NAVTEQ, UNEP-WCMC, USGS, NASA, ESA, METI, NPSAN, GEBCO, NOAA, IPC

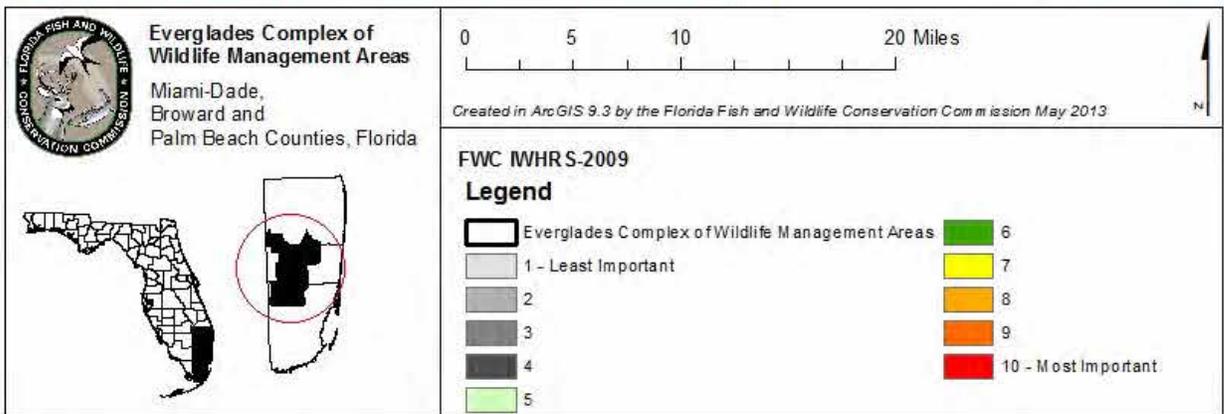


Figure 8. IWHS-2009-ECWMA

### **13.3 Land Management Review**

**Name of Site:** Everglades Complex of WMA's      **County:** Palm Beach/Broward/Miami-Dade Counties

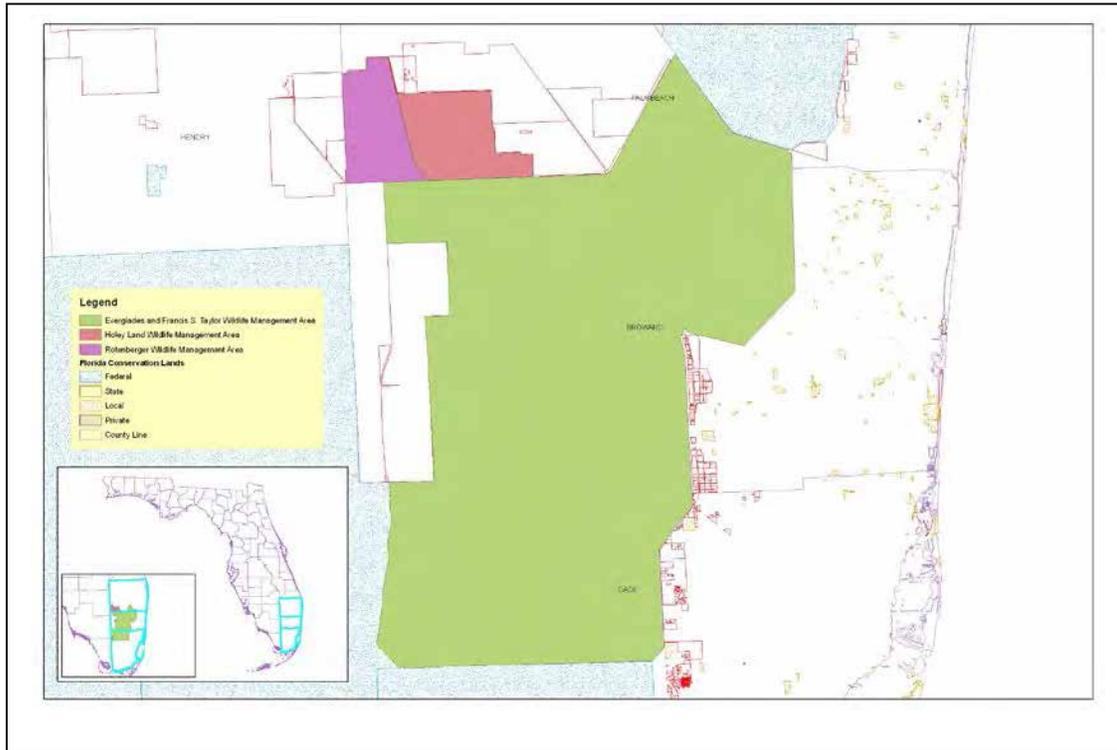
**Managed by:** Florida Fish and Wildlife Conservation Commission  
736,881 Acres

**Acres:**

**Area Reviewed:** Entire tract

**Review Date:** 02/22-23/11

**Management Plan Approval Date:** 2/7/03



**Review Team Determination**

Managed in accordance with Acquisition purpose? Yes =6, No = 0



Management practices, including public access, in compliance with the management plan? Yes =6, No = 0



Categories	Management Plan Review	Field Review
Natural Communities	0.93	4.53
Listed Species	0.75	4.00
Natural Resource Survey	0.86	4.38
Cultural Resources	1.00	4.17
Prescribed Fire	0.39	4.11
Restoration	1.00	4.42
Exotic Species	0.39	3.92
Hydrology	1.00	4.19
Surface Water Monitoring	1.00	4.58
Resource Protection	0.73	4.58

Florida Fish and Wildlife Conservation Commission Everglades Complex of WMA Management Plan

### Consensus Commendations to the Managing Agency

The following commendations resulted from discussion and vote of the review team members.

1. The team commends the FWC for their continued involvement and cooperation with water managers to encourage a more flexible operational schedule that would benefit wetland communities. (VOTE: 6+, 0-)



2. The team commends the FWC for the progress on restoration of the tree islands in the WMAs. (VOTE: 6+, 0-)



3. The team commends the FWC on their ongoing restoration of the farm tracts within Rotenberger WMA. (VOTE: 6+, 0-)



4. The team commends the FWC for collection and dissemination of data on biological resources and program implementation. (VOTE: 6+, 0-)



5. The team commends the FWC's achievement of maintenance level condition of all invasive plants which has resulted from an excellent level of coordination with several agencies, including SFWMD. (VOTE: 6+, 0-)



### Consensus Recommendations to the Managing Agency

The following recommendations resulted from a discussion and vote of review team members. The management plan must include responses to the recommendations identified below.

1. The team recommends removing size and bag limits on feral hog hunting. (VOTE: 6+, 0-)



*Managing Agency Response: FWC annually evaluates the need to increase or revise area hunting regulations including hunting size and bag limits for wild hog. FWC will continue to monitor hogs, assess impacts on the area, and evaluate the need for future expansion of hog hunting opportunities.*

2. The team recommends maintaining at least current funding levels for exotic plant control, particularly given the potential for *Lygodium* infestation. (VOTE: 6+, 0-)



*Managing Agency Response: FWC will continue to pursue funding and will explore opportunities for additional funding to maintain invasive exotic vegetation treatment maintenance and control objectives.*

3. The team recommends that FWC continue their ongoing efforts to identify appropriate annual prescribed burning goals. (VOTE: 6+, 0-)



*Managing Agency Response: FWC will revise the area's prescribed burn plan as guided by the Objective-based Vegetation Management strategies for maintenance, enhancement, and restoration of natural communities. This will be addressed during the next scheduled plan update. Prior to the next management plan revision, the FWC will evaluate and develop appropriate annual prescribed burning goals.*

## Field Review Checklist Findings

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

- Natural Communities, regarding strand swamps, hydric hammock/prairie hammock, sloughs, swale and shrub land.
- Listed Species, regarding animal and plant inventory.
- Natural Resources, regarding sport fish or habitat monitoring, listed species or habitat monitoring, other non-game species or habitat monitoring, fire effects monitoring, other habitat management effects monitoring, and invasive species survey/monitoring.
- Cultural Resources, regarding the cultural resource survey, protection and preservation of those resources.
- Resource Management, regarding the areas being burned and the frequency and quality of the burns.
- Restoration of Ruderal Areas, regarding Tree Island and farms.
- Non-native, Invasive and Problem Species, regarding the prevention of plants and animals, as well as control of plants, animals and pests/pathogens.
- Hydrologic/Geologic Function, regarding ditches, hydro-period alteration, and water level alterations.
- Surface Water Monitoring, regarding the water quality and quantity.
- Resource Protection, regarding boundary surveys, gates/fencing, signage and law enforcement presence.
- Adjacent Property Concerns, regarding expanding development, agriculture, inholdings and additions.
- Public Access & Education, regarding roads, parking, boat access, wildlife, invasive species, habitat management activities, interpretive facilities and signs, recreational opportunities, and the management of visitor impacts.
- Management Resources, regarding waste disposal, sanitary facilities, buildings and equipment.

## Items Requiring Improvement Actions in the Management Plan

The following items received low scores on the review team checklist, which indicates that the text noted in the Management Plan Review does not sufficiently address this issue (less than .5 score on average.). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The management plan must include responses to the checklist items identified below:

### **1. Increased protection of listed species, specifically in plant inventory, with documentation in the management plan.**

*Managing Agency Response:*

*FWC notes that FNAI has completed mapping of historic and natural communities which are incorporated in the current plan on pages 13-19. Natural communities including plant inventories are included on pages 14-19. Furthermore, imperiled species lists (endangered, threatened, and species of special concern) are listed on page 28.*

*Prior to the next management plan update, FWC will develop and implement a Wildlife Conservation Prioritization and Recovery (WCPR) strategy to address management of imperiled wildlife species. FWC will consult with FNAI or other entities to determine the need and feasibility for conducting additional imperiled species, specifically plant species, survey and inventory for the area as funding allows.*

**2. Increased resource management activity related to prescribed burning, specifically the areas being burned and the frequency and quality at which these burns are conducted, with documentation in the management plan.**

*Managing Agency Response:*

*FWC notes that specific management activities designed to enhance, restore and maintain natural communities are described on pages 49 - 63. Overall resource management activities will be through continuing implementation of FWC's Objective-based Vegetation Management (OBVM) desired future conditions and associated monitoring protocols. A Prescribed Burn Plan will be developed for the area, and included in the update of the management plan.*

**3. Discussion regarding deficiencies with non-native, invasive and problem species, more specifically the prevention of plants, animals, pets/pathogens and the control of animals and pests/pathogens, with documentation in the management plan.**

*Managing Agency Response: FWC notes that this is addressed on pages 41, 44, 48, 50, and 55 of the current management plan. Invasive exotic species will be addressed further in the management plan update including plants and animals known to occur on the area. Natural communities that may have occurrences and densities of non-native plant species will be addressed through FWC's OBVM desired future conditions and associated monitoring protocols. This information will be included in the management plan update.*

*Use of the terminology "pests/pathogen" is not clear since it is not a required element of management plans. FWC will evaluate the need to address the issue of pests/pathogens in the management plan update.*

PLAN REVIEW		1	2	3	4	5	6	AVERAGE
<b>Natural Communities ( I.A )</b>								
Strand Swamp (Cypress)	I.A.1	1	1	1	1	1	1	1.00
Hydric Hammock/ Prairie Hammock	I.A.2	1	1	1	1	1	1	1.00
Sloughs	I.A.3	1	1	1	1	1	1	1.00
Swale	I.A.4	1		1	1	1	1	1.00
Shrub Land (Levee Forest & Willows)	I.A.5	1	1	1	1	0	0	0.67
<b>Listed species:Protection &amp; Preservation ( I.B )</b>								
Animal Inventory	I.B.1	1	1	1	1	1	1	1.00
Plant Inventory	I.B.2	0	1	0	1	0	1	0.50
<b>Natural Resources Survey/Management Resources ( I.C )</b>								
Sport fish or habitat monitoring	I.C.1	1	1	0	1	1	1	0.83
Listed species or habitat monitoring	I.C.2	1	1	1	1	1	1	1.00
Other non-game species or habitat monitoring	I.C.3	1	1	1	1	1	1	1.00
Fire effects monitoring	I.C.4	0	1	1	1	1	1	0.83
Other habitat management effects monitoring	I.C.5	0	1	1	1	1	0	0.67

Invasive species survey / monitoring	I.C.6	1		1	1	1	0	0.80
<b>Cultural Resources (Archeological &amp; Historic sites) (II.A,II.B)</b>								
Cultural Res. Survey	II.A	1	1	1	1	1	1	1.00
Protection and preservation	II.B	1	1	1	1	1	1	1.00
<b>Resource Management, Prescribed Fire (III.A)</b>								
Area Being Burned (no. acres)	III.A.1	0	0	1	1	1	0	0.50
Frequency	III.A.2	0	1	1	0	0	0	0.33
Quality	III.A.3	0	1	1	0	0	0	0.33
<b>Restoration of Ruderal Areas (III.B)</b>								
Tree Islands	III.B.1	1	1	1	1	1	1	1.00
Farms	III.B.2	1	1		1	1	1	1.00
<b>Non-Native, Invasive &amp; Problem Species (III.E)</b>								
<b>Prevention</b>								
prevention - plants	III.E.1.a	0	1	0	0	0	0	0.17
prevention - animals	III.E.1.b	0	1	0	0	0	0	0.17
prevention - pests/pathogens	III.E.1.c	0	1	0	0	0	0	0.17
<b>Control</b>								
control - plants	III.E.2.a	1	1	1	1	1	0	0.83
control - animals	III.E.2.b	0	1	0	1	1	0	0.50
control - pest/pathogens	III.E.2.c	0	1	0	1	1	0	0.50
<b>Hydrologic/Geologic function Hydro-Alteration (III.F.1)</b>								
Ditches	III.F.1.b	1	1	1	1	1	1	1.00
Hydro-period Alteration	III.F.1.c	1	1	1	1	1	1	1.00
Water Level Alteration	III.F.1.d	1		1	1	1	1	1.00
<b>Surface Water Monitoring (III.F.3)</b>								
Surface water quality	III.F.3.a	1	1	1	1	1	1	1.00
Surface water quantity	III.F.3.b	1	1	1	1	1	1	1.00
<b>Resource Protection (III.G)</b>								
Boundary survey	III.G.1	0	1	1	1	1	0	0.67
Gates & fencing	III.G.2	0	1		1	1	0	0.60
Signage	III.G.3	0	1	1	1	1	0	0.67
Law enforcement presence	III.G.4	1		1	1	1	1	1.00
<b>Adjacent Property Concerns (III.H)</b>								
<b>Land Use</b>								
Expanding development	III.H.1.a	1	1	1	1	1	1	1.00
Agriculture	III.H.1.b	1	1	1	1	1	1	1.00
Inholdings/additions	III.H.2	1	1	1	1	1	1	1.00

Discussion of Potential Surplus Land Determination	III.H.3	1	1		1	0	1	0.80
Surplus Lands Identified?	III.H.4	1	1		1	0	0	0.60
<b>Public Access &amp; Education</b>								
<b>Public Access</b>								
Roads	IV.1.a	1	1	1	1	1	1	1.00
Parking	IV.1.b	1	1	1	1	1	1	1.00
Boat Access	IV.1.c	1	1	1	1	1	1	1.00
<b>Environmental Education &amp; Outreach</b>								
Wildlife	IV.2.a	1	1	1	1	1	0	0.83
Invasive Species	IV.2.b	1	1	1	1	1	0	0.83
Habitat Management Activities	IV.2.c	1	1	1	1	1	0	0.83
Interpretive facilities and signs	IV.3	1	1	1	1	1	1	1.00
Recreational Opportunities	IV.4	1	1	1	1	1	1	1.00
Management of Visitor Impacts	IV.5	1	1	1	1	1	0	0.83
<b>Managed Area Uses</b>								
<b>Existing Uses</b>								
ORV Use	VI.A.1	1	1	1	1	1	1	1.00
Camping	VI.A.2	1	1	1	1	1	1	1.00
Boating	VI.A.3	1	1	1	1	1	1	1.00
Hunting	VI.A.4	1	1	1	1	1	1	1.00
Fishing	VI.A.5	1	1	1	1	1	1	1.00
Camps	VI.A.6	1	1	0	1	1	1	0.83
Wildlife Viewing	VI.A.7	1	1	1	1	1	1	1.00
Concessioners/Tourists	VI.A.8	1	1	1	1	1	1	1.00

### Items Requiring Improvement Actions in the Field

The following items received low scores on the review team checklist, which indicates that management actions noted during the Field Review were not considered sufficient (less than 2.5 score on average). Please note that overall good scores do not preclude specific recommendations by the review team requiring remediation. The management plan must include responses to the checklist items identified below:

#### 1. The need for management resources, specifically staff and funding, with documentation in the management plan.

*Managing Agency Response: FWC evaluates the need for more management resources, specifically staff and funding on a continuous basis, and will continue to seek appropriate funding for staff and resources sufficient to implement the plan's goals and objectives. All land management funding is dependent upon legislative appropriations.*

<b>FIELD REVIEW</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>AVERAGE</b>
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<b>Natural Communities ( I.A )</b>								
Strand Swamp (Cypress)	I.A.1	5	5	5	5	5	5	5.00
Hydric Hammock/ Prairie Hammock	I.A.2	4	4	4	4	4	5	4.17
Sloughs	I.A.3	4	5	5	5	5	5	4.83
Swale	I.A.4	4	5	5	5	5	5	4.83
Shrub Land (Levee Forest & Willows)	I.A.5	3	4	4	4	4	4	3.83
<b>Listed species:Protection &amp; Preservation ( I.B )</b>								
Animal Inventory	I.B.1	4	5	4	5	4	4	4.33
Plant Inventory	I.B.2	1	5	3	5	4	4	3.67
<b>Natural Resources Survey/Management Resources (I.C)</b>								
Sport fish or habitat monitoring	I.C.1	3	5	X	5	3	4	4.00
Listed species or habitat monitoring	I.C.2	3	5	3	5	5	4	4.17
Other non-game species or habitat monitoring	I.C.3	3	5	4	5	5	4	4.33
Fire effects monitoring	I.C.4	4	5	4	5	5	5	4.67
Other habitat management effects monitoring	I.C.5	4	5	4	4	5	5	4.50
Invasive species survey / monitoring	I.C.6	3		5	5	5	5	4.60
<b>Cultural Resources (Archeological &amp; Historic sites) (II.A,II.B )</b>								
Cultural Res. Survey	II.A	3	5	4	5	4	4	4.17
Protection and preservation	II.B	3	4	4	5	5	4	4.17
<b>Resource Management, Prescribed Fire (III.A)</b>								
Area Being Burned (no. acres)	III.A1	3	4	5	4	5	3	4.00
Frequency	III.A.2	3	4	5	4	4	3	3.83
Quality	III.A.3	4	4	5	4	5	5	4.50
<b>Restoration of Ruderal Areas (III.B)</b>								
Tree Islands	III.B.1	4	5	5	5	5	5	4.83
Farms	III.B.2	4	5	X	3	4	4	4.00
<b>Non-Native, Invasive &amp; Problem Species (III.E)</b>								
<b>Prevention</b>								
prevention - plants	III.E.1.a	2	5	3	4	4	4	3.67
prevention - animals	III.E.1.b	3	5	3	3	3	4	3.50
prevention - pests/pathogens	III.E.1.c	3	5	3	3	2	3	3.17
<b>Control</b>								
control - plants	III.E.2.a	5	5	5	5	5	5	5.00
control - animals	III.E.2.b	3	5	4	4	4	5	4.17
control - pest/pathogens	III.E.2.c	3	5	3	X	5	4	4.00
<b>Hydrologic/Geologic function Hydro-Alteration (III.E.1)</b>								
Ditches	III.F.1.b	3	5	5	3	3	3	3.67

Hydro-period Alteration	III.F.1.c	4	5	4	4	5	5	4.50
Water Level Alteration	III.F.1.d	4		4	4	5	5	4.40
<b>Surface Water Monitoring (III.E.3)</b>								
Surface water quality	III.F.3.a	4	5	4	5	4	4	4.33
Surface water quantity	III.F.3.b	4	5	5	5	5	5	4.83
<b>Resource Protection (III.F)</b>								
Boundary survey	III.G.1	5	4	5	5	5	4	4.67
Gates & fencing	III.G.2	X	4	X	5	5	4	4.50
Signage	III.G.3	4	5	5	5	5	4	4.67
Law enforcement presence	III.G.4	3	5	5	5	5	4	4.50
<b>Adjacent Property Concerns (III.G)</b>								
<b>Land Use</b>								
Expanding development	III.H.1.a	3	4	X	5	X	4	4.00
Agriculture	III.H.1.b	3		4	5	5	4	4.20
Inholdings/additions	III.H.2	3		X	X	X	3	3.00
<b>Public Access &amp; Education</b>								
<b>Public Access</b>								
Roads	IV.1.a	4	5	5	5	5	4	4.67
Parking	IV.1.b	4	5	5	5	5	4	4.67
Boat Access	IV.1.c	4	5	5	5	5	5	4.83
<b>Environmental Education &amp; Outreach</b>								
Wildlife	IV.2.a	3	5	4	5	5	4	4.33
Invasive Species	IV.2.b	3	4	4	4	5	3	3.83
Habitat Management Activities	IV.2.c	3	5	4	5	5	4	4.33
Interpretive facilities and signs	IV.3	3	5	4	5	5	4	4.33
Recreational Opportunities	IV.4	4	4	4	5	5	5	4.50
Management of Visitor Impacts	IV.5	4	4	4	4	5	4	4.17
<b>Management Resources</b>								
<b>Maintenance</b>								
Waste disposal	V.1.a	4	5	5	5	5	4	4.67
Sanitary facilities	V.1.b	X	X	X	5	5	3	4.33
<b>Infrastructure</b>								
Buildings	V.2.a	X	3	X	4	X	4	3.67
Equipment	V.2.b	4	3	4	4	5	3	3.83
Staff	V.3	2	3	1	2	2	2	2.00
Funding	V.4	2	3	1	2	2	3	2.17

**Fish and Wildlife Commission Manager and Key Staff Present:**

- Daniel Mitchell, Manager
- Melissa Juntunen, Manager
- Marsha Ward, District Biologist
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## **APPENDIX:**

**The following comments represent individual comments, and may not represent the consensus of the land management review team.**

### **I.A. Natural Communities**

- Overall condition of communities is better in areas outside of the Holey Land property, mainly due to the lack of hydrological control.
- Tree island restoration with planting trees is effective; also protection of these islands from wildfire by using prescribed fires. Air boats and tracked vehicle impacts are minimal. The plan could integrate recent FNAI data for shrub land and willows.
- Excellent restoration program on Tree Island.
- The plan should include more information about the shrub land and willow forest and farm restoration and what their goals for this area are.
- On the whole the natural communities are in excellent condition given the challenge of managing wetland communities that are impacted by levees and canals that have drained the lands unnaturally and which have introduced nutrient rich water. Good efforts to increase the level of burning and to restore what invasive species have done.

### **I.B. Listed Species**

- No discussion of listed species of plants or list of known occurrence in the plan. Good discussion of listed species of animals and their needs.
- Water level management for snails benefits all species. Much snail kite monitoring is federal. FNAI surveyed for plant communities and plants of conservation concern. Invasive plants are monitored by aerial “sketchy” mapping every other year. Also much ground work.
- Not much information on listed plants in the management plan. FNAI did more but the information has not been placed in the management plan yet.
- Overall management actions are directed toward the suite of everglades species.
- FNAI has completed a listed plant survey since the last land management review, with only four species identified. Good cooperation with US FWS in collecting data.

### **I.C. Natural Resource Survey/Monitoring Resources**

- Photo plots for fire effects, farm restoration and native plantings are good tools to track the progress being made.
- FWC fisheries division does fish sampling, angler surveys, etc. fishery monitoring is in the plan implementation via FWC fisheries. Mercury is monitored. No fish consumption restrictions in place. Round trail muskrats have been monitored. Fires are mapped in part through aerial deer surveys and DOF reports.
- Fisheries section is in charge of monitoring the fishing on the property. I like the photo point, maps of wildfires and burns, deer survey monitoring annually and dove monitoring, game species are being monitored, and monitoring is excellent considering the staff size and total acreage managed.
- Mottled duck, wood duck, deer, mourning dove surveys and monitoring are examples of extensive game species management in these areas.
- The team is doing an exceptional job of white tail deer surveys via leave surveys. Spot light surveys and photo stations. They also do numerous other game animals. Species surveys such as dove tagging.
- Good work on monitoring deer populations twice a year using aerial flights, spotlight surveys and browse surveys. Good work in monitoring wading birds. Good cooperation with SFWMD to have a sketched map done of aerial surveys done for invasive plants. FWC staff is maintaining an ARCview file to map all known sites. Contractors are encouraged to survey the islands for additional plants when treating known invasive plants. Photo plots (360 degrees) are used at 10 to 12 sites to monitor burning and tree island restoration.

### **II.A.B. Cultural Resources**

- Additional surveys should be done on Tree Islands that have not previously been recorded. Need to continue to try and get staff trained as archeological monitors.
- Miccosukee tribe privacy concerns have limited information available to the state. Working relations with Miccosukee appear good. FWC assumes all tree islands are cultural sites. Broward County and FWC have had problems with publicizing archeological/cultural sites. Looting and vandalism are concerns.
- Based on the size and scope of the number of archeological sites, I think FWC has done an excellent job. Preservation is aided by remoteness and lack of advertising presence of sites. Any increased protection could put the sites at an increased risk.
- Staff has coordinated and followed recommendations from DHR.
- DHR has offered to provide FWC guidelines for monitoring eight important sites. FWC will pursue this. There is still no onsite staff trained as archeological site monitors. Suggest there may be opportunities for increased offsite cultural interpretation at the kiosk areas.

### **III.A. Resource Management**

- The quality of the burns has been excellent. However, more acreage needs to be burned annually to achieve success. The management plan needs to address the frequency and the number of acreage.
- Burn management plan is being revived. Burned acreages increasing (improving). Weather and water levels limit burn acreage. The number one burn priority is for protection, tree islands.
- Burning is clearly of importance and focus of management efforts is excellent.
- Burn plans should identify goals for natural communities, rather than one general goal for the entire property. Continued hydrological improvements will provide increased flexibility for prescribed fire options in these areas; this can help address quality and frequency goals.
- Even though burn goals may not be met every year due to conditions, water levels and other commitments such as taking time for this LMR you are doing a good job of pursuing it in the field.
- Data shows an increase in acres burned each year. There has been an average of 8000 acres burned over the last five years; however in 2010 over 14,000 acres were burned. The current annual goal is approximately 20,000 acres per year. This goal over time will need to be increased if FWC is to achieve the desired 1 to 5 year return interval for the entire property- which would exceed 100,000 acres burned each year. Burning results should include wildfire acreage as well. Good effort to burn both during winter months as well as during the growing season. Continued efforts by staff to identify appropriate annual burn goals and mapping of priority old growth. Sawgrass zones are important steps being under taken and researched at this time.

### **III.B. Restoration**

- Good progress on the restoration of tree islands since the last review. Farm restoration has been successful as well and continues to progress.
- Exotic removal and tree plantings on tree islands are successful. Three farms, 1700 acres, are looking successful as well.
- I'm very impressed with management on the northern tree islands. The sophistication of management efforts has clearly been improved over the last ten years, excellent job! The actual aspects of management/restoration could be addressed in the management plan with more detail.
- Restoration of farms is ongoing. Planned management should be sufficient to meet resource management goals.
- Tree Island restoration and maintenance seems very well handled by the staff and we saw successful planting in all stages on numerous islands. It seems that tree island restoration could only be improved by receiving more funding. The farm restoration seems well underway and could only be improved by more funding.
- Superb work treating invasive plants and replanting native trees/shrubs on over 40 of the islands. Great follow up treatments to control vegetative competition and ensure efficiency of cages used to protect plants initially from deer browsing.

### **III.E. Non-native, Invasive & Problem Species**

- Exotic removal has achieved a high level of success with cooperative efforts among FWC and SFWMD.

- Trees planted on Tree Island are inspected for pest plants. There is surveillance for exotic ticks as well. Exotic control is maintenance status. Vastly better than a decade ago. Animals such as pythons, exotic swamp hens and apple snails. FWC has a south Florida exotic wildlife coordinator. Pythons aren't a major problem in this area. Hogs have not become a problem. There are procedures for humane euthanization of exotic snakes.
- Signs could be put up at boat ramps recommending washing props and boats between water bodies to avoid the spread of exotics. Efforts are about average for managing agencies. Control of exotic plants is excellent.
- Funding levels need to be maintained for exotic plant control. Remove size and bag limits for hog hunting.
- Need to implement a protocol for decontamination of invasive plant contractor equipment. Excellent efforts to identify and treat invasive populations of Brazilian pepper and melaleuca. Very few specimens were observed still alive or untreated. All sites appeared to be in a maintenance condition. Would like to see more maps and data in the management plan or the operational plan to reflect critical treatment areas, acres impacted, etc.

### **III.F. Hydrologic/Geologic Function**

- Hydrological function still needs to be restored to Holey Land portion of the WMA. SFWMD and FWC both provide and share data to track water quality and quantity within the WMA.
- FWC has been an active participant in discussions on water management. Levees, culverts and control structures are managed by the water management district. The FWC has only input on the hydrological improvement, except for some restoration projects. Ditches removed in Rotenberger WMA. FWC does water level monitoring in natural vegetation as well as gauges.
- FWC does an excellent job pushing for management of hydrology for wildlife but it isn't in their control. Restoration in farming area should include removing ditches.
- Hydro period and water level alterations are out of the control of the area managers, scored on the level of cooperation. FWC cooperates with the SFWMD and has gauges on the property.
- Excellent cooperation and input with SFWMD and ACOE staff to address flexibility in managing water levels. Good work collecting and monitoring water data on the property.

### **III.G. Resource Protection**

- Gates are maintained by SFWMD.
- There needs to be signs for restoration and boundaries.
- Gates are done by the water management district. Tree Islands have signage for vehicles and vegetation restoration. FWC monitors the condition of the gates.
- Restoration signage needed for protecting tree islands.

### **III.H. Adjacent Property Concerns**

- Exotic plants in neighboring properties are a concern, there are inholdings, including several tree islands. No lands are considered surplus. The water management district works to convert agricultural land to storm water treatment areas is important to the FWC managed properties but are external to it.
- It seems that FWC is doing what they can.

### **IV. Public Access and Education**

- Appears to be sufficient number of access points for public especially boating. Discontinued ATV access when impact to resources became apparent (good reaction).
- Kiosks on I-75. New vehicle counters are being used. Tracked vehicle impacts in hunting season are monitored.
- Presentation made to elementary schools.
- The visitor centers and rest areas were very well maintained and the public seemed to be enjoying them during our visit. They also seemed well maintained and free of litter.
- FWC has done a nice job establishing and monitoring numerous boat ramp/access points to the property. A new boat ramp has been added to NW Holey Lands. The wildlife interpretative center on I-75 is extremely well done. There is good access offered for boating and fishing throughout the main canals and crossroads on the property. Excellent monitoring of visitation. FWC did an excellent job of collecting data and implementing a policy to eliminate "non-hunting" ATV access in one heavily impacted area.

### **V. Infrastructure/ Management Resources**

- The shortage of staff limits the amount of burning that could be done. There is a staff of 9, plus a district biologist. A larger staff would be very useful. The airboat replacement is insufficient. Need a marsh master tracked vehicle which provides better access under dry conditions and can be useful for prescribed burns.
- A marsh master vehicle is needed. More staff is clearly needed as well as funding. The managers are accomplishing a lot but with more funding could do a lot more.
- Airboats need to be repaired periodically. Holey Land needs a marsh master track vehicle of improved access. The number of staff compare to the number of acres is very low relative to staff levels at other state properties. Very limiting in terms of what management is reasonable and accomplishable.
- Staff number is adequate to keep up with maintenance but not to greatly improve and do more projects. Many of the projects, current tasks and projects they'd like to do are hard to do properly due to the lack of funding. Staff expressed the need of a marsh master and better vehicles to easier access portions of the land for maintenance and prescribed burns.
- Over all the public access sites looked good and clean. The only exception was along the banks of a fishing area on US27. FWC would benefit by acquisition of a marsh master type of equipment to allow access to swales during low water periods. Additional staff is essential to address the geographic scale of management on this large property. Staff has done an excellent job of prioritizing the work accomplished here with existing funding.

#### **VI. Managed Area Uses**

- Permanent camps, while a historical use, it is a strange use for this land that may not be constituted with those purposes. I realize how improbable this would be to change.
- ORV use is restricted to hunting. Holiday Park is a concessionaire, which will end soon. Holiday Park is being reassigned to Broward County.
- Airboat concessions are not assessed any fee to access the WMA as part of their tours.

#### **Management Review Determination**

- While much of this land was originally acquired by the State for agriculture, it has long been proposed for water management and conservation.
- Excellent job – especially with exotic plant removal and tree island restoration. I believe the management exceeds what is outlined in the management plan.
- Additional hydrologic improvements will continue to support the purpose for which it was purchased.
- Excellent job of management.

## 13.4 Soil Series Descriptions

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 2 - Biscayne gravelly marl, drained

**Component:** Biscayne, drained (90%)

*The Biscayne, drained component makes up 90 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 loamy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 1 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 80 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:** 3 - Lauderhill muck, depressional

**Component:** Lauderhill, depressional (96%)

*The Lauderhill, depressional component makes up 96 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 herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very high. 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 January, February, March, April, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent. 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:** 4 - Pennsuco marl, drained

**Component:** Pennsuco, drained (95%)

*The Pennsuco, drained component makes up 95 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 loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 72 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 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:** 5 - Pennsuco marl

**Component:** Pennsuco (95%)

*The Pennsuco component makes up 95 percent of the map unit. Slopes are 0 to 1 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 72 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 50 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:** 6 - Perrine marl, drained

**Component:** Perrine, drained (98%)

*The Perrine, drained component makes up 98 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 loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is*

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 6 - Perrine marl, drained

**Component:** Perrine, drained (98%)

*frequently ponded. A seasonal zone of water saturation is at 0 inches during June, July, August. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 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:** 7 - Krome very gravelly loam

**Component:** Krome (95%)

*The Krome component makes up 95 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of loamy residuum over oolitic limestone. Depth to a root restrictive layer, bedrock, lithic, is 2 to 10 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 54 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 5s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 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:** 9 - Udorthents-Water complex

**Component:** Udorthents (75%)

*The Udorthents component makes up 75 percent of the map unit. Slopes are 15 to 60 percent. This component is on fills on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. 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:** Water (20%)

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

**Map unit:** 10 - Udorthents, limestone substratum-Urban land complex

**Component:** Udorthents (55%)

*The Udorthents component makes up 55 percent of the map unit. Slopes are 0 to 2 percent. This component is on fills on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 40 to 72 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 36 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. 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:** Urban land (35%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 11 - Udorthents, marl substratum-Urban land complex

**Component:** Udorthents (60%)

*The Udorthents component makes up 60 percent of the map unit. Slopes are 0 to 2 percent. This component is on fills on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 60 to 90 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 36 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The soil has a slightly saline horizon 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:** Urban land (40%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 12 - Perrine marl

**Component:** Perrine (92%)

*The Perrine component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. 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 4 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 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:** 13 - Biscayne marl

**Component:** Biscayne (92%)

*The Biscayne component makes up 92 percent of the map unit. Slopes are 0 to 2 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of loamy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 1 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 95 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:** 14 - Dania muck, depressional

**Component:** Dania, depressional (92%)

*The Dania, depressional component makes up 92 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 herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 8 to 20 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent. 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 Description

Miami-Dade County Area, Florida

**Map unit:** 15 - Urban land

**Component:** Urban land (98%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 16 - Biscayne marl, drained

**Component:** Biscayne, drained (90%)

*The Biscayne, drained component makes up 90 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 loamy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 1 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 95 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:** 18 - Tamiami muck, depressionai

**Component:** Tamiami, depressionai (90%)

*The Tamiami, depressionai component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 51 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 70 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 35 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:** 20 - Cardsound silty clay loam-Rock outcrop complex

**Component:** Cardsound (54%)

*The Cardsound component makes up 54 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 loamy marine deposits over oolitic limestone. Depth to a root restrictive layer, bedrock, lithic, is 2 to 8 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 66 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 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.*

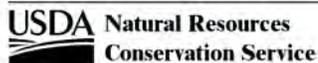
**Component:** Rock outcrop (38%)

*Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.*

**Map unit:** 22 - Opalocka sand-Rock outcrop complex

**Component:** Opalocka (60%)

*The Opalocka component makes up 60 percent of the map unit. Slopes are 0 to 2 percent. This component is on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 2 to 9 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high.*



Survey Area Version: 4  
Survey Area Version Date: 12/13/2013

Page 108 of 211

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 22 - Opalocka sand-Rock outcrop complex

**Component:** Opalocka (60%)

*Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 60 inches during January. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 4 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.*

**Component:** Rock outcrop (38%)

*Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.*

**Map unit:** 23 - Chekika very gravelly loam

**Component:** Chekika (88%)

*The Chekika component makes up 88 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 marly and loamy marine deposits over collitic limestone. Depth to a root restrictive layer, bedrock, lithic, is 2 to 10 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 24 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 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:** 24 - Matecumbe muck

**Component:** Matecumbe (90%)

*The Matecumbe component makes up 90 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 herbaceous organic material over coral or collitic limestone. Depth to a root restrictive layer, bedrock, paralithic, is 2 to 9 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during July, August, September, October, November, December. Organic matter content in the surface horizon is about 85 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 2 within 30 inches of the soil surface.*

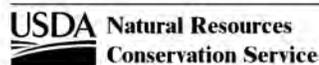
**Map unit:** 25 - Biscayne marl-Rock outcrop complex

**Component:** Biscayne (55%)

*The Biscayne component makes up 55 percent of the map unit. Slopes are 0 to 1 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of loamy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 1 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 80 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.*

**Component:** Rock outcrop (42%)

*Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.*



Survey Area Version: 4  
Survey Area Version Date: 12/13/2013

Page 109 of 211

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 26 - Perrine marl, tidal

**Component:** Perrine, tidal (90%)

*The Perrine, tidal component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 percent. The soil has a moderately saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 7 within 30 inches of the soil surface.*

**Map unit:** 28 - Demory sandy clay loam-Rock outcrop complex

**Component:** Demory (70%)

*The Demory component makes up 70 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 loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 3 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during April, May, June, July, August, September. Organic matter content in the surface horizon is about 12 percent. 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 12 within 30 inches of the soil surface.*

**Component:** Rock outcrop (25%)

*Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.*

**Map unit:** 30 - Pahokee muck, depressional

**Component:** Pahokee (99%)

*The Pahokee component makes up 99 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 36 to 51 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is high. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 83 percent. This component is in the R156AY010FL 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:** 31 - Pennsuco marl, tidal

**Component:** Pennsuco, tidal (90%)

*The Pennsuco, tidal component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 80 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 35 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 50 within 30 inches of the soil surface.*

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 32 - Terra Ceia muck, tidal

**Component:** Terra Ceia, tidal (92%)

*The Terra Ceia, tidal component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes on marine terraces on coastal plains. The parent material consists of herbaceous organic material. 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 high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 73 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a slightly saline horizon 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:** 33 - Plantation muck

**Component:** Plantation (95%)

*The Plantation component makes up 95 percent of the map unit. Slopes are 0 to 1 percent. This component is on marshes on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 35 percent. 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:** 34 - Hallandale fine sand

**Component:** Hallandale (92%)

*The Hallandale component makes up 92 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 marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 7 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. 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 2 percent. Nonirrigated land capability classification is 4w. 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:** 35 - Margate fine sand

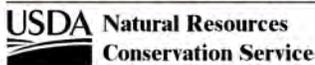
**Component:** Margate (98%)

*The Margate component makes up 98 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 marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. 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. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 4w. 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:** 37 - Basinger fine sand

**Component:** Basinger (95%)

*The Basinger component makes up 95 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy 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 high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface.*



Survey Area Version: 4  
Survey Area Version Date: 12/13/2013

Page 111 of 211

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 37 - Basinger fine sand

**Component:** Basinger (95%)

*surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.*

**Map unit:** 38 - Rock outcrop-Vizcaya-Biscayne complex

**Component:** Rock outcrop (55%)

*Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.*

**Component:** Vizcaya (25%)

*The Vizcaya component makes up 25 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 loamy and clayey marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 3 to 20 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 low. 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 25 percent. 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.*

**Component:** Biscayne (15%)

*The Biscayne component makes up 15 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 loamy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 1 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September. Organic matter content in the surface horizon is about 5 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 80 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:** 39 - Beaches

**Component:** Beaches (95%)

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

**Map unit:** 40 - Pomello sand

**Component:** Pomello (98%)

*The Pomello component makes up 98 percent of the map unit. Slopes are 2 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. 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 33 inches during July, August, September, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. 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.*

**Map unit:** 41 - Dade fine sand

**Component:** Dade (99%)

*The Dade component makes up 99 percent of the map unit. Slopes are 0 to 2 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits over soft limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available*

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 41 - Dade fine sand

**Component:** Dade (99%)

*water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 66 inches during June, July, August, September. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 6s. 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.*

**Map unit:** 42 - Udorthents, limestone substratum, 0 to 5 percent slopes

**Component:** Udorthents (90%)

*The Udorthents component makes up 90 percent of the map unit. Slopes are 0 to 5 percent. This component is on fills on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 30 to 50 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 36 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 7s. 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.*

**Map unit:** 45 - Canaveral sand

**Component:** Canaveral (99%)

*The Canaveral component makes up 99 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains, dunes on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 21 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. 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.*

**Map unit:** 47 - St. Augustine sand

**Component:** St. Augustine (95%)

*The St. Augustine component makes up 95 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 mine spoil or earthy fill. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 23 inches during June, July, August, September, October. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7s. 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.*

**Map unit:** 48 - Kesson muck, tidal

**Component:** Kesson, tidal (96%)

*The Kesson, tidal component makes up 96 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of sandy marine deposits with shells. 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 high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 35 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 20 within 30 inches of the soil surface.*

## Map Unit Description

Miami-Dade County Area, Florida

**Map unit:** 99 - Water

**Component:** Water (100%)

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

**Map unit:** 100 - Waters of the Atlantic Ocean

**Component:** Waters of the Atlantic Ocean (100%)

*Generated brief soil descriptions are created for major soil components. The Waters of the Atlantic Ocean is a miscellaneous area.*

## Map Unit Description

Miccosukee Indian Alligator Alley Reservation, Broward County, Florida

**Map unit:** 2 - Boca fine sand

**Component:** Boca (75%)

*The Boca component makes up 75 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 over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 24 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is occasionally 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 2 percent. This component is in the R156AY006FL Everglades 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:** 3 - Chobee muck, limestone substratum, depressional

**Component:** Chobee, limestone substratum (80%)

*The Chobee, limestone substratum component makes up 80 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on coastal plains, marine terraces. The parent material consists of loamy alluvium. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 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 moderate. 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 40 percent. This component is in the R156AY010FL 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:** 4 - Copeland mucky fine sand, depressional

**Component:** Copeland (75%)

*The Copeland component makes up 75 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 sandy and loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. 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 13 percent. This component is in the R156AY010FL 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:** 5 - Gator muck, limestone substratum, depressional

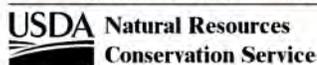
**Component:** Gator (77%)

*The Gator component makes up 77 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over loamy and sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 40 to 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 very high. 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 January, February, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 70 percent. This component is in the R156AY010FL 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:** 6 - Hallandale fine sand

**Component:** Hallandale (75%)

*The Hallandale component makes up 75 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 marine deposits over limestone. Depth to a root restrictive layer,*



Survey Area Version: 4  
Survey Area Version Date: 12/13/2013

Page 115 of 211

## Map Unit Description

Miccosukee Indian Alligator Alley Reservation, Broward County, Florida

**Map unit:** 6 - Hallandale fine sand

**Component:** Hallandale (75%)

*bedrock, paralithic, is 7 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. 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 2 percent. This component is in the R156AY006FL Everglades Flatwoods ecological site. Nonirrigated land capability classification is 4w. 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:** 7 - Hallandale fine sand, slough

**Component:** Hallandale, slough (70%)

*The Hallandale, slough component makes up 70 percent of the map unit. Slopes are 0 to 1 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 4 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is occasionally 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 1 percent. This component is in the R156AY013FL Scrub Cypress ecological site. Nonirrigated land capability classification is 5w. 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:** 8 - Jupiter fine sand

**Component:** Jupiter (80%)

*The Jupiter component makes up 80 percent of the map unit. Slopes are 0 to 2 percent. This component is on low flats on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. 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 3 percent. This component is in the R156AY012FL Wetland Hardwood Hammock ecological site. Nonirrigated land capability classification is 4w. 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:** 9 - Lauderhill muck

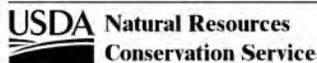
**Component:** Lauderhill (80%)

*The Lauderhill component makes up 80 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 7w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 60 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:** 10 - Margate fine sand

**Component:** Margate (80%)

*The Margate component makes up 80 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 marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is occasionally 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 3 percent. This component is in the R156AY006FL Everglades Flatwoods ecological site. Nonirrigated land capability classification*



Survey Area Version: 3  
Survey Area Version Date: 12/20/2013

Page 116 of 211

## Map Unit Description

Miccosukee Indian Alligator Alley Reservation, Broward County, Florida

**Map unit:** 10 - Margate fine sand

**Component:** Margate (80%)

*is 4w. 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:** 11 - Ochopee loamy fine sand

**Component:** Ochopee, low (75%)

*The Ochopee, low component makes up 75 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 loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 6 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 25 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:** 99 - Water

**Component:** Water (100%)

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

## Map Unit Description

Palm Beach County Area, Florida

**Map unit:** 2 - Anclote fine sand

**Component:** Anclote (90%)

*The Anclote component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy 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 high. Available water to a depth of 60 inches is low. 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, October, November. Organic matter content in the surface horizon is about 6 percent. 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:** 4 - Arents-Urban land complex, 0 to 5 percent slopes

**Component:** Arents (60%)

*The Arents component makes up 60 percent of the map unit. Slopes are 0 to 5 percent. This component is on fills, rises on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 30 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 6s. 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:** Urban land (35%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 5 - Arents-Urban land complex, organic substratum

**Component:** Arents, organic substratum (55%)

*The Arents, organic substratum component makes up 55 percent of the map unit. Slopes are 0 to 2 percent. This component is on fills, rises on marine terraces on coastal plains. The parent material consists of sandy dredge spoils over organic material over sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. 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 30 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 6s. 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:** Urban land (40%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 6 - Basinger fine sand, 0 to 2 percent slopes

**Component:** Basinger (90%)

*The Basinger component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces. The parent material consists of sandy 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 high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during July, August. Organic matter content in the surface horizon is about 1 percent. This component is in the R155XY011FL Slough ecological site. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.*

## Map Unit Description

Palm Beach County Area, Florida

**Map unit:** 7 - Basinger-Urban land complex

**Component:** Basinger (55%)

*The Basinger component makes up 55 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy 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 high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not 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 1 percent. Nonirrigated land capability classification is 4w. 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.*

**Component:** Urban land (40%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 8 - Basinger and Myakka sands, depressional

**Component:** Basinger, depressional (47%)

*The Basinger, depressional component makes up 47 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 sandy 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 very high. Available water to a depth of 60 inches is very low. 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 4 percent. 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.*

**Component:** Myakka, depressional (47%)

*The Myakka, depressional component makes up 47 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 sandy 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 high. Available water to a depth of 60 inches is low. 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 5 percent. 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:** 9 - Beaches

**Component:** Beaches (90%)

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

**Map unit:** 10 - Boca fine sand

**Component:** Boca (85%)

*The Boca component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, flats on marine terraces on coastal plains. The parent material consists of sandy and loamy marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 24 to 40 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not 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 1 percent. Nonirrigated land capability classification is 3w. 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.*

## Map Unit Description

Palm Beach County Area, Florida

**Map unit:** 11 - Canaveral-Urban land complex, 0 to 5 percent slopes

**Component:** Canaveral (55%)

*The Canaveral component makes up 55 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains, dunes on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 21 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6s. 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:** Urban land (40%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 12 - Chobee fine sandy loam

**Component:** Chobee (88%)

*The Chobee component makes up 88 percent of the map unit. Slopes are 0 to 1 percent. This component is on drainageways 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 high. 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, October, November. Organic matter content in the surface horizon is about 9 percent. Nonirrigated land capability classification is 3w. 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.*

**Map unit:** 13 - Cocoa-Urban land complex, 0 to 5 percent slopes

**Component:** Cocoa (60%)

*The Cocoa component makes up 60 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 4s. 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:** Urban land (40%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 14 - Dania muck

**Component:** Dania, drained (92%)

*The Dania, drained component makes up 92 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 8 to 20 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. 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. Organic matter content in the surface horizon is about 86 percent. Nonirrigated land capability classification is 3w. 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.*

## Map Unit Description

Palm Beach County Area, Florida

**Map unit:** 15 - Floridana fine sand

**Component:** Floridana (85%)

*The Floridana component makes up 85 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 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 high. 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. Organic matter content in the surface horizon is about 10 percent. 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:** 16 - Hallandale fine sand

**Component:** Hallandale (85%)

*The Hallandale component makes up 85 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 marine deposits over limestone. Depth to a root restrictive layer, bedrock, paralithic, is 7 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. 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 1 percent. Nonirrigated land capability classification is 4w. 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.*

**Map unit:** 17 - Holopaw fine sand

**Component:** Holopaw (85%)

*The Holopaw component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways 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 high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not 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 1 percent. Nonirrigated land capability classification is 4w. 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:** 18 - Immokalee fine sand, 0 to 2 percent slopes

**Component:** Immokalee (90%)

*The Immokalee component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats, coastal plains. The parent material consists of sandy 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 high. Available water to a depth of 60 inches is low. 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 2 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.*

**Map unit:** 19 - Jupiter fine sand

**Component:** Jupiter (85%)

*The Jupiter component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy marine deposits over limestone. Depth to a root restrictive layer, bedrock, lithic, is 8 to 20 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not 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 6 percent. Nonirrigated land capability classification is 4w. 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 Description

Palm Beach County Area, Florida

**Map unit:** 20 - Lauderhill muck

**Component:** Lauderhill, drained (85%)

*The Lauderhill, drained component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. 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. Organic matter content in the surface horizon is about 78 percent. 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:** 21 - Myakka fine sand, 0 to 2 percent slopes

**Component:** Myakka (90%)

*The Myakka component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods, coastal plains. The parent material consists of sandy 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 high. Available water to a depth of 60 inches is low. 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, October, November. Organic matter content in the surface horizon is about 2 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.*

**Map unit:** 22 - Myakka-Urban land complex

**Component:** Myakka (50%)

*The Myakka component makes up 50 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 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 high. Available water to a depth of 60 inches is low. 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 4 percent. Nonirrigated land capability classification is 4w. 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:** Urban land (40%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 23 - Okeechobee muck

**Component:** Okeechobee (85%)

*The Okeechobee component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. 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 high. Available water to a depth of 60 inches is very high. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 80 percent. 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 Description

Palm Beach County Area, Florida

**Map unit:** 24 - Okeelanta muck

**Component:** Okeelanta, drained (80%)

*The Okeelanta, drained component makes up 80 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy 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 high. Available water to a depth of 60 inches is high. 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. Organic matter content in the surface horizon is about 65 percent. 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:** 25 - Oldsmar sand, 0 to 2 percent slopes

**Component:** Oldsmar (85%)

*The Oldsmar component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flatwoods, 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 moderately low. Available water to a depth of 60 inches is low. 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, October, November. Organic matter content in the surface horizon is about 2 percent. This component is in the R155XY003FL South Florida Flatwoods ecological site. Nonirrigated land capability classification is 4w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a slightly sodic horizon within 30 inches of the soil surface.*

**Map unit:** 26 - Pahokee muck

**Component:** Pahokee, drained (85%)

*The Pahokee, drained component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 36 to 51 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is high. 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. Organic matter content in the surface horizon is about 83 percent. 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:** 27 - Palm Beach-Urban land complex, 0 to 8 percent slopes

**Component:** Palm Beach (60%)

*The Palm Beach component makes up 60 percent of the map unit. Slopes are 0 to 8 percent. This component is on dunes on marine terraces on coastal plains. The parent material consists of shells and sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet 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.*

**Component:** Urban land (35%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

## Map Unit Description

Palm Beach County Area, Florida

**Map unit:** 29 - Pineda fine sand, 0 to 2 percent slopes

**Component:** Pineda (93%)

*The Pineda component makes up 93 percent of the map unit. Slopes are 0 to 2 percent. This component is on flats on marine terraces. 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 high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November. Organic matter content in the surface horizon is about 3 percent. This component is in the R155X011FL Slough 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 slightly sodic horizon within 30 inches of the soil surface.*

**Map unit:** 30 - Pinellas fine sand

**Component:** Pinellas (85%)

*The Pinellas component makes up 85 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 moderately high. Available water to a depth of 60 inches is low. 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 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet 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:** 31 - Pits, 0 to 5 percent slopes

**Component:** Pits (90%)

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

**Map unit:** 33 - Pomello fine sand, 0 to 5 percent slopes

**Component:** Pomello (85%)

*The Pomello component makes up 85 percent of the map unit. Slopes are 0 to 5 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 33 inches during July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. 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.*

**Map unit:** 34 - Pompano fine sand

**Component:** Pompano (85%)

*The Pompano component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains. The parent material consists of sandy 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 high. Available water to a depth of 60 inches is very low. 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, October. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 4w. 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 Description

Palm Beach County Area, Florida

**Map unit:** 35 - Quartzipsamments, shaped, 0 to 5 percent slopes

**Component:** Quartzipsamments (100%)

*The Quartzipsamments component makes up 100 percent of the map unit. Slopes are 0 to 5 percent. This component is on fills on rises on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 7s. 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.*

**Map unit:** 36 - Riviera fine sand

**Component:** Riviera (82%)

*The Riviera component makes up 82 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, 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 moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 6 inches during June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 1 percent. 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:** 37 - Riviera fine sand, depressional

**Component:** Riviera, depressional (85%)

*The Riviera, depressional component makes up 85 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 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 high. Available water to a depth of 60 inches is low. 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, December. Organic matter content in the surface horizon is about 2 percent. 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:** 38 - Riviera-Urban land complex

**Component:** Riviera (50%)

*The Riviera component makes up 50 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways 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 moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not 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 1 percent. 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.*

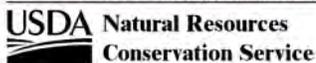
**Component:** Urban land (45%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 39 - Sanibel muck

**Component:** Sanibel (85%)

*The Sanibel component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine*



Survey Area Version: 8  
Survey Area Version Date: 12/30/2013

Page 165 of 211

## Map Unit Description

Palm Beach County Area, Florida

**Map unit:** 39 - Sanibel muck

**Component:** Sanibel (85%)

*terraces on coastal plains. The parent material consists of thin organic material over sandy 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 high. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 38 percent. 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:** 41 - St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes

**Component:** St. Lucie (35%)

*The St. Lucie component makes up 35 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of eolian or sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 7s. 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:** Paola (33%)

*The Paola component makes up 33 percent of the map unit. Slopes are 0 to 8 percent. This component is on ridges on marine terraces on coastal plains. The parent material consists of sandy marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is very high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6s. 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:** Urban land (30%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 42 - Tequesta muck

**Component:** Tequesta (85%)

*The Tequesta component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of stratified 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 high. 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 January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 68 percent. 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:** 43 - Terra Ceia muck

**Component:** Terra Ceia, drained (84%)

*The Terra Ceia, drained component makes up 84 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material. 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 high. Available water to a depth of 60 inches is very high. 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. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 3w. This soil meets hydric criteria. There are no saline horizons within 30*

## Map Unit Description

Palm Beach County Area, Florida

**Map unit:** 43 - Terra Ceia muck

**Component:** Terra Ceia, drained (84%)

*inches of the soil surface. The soil has a maximum sodium adsorption ratio of 1 within 30 inches of the soil surface.*

**Map unit:** 44 - Kesson mucky sand, tidal

**Component:** Kesson, tidal (100%)

*The Kesson, tidal component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of sandy marine deposits with shells. 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 high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 22 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 20 within 30 inches of the soil surface.*

**Map unit:** 45 - Wulfert and Durbin muck, tidal

**Component:** Durbin, tidal (50%)

*The Durbin, tidal component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of herbaceous organic material over sandy 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 high. Available water to a depth of 60 inches is very high. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 44 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 30 within 30 inches of the soil surface.*

**Component:** Wulfert, tidal (50%)

*The Wulfert, tidal component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on mangrove swamps on marine terraces on coastal plains. The parent material consists of organic material over sandy 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 high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is very frequently flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 43 percent. Nonirrigated land capability classification is 8. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 60 within 30 inches of the soil surface.*

**Map unit:** 46 - Torry muck

**Component:** Torry, drained (85%)

*The Torry, drained component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on depressions on marine terraces on coastal plains. The parent material consists of herbaceous organic material over limestone. Depth to a root restrictive layer, bedrock, lithic, is 51 to 80 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. 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. Organic matter content in the surface horizon is about 35 percent. 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 Description

Palm Beach County Area, Florida

**Map unit:** 47 - Udorthernts, 2 to 35 percent slopes

**Component:** Udorthernts (95%)

*The Udorthernts component makes up 95 percent of the map unit. Slopes are 2 to 65 percent. This component is on fills on marine terraces on coastal plains. The parent material consists of altered marine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. 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.*

**Map unit:** 48 - Urban land

**Component:** Urban land (100%)

*Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.*

**Map unit:** 49 - Wabasso fine sand

**Component:** Wabasso (80%)

*The Wabasso component makes up 80 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 moderately high. Available water to a depth of 60 inches is low. 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 3 percent. 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.*

**Map unit:** 50 - Winder fine sand

**Component:** Winder (90%)

*The Winder component makes up 90 percent of the map unit. Slopes are 0 to 2 percent. This component is on drainageways on marine terraces on coastal plains, 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 moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not 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 2 percent. 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:** 99 - Water

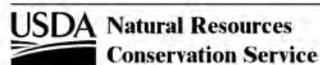
**Component:** Water (100%)

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

**Map unit:** 100 - Waters of the Atlantic Ocean

**Component:** Waters of the Atlantic Ocean (100%)

*Generated brief soil descriptions are created for major soil components. The Waters of the Atlantic Ocean is a miscellaneous area.*



Survey Area Version: 8  
Survey Area Version Date: 12/30/2013

Page 168 of 211

## Map Unit Description

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 Element Occurrence Data Usage Letter



1018 Thomasville Road  
Suite 200-C  
Tallahassee, FL 32303  
850-224-8207  
fax 850-681-9364  
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

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**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 Prescribed Burn Plan

EVERGLADES COMPLEX OF  
WILDLIFE MANAGEMENT AREAS  
**PRESCRIBED FIRE PLAN**



SEPTEMBER 2014



## INTRODUCTION

Many ecosystems in Florida evolved with fire, and rely on its frequent return in order to sustain their unique structure and species assemblages (Myers and Ewel 1990). Florida experiences lightning storms more frequently than most parts of the country (Abrahamson et al. 1984) and fires have been started from these storms throughout history. Lightning-caused wildfires have been historically common throughout the Everglades ecosystem for thousands of years, and have played an important role in shaping the ecosystem.

To continue the important effects that fire has on the landscape, prescribed fires are conducted. Prescribed fire fulfills the historical role of wildfire by maintaining natural plant communities and associations (Cohen 1974). Fire in the Everglades ecosystem is an important natural process which has many vital functions, and is a primary factor in shaping the Everglades vegetation patterns (Wade et al. 1980). Prescribed fires allow these natural functions to occur under optimal conditions, and are an important and required land management tool for maintaining healthy plant communities across Florida's landscape. Both plants and animals have adapted strategies which allow them to flourish under natural fire regimes. The Everglades Complex of Wildlife Management Areas (ECWMA) has been affected by compartmentalization and altered hydrology, both of which have affected the frequency, size, and severity of wildfires. Without fire, dramatic habitat changes occur, fuel loads reach dangerous levels, and desirable plant species are displaced. Subsequent damaging wildfires can further degrade these habitats. When fire is maintained across the landscape, both plants and animals can thrive.

The ECWMA is located within the Everglades ecosystem of southern Florida (Figure 1), and is characterized by tree islands, sawgrass marsh, wet prairies, and sloughs. Sawgrass is the dominant vegetation, and is a fire-adapted plant that grows quickly and recovers rapidly after fire (Loveless 1959b, Wade et al. 1980). Dense stands of willow or cattail can be common locally, and are often found near alligator holes, areas previously altered by muck fires, and in disturbed areas adjacent to levees, drainage ditches, canals, and other elevated sites. These communities are all shaped by fire, and prescribed fire is used to maintain them. Prescribed fire and wildfires are an inherent part of the ECWMA.

## BURN OBJECTIVES

Prescribed fire is used on the ECWMA as a habitat management tool exclusively or in conjunction with other management techniques to accomplish a variety of objectives. Prescribed fire is used to restore and/or maintain fire-dependent native habitat communities. This results in preserving native plant communities and improving wildlife habitat. The primary objective of the prescribed burn program is to mimic a natural fire regime that reduces hazardous fuel loads, protects tree islands from catastrophic wildfires, and enhances and maintains a mosaic of natural plant communities for the benefit of wildlife.

Additional benefits of prescribed burning include releasing nutrients back into the soil, making them available to plants and wildlife, control of undesirable vegetation, control of exotic plant species, improving wildlife access for both foraging and travel (Givens 1982, Venne and Frederick 2013), promoting the growth and production of vegetation (Loveless 1959a), improved public access, and

potentially reducing parasite populations, particularly immature stages of ticks and internal parasites (Garrison and Gedir 2006).

#### DESCRIPTION OF AREA

The ECWMA is comprised of approximately 736,881 acres and includes Everglades and Francis S. Taylor Wildlife Management Area (EWMA), Holey Land Wildlife Management Area (HWMA), and Rotenberger Wildlife Management Area (RWMA). The ECWMA is part of the Everglades ecosystem and stretches over 50 miles from southwestern Palm Beach County, through western Broward County, and into northwestern Miami-Dade County. The Florida Natural Areas Inventory has identified the following natural communities within the ECWMA: baygall/hydric hammock, cattail marsh, developed, dome swamp/strand swamp, exotic, levee, open water, ruderal, swale, wet prairie/slough, and willow (Figure 2). The EWMA, also known as Water Conservation Areas (WCA) 2 and 3, is comprised of 671,831 acres and is characterized by sawgrass marsh, freshwater slough, wet prairie, and upland tree island habitat. The two WCAs are subdivided into five water management units: WCA 2A, WCA 2B, WCA 3A North (3AN), WCA 3A South (3AS), and WCA 3B (also named Francis S. Taylor Wildlife Management Area). Situated above the northwest corner of EWMA, the RWMA is comprised of 29,700 acres of Everglades' ecosystem, including sawgrass marsh, freshwater slough, cattail, wet prairie, shrubs, and upland tree island habitat. The third unit of the complex, the HWMA, lies directly to the east of RWMA, totals approximately 35,350 acres of Everglades' ecosystem, and is characterized by a marsh of dense sawgrass with scattered shrubs, tree islands, cattail marsh, levee forest, and slough. There is minimal relief, generally with decreasing elevations from north to south (approximately 0.2 feet per mile). Peaty mucks are the dominant substrates of the ECWMA. The FWC is the lead managing agency on the ECWMA.

#### HYDROPERIOD

The amount and success of prescribed burns in the ECWMA depends heavily on hydroperiod. The natural hydroperiods of the areas have been altered for many years primarily due to their impoundment following the construction of levees, canals, and water control structures. Typically, WCA 2 and WCA 3AS are the wettest of the areas and generally have surface water (southern portions) year round. The driest areas are WCA 3AN and HWMA. Both HWMA and WCA 3B are primarily rainfall-driven. The RWMA typically has surface water from July through March. During times of drought, portions or all of the ECWMA can dry out completely and halt any burning activities. Water levels in the ECWMA begin to rise with the start of the wet season (May – October) and recede during the dry season (November – April).

#### PRESCRIBED BURNING PROGRAM

##### A. Firebreaks

Natural and existing features, such as sloughs, wet prairies, and airboat trails, are used as firebreaks whenever possible. Firebreaks are created by flattening lanes of vegetation at least 40-50 feet (four-five airboat widths) wide using an airboat or tracked vehicle. Existing features are widened as necessary to meet this minimum. In addition to ensuring the unit is surrounded by firebreaks, wooden



stakes with fluorescent flagging are deployed at strategic locations around the unit to help delineate the burn unit boundaries. Stakes are placed on the inside of the firebreak to mark the side to be lit, which can be helpful for personnel unfamiliar with the area.

Levees can be used for firebreaks, but typically require either Florida Forest Service (FFS) personnel/equipment and/or foot crews to monitor the fire line. Canals and roads can also be used for firebreaks, but are used infrequently due to availability and/or closeness to smoke sensitive areas.

#### B. Burn Units

Burn units are fluid and not permanently defined. Vegetation communities shift over time, and created firebreaks typically disappear rapidly. Factors such as vegetative communities, water levels, and objectives influence the boundaries and size of the unit. Burn units in the ECWMA can range from less than 500 acres to 3,000 acres depending on area conditions. Large-scale burn units have been developed for each WMA (Figures 3-5) to delineate general areas that should be prescribed burned. Specific burn units will be developed within these larger burn units according to factors described above. Typical prescribed burn rotations will be approximately 3-5 years with at least 8,000 acres burned each year. Shorter rotations may be used in areas of critical fire concern. Burn units will include a mosaic of habitats whenever possible so that wildlife species with small home ranges have nearby escape cover.

Each year, as part of the ECWMA Wildlife Conservation and Prioritization Strategy developed for the area, a map of proposed burn units for each WMA will be created and available upon request.

#### C. Type of Burn

Burns will be conducted by a certified (through FFS) prescribed burn manager utilizing a prescription (Appendix 1) and in accordance with FWC's Prescribed Burning and Wildfire Suppression Standards (Appendix 2).



Ignition will typically be from airboats, although aerial ignition and flares are also used. Ignition from airboat is via a fuel tank equipped with a torch. The airboat driver navigates along the fire line while the passenger ignites vegetation at each ignition point. Aerial ignition is conducted with an Aerial Ignition Device from a helicopter, with ground support provided by airboats. Flares can be used to

ignite patches of vegetation that are difficult to access, or to protect tree islands from head fires (flares are shot into the upwind edge of islands to start a backing fire that will consume fuel around the island); however, flares typically have little success. Although large burn units, particularly those without fuel continuity or limited access, have been successfully burned with aerial ignition, due to fuel continuity, cost-effectiveness, and access, most burns will be ignited using airboat ground crews.

A variety of techniques (backing, flanking, and heading fire) will be used. Most prescribed burns are conducted via ring fire. The mosaic of natural communities found throughout most Everglades burn units allows for maximum success with minimal risk to wildlife. After a successful test fire is conducted, most burns will begin with a backfire along the downwind side of the unit. Once the backfire is secured, the rest of the unit will be burned with spot, flank, or head fires depending on fuel loads and desired fire intensity. Occasionally an ignition line through the middle of the unit will be utilized. Contingency plans are included within each prescription, and burns will be monitored until the burn is declared out.

#### D. Season and Time of Day

Because hydroperiods may be unpredictable, prescribed burns on the ECWMA may be conducted during both the growing (April – September) and dormant (October – March) seasons. Generally, prescription conditions occur from May through April, with most prescribed burns conducted during the dormant season (i.e. winter and early spring) when weather patterns are more stable and water levels are typically stable to receding, and at least four inches of water protect the underlying peat layer from ignition. Prescribed burns are conducted during the growing season as weather and water levels allow.

Prescribed fire will be conducted primarily during daylight hours; night burning will be avoided due to problems associated with smoke dispersal, equipment limitations, and safety. Should a burn extend into the night, FFS will be notified. Recreational activities occur year-round; however, burning during peak periods of recreational use will be limited.

#### E. Optimal Weather and Water Conditions

Natural communities within burn units will be evaluated beforehand to determine the desired wind direction. Areas surrounding the burn unit will also be used to determine the best wind direction. In general, winds that blow away from smoke sensitive areas and areas where containment would be difficult will be favored. Other parameters, such as desired relative humidity, will be prescribed based on fire objectives within the unit and containment concerns. Burns will not be conducted on days that are deemed too volatile or days in which objectives would likely not be met. Water levels are one of the most important factors in the determination of prescribed burns; and at least four inches of water on average must be present before an area can be burned.

#### F. Smoke Management

Smoke management will be considered when planning a prescribed burn in the ECWMA. Smoke sensitive areas include powerlines, U.S. Highway 27, Interstate 75, Sawgrass Expressway (869), State Road 84, urban portions of Broward County, and U.S. Highway 41. All prescriptions require a smoke screen to identify “smoke sensitive areas”. The smoke screen will be performed either the day of or the day prior to conducting a prescribed burn. A smoke screening tool is available via internet by the

FFS at [http://flame.fl-dof.com/wildfire/tools\\_sst.html](http://flame.fl-dof.com/wildfire/tools_sst.html). The map of the expected smoke plume will be included with the prescription. If the tool is not available online, a smoke plotter on the burn map is



required. A minimum of five miles will be allowed for grass fuels, regardless of fire technique. When burning less than five miles from any public road, a person will be assigned to periodically monitor the road for smoke impacts.

To minimize smoke problems, preferred conditions include a dispersion index greater than 40, a minimum mixing height of 1,700 feet, and transport wind speeds of 9 miles per hour or more. Winds that blow away from smoke-sensitive areas are favored. Residual smoke problems such as stumps or snags will be promptly mopped-up and monitored to minimize smoke hazards.

#### G. Personnel

A minimum of four airboats and six personnel are required for a prescribed burn. Most burns will be conducted with at least five airboats (2 ignition, 2 holding, 1 burn boss) and nine personnel. Burn crew members will be assigned tasks according to training, experience, and burn requirements. Volunteers or personnel from other districts within FWC or state and federal agencies (i.e. FFS, South Florida Water Management District (SFWMD)) may be used if needed. FWC's Prescribed Burning and Wildfire Suppression Standards (Appendix 2) provide guidance on crew members.



#### H. Equipment

All members of the fire crew will wear the required PPE (Appendix 2) and ensure communication devices (i.e. hand-held radio, mobile radio) are in working condition. Each airboat driver shall be a FWC-certified airboat operator, and should have a GPS unit with the appropriate information (i.e. burn unit, trails, tree islands) uploaded. Each airboat should contain a minimum of one fire flap, one shovel, and one water pack. Additionally, at least one pressurized water tank should be strategically placed on an airboat. Airboats are also equipped with burn tanks and torches as needed. Supplemental burn fuel and airboat gas will be placed at a strategic location near the burn unit. Other equipment such as engines, trucks, or ATVs may be utilized on roads and levees as conditions require. Smoke caution signs for nearby roads will be deployed as necessary.

#### I. Permits and Notifications

Burn authorization permits will be obtained from FFS on the morning of the burn in accordance with the provisions of FS 590.125 utilizing the web-based open burn authorization request (<http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Wildfire/Resources/Fire-Tools-and-Downloads/Web-Based-Open-Burn-Authorization-Request-WebOBA>). Notifications as per the prescription will also be made on the afternoon before or the morning of the burn.

#### J. Evaluation of Burn

Burns will be evaluated informally during and shortly after each burn through observations. Comments and/or results should be recorded on the prescription to include fire behavior, weather conditions, problems encountered, and if burn objectives were met. Also, a group discussion to review the burn will be conducted at the first FWC Sunrise Field Office staff meeting following the burn. This information will be used to improve efficiency and methods of future burns.

#### K. Special Considerations

Safety is the primary concern of any burn. Special attention will be given to ensure burns do not adversely affect adjacent landowners and nearby roads. Smoke impacts on nearby roads and residents will be minimized by utilizing the FFS's smoke screening tool and responding to changing weather conditions during the burn. Sensitive wildlife resources will be depicted on burn maps and protected. Areas of special concern, including potential hazards, hotspots, or infrastructure (such as water monitoring gauges) to protect within the unit will be depicted on burn maps.

A pre-burn briefing will be held prior to each burn to discuss details of the burn. The briefing at a minimum will include all items listed in the "crew briefing" section of the prescription (Appendix 1) and the "briefing checklist" from the National Wildfire Coordinating Group's Incident Response Pocket Guide (Appendix 3).

#### WILDFIRE

Wildfires remain a natural occurrence in the Everglades ecosystem. The primary causes of wildfires in the ECWMA are lightning and man. Wildfires have ranged in size from less than an acre to 90,000 acres. Wildfires most frequently occur at the onset of the wet season when lightning strikes commonly occur (Gunderson and Snyder 1994) and when water depths are most shallow. Areas with shorter hydroperiods tend to have larger and more numerous wildfires than areas with longer hydroperiods. Muck or peat fires can occur during drought conditions, and can be detrimental to the vegetative community with the potential to permanently alter the landscape. Muck fire potential is frequently analyzed by FWC and SFWMD, and the information is used to assist in decisions regarding water management and public access during dry periods. The ECWMA experiences fluctuations (approximately every three to five years) of active fire seasons when frequent and large wildfires burn extensive portions of the area. The FFS is responsible for suppression of wildfires within the ECWMA, with FWC assisting as directed. The FWC reports all wildfires observed in the ECWMA to FFS. The history of wildfires and prescribed burns dating back to 1980 are recorded in organized binders and in digital format (i.e. shapefiles, maps) at the FWC Sunrise Field Office.

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**EVERGLADES AND FRANCIS S. TAYLOR WILDLIFE MANAGEMENT AREA**  
 671,831 acres  
 Palm Beach, Broward and Miami-Dade Counties

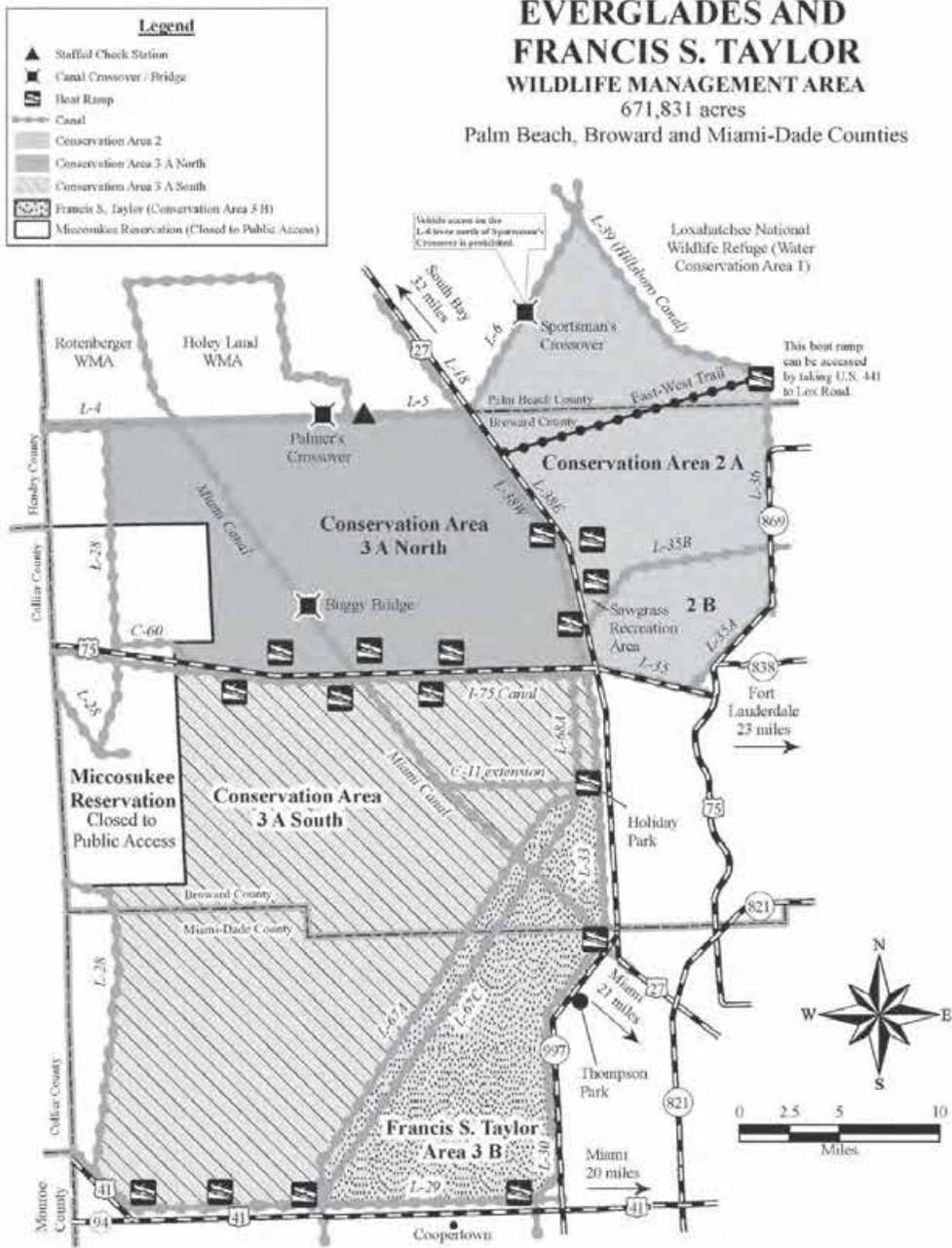


Figure 1. Map of the Everglades Complex of Wildlife Management Areas, 2014.

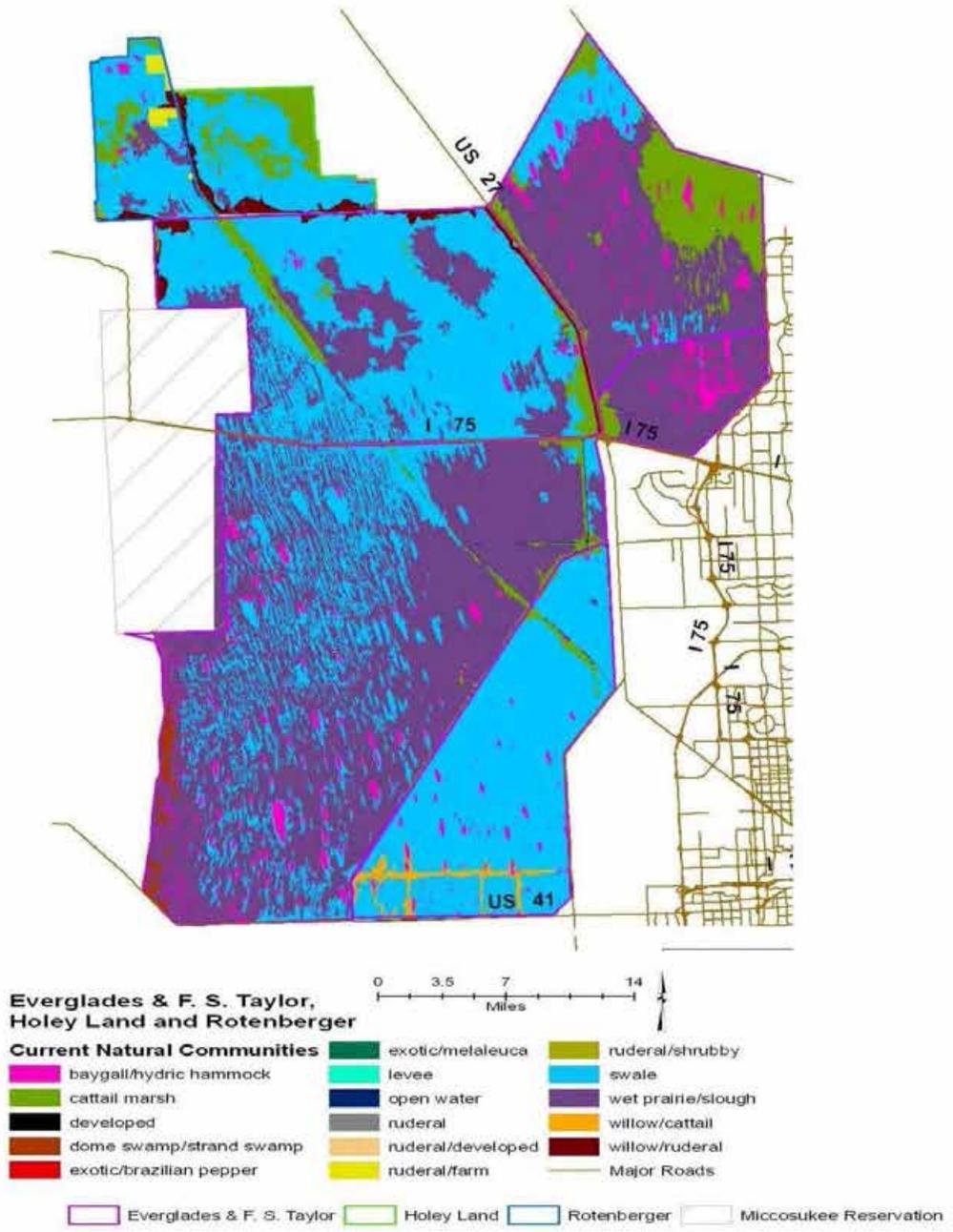


Figure 2. Natural community map of the Everglades Complex of Wildlife Management Areas, 2012.

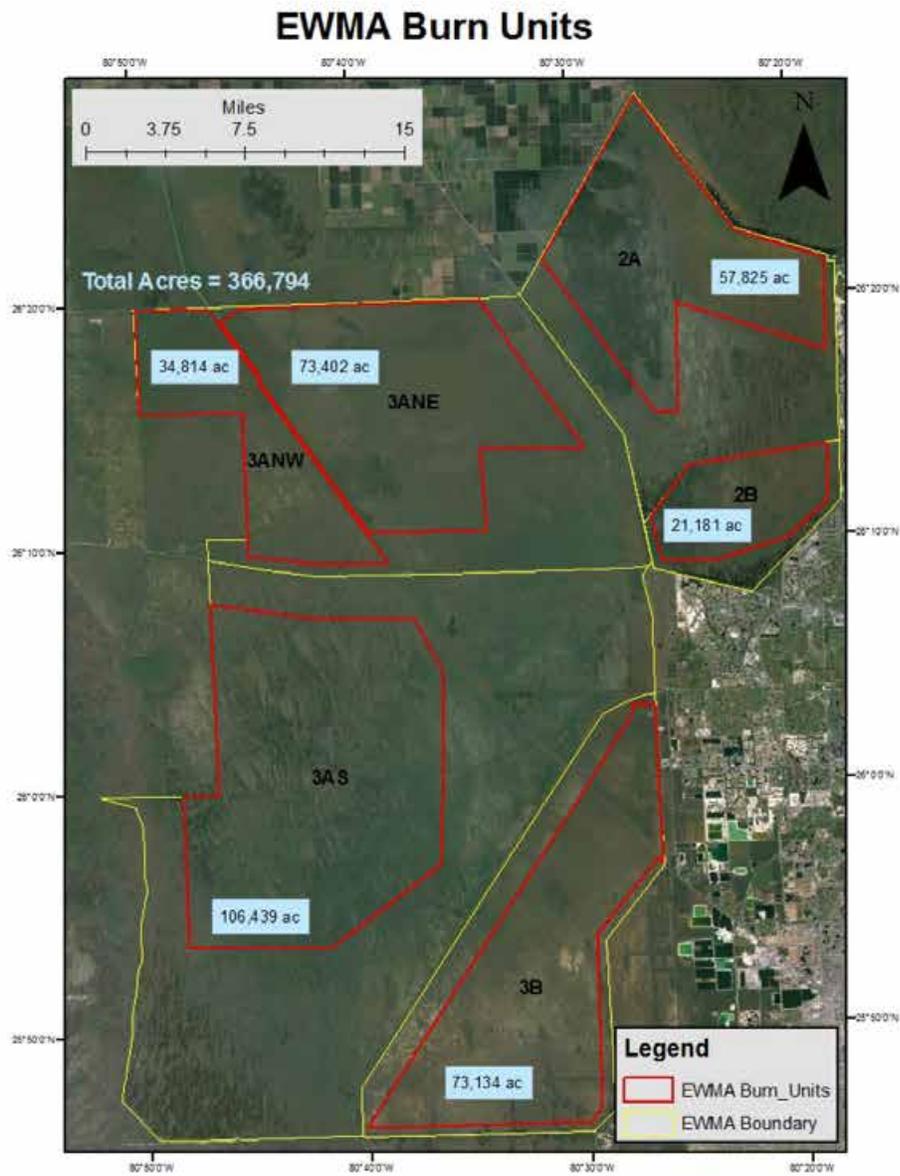


Figure 3. Prescribed burn units for Everglades and Francis S. Taylor Wildlife Management Area, 2014.

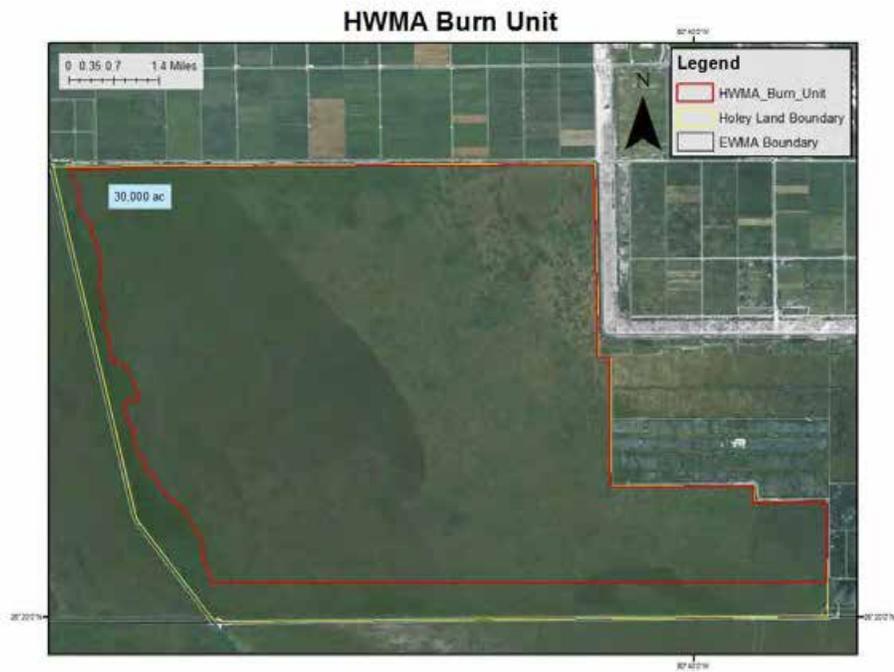


Figure 4. Prescribed burn unit for Holey Land Wildlife Management Area, 2014.

# RWMA Burn Unit



Figure 5. Prescribed burn unit for Rotenberger Wildlife Management Area, 2014.

Appendix 1. Burn Prescription.

## Prescription for Prescribed Burning

Entered LMIS

Florida Fish and Wildlife Conservation Commission  
Division of Habitat and Species Conservation

<b>WMA/WEA:</b> <a href="#">Click here to enter WMA/WEA</a>		<b>FFS Certified Burn Authorization Number:</b> <a href="#">Enter number</a>				
<b>Landowner:</b> 31450		<b>County of Burn:</b> <a href="#">Click here to enter county</a>				
<b>Customer Number:</b> <a href="#">Click here to enter number</a>		<b>Customer Name:</b> <a href="#">Click here to enter name</a>				
Burn Unit Name/Number	Acres	Date of Last Burn	Section(s)	Township	Range	Gauge Reading
<a href="#">Unit name/number</a>	<a href="#">Acres</a>	<a href="#">Date</a>	<a href="#">Section</a>	<a href="#">Township</a>	<a href="#">Range</a>	<a href="#">Info</a>
<a href="#">Unit name/number</a>	<a href="#">Acres</a>	<a href="#">Date</a>	<a href="#">Section</a>	<a href="#">Township</a>	<a href="#">Range</a>	<a href="#">Info</a>
<a href="#">Unit name/number</a>	<a href="#">Acres</a>	<a href="#">Date</a>	<a href="#">Section</a>	<a href="#">Township</a>	<a href="#">Range</a>	<a href="#">Info</a>
<a href="#">Unit name/number</a>	<a href="#">Acres</a>	<a href="#">Date</a>	<a href="#">Section</a>	<a href="#">Township</a>	<a href="#">Range</a>	<a href="#">Info</a>
<b>Total</b>	<a href="#">Total Acres</a>					
<b>Latitude/Longitude to Assist with Emergency Locate:</b> <a href="#">Click here to enter Lat/Long</a>						
<b>Unit Description and Habitat Composition - Attach Maps of Area to be Burned</b>						
<b>Overstory Description and Basal Area if Applicable:</b> N/A						
<b>Understory Description:</b> Sawgrass: _____ Slough: _____ Willow: _____ Tree Island/Cypress Dome: _____ Mixed Prairie: _____ Cattails: _____ Other: _____						
<b>Fuel Loading:</b> % Light: _____ % Moderate: _____ % Heavy: _____ % Herbaceous _____ % Woody _____						
<b>Duff or Muck Locations:</b> N/A						
<b>Description and Condition of Fire Breaks:</b> <a href="#">Click here to enter description</a>						
<b>Other Important Stand Parameters if Applicable:</b> N/A						
<b>Restoration or Maintenance Burn?</b> <a href="#">Click here to enter info</a>						
<b>Burn History and Vegetative Description of Surrounding Units:</b> <a href="#">Click here to enter surrounding unit information</a>						

<b>Emergency Contacts (can be attachment)</b>	
<b>FFS Dispatch:</b> 954-475-4120	<b>FFS Forest Area Supervisor:</b> Thomas Coletti. 954-680-4180
<b>Local Fire Departments:</b> 954-849-1094, BSO Fire Rescue	
<b>Local Hospitals or Emergency Care Centers:</b> Cleveland Clinic FL (Weston) 954-659-5000	
<b>FHP:</b> 561-357-4000	<b>DOT:</b> 954-847-2777
<b>FWC Dispatch:</b> 561-357-4200	
<b>Other:</b> FPL 954-605-5697 (AJ Wolf) or SE Division Dispatch 305-442-5732	
<b>Notifications (e-mail group, adjacent landowners, schools, airports, media, etc):</b> See Attachment I.	
<b>Personnel Names and Crew Assignments:</b> <a href="#">Click here to enter personnel/assignments</a>	
<b>Equipment and Suppression Tools to be Used on Burn:</b> <a href="#">Click here to enter equipment/tools</a>	
<b>Purpose of Burn:</b> <a href="#">Click here to enter purpose</a>	
<b>Measurable Burn Objectives:</b> <a href="#">Click here to enter objectives</a>	
<b>Season and Time of Day to Meet Objectives:</b> <a href="#">Click here to enter season/time of day</a>	
<b>Firing Plan and Ignition Pattern:</b> <a href="#">Click here to enter plan/pattern</a>	
<b>Intensity Desired to Meet Purpose and Objective:</b> <a href="#">Click here to enter intensity</a>	<b>Ignition Method:</b> <a href="#">Click here to enter methods</a>

<p><b>Contingencies (includes safety zones, escape routes, secondary control lines, escape response procedures, helicopter landing lat/long if applicable):</b> <a href="#">Click here to enter contingencies.</a></p>
<p><b>Mop-up Standards:</b> <a href="#">Click here to enter standards.</a></p>
<p><b>Declaring the Fire Out Standards:</b> <a href="#">Click here to enter standards.</a></p>
<p><b>Smoke Management</b></p>
<p>Smoke Sensitive Areas Identified Using Southern Smoke Management Guide Smoke Screening Tool? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Any Critical Smoke Sensitive Areas Identified? <input type="checkbox"/> Yes <input type="checkbox"/> No If "Yes", Do Not Burn Under Current Prescription.</p>
<p><b>Downwind/Downdrainage Smoke Sensitive Areas and Distance from Burn:</b> <a href="#">Click here to enter areas.</a></p>
<p><b>Other Smoke Sensitive Areas and Distance from Burn:</b> <a href="#">Click here to enter areas.</a></p>
<p><b>Smoke Management Plan (attach smoke management screening maps):</b> <a href="#">Click here to enter smoke management plan.</a></p>
<p>Is There Potential for Smoke to Impact a Public Roadway? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>If Yes, Have You Erected Smoke Warning Signs and Contacted FHP and Your Local LE? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>Plan for Monitoring Smoke During and After the Burn to Assess Visibility Issues if Applicable:</b> <a href="#">Click here to enter smoke monitoring plan.</a></p>

<b>WEATHER PARAMETERS</b>	<b>Acceptable Parameters</b>	<b>Forecasted and Actual Conditions – Attach Fire Weather Forecast and Spot Weather Forecast.</b>
Surface (20') Wind Direction	Any	Forecasted wind direction
Surface Wind Speed	<20mph	Forecasted wind speeds
Transport Wind Direction	Any	Forecasted wind direction
Transport Wind Speed	>9 mph	Forecasted wind speed
Minimum Mixing Height	>1700	Forecasted mixing height
Dispersion Index (DAY)	≥ 40	Forecasted daytime dispersion
Dispersion Index (NIGHT)	>1	Forecasted nighttime dispersion
Maximum Temperature	No maximum	Forecasted max temperature
Relative Humidity Range	>34%	Forecasted low humidity
Minimum Fine Fuel Moisture	>6%	Actual fine fuel moisture
KBDI	700	Actual KBDI
LVORI	< 7, only if burning next to road	Forecasted LVORI
Days since ½" Rain	N/A	N/A
Minimum Water Level	>3 inches	Additional field condition
No Spreading Fire	1 hour after sunset	Additional field condition
<b>FIRE BEHAVIOR</b>		
Rate of Spread	Desired rate of spread	
Starting Time	After 09:00	
Burn Technique	Backing, Flanking, Head	
Flame Length	Desired flame length	

**PRE-BURN CHECKLIST**

BURN MANAGER: Check each item to indicate compliance.

- All prescription requisites met.
- Authorization obtained.
- All equipment required on scene and fully operational.
- Each crewmember has proper personal gear and clothing.
- Appropriate steps have been taken to ensure crew and public safety.

**CREW BRIEFING**

- Objectives of burn.
- Exact area of burn (ensure crew members have maps).
- Hazards discussed (volatile fuels, spotting potential, weak points in perimeter lines, terrain features, etc.)
- Crew assignments made.
- Weather monitoring assignment made.
- Ignition technique and pattern. Holding method(s).
- Location of extra equipment, fuel, water, vehicle keys.
- Authority and communications.
- Contingencies covered including escape routes or procedures.
- Sources of nearest assistance. Nearest phone and emergency numbers.
- Special instructions regarding smoke management, contact with the public and others.
- Safety briefing
- Mop-up standards
- Arrange next day inspection and mop-up assignments
- Questions?
- Crewmembers given opportunity to decline participation (is there anything that is going to prevent full physical performance?).
- Conduct test burn

<b>Prescription Prepared by:</b> <small>Click here to enter name</small>	<b>Date/Time Prescription Prepared:</b> <small>Date/Time</small>
<b>Authorization Date and Time Period:</b> <small>Click here to enter date and time period</small>	
<b>Burn Manager:</b> <small>Click here to enter name</small>	
<b>Burn Manager Title:</b> <small>Click here to enter title</small>	
<b>Burn Manager Certification Number:</b> <small>Click here to enter number</small>	
<b>Burn Manager Signature:</b>	<b>Start Time:</b> <small>Enter start time</small>
<b>Date Fire Declared Out:</b> <small>Click here to enter date</small>	

**Everglades Complex of WMAs Burn Prescription Notifications. Attachment 1.**

\_\_\_\_\_ Florida Forest Service:  
(954) 475-4120 (Dispatch)  
(954) 444-0901 (Fred Boehm – notify for all burns)  
(561) 791-4725 (Chris Wasil—PB, notify for burns in RWMA & HWMA)  
(954) 680-4180 (shop)

\_\_\_\_\_ FWC Dispatch:      Call numbers: \_\_\_\_\_  
(561) 357-4200

\_\_\_\_\_ FL DOT Dispatch: (call for notification and “Smoke on the Road” signs if needed)  
(954) 847-2777

\_\_\_\_\_ Email front page of prescription and an overview map of the burn unit location to:  
[edonlan@sfwmd.gov](mailto:edonlan@sfwmd.gov) (Ellen Allen, South Florida Water Management District)  
[roryf@miccosukeetribe.com](mailto:roryf@miccosukeetribe.com) (Rory Feeny, Miccosukee Tribe)  
[grantsteelman@semtribe.com](mailto:grantsteelman@semtribe.com) (Grant Steelman, Seminole Dept. of Forestry)  
[jeffalter@semtribe.com](mailto:jeffalter@semtribe.com) (Jeff Alter, Seminole Dept. of Forestry)  
[fred\\_north@sheriff.org](mailto:fred_north@sheriff.org) (Lt. Fred North, BSO Fire Rescue, 954-849-1094)  
[Jordan\\_Mcknight@nps.gov](mailto:Jordan_Mcknight@nps.gov) (Jordan McKnight, Big Cypress National Preserve, Fire Mgt. Office)  
[justin\\_turnbo@nps.gov](mailto:justin_turnbo@nps.gov) (Justin Turnbo, Big Cypress National Preserve, Asst. Fire Mgt. Office)  
[mimurphy@sfwmd.gov](mailto:mimurphy@sfwmd.gov) (Mitch Murphy, SFWMD)  
[shohner@sfwmd.gov](mailto:shohner@sfwmd.gov) (Susan Hohner, SFWMD)  
[mnunges@sfwmd.gov](mailto:mnunges@sfwmd.gov) (Martha Nungesser, SFWMD)  
[whaskell@ufl.edu](mailto:whaskell@ufl.edu) (Whitney Haskell, UF – Snail Kite field crew leader)  
[bjeffe01@ufl.edu](mailto:bjeffe01@ufl.edu) (Brian Jeffery, UF Florida Cooperative Fish and Wildlife Unit)  
[michael.anderson@myfwc.com](mailto:michael.anderson@myfwc.com) (Mike Anderson, FWC Regional Biologist)  
[chris.wasil@freshfromflorida.com](mailto:chris.wasil@freshfromflorida.com) **RWMA & HWMA BURNS ONLY** (Chris Wasil, DOF PB County)  
[tyler.beck@myfwc.com](mailto:tyler.beck@myfwc.com) (Tyler Beck, FWC Snail Kite biologist)  
[trexlerj@fiu.edu](mailto:trexlerj@fiu.edu) (Joel Trexler, FIU)

\_\_\_\_\_ If burn will be near any public road, call Florida Hwy Patrol:  
(561) 357-4000 (all burns) / (239) 938-1800 (Ft. Myers, Alligator Alley MM25 west)

\_\_\_\_\_ If burn will be near any power lines, call Florida Power and Light and email front page of prescription and map of burn unit location to:  
AJ Wolf (call first)  
(954) 605-5697  
[A.J.Waltz@fpl.com](mailto:A.J.Waltz@fpl.com)  
SE Division System Dispatcher  
(305) 442-5732

**Everglades Complex of WMAs Burn Prescription. Attachment 2.**

**On-Site Weather**

Time: \_\_\_\_\_ Wind Direction/Speed: \_\_\_\_\_

Relative Humidity (%): \_\_\_\_\_ Air Temperature: \_\_\_\_\_

Flame Length: \_\_\_\_\_ Flame Rate of Spread: \_\_\_\_\_ ft/sec

---

Time: \_\_\_\_\_ Wind Direction/Speed: \_\_\_\_\_

Relative Humidity (%): \_\_\_\_\_ Air Temperature: \_\_\_\_\_

Flame Length: \_\_\_\_\_ Flame Rate of Spread: \_\_\_\_\_ ft/sec

---

Time: \_\_\_\_\_ Wind Direction/Speed: \_\_\_\_\_

Relative Humidity (%): \_\_\_\_\_ Air Temperature: \_\_\_\_\_

Flame Length: \_\_\_\_\_ Flame Rate of Spread: \_\_\_\_\_ ft/sec

---

Time: \_\_\_\_\_ Wind Direction/Speed: \_\_\_\_\_

Relative Humidity (%): \_\_\_\_\_ Air Temperature: \_\_\_\_\_

Flame Length: \_\_\_\_\_ Flame Rate of Spread: \_\_\_\_\_ ft/sec

---

<b>Resources Used</b>	<b>Pre-burn</b>	<b>Burn</b>	<b>Post-burn</b>
Man Hours:	_____	_____	_____
Vehicle Days:	_____	_____	_____
Airboat Hours:	_____	_____	_____
Helicopter Hours:	_____	_____	_____
# of Ping-Pong Balls Used:	_____	_____	_____
# of Flares Used:	_____	_____	_____
Personnel Used:	_____	_____	_____

**Results/Comments** \_\_\_\_\_  
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\_\_\_\_\_

**Certified Burners' Information**

Name: **Marsha Ward**  
Burner's Number: **2007-3712**  
Customer Number: **1342050**

Name: **Melissa Juntunen**  
Burner's Number: **2009-3967**  
Customer Number: **1356426**

Name: **Erik Eckles**  
Burner's Number: **2014-4541**  
Customer Number: **1381209**

Appendix 2. Division of Habitat and Species Conservation's Prescribed Burning and Wildfire  
Suppression Standards.

**DIVISION OF HABITAT AND SPECIES CONSERVATION**  
**Internal Operating Policy**  
Revised March 2011

**Subject: Prescribed Burning and Wildfire Suppression Standards**

**Policy:**

The following policy shall apply to all Division of Habitat and Species Conservation (DHSC) employees engaged in prescribed burning or wildfire suppression activities.

**General Guidelines:**

This policy establishes minimum standards for participation in prescribed burning and wildfire suppression activities. In addition to conducting prescribed burning on Commission-managed lands, DHSC employees are periodically asked to assist the Florida Division of Forestry with wildland fire suppression efforts, particularly during declared wildfire emergencies. Working on prescribed fires or wildfires is an inherently dangerous and risky activity that can result in significant property damage, personal injury, or loss of life. Therefore, it is necessary to establish minimum standards for training and certification to insure DHSC employees have the appropriate skills and knowledge to perform these activities safely and effectively. Employees are encouraged to obtain higher levels of training and certification as warranted and approved through supervisory channels.

**Chapter 1 Prescribed Burning**

**1.1 Prescribed Burn Participation:** This section establishes minimum training, certification, and experience required for members of a prescribed burn team. These same standards apply to non-DHSC employees, volunteers, and contractors participating on a burn on FWC-managed state lands.

- A. **Crew Member Trainee:** Employees who do not meet the requirements for Crew Member shall be classified as a Crew Member Trainee. A Crew Member Trainee may participate in prescribed burning activities provided that they are under the direct supervision of a Crew Member. A Crew Member may supervise no more than one Crew Member Trainee. It is recommended that no more than 40% of the burn crew be Crew Member Trainees.

*Note: Crew members may supervise more than one Crew Member Trainee, and more than 40% of the burn crew may be Crew Member Trainees during prescribed burns conducted during training classes.*

- B. **Crew Member:** May participate independently in prescribed burning activities. Shall have successfully completed the following level of training:

- 1) Interagency Basic Prescribed Fire Course; *or*
- 2) Basic Wildland Firefighter Training (S-130) *and* Introduction to Wildland Fire Behavior (S-190).

C. **Burn Manager Trainee:** May serve as burn manager to fulfill the responsibilities of acquiring certified prescribed burn manager status. Burn Manager Trainee must be under the direct supervision of a Certified Burn Manager on prescribed burns that will be used to qualify them for certified prescribed burn manager status. Shall have successfully completed the following level of training and have the specified level of experience:

- 1) Interagency Basic Prescribed Fire Course;
- 2) S-130/S-190; *and*
- 3) Participated on at least five prescribed burns.

D. **Certified Burn Manager:** May request prescribed burn authorizations and serve as burn manager. Shall have successfully completed the following level of training, and have the specified certification and level of experience:

- 1) Interagency Basic Prescribed Fire Course;
- 2) S-130/S-190;
- 3) Prescribed Burn Manager Certification; *and*
- 4) Participated on at least ten prescribed burns.

**1.2 Prescribed Burn Engine (Pumper Unit/Brush Truck) Operator:** Before an employee may independently operate a water-delivery engine in support of active prescribed burns, they shall have successfully completed the following level of training and have the specified level of experience:

- A. S-130/S-190;
- B. On-the-job training for operation of water-delivery engines by a trained and/or experienced engine operator; *or* successful completion of Southern Area Engine Academy or Engine Operator (PMS 419); *and*
- C. Participated on at least five prescribed burns.

**1.3 Prescribed Burn Tractor/Bulldozer Plow Unit Operator:** Before an employee may independently operate tractor/dozer fire-plow during prescribed burns, they shall have successfully completed the following level of training and have the specified level of experience:

- A. The wildland fire portion of Basic Fire Control Training; *and*
- B. Participated on at least five prescribed burns.

**1.4 Prescribed Burn Aerial Ignition Dispenser (AID) Operator:** Before an employee may independently operate an AID during a prescribed burn, they shall have successfully completed the following level of training and have the specified level of experience:

- A. Qualified at or above Crew Member level for prescribed burning;
- B. Completed an FWC AID training workshop or other courses that provide an equivalent level of training; *and*
- C. Participated on at least five prescribed burns.

**1.5 General:** All prescribed burns shall be conducted in complete compliance with all laws regulating the use of prescribed fire; specifically Chapter 590.125(3) F.S. and Chapter 5I-2 F.A.C. Burn plans shall have all the required elements as specified in Chapter 5I-2.006 as well as a contingency plan, mop-up standards, and standards for declaring the fire out. All prescribed burns shall be conducted as a certified prescribed burn, and managed by a certified prescribed burn manager.

## **Chapter 2 Wildfire Suppression**

**2.1 General:** The Division of Forestry, or other firefighting entity, may request assistance from DHSC staff during a wildfire suppression incident. This request will usually be for a wildfire strike team. A wildfire strike team consists of one wildfire strike team leader, and two wildfire strike team members per Type V or VI engine. Standards for strike team members and leaders are outlined below. In addition, requests may be made for personnel to fill positions on a suppression incident that are not covered by the following standards. The decision to assist, and the level of assistance provided, on fire suppression incidents will be made by DHSC leadership (includes Division Director, Deputy Division Director, Section Leaders and/or Assistant Section Leaders) and the Wildland Fire Coordinator.

**2.2 Wildfire Strike Team Member:** Before an employee may participate on wildfire strike teams in support of wildfire suppression efforts, they shall have successfully completed the following level of training and have the specified level of experience:

- A. S-130/S-190;
- B. Southern Area Engine Academy;
- C. Experience and demonstrated proficiency operating a Type V or VI engine; *and*
- D. Participated on at least ten prescribed burns and/or wildfire suppression incidents.

\* Exception - Employees who do not meet the above standards can be approved by DHSC leadership and the Wildland Fire Coordinator to serve on a wildfire strike team. Exceptions can be granted when available strike team personnel are not sufficient to meet the requested need. Training and experience levels should be considered when approving exceptions.

**2.3 Wildfire Strike Team Leader:** Before an employee may serve as team leader for wildfire strike teams in support of wildfire suppression efforts, they shall have completed the following

level of training and have the specified level of experience **in addition to that required to participate on a wildfire strike team:**

- A. Basic Incident Command System (I-200); **and**
- B. Experience as burn manager, crew boss, or strike team leader on at least ten prescribed burns or wildfire suppression incidents.

**2.4 Wildfire Tractor/Bulldozer Plow Unit Operator:** Before an employee may independently operate tractor/dozer fire-plow units in support of wildfire suppression efforts, they shall have completed the following level of training and have the specified level of experience:

- A. The wildland fire portion of Basic Fire Control Training;
- B. Experience and demonstrated proficiency operating a tractor/bulldozer plow unit; **and**
- C. Participated on at least ten prescribed burns or wildfire suppression incidents.

### **Chapter 3 Safety**

**3.1 Personal Protective Equipment:** Required items of Personal Protective Equipment for all wildland fire activities include:

- Flame Resistant Shirt and Pants, or Jumpsuit
- Wildland Fire Hard Hat
- Leather Gloves
- Leather Boots – 8” Lace-up
- Eye Protection
- Bandana or Dust Mask
- Hand-held Radio
- Fire Shelter

Safety considerations and/or vegetative types may dictate that crew members wear additional equipment or in some cases deviate from the above required equipment. The burn manager/strike team leader shall determine what Personal Protective Equipment will be worn by their crew to maximize safety, and shall document justifications for any deviations of the required equipment.

**3.2 Physical Standards:** Prescribed burning and firefighting are physically demanding activities. Each prescribed burn crew/strike team member shall maintain a level of fitness that will allow full participation in these activities. It is the burn crew/strike team member’s responsibility to make the burn manager/strike team leader aware of any limitations that may restrict their activities so that they can be assigned an appropriate role.

**3.3 Mobile Equipment:** The following is a list of required items for mobile equipment used during wildland fire activities. Mobile equipment includes all-terrain vehicles, utility vehicles, airboats, swamp buggies, trucks, tractors, and bulldozers.

- An ABC fire extinguisher that has been inspected, serviced, and maintained in accordance with the manufacturer's maintenance procedures shall be in or on all mobile equipment. Below are minimum sizes:
  - All-terrain and utility vehicles – 2.5 pound extinguisher
  - Trucks and tractors – 5 pound extinguisher
  - Bulldozers and Swamp Buggies– 10 pound extinguisher
  - Vessels – 5 pounds (could be two, 2.5 pound extinguishers)
- An operational winch shall be installed on all-terrain vehicles, utility vehicles, swamp buggies, and trucks used in the interior of a burn unit.
- An operational water delivery system with at least five gallons of water shall be installed in or on any mobile equipment used in the interior of a burn unit.

#### **Chapter 4 Incident Reviews**

**4.1 Incident Reviews:** This section outlines a mechanism for how DHSC will respond to and review a prescribed fire that had unintended negative consequences. The purpose of a fire-related incident review is to gather facts regarding the incident, and if necessary, recommend actions that may help minimize the chance of reoccurrence.

**4.2 Fire-related Incident:** A fire or smoke related incident that includes any of the following:

- A. Notice of Violation;
- B. Conducting a burn outside of the prescription;
- C. Fire leaves the prescribed burn area;
- D. Fire leaves the WMA or WEA; or
- E. Fire causes property damage, personal injury, or loss of life.

**4.3 Reporting of Fire-related Incidents:** The burn manager shall notify their Regional Wildlife Management Biologist as soon as possible but no later than 8:00 am the day after the fire-related incident occurred. The Regional Wildlife Management Biologist shall notify THCR leadership and the Wildland Fire Coordinator of the incident as soon as possible. The notification should include the following:

- A. Date, Time and Location of Incident
- B. Brief Description of the Incident and Current Status
- C. Other Agencies or Entities Assisting

THCR leadership will notify Division leadership and the Executive and Assistant Executive Director of any incidents involving escapes from the WMA, escapes requiring unplanned

suppression assistance, or any incidents resulting in private property damage or injury to a member of the public.

**4.4 Fire-related Incident Review:** A review of a fire-related incident initiated by the Wildland Fire Coordinator resulting in a written finding of facts and recommendations. The following guidelines should be used to determine the type of review conducted:

- A. No Review – No review is required if the prescribed fire escaped from the burn unit, stayed on the WMA/WEA, and was suppressed. These incidents, however, need to be reported to the Regional Wildlife Management Biologist and the Wildland Fire Coordinator if Division of Forestry or other entity assisted with suppression efforts.
- B. Level 1 Review – Review to be conducted by the Wildland Fire Coordinator or alternate if one or more of the following occurred and no Level 2 review criteria were met:
  - 1) A Notice of Violation was issued to the burn manager.
  - 2) Motorized equipment was damaged requiring the completion of an Equipment Damage Report.
  - 3) A Level 1 review is requested by DHSC leadership.
- C. Level 2 Review – Review to be conducted by the Wildland Fire Coordinator or alternate, and one representative from at least three of the administrative regions if one or more of the following occur:
  - 1) Prescribed fire escaped from the burn unit and from the WMA/WEA.
  - 2) Injury or private property damage resulted from the fire or smoke. If an injury occurs to a member of the burn crew, the need to convene a review team will be determined by DHSC leadership.
  - 3) A Level 2 review is requested by DHSC leadership.

**4.5 Fire-related Incident Report:** Within 45 days of completing a Fire-related Incident Review, the Wildland Fire Coordinator shall submit a report to DHSC leadership for approval. The report should include: 1) a summary of the incident; 2) a review of the weather forecast and observed weather conditions; 3) a review of the burn prescription; 4) a summary of the execution of the burn and the suppression of the escape, if applicable; and 5) recommendations for future burns. After being approved, the report will be made available to appropriate personnel via e-mail and by being posted on the Terrestrial Habitat and Conservation's Wildland Fire Sharepoint site.

Approved: Timothy A. Reault 3-2-2011  
Division Director or Designee Date  
Division of Habitat & Species Conservation  
Florida Fish and Wildlife Conservation Commission

Appendix 3. Briefing checklist, 2014 National Wildfire Coordinating Group's Incident Response Pocket Guide.

## BRIEFING CHECKLIST

### Situation

- Fire name, location, map orientation, other incidents in area
- Terrain influences
- Fuel type and conditions
- Fire weather (previous, current, and expected)
- Winds, RH, temperature, etc.
- Fire behavior (previous, current, and expected)
  - Time of day, alignment of slope and wind, etc.

### Mission/Execution

- Command
  - Incident Commander/immediate supervisor
- Leader's intent
  - Overall objectives/strategy
- Specific tactical assignments
- Contingency plans
- Medevac plan
  - Personnel, equipment, transport options, contingency plans

### Communications

- Communication plan
  - Tactical, command, air-to-ground frequencies
  - Cell phone numbers

### Service/Support

- Other resources
  - Working adjacent and those available to order
  - Aviation operations
- Logistics
  - Transportation
  - Supplies and equipment

### Risk Management

- Identify known hazards and risks
- Identify control measures to mitigate hazards/reduce risk
- Identify trigger points for reevaluating operations

### Questions or Concerns?

## 13.8 WCPR Strategy

# Everglades Complex of Wildlife Management Areas Species Management Strategy July 2012

Covering Everglades and Francis S. Taylor WMA  
Rotenberger WMA, and  
Holey Land WMA

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



# 1 Executive Summary

The Florida Fish and Wildlife Conservation Commission's (FWC) Terrestrial Habitat Conservation and Restoration section (THCR) takes a proactive, science-based approach to species management on lands in the Wildlife Management Area/Wildlife and Environmental Area (WMA/WEA) system. This approach uses information from statewide models in conjunction with input from species experts and people with knowledge of 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 WMA. Staff developed this wildlife management strategy for the Everglades and Francis S. Taylor Wildlife Management Area (EWMA), Rotenberger Wildlife Management Area (RWMA), and Holey Land Wildlife Management Area (HWMA), collectively known as the Everglades Complex of Wildlife Management Areas (ECWMA).

This document presents an evaluation of focal species needs using an ecosystem management approach for the ECWMA. Natural community management focused on a set of focal species provides benefits to a host of species reliant upon these natural communities. Monitoring select species provides information that verifies whether natural community management is having the desired effect on wildlife. Throughout the process, the role of the WMAs in regional and statewide conservation initiatives was considered to maximize the potential benefit. FWC intends for this strategy to: 1) provide land managers with information on actions they should take 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.

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

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

[Section 3](#) provides a list of focal and listed species on the areas, and an assessment of each species' level of opportunity/need. This includes species-specific goals and objectives when appropriate. Objectives are identified for 1 species group on these areas: rare plants.

[Section 4](#) describes specific land management actions recommended for focal species. Staff did not identify need for any Strategic Management Areas (SMA), and made no changes to Objective-Based Vegetation Management (OBVM) considerations. This section also discusses management necessary to ensure continued persistence of focal species.

[Section 5](#) describes species-specific management and monitoring prescribed for the area, and identifies any research necessary to guide future management efforts. Species-specific management actions and area-specific monitoring are not recommended for any of the focal species, as many of the priority species are monitored by other entities. Opportunistic monitoring is suggested for a number of focal and imperiled species, and the Strategy does identify the need for a rare plant inventory. We also discuss the need for information on apple snail repopulation efforts.

[Section 6](#) identifies coordination that will assist in conserving these focal species. We identify coordination with 6 other units in FWC and inter-agency coordination with 9 other entities.

[Section 7](#) describes efforts prescribed "beyond the area's boundaries" to help affect 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. The FWC will use a combination of private sector contract work and efforts of area staff to accomplish these activities. Some of the monitoring and land management recommendations will require additional resources, while FWC can accomplish others with continuation of existing resources. Additional resources will be required to achieve

desired removal of exotic invasive plant species on the property. Coordination with water management agencies is critical for these areas.

## Table of Contents

<a href="#">Executive Summary</a> .....	384
<a href="#">Acronym List</a> .....	388
<a href="#">Statewide Species Prioritization Parameters</a> .....	389
<a href="#">Locator Map</a> .....	390
<a href="#">Section 1: Introduction</a> .....	391
<a href="#">Section 2: Current and Historic Management Actions</a> .....	392
<a href="#">2.1: Everglades and Francis S. Taylor Wildlife Management Area (EWMA)</a> .....	392
<a href="#">2.1.1: History of Water Management</a> .....	394
<a href="#">2.1.2: Management and Monitoring</a> .....	397
<a href="#">2.2: Holey Land Wildlife Management Area (HWMA)</a> .....	402
<a href="#">2.2.1: History of Water Management</a> .....	403
<a href="#">2.2.2: Management and Monitoring</a> .....	404
<a href="#">2.3: Rotenberger Wildlife Management Area (RWMA)</a> .....	407
<a href="#">2.3.1: History of Water Management</a> .....	407
<a href="#">2.3.2: Management and Monitoring</a> .....	408
<a href="#">Section 3: Area Focal Species</a> .....	411
<a href="#">3.1: ECWMA Focal Species</a> .....	412
<a href="#">3.2: Focal Species Opportunity/Needs Assessment</a> .....	412
<a href="#">3.2.1: Swallow-Tailed Kite</a> .....	413
<a href="#">3.2.2: Florida Mottled Duck</a> .....	413
<a href="#">3.2.3: Limpkin</a> .....	414
<a href="#">3.2.4: Short-Tailed Hawk</a> .....	415
<a href="#">3.2.5: Snail Kite</a> .....	416
<a href="#">3.2.6: Southern Bald Eagle</a> .....	417
<a href="#">3.2.7: Wading Birds</a> .....	418
<a href="#">3.2.8: Florida Black Bear</a> .....	419
<a href="#">3.2.9: Florida Panther</a> .....	420
<a href="#">3.2.10: Limited Opportunity Species</a> .....	421
<a href="#">3.3 Other Listed and Locally Important Species</a> .....	422
<a href="#">3.3.1: Other Focal and Imperiled Wildlife Species</a> .....	422
<a href="#">3.3.2: Rare Plants</a> .....	424
<a href="#">Section 4: Land Management Actions and Considerations</a> .....	425
<a href="#">4.1: Strategic Management Areas</a> .....	426
<a href="#">4.2: Objective-Based Vegetation Management (OBVM) Considerations</a> .....	426
<a href="#">4.3: Further Land Management Considerations</a> .....	426
<a href="#">4.3.1: Swallow-Tailed Kite</a> .....	427
<a href="#">4.3.2: Crested Caracara</a> .....	427
<a href="#">4.3.3: Short-Tailed Hawk</a> .....	427
<a href="#">4.3.4: Snail Kite</a> .....	428
<a href="#">4.3.5: Southern Bald Eagle</a> .....	428
<a href="#">4.3.6: Wading Birds</a> .....	428
<a href="#">Section 5: Species Management Opportunities</a> .....	429
<a href="#">5.1: Species Management</a> .....	429
<a href="#">5.2: Species Monitoring</a> .....	429
<a href="#">5.2.1: Rare Plant Inventory</a> .....	430

5.2.2: <i>Opportunistic Monitoring</i> .....	430
5.3: Species Research Needs.....	430
5.3.1: <i>Apple Snail Repopulation Research</i> .....	431
Section 6: Intra/Inter Agency Coordination.....	431
6.1: Florida Fish and Wildlife Conservation Commission (FWC).....	431
6.1.1: <i>Species Conservation Planning Section (SCP)</i> .....	431
6.1.2: <i>Fish and Wildlife Research Institute (FWRI)</i> .....	432
6.1.3: <i>Florida’s Wildlife Legacy Initiative (FWLI)</i> .....	432
6.1.4: <i>Imperiled Species Management Section (ISMS)</i> .....	432
6.1.5: <i>Aquatic Habitat Restoration and Enhancement Subsection (AHREs)</i> .....	433
6.1.6 <i>Invasive Plant Management Section (IPM)</i> .....	433
6.2: South Florida Water Management District (SFWMD).....	433
6.3: Avian Research and Conservation Institute (ARCI).....	434
6.4: United States Fish and Wildlife Service (USFWS).....	434
6.5: Florida Natural Areas Inventory (FNAI).....	434
6.6: Broward County Parks and Recreation, Environmental Section.....	434
6.7: Miccosukee Tribe of Indians of Florida.....	435
6.8: Seminole Tribe of Florida.....	435
6.9: Florida Bat Conservancy.....	435
6.10: Florida Forest Service.....	435
Section 7: Beyond the Boundaries Considerations.....	436
Document Map.....	<b>Error! Bookmark not defined.</b>

## 2 Acronym List

AHRE	Aquatic Habitat Restoration and Enhancement
ARCI	Avian Research and Conservation Institute
BCNP	Big Cypress National Preserve
BO	Biological Opinion
C&SF	Central and Southern Florida Project for Flood Control and Other Purposes
COE	U.S. Army Corps of Engineers
DEP	Department of Environmental Protection
DER	Department of Environmental Regulation
DFC	Desired Future Condition
DHR	Florida Division of Historical Resources
ECWMA	Everglades Complex of Wildlife Management Areas
ENP	Everglades National Park
ERTP	Everglades Restoration Transition Plan
EWMA	Everglades and Francis S. Taylor Wildlife Management Area
FWLI	Florida's Wildlife Legacy Initiative
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Florida Wildlife Research Institute
GFC	Florida Game and Fresh Water Fish Commission
HWMA	Holey Land Wildlife Management Area
IOP	Interim Operational Plan
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MSTS	Multi-Species Transition Strategy
MU	Management Unit(s)
MWD	Modified Water Deliveries
NGVD	National Geodetic Vertical Datum
OBVM	Objective Based Vegetation Management
PLCP	Public Lands Conservation Planning (project)
PVA	Population Viability Analysis
RWMA	Rotenberger Wildlife Management Area
SCP	Species Conservation Planning (section)
SFWMD	South Florida Water Management District
SGCN	Species of Greatest Conservation Need
SHCA	Strategic Habitat Conservation Area
SMA	Strategic Management Area
SRF	Systematic Reconnaissance Flight
STA	Stormwater Treatment Area
THCR	Terrestrial Habitat Conservation and Restoration (section)
Trustees	Board of Trustees of the State of Florida
USFWS	United States Fish and Wildlife Service
WCA	Water Conservation Area
WCPR	Wildlife Conservation Prioritization and Recovery
WHCniF	Wildlife Habitat Conservation Needs in Florida
WMA	Wildlife Management Area

### 3 Statewide Species Prioritization Parameters

This table provides the values for the 6 prioritization parameters for the area’s 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 on managed lands	
	Biological Score <sup>1</sup>	Supplemental Score <sup>2</sup>	Population Status <sup>3</sup>	Population Trends <sup>4</sup>	Probability of a 50% decline <sup>5</sup>	Populations persisting (to 100 years) <sup>6</sup>
<a href="#"><u>Swallow-Tailed Kite</u></a>	25.7	13	low	unk	20%	50%
<a href="#"><u>Burrowing Owl</u></a>	15.3	<b>15</b>	med <sup>7</sup>	unk	>90%	6%
<a href="#"><u>Audubon's Crested Caracara</u></a>	<b>37.7</b>	<b>17</b>	low	unk	0	100%
<a href="#"><u>Florida Mottled Duck</u></a>	<b>17.3</b>	<b>18</b>	med	decl	1%	100%
<a href="#"><u>Limpkin</u></a>	24.3	14	med	unk	0	100%
<a href="#"><u>Northern Bobwhite</u></a>	11.0	14	low	decl	0	100%
<a href="#"><u>Short-Tailed Hawk</u></a>	<b>30.6</b>	<b>15</b>	low	unk	61%	50%
<a href="#"><u>Snail Kite</u></a>	<b>50.0</b>	<b>17</b>	low	decl	0	100%
<a href="#"><u>Southern Bald Eagle</u></a>	21.3	10	med	inc <sup>7</sup>	0	100%
<a href="#"><u>Wading Birds</u></a>	var <sup>7</sup>	var	var	var	<b>0</b>	100%
<a href="#"><u>Florida Black Bear</u></a>	<b>32.7</b>	13	med	stbl <sup>7</sup>	<b>5%</b>	100%
<a href="#"><u>Florida Panther</u></a>	<b>40.3</b>	<b>15</b>	low	unk	0	100%

<sup>1</sup> Species trigger this parameter if the score is  $\geq 25.9$

<sup>2</sup> Species trigger this parameter if the score is  $\geq 15$

<sup>3</sup> Species trigger this parameter if the score is low or unknown (unk)

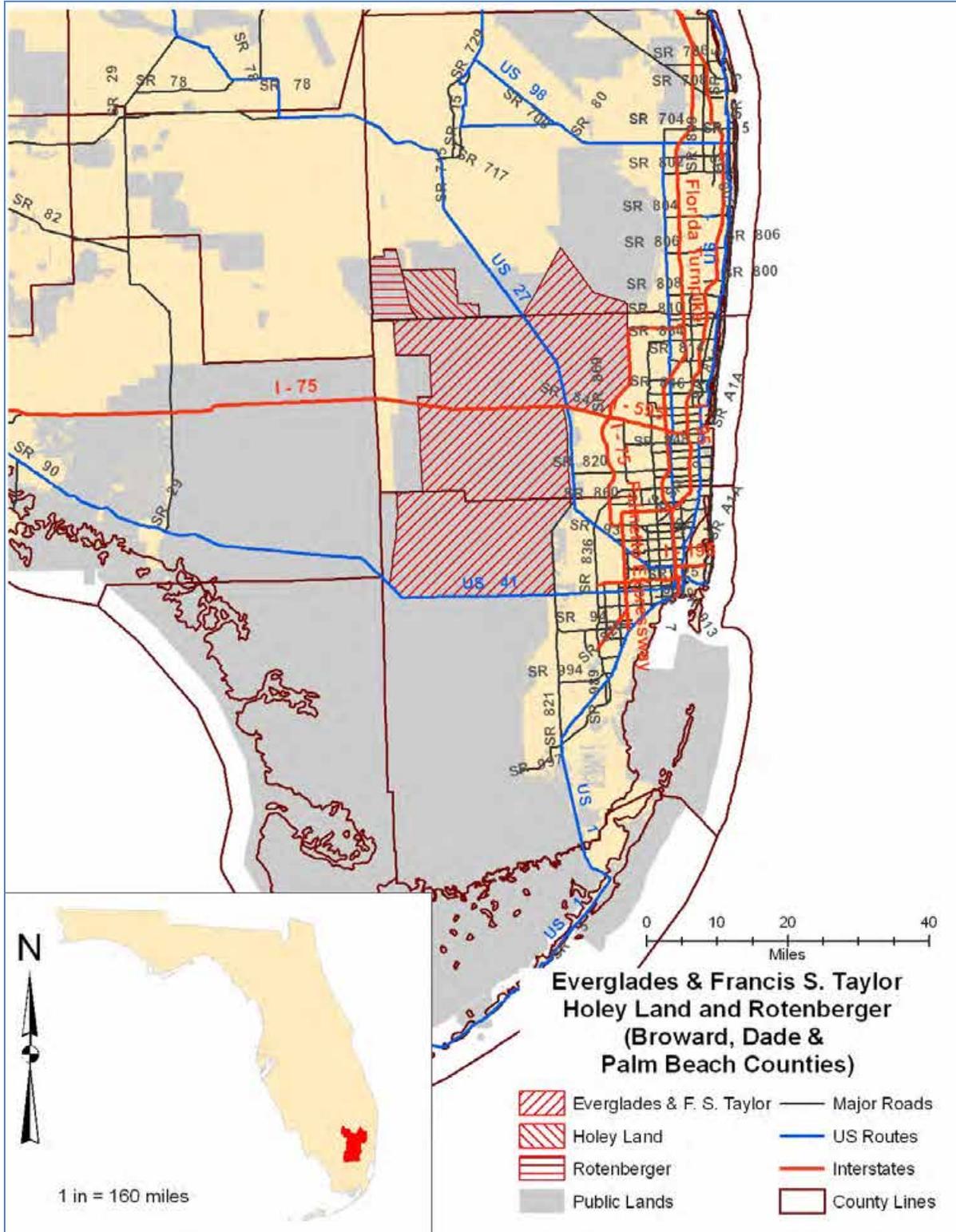
<sup>4</sup> Species trigger this parameter if the score is declining (decl) or unknown (unk)

<sup>5</sup> Species trigger this parameter if the score is  $> 0$

<sup>6</sup> Species trigger this parameter if the score is  $\leq 75\%$

<sup>7</sup> med = medium; inc = increasing; stbl = stable; var = variable

## 4 Locator Map



## 5 Section 1: Introduction

The FWC takes a proactive, science-informed approach to species management on lands in the WMA/WEA system. Staff integrates conservation planning, Population Viability Analysis (PVA) results, and geospatial analytical techniques to model potential habitat to help FWC determine where to affect focal species conservation. We then combine the landscape level assessments with input from species experts and people with knowledge of the area to create site-specific wildlife assessments for a number of focal species. Staff combines these assessments with management considerations to develop a wildlife management strategy for the area or WMA complex.

The FWC intends for this Strategy to: 1) provide land managers with information on actions they should take provided the necessary resources are available, 2) promote the presence and facilitate the persistence of focal wildlife species on the area, and 3) provide measurable species objectives managers can use to evaluate the success of wildlife management on the area. On FWC lead areas, we reference goals and objectives included in the Management Plan when discussing the species; therefore, this Strategy will help guide and support the goals of the Management Plan. The species-specific objectives identified in this Strategy will be incorporated into the Management Plan and this Strategy will be appended to the Management Plan.

In this document, we define goals, objectives and strategies as follows: 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. Strategies are the actions that will be taken to accomplish a goal or objective, and strategies may be measurable.

Staff uses species-specific habitat models to create statewide potential habitat maps. A GIS analysis is performed to determine which of the focal species were modeled to have potential habitat on an area. We use the knowledge of local staff and species experts, as well as area-specific natural community maps, to refine estimates of potential habitat on the area to assist us in evaluating the area's role in the conservation of the focal species. A workshop is conducted at which all individuals involved in the decision making process discuss the focal species status, evaluate opportunities for land and species management on the area, and decide on appropriate monitoring and/or research actions. Some species cannot be expected to persist on an area based solely on area-specific measures; therefore, this strategy identifies intra- and interagency coordination, and any "beyond the boundary" considerations (i.e., working with neighboring landowners necessary for the management of focal species). Area-specific species objectives, a list of necessary actions to achieve these objectives, and the monitoring necessary to verify progress towards objectives are agreed upon and used to create the area's Strategy.

The primary focus of this approach is non-game species; however, two of the focal species are game birds. Specific game management actions are not included in this Strategy, although game management actions are considered when drafting the Strategy and are compatible with the actions prescribed by this Strategy. While this Strategy focuses on EWMA, HWMA, and RWMA, it considers the role of the areas within the larger State and/or regional context. Similarly, while the Strategy has species-specific objectives and actions, it does not endorse single-species management. The FWC's land management focuses on natural community management that benefits the host of species that naturally occur in each natural

community. However, some species may need directed actions to recover from past declines, or to be restored to formerly occupied habitat. By implementing the Strategy, FWC believes our management will keep common species common, aid in the recovery of listed species, and benefit the largest suite of native wildlife.

## **6 Section 2: Current and Historic Management Actions**

The WMA complex that includes EWMA, HWMA, and RWMA (collectively referred to as ECWMA) is located in southwestern Palm Beach, western Broward, and northwestern Miami-Dade Counties. The FWC manages approximately 730,061 acres combined on the 3 areas. The ECWMA is part of a network of conservation lands, including lands managed by the Miccosukee Tribe of Indians of Florida and by the Seminole Tribe of Florida. Federal properties that are part of this complex include Big Cypress National Preserve (BCNP) to the west, Everglades National Park (ENP) to the south, and Arthur R. Marshall Loxahatchee National Wildlife Refuge to the northeast. The ECWMA also borders land managed by the South Florida Water Management District (SFWMD), including several stormwater treatment areas (STAs). A number of smaller parcels in public ownership, managed by cities and counties, are scattered to the east. Other surrounding lands include the Everglades Agricultural Area, additional agricultural areas, and significant urban development to the east.

Large-scale human alteration in this area began in 1948 when Congress authorized the Central and Southern Florida Project for Flood Control and Other Purposes (C&SF). This project included the construction of a substantial system of canals and levees in the Everglades ecosystem to provide flood control, water supply, preservation of fish and wildlife, and other environmental benefits to south Florida. The Water Conservation Areas (WCAs) were constructed in the Everglades ecosystem as part of the C&SF. [Figure 1](#) provides approximate locations and names of water control structures, canals, and levees on the ECWMA.

Management for each of the WMAs in the ECWMA requires a unique approach. The current condition of each WMA is a result of the property's historic land uses, as well as more current management actions. A primary management goal for these lands is to restore, where appropriate, the natural form and function of the natural communities while maintaining a mosaic of habitats that meet the needs of the areas' wildlife.

### **7 2.1: Everglades and Francis S. Taylor Wildlife Management Area (EWMA)**

Based on information in the area's Management Plan, the EWMA, also known as WCA2 and WCA3, is approximately 671,831 acres of Everglades ecosystem characterized by sawgrass marsh, freshwater slough, wet prairie, and upland tree island habitat. The FWC is the lead managing agency for the EWMA under leases and agreements (as described herein), with responsibilities including land stewardship, fish and wildlife conservation, and recreational opportunities. The EWMA is bordered by BCNP and the Miccosukee Tribe of Indians of Florida Reservation to the west, RWMA, HWMA, STAs, and Loxahatchee National Wildlife Refuge to the north, urban Fort Lauderdale and SFWMD managed lands to the east, and ENP to the south ([Locator Map](#)).



Approximately 82,000 acres of WCA3A located in western Broward and Dade counties is part of the Miccosukee Tribe of Indians of Florida Reservation. The Reservation extends to the eastern border of Collier County, and portions established within WCA3A border the western edge of EWMA. The boundary of the Reservation located within WCA3A is posted to delineate the Reservation from EWMA.

In April of 1960, the Board of Trustees of the State of Florida (Trustees) set aside approximately 143,000 acres within WCA3A in Dade and Broward counties as a license area for use, occupancy, and enjoyment by members of the Miccosukee Indian Tribe. In 1982, clarification was needed in regards to the respective rights of the Tribe and the Trustees within these areas. The Tribe was granted a perpetual lease for approximately 189,000 acres within WCA3A. This agreement assures the Tribe and their descendants the continued use of their traditional homeland. However, these lands are under the jurisdiction, management, and control of the Trustees and the SFWMD. This leased tract makes up a portion of WCA3A that is located south of Interstate 75 and west of the Miami canal. Although the FWC remains the lead managing agency, the Tribe has the right to traditional uses of the lands for subsistence purposes including hunting, fishing, frogging, and commercial and agricultural activities. Hunting, fishing and frogging uses by the Tribe are not subject to the season restrictions set by the FWC for the general public. Additionally, management activities set forth by the FWC are not to interfere with or close any part of the leased area to any tribal use or activity. The FWC discusses all proposed management with the Tribe prior to initiating actions.

A 1952 cooperative and license agreement between the Florida Game and Fresh Water Fish Commission (GFC, predecessor to the FWC) and the SFWMD recognized the GFC as the agency responsible for wildlife and recreational management of EWMA. In the years following the agreement, modifications to the legal description of the area included:

- 1952: WCA2 and 3 were designated the Everglades Wildlife Management Area
- 1962: The construction of the L-67 canals and levees subdivided WCA3, creating WCA3A and WCA3B
- 1971: The definition and recognition of WCA compartment areas 2A, 2B, 3A and 3B
- 1981: The legal description to establish the boundaries of WCA3B to include the L67A levee
- 1985: The 3B portion of WCA3 was designated as Francis S. Taylor, which changed the WMA name to the Everglades and Francis S. Taylor Wildlife Management Area

## 8 *2.1.1: History of Water Management*

The U.S. Army Corps of Engineers (COE) operates and maintains the main water outlets of EWMA, and is responsible for prescribing water regulations and key operating criteria. Water regulation schedules specify the water flow outlet operational strategy as a function of the water levels and the time of year. The FWC coordinates with the COE and SFWMD on appropriate water regulation schedules, and encourages water regulation schedules that promote the protection of tree islands and enhance conditions for wildlife. The SFWMD and the Florida Department of Environmental Protection (DEP) are responsible for regulating water quality and secondary drainage works. The FWC provides technical assistance and ecological recommendations to these agencies. Water regulation schedules have been modified throughout

the years in response to new information. A brief timeline of significant changes to water deliveries is:

- 1984: Experimental Program of water deliveries was implemented to improve conditions in ENP
- 1989: Modified Water Deliveries to ENP project
- 1994: Initiation of the C-111 project
- 1995: Test 7 of the Experimental Program of Water Deliveries to ENP
- 1999: U.S. Fish and Wildlife Service (USFWS) issued a Biological Opinion (BO) under the Endangered Species Act, requiring changes to the MWD and the C-111 Project
- 2000: Interim Structural and Operational Plan (ISOP) replaced Test 7
- 2002: Interim Operational Plan (IOP) for Protection of the Cape Sable seaside sparrow was implemented
- 2006: IOP Supplemental Environmental Impact Statement, which included updated hydrologic modeling, was completed
- 2009: Everglades Restoration Transition Plan (ERTP) was initiated and includes a Multi-Species Transition Strategy that includes species-specific parameters and associated recession and ascension rates
- 2013: Scheduled completion of the MWD and C-111 projects and transition to a future Combined Operational Plan

The construction of canals, levees, and water control structures occurred from 1949 through 1962, and a levee and canal system approximately 150 miles in length almost completely encloses WCA2 and WCA3. Levees and canals subdivide WCA3 into two water management units, WCA3A and WCA3B. A levee subdivides WCA2 into 2 water management units, WCA2A and WCA2B. The only portion of EWMA not completely enclosed by the levee system is WCA3A, where a 7-mile section of the western border remains hydrologically connected to BCNP.

Major roads influence the area as well. U.S. Highway 27 separates WCA2 from WCA3, U.S. Highway 41 (Tamiami Trail) borders WCA3, and Interstate 75 bisects WCA3. These roads, in combination with the existing levee and water delivery system, have altered the hydroperiods and disrupted sheetflow throughout EWMA. Water is impounded in the WCAs by the levee and canal system, and water flow into and out of the WCAs is regulated by various water control structures ([Figure 1](#)) and regulation schedules. As the Everglades ecosystem, which includes the EWMA, is interconnected from the Kissimmee Chain of Lakes to Florida Bay, water regulation schedule changes made to one part of the system can affect the entire system. In the 1960s, after completion of the C&SF project, adverse environmental effects due to drought and impacts from the compartmentalized system became evident, primarily in ENP. In 1970, Congress authorized a delivery schedule that provided minimum monthly water allocations to protect ENP under drought conditions.

In 1984, the Experimental Program of water deliveries was implemented to improve conditions in ENP. Subsequently, the Modified Water Deliveries (MWD) to ENP project and the C-111 Project were developed. In 1989, the MWD project was intended to take structural and operational steps to restore the natural hydrologic conditions within ENP. In 1994, the C-111 Project was intended to control seepage from ENP while providing flood mitigation to

eastern agricultural lands. In 1999, the USFWS issued a BO under the Endangered Species Act, requiring changes to the MWD and the C-111 Project. Since 1995, these projects had been operating under the water delivery program referred to as Test 7 of the Experimental Program of Water Deliveries to ENP. The USFWS determined that Test 7 was jeopardizing the continued existence of the Cape Sable seaside sparrow (*Ammodramus maritimus mirabilis*). In 2000, the Interim Structural and Operational Plan (ISOP) replaced Test 7. The ISOP was designed to meet conditions set forth in the BO until further refined water management operations were developed.

In 2002, the Interim Operational Plan (IOP) for protection of the Cape Sable seaside sparrow was implemented. The IOP included additional operational modifications to protect the Cape Sable seaside sparrow and its habitat. The objective of IOP was to reduce damaging high water levels within ENP Cape Sable seaside sparrow habitat. Improved opportunity for nesting was to be provided by maintaining water levels below ground level for 60 days during the breeding season. In 2006, the IOP Supplemental Environmental Impact Statement, which included updated hydrologic modeling, was completed. Water schedules have required water releases, gate closures and openings, or water retention within EWMA, and these actions have continued to affect natural hydroperiods and sheetflow.

In 2009, due to endangered species concerns within WCA3A and the pending expiration of the 2006 USFWS IOP BO, drafting of the Everglades Restoration Transition Plan (ERTP) was initiated. The ERTTP is a modification of the IOP with operational flexibilities to provide further hydrological improvements consistent with the protection of multiple listed wildlife species, while maintaining C&SF project purposes. Because some components of the MWD and C-111 projects are not currently complete as envisioned in the 2006 IOP BO, ERTTP represents a bridge between the IOP and a Combined Operational Plan. When the Combined Operational Plan is completed, it will then supersede ERTTP and define water management operations for the completed MWD and C-111 projects (scheduled for 2013). The objectives of ERTTP include maintaining protection for the endangered Cape Sable seaside sparrow while improving conditions in WCA3A for the federally endangered snail kite (*Rostrhamus sociabilis plumbeus*) and wood stork (*Mycteria americana*) and a number of FWC-listed wading bird species.

Forming the basis for ERTTP, a Multi-Species Transition Strategy (MSTS) was developed for WCA3A that includes species-specific parameters and associated recession and ascension rates intended to reflect water levels or water depths believed to provide optimal conditions for breeding and foraging. The goal of this strategy is to provide appropriate inter-annual variability that will optimize habitat suitability for snail kites, apple snails (*Pomacea spp.*), wood storks and other wading birds in WCA3A, while optimizing habitat suitability in tree islands. Numerous components influence water management decisions, and an interagency team will determine targeted water levels within any given season or year. The key seasonal ecological recommendations include:

- Pre-breeding (Jan 1) levels between 1.42-1.92 ft depth (to provide favorable conditions for snail kite nest success in the breeding season)
- Dry season (May 1-30) low water levels between 0.06 and 0.96 ft depth with the low end of the recommended range not exceeding 4-6 weeks in duration (to promote snail kite and wading bird nest success, apple snail reproductive success, and maintenance of wet prairie habitat)

- Wet season (Sep 15–Oct 15) high water levels < ~2.46 ft depth, with a maximum duration not to exceed 120 days (to reduce further tree island degradation)

Until ERTTP is fully implemented, the current operational plan for the C&SF project in the southern Everglades remains the 2006 IOP, although current ecological recommendations typically utilize the MSTs.

For WCA3A, the current IOP regulation schedule includes operational zones depending on the time of year. Outflows are regulated by various outflow structures based on the operational zone according to the rainfall formula. The rainfall-based delivery formula specifies the amount of water to be delivered to ENP in weekly volumes through certain water control structures. Inflow into WCA3A is primarily from the Miami canal, WCA2A, and STAs.

WCA3B is primarily a rainfall driven system, with some inflow from the Miami canal and seepage from WCA3A. However, when WCA3A is in certain zones of its regulation schedule, when the upper limit is reached, water is discharged into WCA3B. Releases from WCA3B can be made to the east coast or south. While there is no regulation schedule for WCA3B, an ecologically-based hydrologic schedule is currently under development by FWC and other cooperating agencies with no timeline for completion.

The regulation schedule for WCA2A establishes a targeted water level range from 11.0-13.0 ft, depending on the time of year. Inflow into WCA2A is from WCA1 (Loxahatchee National Wildlife Refuge) or STAs, and outflow is to WCA3A, WCA2B, the Everglades Agricultural Area, and the east coast.

Similar to WCA3B, WCA2B overlies the Biscayne Aquifer and has a high rate of seepage; therefore, WCA2B does not have a regulation schedule. There is an upper limit within WCA2B that when reached, allows for only limited inflows from WCA2A. Limited flood releases from WCA2B can be made if downstream canal capacity is available.

## 9 2.1.2: Management and Monitoring

The Florida Natural Areas Inventory (FNAI) mapped EWMA's current communities ([Table 1](#)). The acres in the table are estimates based partially on interpretation of GIS data, and a number of issues result in this acreage differing slightly from the acreage reported in the management plan. Current natural communities are relatively comparable to historic conditions in that the EWMA remains an Everglades ecosystem; however, the acreage for specific communities has been altered. For example, because of continuously flooded or artificially higher water levels, areas that were previously wet prairie or sawgrass swale habitats have transitioned to slough.

Tree islands, although a small proportion of the overall size of the EWMA, are essential to the functional integrity of the Everglades ecosystem. In portions of the EWMA, tree islands have suffered due to human-induced events, and over half of the historic tree islands have disappeared due to hydrological changes. For example, in the more northern portions, over-draining of the marsh in the 1970s facilitated the occurrence of intense and frequent wildfires that not only devastated the natural vegetation present on some islands, but also burned away layers of organic soil. In contrast, pooled water in the more southern portion of EWMA increased hydroperiods and flooding, resulting in tree island loss in the southern portion of WCA3A.

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

Community Type	Estimated Current Acreage	# of focal species that use the NC
Baygall/Hydric Hammock	24,341	6
Cattail Marsh	38,065	
Developed	1,494	
Dome Swamp/Strand Swamp	3,399	4
Exotic/Brazilian Pepper	0.3	
Exotic/Melaleuca	74	
Levee	2,639	2
Open Water	3,613	
Ruderal	75	8
Swale	275,446	5
Wet Prairie/Slough	314,466	6
Willow/Cattail	4,356	
Willow/Ruderal	4,781	2
<b>TOTAL ACRES</b>	<b>672,749</b>	

Because of the changes, much of the native woody vegetation historically found on tree islands in the northern portion of the EWMA was lost and subsequently replaced by exotic invasive plants. For several years, the FWC has worked at restoring many of these damaged tree islands. Restoration includes exotic plant control, prescribed fire, and the planting and maintenance of native trees and shrubs. Presently, 267 tree islands totaling 484 acres are in various stages of restoration.

Exotic plant control is conducted on EWMA for plants identified by the Florida Exotic Pest Plant Council as Category I, but the primary focus includes the invasive species Brazilian pepper (*Schinus terebinthifolius*), melaleuca (*Melaleuca quinquenervia*), and climbing fern (*Lygodium microphyllum*). Due to the large size of EWMA, FWC typically coordinates annual exotic treatments with the SFWMD. FWC-funded contractors or FWC area staff annually treat approximately 700 acres of tree islands, Miami canal spoil islands (created during the dredging of the Miami canal), and woody vegetation areas along the levees. Although not prevalent, old world climbing fern is sporadically found in the area. Because this species has the potential for rapid spreading, old world climbing fern surveys and treatment have been conducted on approximately 185 tree islands totaling 2,455 acres.

Planting of native trees and shrubs on degraded tree islands and Miami canal spoil islands began in 1974, and efforts increased in 1995 to enhance the establishment of diverse native plant communities that provide functional wildlife habitat. Thus far, over 21,000 trees and shrubs have been planted on over 80 tree islands and Miami canal spoil islands. Although human-made, the Miami canal spoil islands provide wildlife habitat and help offset some tree island loss. The primary species planted on tree islands and Miami canal spoil mounds include hackberry (*Celtis laevigata*), red maple (*Acer rubrum*), pop ash (*Fraxinus caroliniana*), dahoon holly (*Ilex cassine*), Carolina willow (*Salix caroliniana*), elderberry (*Sambucus simpsonii*), bald cypress

(*Taxodium distichum*), wild coffee (*Psychotria nervosa*), pond apple (*Annona glabra*), firebush (*Hamelia patens*), and cocoplum (*Chrysobalanus icaco*). A density of approximately 150 plants per acre is used to determine tree and shrub placement on tree islands; however, soil depth, tree island hydrology, and native species present on the island are also considered. Metal cages placed around individual planted trees and shrubs provide protection from wildlife damage and increase the plant's chance of survival. To prevent vines and weeds from overgrowing and shading out the plants, FWC-funded contractors maintain these cages on an annual basis, and remove cages once plants are well established. Currently, there are approximately 8,500 cages being maintained.

Vegetation monitoring tools, including photo-points and planted tree survival rates, are used to monitor and evaluate re-vegetation after management activities such as prescribed burning, exotic treatment, and plantings of native species. The 4 photo-point monitoring sites on EWMA provide insight into vegetative response to tree plantings and prescribed fire. Additionally, staff obtains planting survival rates from the data collected during the maintenance of tree and shrub cages. Trees and shrubs reported to be dead or alive each year are tracked and an annual summary that includes survival rates is prepared for each planted tree island. Overall survival of planted trees and shrubs is estimated to be 75%. This data is used to inform future planting decisions. Selecting tree and shrub species that prosper in diverse tree island conditions is paramount for effective tree island restoration.

We have records of prescribed burning occurring on EWMA dating back to 1980. The objective of the prescribed burn program is to mimic a natural fire regime that reduces fuel loads, protects tree islands from catastrophic wildfires, and enhances natural communities for the benefit of wildlife. Although most burning is conducted via airboat, aerial burns provide staff another tool to both increase burn acreage, and to allow burning in areas that are difficult to access. To date, 207,343 acres remain unburned, and 214,717 acres are within the recommended 3-5 year burn rotation for swale. Staff will develop an updated prescribed burn management plan in 2012.

Recreational opportunities in the EWMA include hunting, camping, fishing, boating, and wildlife viewing. There are approximately 80 camps located on tree islands in the EWMA. Some camps are privately owned and others are maintained through leases with the Trustees, SFWMD, or the Tribe. Within EWMA, there are 112 sites listed as cultural sites in the Florida Master Site File; however, past use by Native Americans likely qualifies most of the tree islands in the EWMA as cultural sites. FWC staff currently monitors 6 sites as recommended by the Florida Division of Historical Resources (DHR).

Wildlife surveys currently conducted on the EWMA include white-tailed deer (*Odocoileus virginianus*) aerial surveys, wading bird colony monitoring, snail kite monitoring, motion-sensor camera trapping, wood duck (*Aix sponsa*) box monitoring, and mourning dove (*Zenaidura macroura*) call counts. In addition to surveys, area staff records incidental observations of select species and enters them into a GIS database.

The FWC has conducted white-tailed deer surveys on EWMA since 1955, and have conducted systematic reconnaissance flight (SRF) surveys for white-tailed deer since 1974. Data generated from these surveys are used to create population estimates, indices, and recruitment rates, which staff uses to track the status of the herd. The 2011 population index for EWMA was 525, higher than the 5-year average of 300. The 2011 population estimate for EWMA was 629, higher than the 3-year average of 460. All portions of the area showed an increase from 2010.

The 2011 fawn recruitment rate for EWMA was 32%, a 68% increase from the 2010 recruitment rate of 19%, and the buck to doe ratio was 1:3.6. Large fluctuations can be common between consecutive years, as these surveys may be biased by environmental factors that affect deer visibility, such as high water levels or extensive wildfires. The long-term trend indicates the EWMA deer population is stable to slightly increasing. FWC uses this data in conjunctions with data collected at hunter check stations to inform herd management decisions, such as recommending the number of preferred quota permits for General Gun-Vehicle season.

During episodes of high water, terrestrial wildlife use tree islands and levees as refuge. To protect wildlife during these critical times, staff has developed criteria that when met, allow for closure of the area to the public. Staff selected deer as the indicator of increased wildlife use of levees, and conducted a series of monthly spotlight surveys in 2007 to support high-water closure criteria. Under normal conditions, fewer than 10 deer will be seen during a spotlight survey on the L5 levee and this number factors into the decision to re-open the area. When water levels average 11.60 ft National Geodetic Vertical Datum (NGVD) at the 62 and 63 gauges and are expected to increase, the area is closed to public access and hunting seasons are cancelled if occurring. Water levels plus the number of deer observed on the L5 south levee via the spotlight survey are utilized to recommend re-opening the area.

In conjunction with spotlight surveys, once a week during periods of high water, staff conducts browse surveys on tree islands to gauge the level of wildlife use and the severity of the high-water effects on wildlife. Observations include water level above island, water level in surrounding marsh, wildlife seen (live or deceased), scat observed, level of browse on identified plants, and water level reading at the nearest gauge. Staff uses this information to further support closure or re-opening of public access to EWMA.

Currently, there are 12 known active wading bird colonies within or immediately adjacent to EWMA. As part of a region-wide monitoring effort, the SFWMD monitors wading bird activity, colony locations, nesting status, and estimates the number of nests and birds present. This information is shared with the FWC. Any noteworthy wading bird activity observed by the FWC is reported to the SFWMD. Wading bird species that typically nest within the EWMA include wood stork, great egret (*Ardea alba*), great blue heron (*A. herodias*), white ibis (*Eudocimus albus*), roseate spoonbill (*Platalea ajaja*), snowy egret (*Egretta thula*), little blue heron (*E. caerulea*), tricolored heron (*E. tricolor*), glossy ibis (*Plegadis falcinellus*), and the black-crowned night-heron (*Nycticorax nycticorax*).

Water Conservation Area 2 and a portion of WCA3 serve as important snail kite nesting habitat during certain years, and are designated critical habitat by the USFWS. The University of Florida monitors snail kites throughout their Florida range, from the Kissimmee Chain of Lakes south to ENP. Area staff cooperatively assists in surveys when needed and monitoring information is shared for use in land management activities and for providing water level management recommendations. There has been a continued decline in snail kite nesting attempts and success in the EWMA since 1999. In 2011, 11 successful nests produced 11 fledglings in WCA3A.

The University of West Florida monitors apple snails, the primary food source of the snail kite. Recent apple snail surveys indicate that snail densities in the EWMA are below levels necessary to support successful snail kite breeding.

As of 2005, camera-trapping surveillance is conducted throughout the area on certain tree islands and Miami canal spoil islands to document the wildlife (primarily mammals) use of tree

island habitat. Thus far, cameras have recorded 3,725 wildlife occurrences on approximately 80 tree islands and Miami canal spoil islands. Species that are rarely observed on EWMA that cameras have documented utilizing tree island habitat include northern river otter (*Lutra canadensis*), Florida black bear (*Ursus americanus floridanus*), eastern gray squirrel (*Sciurus carolinensis*), nine-banded armadillo (*Dasypus novemcinctus*), Florida softshell turtle (*Apalone ferox*), king rail (*Rallus elegans*), and barn owl (*Tyto alba*). Common species recorded by the cameras include white-tailed deer, marsh rabbit (*Sylvilagus palustris*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), and various rats, mice, and birds.

Staff conducts annual mourning dove call counts as part of the USFWS nationwide survey. The 20-mile route is located on the L-35, L-35A and L-36 levees that border WCAs 2B and 2A to the south and east. Wildlife administrators use this data in setting annual hunting regulations.

Migratory bird surveys were conducted on the Miami canal spoil islands in the spring and fall of 2008 through 2010. Staff performed the surveys on the same 8 spoil islands located along the Miami canal in WCA3A north. The two years of survey data provided a baseline inventory of the many avian species that utilize the spoil mounds of the Miami canal. To date, surveys have documented 79 different species of bird utilizing the Miami canal spoil islands, including 3 species not previously known to utilize the EWMA: black-throated green warbler (*Setophaga virens*), eastern wood pewee (*Contopus virens*), and orchard oriole (*Icterus spurius*). The EWMA bird list includes 190 species and was last updated in 2009. In 1980, an avian inventory survey was conducted in WCA2A and included canals, airboat trails, levees, and interior marsh. The survey documented 441 individuals from 17 species, and 216 unidentified ducks.

As part of the National Marsh Bird Monitoring Program, staff conducted a call playback survey in 2010 and 2011. Seven species of marsh birds and 110 individuals were detected. Species included common gallinule (*Gallinula galeata*), least bittern (*Ixobrychus exilis*), limpkin (*Aramus guarauna*), purple gallinule (*Porphyrio martinica*), American bittern (*Botaurus lentiginosus*), king rail (*Rallus elegans*), and black rail (*Laterallus jamaicensis*).

FWC conducted aerial waterfowl surveys in WCA2 and WCA3 over several years. Fifteen species were documented with 23,316 individuals recorded from 1959-1962 and 68,050 individuals recorded from 1967-1969 and 1980. WCA1 was included in the 1968 aerial surveys. In 1984, 425 Florida mottled ducks (*Anas fulvigula fulvigula*) were banded and recorded. Currently, the FWC Waterfowl Management Program performs all waterfowl monitoring on EWMA.

A presence/absence survey was performed for round-tailed muskrats (*Neofiber alleni*) in 2009. Staff found their lodges to be common in the EWMA and discontinued the surveys. Furbearer surveys conducted from 1978-1985, 1993-1994, and 2001-2002 used scent stations to record abundance of furbearer species as identified by their tracks. Eleven species were identified including striped skunk (*Mephitis mephitis*), bobcat, and gray fox (*Urocyon cinereoargenteus*). As part of a study documenting the effects of the 1994 high water event, small mammals were trapped along the L4 levee Miami canal in the northwestern portion of WCA3A from 1995-1997. This study documented cotton mice (*Peromyscus gossypinus*), rice rats (*Oryzomys palustris*), and least shrews (*Cryptotis parva*), and it showed a positive relationship between amount land area and small mammal populations. In addition to cotton mice and rice rats, staff found cotton rats (*Sigmodon hispidus*) in small mammal trapping surveys conducted on tree islands in 2000-2001.

Bobcat scat surveys were conducted from 1982-1986 to identify prey species. Staff collected 622 scats along the L-4, L-5, L-28, and L-67 levees for analysis of prey species composition. Marsh rabbits were the main food source found in 85.1% of scat analyzed, followed by 15.4% with cotton rat, 12.2% with birds, 7.7% with white-tailed deer, and 4.3% with round-tailed muskrat. Increased prey abundance near the levee due to high water played a large factor in prey availability. When other prey dispersed into the marsh during low water, bobcats resorted to eating cotton rats. Bobcat predation on white-tailed deer coincided with high water events.

Airboat spotlight surveys for alligators (*Alligator mississippiensis*) were conducted from 1975-1979 and resulted in documentation of 2,117 alligators. The high variation in sightings caused FWC to evaluate survey techniques in 1976. Water level and temperature fluctuations accounted for most of the variation in counts. In spite of the variability of data, results indicated a widespread and healthy alligator population throughout EWMA.

FWC collected alligator nesting data from 1974-1975 and 1982-1986. Surveyors located 152 active nests, and determined a 55% success rate. Results suggested higher water early in the season leads to better dispersal and more nesting attempts in the interior marsh. Earliest (August 3) and latest (November 9) known hatching dates were recorded. Additionally, staff captured and tagged alligators from 1961-1986. Information recorded included general condition, biological data, capture sites, and recapture information.

Staff conducted herpetofauna trapping surveys of tree island, prairie, and sawgrass habitat in 1995, 2000, and 2001. These surveys documented 32 species and the findings contributed to a species list in the EWMA's Management Plan. Various fish and bottom fauna (e.g., insect larvae, shrimp, clams, gastropods, and leeches) surveys were conducted from 1962-1964. These surveys identified 24 species of fish, and for major species, a summary of habitat and prey preference was recorded. Sixteen species of bottom fauna were found with equal abundance in old and newly constructed canals.

In 2002, staff installed 50 wood duck boxes to provide additional breeding sites throughout EWMA. Over the years, some boxes have disappeared, been burned over, or were removed from unsuccessful locations. The boxes are maintained in December or January (before breeding season), when wood shavings are replaced and any necessary repairs are made. In late May, staff checks the boxes for signs of wildlife use. Currently, there are 35 wood duck boxes monitored in WCA3A south and WCA2B. There has been no documentation of wood ducks using the boxes; however, other wildlife species such as Eastern screech-owls (*Otus asio*) have been documented utilizing the boxes.

Hog (*Sus scrofa*) dispersal and telemetry studies were conducted coinciding with hog releases into the EWMA in 1965, 1968, 1970-1971, 1977, and 1983. Studies found that hogs travel little from where they are released or trapped, canals act as physical barriers to dispersal, and no predation was detected on adult hogs.

## **10 2.2: Holey Land Wildlife Management Area (HWMA)**

Based on information in the area's management plan, HWMA is comprised of 35,350 acres of Everglades ecosystem, characterized by a marsh of dense sawgrass with scattered shrubs, tree islands, cattail marsh, and freshwater sloughs. The HWMA derived its name from

reports that it was used as a practice bombing range during World War II and is pocked with bomb craters. However, these depressions may be the result of natural phenomena.

Florida acquired 31,670 acres in 1968 and leased the land to the GFC (predecessor to the FWC) to be managed as a portion of the EWMA for the purpose of wildlife management. In 1975, these acres were established as a separate WMA. In 1986, a DEP permit modification was issued to add a 3,680-acre parcel (the “Toe of the Boot”) in the southeast corner of HWMA. The HWMA is bordered by RWMA to the west, EWMA to the south, STA 3/4 to the east, and agricultural land to the north.

The FNAI mapped HWMA’s current communities ([Table 2](#)). The acres in the table are estimates based partially on interpretation of GIS data. A number of issues result in this acreage differing slightly from the acreage reported in the Management Plan. These habitats support native fish and wildlife such as swallow-tailed kites (*Elanoides forficatus*), alligators, and white-tailed deer. A number of issues, including the canal and levee system that disrupts sheet flow and the conversion of marsh to farmland north of HWMA, negatively influence HWMA’s hydrology. These alterations have resulted in changes to HWMA’s plant communities. Substantial droughts created conditions that allowed muck fires that destroyed considerable acreage of tree island habitat and promoted the encroachment of shrubs into areas previously dominated by wetland plant species.

**Table 2.** Mapped acreage of current plant communities on HWMA, including management status and number of focal species that use the community.

Community Type	Estimated Current Acreage	# of focal species that use the NC
Baygall/Hydric Hammock	274	5
Cattail Marsh	9,294	
Levee	194	2
Open Water	8	
Ruderal	118	8
Swale	20,736	5
Wet Prairie/ Slough	478	6
Willow/ Ruderal	3,479	2
TOTAL ACRES	34,581	

### 11 2.2.1: History of Water Management

The system of levees and canals created for the C&SF completely impounded the property that is now HWMA, and water control structures and a regulation schedule determine water flow into and out of the area. A brief summary of the development of the HWMA water regulation schedule follows:

1976: The GFC proposed a Conceptual Management Plan for HWMA.

1983: The Trustees, Department of Environmental Regulation (DER), GFC, and SFWMD signed a Memorandum of Understanding (MOU) establishing a water regulation schedule 0-2 ft above average ground elevation.

- Late 1980's: SFWMD constructed a pump station (G200A) in the northwest corner of HWMA to provide water inflow from the Miami canal. Additionally, 3 culverts (G204, G205, and G206) were installed along the southern boundary to allow drainage of HWMA into the L-5 borrow canal.
- 1990: GFC and SFWMD entered an agreement that set forth an interim operational plan that was based on the best available data and included a water schedule of 11.5-13.5 ft above Mean Sea Level (MSL). This was done in an attempt to replicate the 0-2 ft schedule in the 1983 MOU. The agreement allowed for adjusting the interim schedule to achieve the goal of restoring HWMA to its natural Everglades habitat as better information became available.
- 1991: The G200A pump began delivering water from the Miami canal into HWMA.
- 1993: Because a water level investigation showed that the average ground elevations were lower than those estimated in 1990, a verbal agreement was made between the GFC and SFWMD to lower the water schedule in HWMA to 11.0-13.0 ft above MSL.
- 1995: SFWMD and GFC start negotiating a revision to the 1990 HWMA Memorandum of Agreement. GFC proposed a 10.5-12.0 ft water schedule to replace the interim schedule of 11.0-13.0' MSL. GFC made this proposal after additional research showed the average ground elevations were lower than estimated, high water levels contribute to explosive cattail growth, high water levels negatively affect the deer herd above 12.5 ft MSL. The GFC and SFWMD have a verbal agreement for the revised schedule.

In 2008-2009, SFWMD and FWC developed a revised operational schedule. This operational schedule (10.5-12.0 ft MSL) recommends that water levels in the interior of the marsh range from 0.75 to 1.0 ft above average ground elevation. The maximum depth should not exceed 1.5 ft above average ground elevation and the minimum depth should not fall under 0.5 ft below ground elevation. Although mutually agreed upon by both agencies, the agencies have not signed an MOU formalizing the revised schedule. Staff conducts annual cattail coverage surveys to monitor the effectiveness of water management schedules. Cattail coverage of HWMA is currently estimated to be 17.8% and has shown a general decreasing trend since 2004.

Unfortunately, the G200A pump has been mostly non-functional since 2005. The replacement cost of this pump station is estimated at \$4,260,000. Additionally, due to elevation differences, the outflow culverts (G204, G205, and G206) only effectively drain HWMA during extreme flood conditions. The lack of functioning infrastructure has hindered hydrological management and implementation of a water management schedule, and has subsequently resulted in HWMA being primarily a rainfall driven system.

## 12 2.2.2: Management and Monitoring

Anthropogenic induced events and hydrological changes have changed many tree islands, causing disappearance or degradation. In the more northern portions of the Everglades, including HWMA, over-draining of the marshes in the 1970s created conditions that allowed intense and frequent wildfires. These wildfires devastated the natural vegetation present on some

islands, burned away layers of organic soil, and created conditions conducive to exotic plant infestation. Restoration of degraded tree island habitat in HWMA focuses on chemical treatment of exotic vegetation and prescribed burning. Exotic invasive species of primary concern include Brazilian pepper, melaleuca, and old world climbing fern found on tree islands, within the marsh, and along levees. Since 2006, approximately 2,937 acres of upland tree island and forested levee habitat have been treated for exotic vegetation. Staff annually monitors and treats tree islands not contracted for exotic vegetation treatment.

Goals of the prescribed burning program include improving wildlife habitat, improving recreational access into HWMA, and reducing fuel loads that can lead to catastrophic wildfires. Due to the current hydrologic constraints of non-functional water management infrastructure, prescribed burning as a land management tool continues to be a challenge in HWMA. Sufficient water levels are necessary to gain access to proposed burn units via airboats and to minimize the risk of igniting and burning away the area's organic soils. There are approximately 27,000 potentially burnable acres in HWMA. Since 2006, wildfires and prescribed burns have affected 18,044 acres. Of these, approximately 17,697 acres have burned within the recommended 3-5 year burn rotation for swale habitat. Staff will develop a burn management plan for HWMA within the next year.

Recreational opportunities in the HWMA include hunting, fishing, boating, and wildlife viewing. There are no hunt camps located within the HWMA. The DHR surveyed for archaeological sites in 1997, and there are no sites listed in the Florida Master Site File for HWMA.

The wildlife resources of HWMA were surveyed from 1982 to 1983 so that recommendations could be made regarding proposals to either restore HWMA to more natural conditions (by reestablishing sheet flow and seasonal water level fluctuation based on historical patterns) or to turn it into a water storage reservoir. This survey effort included avian surveys, alligator surveys, white-tailed deer surveys, opportunistic observations, and vegetation surveys. A brief summary of each survey follows. Avian survey methods included 16 listening stations (4 stations in each of 4 major habitat types: tree island, sawgrass, shrub and sawgrass/shrub mix) as well as two 7-mile aerial transects. Surveys documented 68 species of birds, and the highest quantity, diversity, and densities were found in tree island habitat. Fixed-wing aerial transects were flown to survey for alligator wallows and 9 active alligator wallows were located in HWMA. Fixed-wing aerial transects were used to survey the white-tailed deer population of HWMA. This survey produced 46 observations and a deer herd estimate of 200-300 animals. Incidental observations during the surveys resulted in the documentation of 18 species of reptiles and amphibians, and 9 species of medium and large-sized mammals in the HWMA. There were no opportunistic observations of listed species (other than American alligators). Vegetation sampling was conducted in the understory and canopy of the 4 major habitat types within HWMA. These surveys identified 53 species of plants in the understory of the major habitat types, and determined that Carolina willow and wax myrtle (*Myrica cerifera*) were the dominant overstory species in tree island and shrub habitats, respectively. The overall conclusion from the multiple surveys was that the restoration proposal would provide substantially more benefit to wildlife (notably wading birds, deer, and alligators) than the reservoir proposal.

Staff has used annual SRF surveys to monitor white-tailed deer on the area since 1980. Data generated from these surveys are used to derive population estimates, indices, and recruitment rates, which staff uses to track the status of the herd. This data is combined with

data collected at hunter check stations to develop quota harvest recommendations. The 2011 population index was 227, lower than both the 2010 index of 261 and the 5-year mean index of 236.6. The 2011 population estimate for HWMA was 289, lower than the estimate of 339 in 2010 and similar to the 3-year average of 293. The overall pattern of population surveys since 2008 suggests the HWMA deer population is stable.

During episodes of high water, terrestrial wildlife utilizes tree islands and levees as refuge. Because the amount of these refuge habitats is limited, wildlife can be vulnerable if public access continues during these periods. Staff performed a series of spotlight surveys in 2009 to support high-water closure criteria of 12.5 ft NGVD.

The HWMA route of the North American Breeding Bird Survey was conducted in 1987, 1990, 1993-1999, and 2009-2010. Surveyors have recorded 63 bird species on the HWMA route to date. In general, the total number of birds seen on the HWMA route has decreased since the early 1990s; however, species richness has remained stable.

Aerial mid-winter waterfowl inventories were conducted from 1995-1999 to document the importance of HWMA's wetland habitat to overwintering waterfowl. Species observed included: Florida mottled duck, blue-winged teal (*Anas discors*), green-winged teal (*A. crecca*), gadwall (*A. strepera*), American widgeon (*A. americana*), cinnamon teal (*A. cyanoptera*), fulvous whistling duck (*Dendrocygna bicolor*), American coot (*Fulica americana*) and ring-necked duck (*Aythya collaris*).

Staff conducted SRF surveys from 1986-2002 to determine wading bird use of HWMA. Commonly observed species included white ibis, cattle egret (*Bubulcus ibis*), great blue heron, great egret, little blue heron, and snowy egret. Currently, the presence of wading bird nesting colonies is recorded during the annual deer aerial line-transect surveys or during routine land management activities. Any detected colonies are reported to the SFWMD, which conducts monthly monitoring during the breeding season, making it unnecessary to conduct separate surveys for wading bird use of HWMA. In 1995, it was reported that 5 colonies (160 total nests) of anhinga (*Anhinga anhinga*), 1 colony (150 nests) of cattle egrets, and 2 colonies (30 total nests) of tricolored herons were observed in HWMA. The last active nesting colony reported from incidental observations was 10 yellow-crowned night-herons (*Nyctanassa violacea*) in 1998. During the nesting season, HWMA is typically too dry to support large numbers of wading birds, and consequently, there are currently no active wading bird nesting colonies in HWMA.

A survey for birds within sawgrass and cattail swale was conducted in 1998. Observers documented 563 individuals from 12 species at 20 stations. Species included common yellowthroat (*Geothlypis trichas*), red-winged blackbird (*Agelaius phoeniceus*), boat-tailed grackle (*Quiscalus major*), common gallinule, least bittern, barn swallow (*Hirundo rustica*), limpkin, purple gallinule, American bittern, great egret, great blue heron and little blue heron. In 1997, an airboat was used to survey for snail kites in the freshwater sloughs of the northeastern corner of the HWMA, but no snail kites were observed.

Staff performed electro-fishing surveys on HWMA from 1988 to 1994. This was done to compare the fish species inhabiting HWMA prior to and after the addition of nutrient-rich water from the Miami canal via the G200A pump in 1991. The surveyors found 24 species of fish in the marsh and northern distribution canal of HWMA. The most common fish in the interior marshes was mosquitofish (*Gambusia holbrooki*), and bluegill (*Lepomis macrochirus*) was most common in the distribution canal. The diversity, biomass, and total number of fish sampled in

the marsh increased after the addition of water from the G200A pump in 1991. An accompanying increase in the numbers of largemouth bass (*Micropterus salmoides*) was found within the distribution canal.

In 1997, small mammals were trapped along the Miami canal in the northwestern portion of the HWMA. During 1,000 trap nights, staff captured 39 cotton mice, 6 rice rats, and 6 least shrews.

Staff used airboats to conduct spotlight surveys for American alligators from 1990-2000. Survey routes included distribution canals and interior marsh, and resulted in 1,556 alligator observations over the 11-year period. Alligator densities increased substantially after the G200A pump began delivering water from the Miami canal in 1991 and remained stable for the remainder of the surveys.

Several methods have been used to monitor the nesting activity of alligators in the HWMA. Fixed-wing SRF surveys were performed from 1988-1994, but resulted in only 3 nests being located during the 7-year period. As a result, staff discontinued the SRF flights. Helicopter surveys of fixed plots were used to locate alligator nests from 1988-1995 and 11 nests were located during the 8-year period. From 1993-2002 and in 2007, artificial islands (created in the 1970s) were surveyed by helicopter for alligator nests. Active nests were found every year of the survey except 1996, 1999, 2001, and 2007, with 80 nests located over the 11-year period. Currently, FWC's Alligator Management Program performs all alligator monitoring.

### **13 2.3: Rotenberger Wildlife Management Area (RWMA)**

Based on information in the area's management plan, RWMA is comprised of 29,700 acres of Everglades ecosystem, including sawgrass marsh, freshwater slough, cattail, wet prairie, shrubs and upland tree island habitat. Florida acquired this land through the Environmentally Endangered Lands program in 1975. Subsequent acquisition of inholdings has occurred over the years and there is currently no private property remaining within the boundaries of RWMA. The RWMA is bordered by HWMA to the east, EWMA to the south, STA 5 and 6 to the west, and agricultural land to the north.

#### *14 2.3.1: History of Water Management*

The system of levees and canals resulting from the C&SF completely impounded the property that is now RWMA. In addition, a levee road with an associated Florida Power & Light utility corridor (the Andytown transmission line) completely bisects the southern portion of RWMA. Levees impound water within RWMA, and water control structures and a regulation schedule regulate water flow into and out of RWMA. A brief summary of the development of the RWMA water regulation schedule follows:

1976: The GFC proposed a Conceptual Management Plan for the RWMA.

1983: The Trustees, DER, GFC, and SFWMD signed a MOU establishing a water regulation schedule 0-2 ft above average ground elevation.

1994: The Florida Legislature passed the Everglades Forever Act, which required restoration of the Rotenberger Tract through improvements in the area's hydroperiod.

- 1997: The Everglades Forever Act Permit STA 5 is issued, which includes discharge requirements and a requirement to develop an operational plan for RWMA.
- 2000: The SFWMD completed construction of a pump station (G410) in the northwest corner of RWMA to function as the primary input of treated water from STA 5 into RWMA. Additionally, four gates (G402 A, B, C, and D) were installed along the eastern boundary of RWMA to allow drainage of RWMA into the Miami canal and the STA 5 distribution canal.
- 2001: FWC, DEP, and SFWMD finalize development of the interim operational plan for RWMA. This operational plan detailed RWMA's water control structures, how and when these structures should be utilized, and a water regulation schedule to guide hydrological management decisions.
- 2004: Agencies prepare an updated operation plan for RWMA to incorporate a section on departures from routine operations and modifications to the monitoring and reporting section.
- 2008: The SFWMD began the planning and design of a supplemental inflow pump station that would provide additional treated water from STA 6 (on the western boundary of RWMA). Construction of this pump station is currently underway.
- 2008-9: The SFWMD, FWC, and DEP participated in several interagency meetings to revise and improve the 2004 interim regulation schedule. The reason for these meets was to determine how to achieve the hydropattern restoration goals for RWMA more effectively. An initial step in the process was to obtain an updated survey of RWMA, which was completed in December 2008. The agencies reached consensus on a modified interim regulation schedule of 12.1–13.25 ft NGVD. This schedule maintains the hydropattern restoration goals, addresses the diverse biological needs of RWMA, and minimizes the risk of muck and peat fires. The current operational plan (March 2010) and its corresponding interim regulation schedule are awaiting final approval by DEP. FWC staff coordinates on a weekly basis with the SFWMD to recommend and implement hydrologic management actions. Annual cattail coverage surveys are performed to monitor the effectiveness of the current operational schedule. The estimated cattail coverage of RWMA is currently 17.6%, and this coverage has remained relatively stable since surveys began in 2009.

15      2.3.2: *Management and Monitoring*

FNAI mapped RWMA's current natural communities ([Table 3](#)). The acres in the table are estimates based partially on interpretation of GIS data. A number of issues result in this acreage differing slightly from the acreage reported in the management plan. These habitats support native fish and wildlife species such as marsh birds, wading birds, alligators, and white-tailed deer. In addition, 3 former farm properties, totaling 1,758 acres, made up a significant portion of the eastern boundary of RWMA. The berms and canals surrounding these farms effectively blocked the natural flow of surface water as it passed through the area's extensive sawgrass marshes. These barriers to surface flow also resulted in an altered habitat conducive to invasion by exotic plant species and more susceptible to muck fires. Staff received funding from the Aquatic Habitat Restoration and Enhancement (AHRE) sub-section for the mechanical

removal and restoration of 10.7 miles of berms and canals that altered surface flow along the eastern boundary of RWMA. This multi-phase project was performed from May 2009 to May 2011 at a cost of \$134,225.

**Table 3.** Mapped acreage of current plant communities on RWMA, including management status and number of focal species that use the community. Community acreages are approximate and may differ slightly from acreages in the management plan.

Community Type	Estimated Current Acreage	# of focal species that use the NC
Baygall/ Hydric Hammock	825	5
Cattail Marsh	3,120	
Levee	243	2
Open Water	54	
Ruderal/ Developed	8	
Ruderal/ Farm	1,849	2
Ruderal/ Shrubby	187	3
Swale	19,600	5
Wet Prairie/ Slough	2,841	6
Willow/ Ruderal	1,125	2
<b>TOTAL ACRES</b>		<b>29,852</b>

Anthropogenic induced events and hydrological changes have changed many tree islands, causing disappearance or degradation. In the more northern portions of the Everglades, including RWMA, over-draining of the marshes in the 1970s created conditions that allowed intense and frequent wildfires. These wildfires devastated the natural vegetation present on some islands, burned away layers of organic soil, and created conditions conducive to exotic plant infestation. Restoration of degraded tree island habitat in RWMA focuses on chemical treatment of exotic vegetation, prescribed burning, and planting native vegetation. Exotic invasive species of primary concern include Brazilian pepper, melaleuca, and old world climbing fern found on tree islands, within the marsh, and along levees. A combination of private contractors and area staff are used to achieve exotic vegetation control. Since 2006, approximately 1,230 acres of upland tree island and levee habitat have been treated for exotic vegetation.

The existing pump and gate infrastructure in conjunction with the current operational schedule have improved hydrological conditions, and this has made prescribed burning a more practical land management tool in RWMA. Goals of the prescribed burning program include improving wildlife habitat, complementing tree island restoration, improving recreational access into RWMA, and reducing fuel loads to prevent catastrophic wildfires. There are approximately 24,000 potentially burnable acres in RWMA, and since 2006, wildfires and prescribed burns have affected 35,365 acres. Consequently, all of RWMA has burned within the recommended 3-5 year burn rotation for swale habitat. Staff will develop a burn management plan for RWMA within the next year.

Another component of tree island restoration is planting native trees and shrubs that promote the establishment of diverse native plant communities and help provide functional wildlife habitat. Primary planted species include hackberry, red maple, dahoon holly, Carolina

willow, elderberry, bald cypress, wild coffee, pond apple, firebush, and cocoplum. A density of approximately 150 plants per acre is used to determine tree and shrub placement on tree islands. Metal cages placed around individual planted trees and shrubs provide protection from wildlife damage and increase the plant's chance of survival. To prevent vines and weeds from overgrowing and shading out the plants, FWC-funded contractors maintain these cages on an annual basis, and remove cages once plants are well established.

Vegetation monitoring tools, including photo-points and planted tree survival rates, are used to monitor and evaluate re-vegetation after management activities such as prescribed burning, exotic vegetation treatment, and plantings of native species. Currently, there are 13 panoramic photo-points on RWMA. Additionally, staff obtains planting survival rates from the data collected during the maintenance of tree and shrub cages. Trees and shrubs reported to be dead or alive each year are tracked and an annual summary that includes survival rates is prepared for each planted tree island. Overall survival of planted tree and shrubs in RWMA is estimated to be 82% (based upon records since 2007). Staff uses this vegetation monitoring data when making management decisions regarding future plantings.

Recreational opportunities in RWMA include hunting, fishing, boating, and wildlife viewing. Hunt camps are not allowed on RWMA, and a contractor removed one hunt camp in 2005 and staff removed another in 2009. Staff performs annual monitoring at 2 documented archaeological sites listed in the Florida Master Site File. DHR first recorded these sites in 1987 and 1997. A third site used to occur on a tree island that was destroyed by a muck fire. The DHR has concurred that annual monitoring of this site by FWC staff is not necessary.

FWC has conducted a number of species surveys on RWMA. A presence/absence survey was performed for round-tailed muskrats in 2009. Staff found their lodges to be common in the RWMA, and discontinued the surveys. As part of the National Marsh Bird Monitoring Program, a call-playback survey was conducted in 2010. Observers detected 72 individuals from 7 species of marsh birds at the 8 monitoring points. Species included common gallinule, least bittern, limpkin, purple gallinule, American bittern, king rail, and black rail. An aerial survey was conducted in 1983 to determine wading bird and waterfowl use of an area affected by a recent muck fire. Observers documented approximately 1,800 individual birds including little blue herons, great blue herons, white ibis, great egrets, Florida mottled ducks, and yellowlegs (*Tringa sp.*).

Herpetofauna surveys of tree islands, prairie, and sawgrass habitat were conducted in 1993, and resulted in 120 individuals from 21 species being trapped at 5 sites within RWMA. No listed species were observed. A frog call survey using 10 listening stations was performed in 1998 to determine its efficacy as a surveying method. Species heard included the pig frog (*Rana grylio*), squirrel tree frog (*Hyla squirella*) and green tree frog (*Hyla cinerea*). Because the survey provided unreliable estimates of the number of frogs, the survey was discontinued.

Aerial alligator nest surveys occurred from 1992-1998 to monitor their population trends in the RWMA. Observers found active nests in RWMA every year of the survey and 164 nests over the 7-year period. Currently, FWC's Alligator Management Program performs all alligator monitoring.

White-tailed deer surveys began in 1974. Staff currently uses SRF surveys to generate population estimates, indices, and recruitment rates. The 2011 population index was 82, lower than both the 2010 index of 92 and the 5-year mean index of 137. The 2011 population estimate for RWMA was 108, higher than both the 2010 estimate of 65 and the 3-year mean of 71.

However, the overall pattern of population surveys since 2008 suggests the RWMA deer population is in decline.

During episodes of high water, terrestrial wildlife utilizes tree islands and levees as refuge. When interior marsh water levels approach the area high-water closure criteria of 13.5' NGVD, spotlight surveys for white-tailed deer on the L23 (Miami canal) and Manley ditch levees occur to provide information to support closure and re-opening of the area.

Staff conducted SRF surveys from 1986-2002 to determine wading bird use of RWMA. Commonly observed species included white ibis, cattle egret, great blue heron, great egret, little blue heron and snowy egret. Currently, staff records the presence of any wading bird nesting colonies during the annual deer SRF surveys or during routine land management activities. Any detected colonies are reported to the SFWMD, which conducts monthly monitoring during the breeding season; therefore, separate surveys for wading bird use of RWMA are unnecessary. Records dating back to 1996 indicate no active nesting colonies on RWMA. During the nesting season, RWMA is typically too dry to support large numbers of wading birds.

## **16 Section 3: Area Focal Species**

The FWC's land management focuses on restoring the form and function of natural communities. However, in some instances, it is important to consider the needs of specific species, and it is necessary to monitor the impacts of natural community management on select wildlife to ensure management is having the desired effect. To ensure a focused, science-based approach to species management, the FWC uses the focal species concept embraced by the [Wildlife Habitat Conservation Needs in Florida](#) (WHCnIF) project. The focal species approach incorporates a variety of concepts and considerations that, if applied correctly, allow one to identify the needs of wildlife collectively by strategically selecting a subset of wildlife species. The species selected as focal species include umbrella species, keystone species, habitat specialists, and indicator species.

The Public Lands Conservation Planning (PLCP) project selected 60 focal species for the statewide assessment. The PLCP project used potential habitat models to create statewide potential habitat maps for each species. Staff created these potential habitat models using relevant available data with the base layer for all models being the FWC 2003 landcover data. Considering the natural history of species, staff selected additional data layers such as the species range, soils, land use, etc. As such, each model is species specific. Once statewide potential habitat maps were available, a PVA was conducted for each focal species.

Using the statewide landcover-based habitat maps, models identified 12 of the 60 focal species as having potential habitat on the ECWMA ([Section 3.1](#)). To create more accurate area-specific potential habitat maps, we used the same statewide model for each focal species on the area but replaced the landcover data with area-specific natural community data. The resulting potential habitat map was then refined using input from local managers and species experts. All potential habitat acreage estimates provided in [Section 3.2](#) are the results of this area-specific model and resulting map.

The ECWMA Wildlife Conservation Prioritization and Recovery (WCPR) Workshop held December 14-15, 2011 brought decision makers together to assess species' opportunity and needs, identify measurable objectives, determine necessary actions including monitoring, and identify necessary coordination efforts. WCPR staff compiled information on the focal species

in a workbook to facilitate informed discussion. 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 long-term security of the species (i.e., examine PVA results), if the species is management responsive, and any other local overriding considerations (e.g., status of species in the region, local declines/extirpations). A summary of this assessment of each species is available in [Section 3.2](#).

### 17 3.1: ECWMA Focal Species

Using the statewide landcover-based habitat maps, models identified 12 of the 60 focal species as having potential habitat on the ECWMA. Occasionally, models indicate species have potential habitat on the area when using statewide data; however, the local assessment indicates there is little opportunity to manage for these species on the area and they are not a focus of management on the area. These species are identified with an \* and are discussed as Limited Opportunity Species ([Section 3.2.10](#)).

American Swallow-Tailed kite (*Elanoides forficatus*)  
Burrowing Owl (*Athene cunicularia floridana*) \*  
Crested caracara (*Caracara cheriway*)\*  
Florida mottled duck (*Anas fulvigula fulvigula*)  
Limpkin (*Aramus guarauna*)  
Northern bobwhite (*Colinus virginianus*) \*  
Short-tailed hawk (*Buteo brachyurus*)  
Snail kite (*Rostrhamus sociabilis plumbeus*)  
Southern bald eagle (*Haliaeetus leucocephalus*)  
Wading birds (*Multiple spp.*)

Florida black bear (*Ursus americanus floridanus*)  
Florida panther (*Puma concolor coryi*)

### 18 3.2: Focal Species Opportunity/Needs Assessment

This section provides an assessment of the opportunity and needs of each of the focal species. Because all federally listed species 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 category. Unless otherwise noted, all acres of potential habitat are the result of using the area-specific natural community data in the species potential habitat model. We presume that by doing the actions called for in this strategy, we will ensure the area fulfills its role in the conservation of wildlife.

FWC is currently in the process of developing management plans for FWC-listed species. Staff will monitor these plans to determine if the content of the plans would warrant a revision to any of these assessments. Revisions will be amended to the strategy.

The swallow-tailed kite is occasionally observed on the ECWMA, and nesting and nesting behavior have not been documented. There is a limited amount of nesting habitat in the ECWMA; the hammocks and tree islands along the southwest border of EWMA and tree islands throughout the properties provide only small pockets of trees as potential nesting sites.

As a habitat generalist, swallow-tailed kites utilize a variety of natural communities. Tall trees are an important component of nesting habitat, and open areas are used for foraging. 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. Models indicate 15,082 acres of potential habitat for swallow-tailed kites occur within current natural communities on the ECWMA. Swallow-tailed kites are a moderate statewide priority and trigger 4 of 6 statewide prioritization parameters ([Priority table](#)).

There is a large amount of suitable swallow-tailed kite nesting habitat on nearby BCNP and staff believe that the individuals occurring on the ECWMA are part of a larger, regional population. Though the occasional nest is possible on the ECWMA, it is likely the WMAs primarily provide foraging habitat for the regional population. Additionally, the ECWMA does not lie on a major migratory route for the species.

Swallow-tailed kites are not typically considered management-dependent and the opportunity to affect this species at the management-area level on any of the WMAs is low. However, ongoing efforts to maintain the WMAs' natural community structure and function will allow the areas to fulfill their role in conserving the species. Management actions that maintain or enhance habitat for this species include prescribed fire, tree island restoration and protection, and exotic vegetation removal.

Because this species is not a good indicator of management and is more appropriately monitored at the regional or statewide level, there is no need for monitoring or area-specific objectives for this species. Further, though the swallow-tailed kite may occasionally utilize the ECWMA, most of the habitat on the WMAs is not particularly suitable for the species. No attempt will be made to actively search for nests, but if individuals are observed exhibiting nesting behavior (carrying nesting material to/from an area, acting aggressively), the location will be noted, an attempt will be made to locate the nest, and the area will be protected from disturbance ([Section 4.3.1](#)). If swallow-tailed kite activity is observed during the nesting season, this information will be documented. There is no need to establish a SMA as there is no management that could be applied specifically for the benefit of this species.

The area goal is to continue to provide habitat for the swallow-tailed kite that will allow the individuals using the ECWMA to function as part of the regional population. While the continued presence of this species on these areas is dependent on conditions that influence the regional population of swallow-tailed kites, the proximity of the ECWMA to other conservation lands greatly increases the chances of this species persisting in the area. Coordination recommendations can be found in [Sections 6.1.2, 6.6, 6.7, and 6.8](#).

Florida mottled ducks are common and breed on the ECWMA. As one of the most common ducks occurring on the ECWMA, hunters regularly harvest Florida mottled ducks. Species experts indicate Florida mottled duck use occurs throughout the properties; however, the type, seasonality, and location of use appear to vary based on environmental conditions, especially availability of surface water. Nesting in the ECWMA typically occurs only during the driest years; however, during wetter years, Florida mottled ducks still use the properties. The Fish and Wildlife Research Institute (FWRI) conducted a study on habitat use by Florida mottled ducks. Data from the study indicate a large proportion of mottled ducks in southern Florida use the ECWMA in any given year. The heaviest use was December through May, with more limited use in other months of the year.

The Florida mottled duck is not listed at either the state or federal level and is a harvested game species. The species triggers 2 of the 6 statewide prioritization parameters ([Priority table](#)), making it a moderate priority statewide. Models indicate 633,567 acres of potential habitat for Florida mottled ducks within current plant communities on the ECWMA. While this is enough to independently-support a population of Florida mottled ducks, the Florida mottled ducks on the ECWMA use nearby wetlands and are part of a larger regional population. Most of the habitat modeled on the area for Florida mottled ducks is wet prairie, slough, and swale.

Natural community management that includes prescribed fire in wetland communities will continue to maintain and improve habitat for Florida mottled ducks. The ECWMA is significant to the regional Florida mottled duck population due to its size, and there is a moderate to high level of opportunity to directly-influence the local Florida mottled duck population at the WMA level. Management for higher priority species such as snail kites and wading birds will result in habitat that is not optimal for Florida mottled ducks. A water schedule that focuses on deeper water during the winter and early spring for snail kite and wading bird nesting will produce conditions that are not favorable for Florida mottled duck nesting. However, species experts indicate these areas have never been optimal for Florida mottled duck nesting, as Florida mottled ducks tend to avoid thick sawgrass and cattail. Despite this fact, Florida mottled ducks continue to use the complex, and there are currently no additional recommended land management actions for the species and therefore, no need for an SMA. The adjacent STAs provide higher quality habitat for the species, and Florida mottled ducks are common on these areas throughout the year.

The goal for the ECWMA is to continue to provide habitat for the regional Florida mottled duck population. In south Florida, patterns of movement, habitat use, and population size are only now being sufficiently understood. Therefore, it would be inappropriate to designate specific area-level management objectives until final recommendations are presented from the recently concluded FWRI research. Communication with FWRI will continue, and [Section 6.1.2](#) describes coordination efforts.

### 22 3.2.3: Limpkin

Limpkins are common on the ECWMA, and although reproduction has not been documented on the area, area managers believe it occurs. Staff indicates tall vegetation likely reduces their ability to detect nests. Limpkins occur throughout the properties, as do both native and exotic apple snails, which are an important limpkin prey item. Limpkins are so common

staff does not document every sighting. Juvenile limpkins have been documented in the STAs, as well as within urban uplands in county parks and recreation lands.

Limpkins typically inhabit freshwater marshes, swamps, springs, and spring runs. Limpkins are highly mobile and influenced by regional water levels and prey availability, though they typically remain in an area as long as habitat is suitable. The FWC lists the limpkin as a species of special concern, and the species triggers 1 of 6 prioritization parameters ([Priority table](#)). Models indicate 633,567 acres of potential habitat for limpkins within current plant communities on the ECWMA, which is likely enough to support a population of limpkins. Although the ECWMA contains enough habitat to support a population of limpkins, the individuals using the WMAs interact with a larger regional population.

Prescribed fire in wetland systems enhances foraging opportunities and can prevent shrub encroachment. Hydrologic recommendations for snail kites will benefit limpkins. Therefore, planned and ongoing management actions will maintain and enhance habitat suitability for the regional limpkin population, and there is no need for an SMA. However, area staff has limited control over the area's hydrology, and meeting all hydrologic recommendations may not be feasible.

Limpkins were included in marsh bird surveys staff conducted in 2010 and 2011 on EWMA as part of the nationwide pilot project. Each year, staff surveyed 6 points 3 times each in WCA2B; 1 limpkin was detected in each survey year. Six other points were surveyed 3 times each year in WCA3A south, where observers detected 1 limpkin in 2010 and 5 in 2011. Marsh bird surveys that included limpkins also were conducted in 2010 on RWMA, where observers detected 13 limpkins at 8 points over 3 sample periods. No additional surveys are currently recommended. Because the species is so common, there is no need to document every observation. However, observations of nests or pre-dispersal young are encouraged ([Section 5.2.2](#)). However, if there are additional recommendations following the results of the pilot study and suitable methods for the properties are available, further monitoring may be considered where appropriate.

The area goal for the ECWMA is to continue to provide foraging and nesting habitat to support the regional limpkin population. While the long-term persistence of limpkins on these WMAs will be influenced by factors affecting the regional population, the proximity of the ECWMA to other conservation lands greatly increases the chances of this species persisting in the area. [Sections 6.1.1](#) and [6.2](#) describe coordination recommendations. Workshop participants identified a need for apple snail repopulation research ([Section 5.3.1](#)).

### 23 3.2.4: Short-Tailed Hawk

Staff on the ECWMA has not documented short-tailed hawks, although the EWMA Bird List indicates the species occurs on the property year-round. Researchers that track short-tailed hawks with radio telemetry equipment indicate that while nesting was not confirmed, based on telemetry data, nesting was possible on EWMA. Statewide, observations of this species are limited, though there is an ongoing effort to collect observations. There have been observations of the species occurring in BCNP, ENP and the Loxahatchee National Wildlife Refuge. Nesting was not documented on these areas, though telemetry and visual data indicate it is possible on BCNP.

The short-tailed hawk is an elusive species that breeds in dense or open woodland stands in wetlands, cypress swamps, and bayheads. Vegetation surrounding nest trees is often very dense, making it difficult to locate and assess nests from the ground. This species exhibits high nest-site fidelity, emphasizing the need to locate and preserve nest sites. Foraging habitat includes prairies and open areas adjacent to breeding sites. Transitional zones and ecotones may be important components of foraging habitat for this species. The short-tailed hawk triggers 6 of 6 prioritization parameters ([Priority table](#)), making it a high priority.

Models indicate 3,790 acres of potential habitat for short-tailed hawks within current natural communities, all of which occur on EWMA. This species is not typically considered management-dependent and the opportunity to affect this species at the management-area level on the ECWMA is low. However, ongoing management actions that will maintain or enhance foraging habitat for this species include prescribed fire, removal of exotic vegetation, and tree island restoration and protection.

Because this species naturally occurs in relatively low densities, local monitoring would be unlikely to detect a change in the area's population. There is no need for an SMA or area objective. Monitoring for this species will be opportunistic, and should include season and color phase ([Section 5.2.2](#)). Observations of this species should be shared with the Avian Research and Conservation Institute (ARCI) ([Section 6.3](#)). If a nest is identified, nest protection guidelines will be followed ([Section 4.3.3](#)).

The area goal is to continue to provide suitable foraging and nesting habitat for the short-tailed hawk that will allow individuals using the ECWMA to function as part of a regional population. However, the presence of short-tailed hawks on the ECWMA is dependent on conditions that influence the statewide population.

#### 24 3.2.5: *Snail Kite*

Snail kites are common on EWMA and occasional on HWMA and RWMA, and there were successful nests on EWMA in 2010 and 2011. Historically, the ECWMA was an important nesting area for snail kites, and WCAs 2 and a portion of WCA3 are designated critical habitat by the USFWS. Regionally, WCA3A was the core of snail kite nesting in Florida, though recent nesting has been less successful, with fewer nesting attempts. This decrease in use is most likely due to changes in water management as water levels influence the availability of prey and nesting and perching substrate.

The snail kite is federally endangered and triggers 4 of 6 prioritization parameters ([Priority table](#)), making it a high statewide priority. More information can be found in the FWC [Snail Kite Management Plan](#) and the snail kite chapter in the USFWS [Multi Species Recovery Plan](#). Models indicate 633,633 acres of potential habitat for the snail kite within current plant communities on the ECWMA. Snail kites utilize habitat throughout the WMAs, and native apple snails occur on the properties.

Snail kites are dependent on apple snails for food and large open freshwater marshes with shallow water and a low density of emergent vegetation are preferred foraging. In other parts of Florida, they utilize shallow lake habitat. WCA3A historically played a major role in supporting the statewide snail kite population and WCA2B was historically important for snail kite nesting. WCA3B was used, though less than WCA3A, and this area also has seen a decline in nesting success. The USFWS has designated most of EWMA as priority habitat. The removal of exotic

melaleuca, sustained high water levels, and storm events have depleted perching and nesting substrates near prime foraging locations. Currently, there is no ecologically-based water schedule for WCA3B or WCA2B, though there is an upper limit for inflows. Plans to develop an ecologically-based water schedule are underway.

The species is a high regional and statewide priority and staff will continue their efforts to maintain the habitat via prescribed fire and control of invasive exotic plants. However, the opportunity for local managers to affect the hydrology is limited, and hydrology will have the greatest influence on the condition of these habitats. While FWC regularly provides input on water schedules and water management, water levels in the WMAs are not controlled by FWC. Maintaining positive working relationships and providing technical and ecological input with agencies such as the SFWMD and the COE that have primary influence over water levels will be the most important action area staff can take to manage for snail kites on the ECWMA.

Ongoing natural community management including tree island restoration, exotic plant control, and prescribed fire in wetlands should promote suitable habitat for this species by supporting growth of appropriate native vegetation and maintaining the semi-open wetland on which the species depends. In addition, there may be some value in planting mature native trees for nesting and feeding perches in WCA2B ([Section 4.3.4](#)), should additional resources become available. In the future, there may be some benefit to installing artificial perch platforms; however, the current need is to increase the density of available apple snails. Any such actions would be coordinated with the FWC snail kite coordinator ([Section 6.1.1](#)).

Workshop participants did not identify the need for a SMA or a measurable objective. Snail kites are monitored by the University of Florida and additional monitoring is not necessary ([Section 5.2.2](#)). If staff observes nesting or nesting behavior, it is documented and reported. Each year, staff should contact the FWC snail kite coordinator to obtain data on the nests that occurred on the ECWMA. Coordination recommendations are found in [Sections 6.1.2, 6.2, 6.6, 6.7, and 6.8](#). Workshop participants did identify a need for apple snail repopulation research ([Section 5.3.1](#)).

The area goal is to continue to enhance and maintain foraging and nesting habitat for the species to allow snail kites using the ECWMA to function as part of a regional population. This is compatible with the FWC's Snail Kite Recovery Plan regional goal to restore major snail kite nesting activity to historic nesting areas. However, snail kites will only continue to occur in the ECWMA if the regional population is stabilized and increased.

### 25     3.2.6: *Southern Bald Eagle*

Bald eagles are occasionally seen on the ECWMA. There are no known nests on any of the WMAs, but there is 1 active and 2 historically active nests within 3 miles of ECWMA. The active nest is east of EWMA's eastern boundary on property owned by the City of Pembroke Pines. The other 2 nests were monitored by the SFWMD when active.

Southern bald eagles are habitat generalists and use a number of natural communities, but only if these communities occur close to open water and have suitable nest sites. This ECWMA does not occur in or near any of the bald eagle core nesting areas identified in the FWC Bald Eagle Management Plan. Bald eagles are not management dependent, though they do benefit from active management that restores natural communities, provided nest protection guidelines are followed. Statewide, this species triggers 0 of the prioritization parameters ([Priority table](#)).

However, federal and state protections remain, and there is an FWC management plan to guide the continued recovery of the species.

Models indicate 139,864 acres of potential habitat for bald eagles within natural communities on the ECWMA, all of which are on EWMA. In this part of Florida, eagles typically forage over Lake Okeechobee, although EWMA, HWMA, RWMA, and the surrounding lands may provide a limited amount of additional foraging habitat. In the ECWMA, the most suitable foraging habitat exists along the Miami canal, at the southern end of WCA3B, and at the west end of HWMA. There is a limited amount of nesting habitat in the ECWMA; the hammocks on the southwest border of EWMA and tree islands throughout the properties provide some small pockets of trees suitable for potential nesting sites. However, the ECWMA could not independently-sustain a population of southern bald eagles; therefore, individuals utilizing the WMAs are part of a larger regional population. Managers will follow management guidelines around any identified nesting sites ([Section 4.3.5](#)). If bald eagle nesting is documented on site, the nest will be reported and the coordinator for this species notified ([Section 6.1.1](#)). Sections [6.6](#), [6.7](#), and [6.8](#) describe other coordination recommendations.

The area goal is to continue to provide suitable habitat for southern bald eagles that will allow individuals using the ECWMA to function as part of the regional population. While the continued presence of this species on these areas is dependent on conditions that influence the regional population of eagles, the amount of contiguous conservation lands in this part of Florida and the recent growth in the bald eagle population enhance the chance of persistence.

### 26 3.2.7: Wading Birds

Seven of the 8 focal wading bird species are commonly seen and have been documented to nest on the ECWMA, including the white ibis, great egret, snowy egret, little blue heron, tricolored heron, wood stork, and roseate spoonbill. The reddish egret (*Egretta rufescens*) is not typically seen in this area. The EWMA has a number of active nesting colonies. In 2011, there were approximately 14,000 wading bird nesting pairs and 350 wood stork pairs in WCAs 2 and 3; however, severe drought conditions limited prey production and availability that resulted in wading bird nest abandonment.

Statewide, this group of species is a moderate priority ([Priority table](#)). Several species are FWC-listed species of special concern and the wood stork is federally listed 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 population trends identified as declining, while the tricolored heron and white ibis have unknown trends.

Models indicate 675,245 acres of potential habitat for wading birds within natural communities on the ECWMA. Although habitat was modeled to occur on HWMA and RWMA, current conditions are not favorable for wading bird nesting and will not become so without significant restoration. Nearly all of EWMA falls into the USFWS's foraging consultation area for a nearby wood stork colony, and there are several known wading bird colonies on and immediately adjacent to the property. Given this and the large amount of habitat available for this suite of species on the ECWMA, wading birds are a high local priority.

Wading birds are capable of significant dispersal and are heavily influenced by regional conditions. The opportunity to influence them at the WMA-level exists through actions such as tree island restoration, application of prescribed fire, and exotic vegetation removal. However,

while FWC regularly provides input on water schedules to benefit wildlife, water levels on EWMA are not controlled by FWC, and WMA-specific hydrologic limitations are significant management barriers. Maintaining positive working relationships with agencies such as the SFWMD, COE, and USFWS that monitor wading birds and have influence over water levels will be the most important action area staff can take to manage for wading birds on the ECWMA. The ongoing management actions mentioned above and working with other agencies to promote favorable hydrologic conditions will continue to provide habitat for wading birds on the ECWMA.

The SFWMD conducts annual aerial surveys, and additional surveys are not necessary. No measurable objectives were identified. When active colonies are identified, measures to protect these colonies from disturbance will be taken ([Section 4.3.6](#)). Tree island protection and restoration also will benefit wading birds. Coordination recommendations are described in [Sections 6.1.2, 6.2, 6.6, 6.7, and 6.8](#).

The area's goal is to continue to provide suitable foraging, nesting, and roosting habitat that allows wading birds on the ECWMA to function as part of the regional population. While, the continued presence of these species on the areas is dependent on conditions that influence the regional population, the proximity of the ECWMA to other conservation lands greatly increases the chances of these species persisting on the area.

### 27 3.2.8: Florida Black Bear

A small portion of western EWMA falls in the secondary range of the Big Cypress bear population, and black bears recently have been documented using EWMA. In 2008, staff from the SFWMD found bear sign on tree islands in the southern portion of WCA3A near Tamiami Trail. In 2009, contractors reported a bear on the L-4 levee bordering EWMA, and in 2010 wildlife cameras documented bears on 2 tree islands in WCA3A, south of I-75.

This FWC-listed threatened species triggers 2 of 6 prioritization parameters ([Priority table](#)). The Florida black bear is a wide-ranging species capable of significant dispersal. Home range sizes vary according to resource availability and the level of habitat fragmentation. A mosaic of flatwoods, swamps, scrub oak ridges, bayheads, and hammocks provides foraging opportunities, cover when traveling between these habitat types, and adequate den sites.

Models indicate 28,232 acres of potential habitat for black bears within current natural communities on the ECWMA, all of which are on EWMA. While sufficient acreage exists to support a few individuals, the ECWMA has a very small role in the conservation of this species because the majority of the natural community types on the ECWMA are open wetlands that black bears use infrequently. Further, management actions that improve natural community function in many natural communities on the ECWMA, such as frequent prescribed fire and removal of Brazilian pepper, create conditions that are not beneficial to bears. However, due to the presence of the nearby Big Cypress bear population, the area is likely to see occasional occurrences of dispersing individuals. Planned and ongoing habitat management actions that include exotic removal and protection and restoration of tree islands will maintain habitat for bears. Because the species is only likely to occur occasionally and in low numbers, there are no particular management actions to apply specifically to benefit this species, and no SMA is recommended.

The area goal is to continue to provide habitat for the regional Florida black bear population. No measurable objectives are recommended at this time. Opportunistic observations of the species will be recorded ([Section 5.2.2](#)).

### 28 3.2.9: Florida Panther

Florida panthers are known to rarely utilize the ECWMA, and the areas are within the primary and secondary range of this species. Denning has not been documented on any of the WMAs; however, a female nursing kittens was documented just west of RWMA on SFWMD land. Telemetry data shows most of the panther activity occurs in the western portion of EWMA and along canals and levees. Panthers use STAs 5 and 6 frequently and may be coming onto RWMA from those areas. There are hogs on the northern portion of the Miami canal (designated as primary habitat), and this may encourage panther use of this area. Panthers historically used the southern part of EWMA, but the Tamiami Trail has acted as a barrier and panthers no longer use this portion of the WMA. This emphasizes the need for wildlife crossings along Tamiami Trail.

The Florida panther triggers 4 of 6 prioritization parameters ([Priority table](#)) and these scores, combined with a small population size and high likelihood of extinction, make this species a high statewide priority. The Florida panther uses a variety of habitats including forested uplands, freshwater wetlands, dry prairie, old fields, pastures, and agricultural areas. Forested areas are preferred, but panthers use non-forested habitat for hunting and as travel corridors across landscapes. Models indicate 354,773 acres of potential habitat for the panther within current plant communities on the ECWMA. However, models may overestimate the amount of usable habitat for panthers, as most of the modeled acreage is tree islands and there are no large, continuous patches of habitat modeled for the species.

Ongoing management actions that include periodic prescribed fire, exotic removal, and tree island restoration will continue to provide natural communities usable by the regional panther population. Staff will continue to identify the need for wildlife crossings along Tamiami Trail when providing environmental commenting. During times of high water, Florida panthers need some cover along levees. Wide-scale roller chopping in which no patches of cover remain results in a loss of important cover for panthers; therefore, staff will work with the SFWMD to leave a patchwork of palmetto islands or other cover when roller chopping in order to provide sufficient cover habitat.

Despite the fact that part of the panther's primary range falls within the ECWMA and the WMAs are adjacent to large tracts of panther habitat on the Miccosukee Reservation and BCNP, habitat conditions within the ECWMA are not, and likely never were, optimal for panthers. Given that most of the ECWMA is inundated throughout much of the year, it is unlikely panthers will consistently use the properties in large numbers, though the WMAs will continue to serve as a bi-directional corridor for movement between ENP and the core population to the NW. Therefore, management that does not inhibit panther use and movement is important for the regional conservation of the species.

FWC's Panther Team monitors the Florida panther at the statewide level, so additional WMA-level monitoring is not necessary. Area staff will document and report opportunistic observations of panthers and their sign ([Section 5.2.2](#)). [Section 6.1.4](#) describes coordination recommendations. No measurable objectives are recommended at this time.

The area goal is to continue to provide habitat for use by the regional Florida panther population. However, factors that affect the regional population will influence the long-term persistence of this species.

### 29 3.2.10: Limited Opportunity Species

*Burrowing Owl* – Despite the fact that biologists and consultants have searched for the species, burrowing owls have not been documented on any of the WMAs. They are known to occur in small numbers on levees on neighboring properties. Burrowing owls require open, treeless areas with low groundcover, and use underground burrows extensively, particularly during the spring for nesting and the winter for protection from predators. The species depends on the availability of dry soils for excavating these burrows, and dry soils are extremely limited in the ECWMA. Historically, burrowing owls predominately utilized dry prairie habitat. However, most modern burrowing owl populations utilize non-native habitats and they frequently use altered landscape features, such as berms or canal banks.

The burrowing owl is a species of special concern in Florida and triggers 4 of the 6 statewide prioritization parameters ([Priority table](#)). Models indicate 3,201 acres of potential habitat for the burrowing owl within current plant communities on the WMAs. Most of the habitat on the ECWMA is unsuitable for burrowing owls, as it is primarily wetlands. However, there is some potential for burrowing owls to utilize artificial levee and spoil features on the properties. The old farms on RWMA may temporarily provide some habitat for burrowing owls, but long-term plans for RWMA that include hydrologic restoration will ultimately make these areas unsuitable for the species.

Given the low opportunity to manage for this species and lack of habitat on the areas, no goal, SMA, or measurable objectives are currently recommended. Opportunistic observations of burrowing owls will be recorded ([Section 5.2.2](#)). Coordination recommendations are described in [Section 6.1.1](#).

*Crested Caracara* - The crested caracara is federally listed as threatened and triggers 4 of 6 prioritization parameters ([Priority table](#)), making it a high statewide priority. There have been limited observations of caracaras using the properties, including a recent sighting on the western edge of RWMA. Models indicate 25,557 acres of potential habitat for crested caracaras within current plant communities on the ECWMA. Staff believes habitat models overestimate the amount of potential habitat on the property, as the ECWMA does not contain the appropriate combination of habitats to support caracaras. Tree islands make up most of the modeled habitat, but have little or no adjacent foraging habitat, as the area is too wet for use by caracaras. Staff does not believe caracaras utilize the interior of the property due to limited foraging habitat on the properties.

The properties will never provide much suitable foraging habitat, and without suitable foraging habitat, caracaras will not occur on the property. There is a limited opportunity to manage for the species on the ECWMA, and it would be impractical to designate a goal, objectives, or SMA. The crested caracara should not be a focus of management on the ECWMA.

Observations of nesting, nesting behaviors, or juveniles will be opportunistically documented ([Section 5.2.2](#)). If there is reason to believe nesting is occurring, staff will attempt

to document the nest, and the nest site area will be managed in a manner compatible with habitat management guidelines created for the species ([Section 4.3.2](#)).

*Northern Bobwhite* – Northern bobwhites are rare on the ECWMA, and breeding is not known to occur. Bobwhites occur in limited numbers along the levee between HWMA and RWMA, on the levee between EWMA and HWMA, and in the *Myrica* shrubland in HWMA. They also may occur in the nearby agricultural areas.

Northern bobwhites have experienced significant range-wide population declines since the 1980s and are currently a major focus of many initiatives including the Upland Ecosystem Restoration Project. Northern bobwhites are typically associated with open canopy forests and grassland communities dominated by warm-season grasses, legumes, and patchy bare ground; communities that never occurred on ECWMA.

Northern bobwhites trigger 2 of 6 prioritization parameters ([Priority table](#)). Models indicate 9,530 acres of potential habitat for the bobwhite on the ECWMA. However, this habitat is marginal at best and would be unlikely to support a population of northern bobwhites. Therefore, the role these WMAs play in supporting the regional population is limited. Other than the artificial features, such as levees and the *Myrica* shrubland on HWMA, habitat for the northern bobwhite is extremely limited. Planned hydrologic restoration in ruderal and impacted areas will further reduce suitability for the species. There is little opportunity to affect the species on the ECWMA and the northern bobwhite should not be a focus of management. Therefore, no area goal, objectives, or SMA would be appropriate.

### 30 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. Additionally, Florida statutes direct conservation land managers to manage for imperiled species. In this section, we discuss listed or locally important species that were not PLCP focal species.

It is possible that additional imperiled species occur on the ECWMA. Imperiled species on these WMAs should continue to benefit from FWC's ongoing management actions that aim to restore natural community structure and function. Florida's imperiled species are adapted to these natural communities and have a higher probability of persistence under FWC management actions than in the absence of management. Location data for rare species should be documented and reported ([Section 5.2.2](#)). Coordination recommendations can be found in [Section 6](#).

#### 31 3.2.1: Other Focal and Imperiled Wildlife Species

In addition to the listed species discussed in [Section 3.2](#), 4 listed animal species have been documented or are likely to occur on the ECWMA: the American alligator, the Everglades mink (*Mustela vison*), the Florida bonneted bat (*Eumops floridanus*), and the eastern indigo snake (*Drymarchon couperi*). Marsh birds, including the king rail and black rail, also are of concern on the ECWMA.

*American Alligator* - The American alligator is federally listed and is common on the ECWMA. It is only listed due to its similarity in appearance to other listed crocodilians, not because of actual imperilment. Planned and ongoing management activities that include prescribed fire and attempts to manage appropriate hydrologic regimes according to USFWS guidelines will continue to provide habitat for the American alligator.

*Eastern Indigo Snake* - The eastern indigo snake is federally listed as threatened. There have been no observations of the eastern indigo snakes on the ECWMA, though they were documented on nearby STA 3 and 4. As a federally listed species, whenever Everglades restoration projects are planned, the area is surveyed for this species as part of the pre-construction wildlife surveys. However, surveyors have not detected this species in any of these surveys on the ECWMA.

Ongoing management actions that include prescribed fire will continue to provide suitable habitat for the species. Ground-disturbing activities will be undertaken with caution in areas where indigo snakes are known to occur. Having a spotter is recommended for digging and may be required by the USFWS depending on the project. When ground-disturbing activities are necessary, if any black snakes are observed, staff will warn equipment operators to stop their activity and wait until the snake leaves the area to resume work. Staff may consider providing operators with photographs of indigo snakes to help with identification. Opportunistic observations of indigo snakes will be documented ([Section 5.2.2](#)).

*Marsh Birds* - In addition to the limpkin, a number of marsh birds, including the common gallinule, king rail, black rail, clapper rail (*Rallus longirostris*), American bittern, least bittern, and purple gallinule occur on the ECWMA. Staff documented these species on EWMA and RWMA in 2010 and 2011 during surveys that were part of a 2-year USFWS pilot study. This group of species is garnering an increasing amount of statewide and national concern that they may be more imperiled than currently believed. The ECWMA contains approximately 690,000 acres of wetland; a significant amount of habitat for this suite of species. Given the amount of habitat on and surrounding the ECWMA, the ECWMA plays an important role in the regional marsh bird population. Changes in populations of marsh birds may provide information regarding significant changes in wetland quality.

Though area staff participated in the statewide pilot study of these species, there is a general lack of information regarding marsh bird distribution and abundance. Therefore, it would be appropriate to conduct monitoring for this suite of species when additional resources and suitable monitoring methods are available. Marsh birds are a group of species that are under-detected in the absence of formal surveys. Observations of black rail and king rail will be documented opportunistically ([Section 5.2.2](#)).

*Everglades Mink* - The Everglades mink is FWC-listed as threatened. There are historic occurrences of mink roadkills on US 41 and the L-67, and the [Mammal Networked Information System](#) shows 5 occurrences of the species on the southern border of EWMA. Because statewide documentation of the Everglades mink is extremely limited, any sign of the species will be documented and reported. Voucher photographs will be taken, if possible.

Bats - As a group, bats in south Florida are poorly studied. Statewide, this group of species is generating concern as there is a lack of information regarding distribution and abundance. Surveys to document species or abundance for bats have not occurred on the ECWMA, and comprehensive surveys would be extremely difficult due to the complex's large size. Area staff and species experts believe an inventory of bat species occurring both on the property and in the region would be beneficial, as there is currently no local information on the species group. The ECWMA is within the known range and has potentially suitable habitat for the imperiled Florida bonneted bat, which is currently a federal candidate species. A regional bat survey that included survey points on the ECWMA would provide better information on which bat species occur on these WMAs. Additional resources would be required to conduct these surveys. The FWC is developing a management plan for this species, and upon its completion, any WMA-specific management or monitoring recommendations will be considered. Coordination recommendations are found in [Section 6.9](#).

### 32 3.3.2: Rare Plants

Observations of rare plants on the ECWMA are limited and a rare plant survey has not been conducted. However, 6 listed plant species are known to occur on EWMA. The Florida Department of Agriculture and Consumer Services listed the banded wild pine (*Tillandsia flexuosa*) and golden leather fern (*Acrostichum aureum*) as threatened. Meadow joint-vetch (*Aeschynomene pratensis*), hoop vine (*Trichostigma octandrum*), and pineland pencil flower (*Stylosanthes calcicola*) are listed as endangered by the Florida Department of Agriculture and Consumer Services. Florida royal palm (*Roystonea elata*) is listed as endangered by USFWS. Most observations of rare plants occur on levees or hardwood hammocks at the southern end of EWMA. However, there are a few scattered observations of hoop vine and meadow joint-vetch in the interior of the WMA.

Banded Wild Pine - Banded wild pine occurs in upland habitats, often near the coast. This species is an epiphytic species that depends on the availability of trees and is often found in hammocks. As with other air plants, illegal collecting and habitat destruction are its primary threats. On the ECWMA, management actions that help maintain upland communities, such as tree island restoration and exotic plant removal, will continue to provide habitat for the banded wild pine.

Florida Royal Palm - The Florida royal palm is an upland species that primarily occurs in tropical hardwood hammocks, mucklands, mangrove swamps and coastal prairies. Management actions such as tree island restoration and exotic plant removal that help maintain upland communities will continue to provide habitat for the Florida Royal Palm.

Golden Leather Fern - Golden leather fern is found in coastal hammocks and mangrove swamps. On the ECWMA, observations occurred in the hammocks at the southwest corner of EWMA. Management actions such as tree island restoration and exotic plant removal that help maintain upland communities, as well as efforts to maintain or improve hydrology, will continue to provide habitat for the golden leather fern.

*Hoop vine* - Hoop vine occurs primarily in pine rocklands and hammock habitats. Management actions such as tree island restoration and exotic plant removal that help maintain upland communities will continue to provide habitat for the hoop vine.

*Meadow Joint-Vetch* - Meadow joint-vetch occurs in wet prairie, swale, and cypress habitats. As a wetland-dependent species, actions that maintain wetlands in good condition, such as prescribed fire and removal of exotic plants, will continue to provide habitat for the species. Restoration and maintenance of natural hydrology in south Florida wetlands is a key component of maintaining habitat for this species. Coordination regarding water levels and hydrology will benefit the meadow joint-vetch.

*Pineland Pencil Flower* - Pineland pencil flower occurs in pine rocklands and wet prairies, especially in the transition zones between these two habitats. Management actions such as tree island restoration and exotic plant removal that help maintain upland communities, efforts to maintain or improve hydrology, and coordination with water managing entities regarding hydrology will continue to provide habitat for the pineland pencil flower on the ECWMA.

Ongoing management actions that include exotic plant removal, tree island restoration, and prescribed fire will continue to provide and maintain habitat for these and other rare plants on the ECWMA. Opportunistic observations of rare plant species will be documented ([Section 5.2.2](#)). A rare plant survey is recommended for the properties ([Section 5.2.1](#)), but will require additional resources. Part of the survey summary document should include management recommendations for each species. Due to the size of the ECWMA, it may be necessary to conduct the plant inventory in phases, spread over several years. As such, planning on how to phase this inventory should occur in the near future to allow movement on the inventory as soon as resources are available.

The area goal for this suite of species is to continue to provide habitat that allows rare plants to thrive on the ECWMA. The measurable objective is to:

- 1) Create a rare plant inventory implementation plan by 2014. This plan would identify priority areas to inventory, identify cost estimates, and identify a phased approach that would allow the resource commitment to be spread over multiple years.
- 2) Conduct a rare plant inventory on the ECWMA by 2022.

### **33 Section 4: Land Management Actions and Considerations**

Models identified potential habitat for 12 focal species on the ECWMA ([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 prescribed fire methods that promote a mosaic of burned and unburned areas, will promote the habitat conditions necessary for most of these species, without the need for further strategic management actions.

We may designate SMAs when actions over and above ongoing natural community management are required ([Section 4.1](#)) in a specific location. In order to ensure natural community management addresses the needs of these focal species, the OBVM DFCs are evaluated ([Section 4.2](#)). Some species have specific protective measures or land management

considerations that are necessary to ensure their continued use of the property. [Section 4.3](#) provides these recommendations.

### 34 4.1: Strategic Management Areas

The intent on EWMA, HWMA, and RWMA is to maintain in-tact natural communities in good condition and restore most restorable natural communities, particularly tree islands, to a more natural condition that will better suit these species. Planned and ongoing management actions across the ECWMA will achieve this objective. Therefore, workshop participants did not identify the need to designate a SMA in the ECWMA.

### 35 4.2: Objective-Based Vegetation Management (OBVM) Considerations

OBVM parameters and monitoring are still in development for the ECWMA. Staff has developed DFCs for tree island communities ([Table 4](#)).

The OBVM DFCs target a range in values for various habitat parameters within actively managed communities. However, some focal species may require a more restricted range in habitat parameters than is reflected in the DFCs. The workshop gave participants the opportunity to suggest modifications to the existing DFC, or add specific vegetative parameters necessary for certain species. Workshop participants did not identify the need to modify the existing DFCs for the ECWMA.

**Table 4.** Desired Future Conditions for specific vegetative parameters in actively managed natural communities at Everglades & Francis S. Taylor, Holey Land, and Rotenberger Wildlife Management Areas as identified via the OBVM process.

<b>Tree Island Complex</b>			
<b>Tree Density - South</b>		<b>Tree Density - North</b>	
Head Community	≥.16 +- .04 trees/m	Head Community	≥.08 +- .03 trees/m
Tail Community	≥.23 +- .02 trees/m	Tail Community	≥.04 +- .01 trees/m
<b>Tree Richness - South</b>		<b>Tree Richness - North</b>	
Head Community	≥2.5 +- .37	Head Community	≥1.2 +- .28
Tail Community	≥3.4 +- .22	Tail Community	≥1.2 +- .20

### 36 4.3: Further Land Management Considerations

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

37 4.3.1: Swallow-Tailed Kite

Because swallow-tailed kites exhibit high nest site fidelity, protect known nest sites from disturbance and alteration, and retain the tallest pines in the area of nest sites. Maintaining a 330-foot limited activity buffer around active nests during nest season (March–June) should minimize the chance of disturbance. If documented on the area, allow nesting areas to have a higher shrub height and density than surrounding areas when feasible. If kite activity is observed during nesting season, particularly if kites are observed carrying nesting material, mobbing, or in groups of 3 or more, this information will be documented and an effort to locate the nest should be made. 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.

It is important to preserve future potential nest trees. This can be done by retaining the tallest, oldest trees on the landscape during land management activities.

38 4.3.2: Crested Caracara

Crested caracaras have high fidelity to their home ranges and nest sites. Staff will protect known nesting sites and maintain home ranges in suitable condition if individuals are known to occupy a particular management unit (MU). Management actions like prescribed burning will improve habitat conditions by creating areas with low ground and shrub cover. Following the guidance in Morrison 2001 (cited below), staff will limit management actions during the breeding season (which peaks from December-February) if a nest is located. Crested caracaras are most likely to flush from the nest, which can be detrimental to eggs or young, if disturbance occurs within 1,000 feet of the nest during the first 2-3 weeks of nesting. Maintain this distance (1,000 feet) as a buffer around known nests. Morrison (2001) suggests historic management can continue (if the birds are used to it) during nesting season, as long as the first 2-3 weeks of nesting are avoided. A significant increase in human activity within the home range or territory can cause caracaras to abandon the area, even outside of the nesting season. Complete management guidelines are available in:

Morrison, J.L. 2001. [Recommended Management Practices and Survey Protocols for Audubon's Crested Caracara \(\*Caracara cheriway audubonii\*\) in Florida](#). Florida Fish and Wildlife Conservation Commission, Technical Report No. 18. Tallahassee, Florida, USA.

39 4.3.3: Short-Tailed Hawk

Short-tailed hawks exhibit high nest site fidelity, and historic nest areas are often used for multiple years, even if not active every year. Nests of this species are difficult to locate and monitor. If nest sites are located, protective action should be taken when nests are known to be active. Protect known nesting sites from disturbance during land management activities by

maintaining a 330-foot limited activity buffer around the nest during the nesting season (February-May), and avoiding heavy alteration of the nesting location. Protect trees near the nest to preserve the integrity of the nest area. Protect potential future nest trees by retaining the tallest, oldest trees on the area.

40      4.3.4: *Snail Kite*

Prescribed fire in wetland habitats can help maintain these communities in an open condition beneficial to snail kites. Fire during low water regimes allows the control and reduction of dense emergent plant growth that can reduce use of the marshes and access to snails by snail kites. Maintaining appropriate year-round water levels in the ECWMA are critical to ensuring habitat continues to be available. Appropriate water levels during nesting season are related to snail kite nest success, prey availability, and susceptibility to predation. As WMA managers do not have direct control over water levels, maintaining coordination with local water managers and snail kite researchers is critical to achieving land management goals.

There may be opportunity to enhance snail kite habitat through planting of larger, mature trees. Particularly in WCA2B, where adequate nest and perch substrate is particularly limited, the planting of larger trees for nesting and perching substrate may help overcome a limiting factor. It may be necessary to plant mature native trees to increase tree survival through periods of water level fluctuations. Additional resources would be necessary for these plantings.

If an active nest is identified, managers will alert the FWC snail kite coordinator and, in coordination with the coordinator, ensure management is compatible with the [USFWS snail kite management guidelines](#) (or any subsequent version) and any guidelines in the FWC snail kite management plan. In particular, increased activity will be prohibited within a 1,640-foot limited activity buffer zone around the active nest.

41      4.3.5: *Southern Bald Eagle*

Protection of bald eagle nests, including avoiding disturbance of nesting eagles, is necessary to continue the recovery of this species. Managers will follow the management guidelines in the [state management plan](#) (or any subsequent version) when planning activities within 660-feet of known eagle nests. Staff will document and report any new nests that are located. Staff will check the [bald eagle nest locator](#) annually to determine if any new nests are detected within 660 feet of the ECWMA via the statewide monitoring efforts. During management activities, retain large mature pines as potential nesting sites.

42      4.3.6: *Wading Birds*

It is possible that ongoing management activities (e.g., prescribed fire, exotic removal) could have negative impacts on wading birds if the needs of the species are not considered during the planning of these activities. Providing a 330-foot buffer around nesting colonies during nesting season will ensure adequate protection of these resources. Additionally, staff will plan any mechanical and/or chemical control of aquatic vegetation at a time that avoids disturbance to the colony, and using methods that do not damage the plants in which wading birds construct their nests. If a colony is identified, nesting sites will be protected from

disturbance and the surrounding habitat managed in a way compatible with the needs of the species. Staff will remain informed of pertinent research projects that provide recommendations for the ECWMA, such as the Draft Final Report submitted in 2011 by Gawlik & Petersen.

### **43 Section 5: Species Management Opportunities**

The focal species approach taken here represents a science-based approach to ecosystem management. Though this method relies on a suite of individual species, land management actions focused on these species directly benefit associated species. For some species, land management actions alone are insufficient in aiding recovery. These include species that are not present on a site and have limited dispersal capabilities or are unlikely to occupy a site without reintroduction once habitat restoration is complete. Additionally, species that are currently present but occur at low densities, have low reproduction potential, or have other limitations that inhibit recovery, may require species-specific management. This section provides species management recommendations ([Section 5.1](#)) as well as monitoring recommendations ([Section 5.2](#)) to assess species response to land management and to determine the need for additional species management. [Section 5.3](#) identifies research necessary to guide future management.

#### **44 5.1: Species Management**

Species management as used here refers to non-monitoring actions taken for a specific species. It can include actions such as translocation, restocking, installing artificial cavities, etc. [Section 5.2](#) covers monitoring related actions, including banding or tagging. [Section 2](#) and [Section 4](#) provide information on land management actions, such as prescribed fire or mechanical treatments. Workshop participants did not identify a need for any hands-on species management on the ECWMA.

#### **45 5.2: Species Monitoring**

Monitoring is critical to evaluating the impact of the management actions described in this Strategy. While area staff is unable to monitor all of the focal species on the ECWMA, other entities monitor many of the focal species. Area staff has access to this data, and will use this data to fulfill their needs. These ongoing monitoring efforts will be used to assess species in all actively managed communities. Staff will supplement the formal monitoring efforts with opportunistic monitoring for uncommon or hard to monitor species. Data collected will be reported to the regional conservation biologist or uploaded into the appropriate database. The FWC will make monitoring data available to cooperating agencies and organizations such as FNAI ([Section 6](#)).

This section provides the list of monitoring actions recommended for the area, and provides the purpose for the monitoring. The FWC is in the process of standardizing monitoring protocols for a number of these species. Approved protocols are available at [Monitoring Protocol Section of the WCPR SharePoint Site](#). When protocols are finalized, they will be implemented in accordance with the timeframe described in this Strategy.

#### 46 5.2.1: Rare Plant Inventory

The purpose of monitoring rare plants on the ECWMA is to create a more complete species list of rare plants occurring on the ECWMA, and to document locations where those species occur so they can be protected. Additional resources, particularly funding for contracting, will be required to complete the rare plant inventory. The survey methodology should be similar to the FNAI rare plant inventory protocol used on other WMAs. That protocol provides for coverage of a percentage of each natural community, with site visits occurring at various times of the year to document plants that are conspicuous at different times of the year. If funds do not allow for surveying the entire ECWMA, HWMA should be the lowest priority due to habitat conditions and management limitations.

#### 47 5.2.2: Opportunistic Monitoring

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. Staff will document opportunistic sightings by recording information including the species, approximate lat/long or appropriate MU, number of individuals, behavior, and habitat type. Record encounters with or sign of the following focal species:

- Swallow-tailed kite (nesting activity)
- Burrowing owl
- Crested caracara (nesting activity or occurrence of dependant young)
- Limpkin (nesting or occurrence of dependant young)
- Short-tailed hawk (all sightings, include color phase)
- Snail kite (breeding behavior or nesting activity)
- Southern bald eagle (nesting activity)
- Wading bird (colony locations and composition)
- Everglades Mink
- Florida black bear
- Florida panther
- Eastern indigo snake
- Black rail
- King rail
- Rare plants
- Road kills of rare, listed, and focal species
- Any other listed species

### 48 5.3: Species Research Needs

Species management recommendations in other sections of this document are based on the most current information regarding management strategies for a given species. However,

cases arise when little or no information is available to guide management. This section outlines research needs identified through the WCPR process.

49     5.3.1: *Apple Snail Repopulation Research*

Workshop participants identified a need for continuation of apple snail repopulation research. The apple snail is a critical prey species for snail kites and limpkins. In many areas, apple snail density is too low to support healthy snail kite populations. The FWC Snail Kite Management Plan details instances where drought created severe declines in apple snail populations that took years to recover to healthy snail populations. Land management actions for apple snail-dependent species such as the snail kite and limpkin cannot be successful without healthy apple snail populations. Species actions for snails are critical to successful management actions for these other species.

## **50 Section 6: Intra/Inter Agency Coordination**

Throughout the WCPR process, there were many recommendations regarding possible management strategies for focal species. THCR staff can handle most proposed management actions; however, cases may arise when coordination with other sections in FWC or other agencies is necessary or increases efficiency. This section identifies cases in which coordination is necessary outside of THCR, 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 this Strategy is drafted. As positions experience turnover, when in doubt, contact the current Section Leader/supervisor to determine the appropriate individual.

### **51 6.1: Florida Fish and Wildlife Conservation Commission (FWC)**

52     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 often is lost. Therefore, staff will share monitoring data with the appropriate taxa coordinator and program coordinator for species in which conservation initiatives or other management programs have been developed. The regional SCP biologist is a good source of information on the regional status of non-game species, and may be able to provide assistance with monitoring for marsh birds and for burrowing owl burrows. Additionally, FWC staff is authorized to handle federally listed species if it is done 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. All snail kite related issues will be coordinated through the snail kite coordinator, and issues related to bald eagles will be coordinated with the Bald Eagle Management Plan Coordinator. Please note some contacts will also be covered under [Section 6.1.3](#); FWRI, and [Section 6.1.5](#); 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, Mammal Taxa Coordinator: (850) 767-3624 x 114  
Zach Welch, Snail Kite Coordinator: (352) 266-6139  
Michelle Vandeventer, Bald Eagle Management Plan Coordinator: (941) 894-6675  
Ricardo Zambrano, Regional Biologist (marsh birds): (561) 625-5122  
Brad Gruver, Endangered Species Coordinator: (850) 488-3831

53     6.1.2: *Fish and Wildlife Research Institute (FWRI)*

Area staff will share significant observations of southern bald eagles with FWRI. The FWRI may also be able to provide expertise for wading birds and snail kites. Area staff will continue to coordinate with FWRI for Florida mottled duck management recommendations, as research projects provide new information. 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.

Contacts:

Tim O'Meara, Section Leader: (850) 488-3831  
Janell Brush, FWRI Wildlife Biologist (bald eagle, snail kite): (352) 955-2081  
Jeff Gore, FWRI Wildlife Biologist (mammals): (850) 767-3624  
Jim Rodgers, Research Administrator (wading birds, limpkins): (352) 955-2081  
Karl Miller, FWRI Wildlife Biologist (hawks, kites): (352) 955-2081 X104  
Ron Bielefeld, FWRI Wildlife Biologist (Florida mottled duck): (772) 228-9125  
Allan Woodward, Research Administrator (alligators and herps): (352) 334-4222

54     6.1.3: *Florida's Wildlife Legacy Initiative (FWLI)*

Monitoring animal populations on a WMA gives managers a way to gauge animal response to management. If staff does not share this information with others, valuable data that can be used to assess statewide conservation efforts often is lost. FWLI can be helpful in identifying and assisting with partnering efforts, and might be a source of funding via the State Wildlife Grants program. Therefore, regular communication with this program will be a priority for SGCN.

Contacts:

Katherine Haley, Florida's Wildlife Legacy Initiative: (850) 410-0656 x17297  
Mary Truglio, South Region Legacy Biologist: (561) 625-5122

55     6.1.4: *Imperiled Species Management Section (ISMS)*

Staff at the ECWMA will maintain communication with the Panther Management Team to address panther habitat improvements, as well as the ECWMA's role in panther management.

Contact:

Kipp Frohlich, Section Leader: (850) 922-4330

Darrell Land, Panther Team Leader: (239) 417-6352

56 *6.1.5: Aquatic Habitat Restoration and Enhancement Subsection (AHREs)*

A number of focal and imperiled species on ECWMA depend on quality aquatic ecosystems to meet their life requirements (wading birds, limpkin). THCR should maintain contact with AHREs to determine opportunities for hydrologic improvements, and for possible funding for aquatic habitat restoration projects.

Contact:

Steve Shea, Section Leader: (850) 488-3831

Rodney Hudson, Wildlife Bio, (863) 462-5190

57 *6.1.6 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.

Contact:

Bill Caton, Section Leader: (850) 617-9428

Jacqueline Smith, Regional Bio, (772) 597-5462

**58 6.2: South Florida Water Management District (SFWMD)**

The SFWMD has a grant program that may assist with management and restoration activities. Additionally, Mark Cook, in the Everglades Division, maintains a regional database for wading bird monitoring. Staff will share wading bird data from the WMA with the SFWMD. The SFWMD plays a role in water management on the ECWMA, as well as surrounding lands. Therefore maintaining current levels of communication and coordination with the SFWMD is critical to achieving current land management goals. Observations of wildlife by SFWMD staff can also help provide a regional perspective on the status of focal and listed species in the area and may be helpful with monitoring efforts.

Contacts:

Steve Coughlin, Director, Division of Land Stewardship: (561) 682-2603

Mark Cook, Sr. Environmental Scientist, Everglades Division: (561) 681-2500 x4539

Brian Garrett, O&M Wildlife Coordinator, Division of Land Stewardship: (561) 682-6653

### **59 6.3: Avian Research and Conservation Institute (ARCI)**

The Avian Research and Conservation Institute surveys and keeps information on swallow-tailed kite and short-tailed hawk populations. Share location information on the swallow-tailed kite and short-tailed hawk, particularly nests or nesting behavior with ARCI.

Contacts:

Dr. Ken Meyer, Avian Researcher: (352) 335-4151; meyer@arcinst.org

### **60 6.4: United States Fish and Wildlife Service (USFWS)**

The USFWS maintains records on the federally listed snail kite, crested caracara, and wood stork. Share nest and colony locations with USFWS. Additionally, USFWS may serve as a source of information on and possible assistance with federally listed species. Therefore, communication with USFWS regarding listed species should occur whenever appropriate.

Contacts:

Heather Tipton, Fish and Wildlife Biologist: (772) 562-3909, ext. 296

Sandra Sneckenberger, Fish and Wildlife Biologist: (772) 562-3909, ext. 321

### **61 6.5: Florida Natural Areas Inventory (FNAI)**

The 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 often is used for planning purposes. As such, staff should share information about element occurrences on the WMA 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

### **62 6.6: Broward County Parks and Recreation, Environmental Section**

Many of the focal species occurring on the ECWMA, such as wading birds, southern bald eagle, and swallow-tailed kite utilize property surrounding the WMA. Broward County owns and manages a number of neighboring properties. Information on species occurrence should be shared with Broward County, in addition to coordination of management efforts and information sharing, when requested.

Contacts:

Linda A. Briggs, Natural Resource Specialist III: (954) 357-8120

### **63 6.7: Miccosukee Tribe of Indians of Florida**

Many of the focal species occurring on the ECWMA, such as wading birds, southern bald eagles, and swallow-tailed kites utilize property surrounding the WMA. The Miccosukee Tribe of Indians of Florida owns and manages a neighboring property. Several focal and listed species, such as snail kites and wading birds occur on their property. Further, the Miccosukee Tribe of Indians of Florida supports apple snail research. Information on species occurrence should be shared with the Miccosukee Tribe of Indians of Florida, in addition to coordination of management efforts and other information sharing, when possible.

Contacts:

Rory Feeney, Fish and Wildlife Director: (305) 223-8380 x2217

### **64 6.8: Seminole Tribe of Florida**

Many of the focal species occurring on the ECWMA, such as wading birds, crested caracaras, southern bald eagles, and swallow-tailed kites utilize property surrounding the WMA. The Seminole Tribe of Florida owns and manages a neighboring property. Information on species occurrence should be shared with the Seminole Tribe of Florida, in addition to coordination of management efforts and other information sharing, when possible.

Contacts:

Craig Tepper, Director, Environmental Services: (954) 494-6092

Pauline Haas, Wildlife Biologist: (863) 902-3200 x13411

### **65 6.9: Florida Bat Conservancy**

The FBC conducted surveys and assisted in locating bat houses on WMAs throughout the State and may serve as a valuable resource for future surveys. Continued coordination with the Florida Bat Conservancy will be necessary if additional surveys are needed, or if bat houses need to be located on the area. The Florida Bat Conservancy may also provide insight into whether species of concern, such as the Florida bonneted bat is likely to occur in the vicinity. Share occupancy information on significant bat observations with the Florida Bat Conservancy.

Contacts:

Cyndi Marks, Executive Director: (727) 710-2287

### **66 6.10: Florida Forest Service**

The FFS provides authorizations for prescribed burning and assists in controlling escaped fires and wildfires. Staff interacts with the FFS when appropriate for these actions.

Contacts:

Fred Boehm, Broward County Forest Area Supervisor, (954) 680-4180

## **67 Section 7: Beyond the Boundaries Considerations**

There is enough potential habitat to support many of the ECWMA's focal species under an appropriate management regime. The ECWMA could currently support a viable population of several species and benefits from being part of a network of conservation lands, which further enhances the potential survival of many of these species. Continued communication with surrounding land and water managers will be critical to ensure management goals are compatible whenever possible. Wide-ranging species such as the swallow-tailed kite, snail kite, Florida mottled duck, limpkin, bald eagle, and wading birds will continue to exist on this complex as long as regional conditions are conducive to their persistence. The complex plays a significant role in the regional persistence of some listed species such as wading birds, limpkin, and snail kites. While the ECWMA can play a role in supporting the regional population of many focal species, ultimately, the continued existence of these species on these WMAs is dependent on what happens to the regional populations, and continuation of management funding.

The current management boundaries identified for the area do not include all important habitat for focal species, such as the lands identified as Strategic Habitat Conservation Areas (SHCAs). The FWC originally identified SHCAs in the Closing the Gaps in Florida's Wildlife Habitat Conservation System report (Cox et al. 1994; available at [Closing the Gaps Report, 1994](#)). 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 remaining habitat conservation needs 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: Updated Recommendations for Strategic Habitat Conservation Areas". American swallow-tailed kite, burrowing owl, short-tailed hawk, snail kite, Florida black bear, and Florida panther are species for which an SHCA was identified within 3 miles of the ECWMA. Although it is unlikely Florida will acquire all property identified in SHCAs, property acquisition and encouraging land use and management that is compatible with the needs of LWRWEA focal species should be a priority.

A mixture of densely populated urban areas and heavily modified agricultural lands border the area on the north, northwest, and east. These can heavily influence the area's hydrology and water quality, and can limit the dispersal of some species. If development continues or water management alters the hydrology on the ECWMA, the area may not be able to fulfill its conservation role for many wetland-dependent species, such as wading birds and snail kites.

While the current conditions and management of the ECWMA and neighboring lands provides an opportunity to further the conservation of many focal and imperiled species, significant changes in management or land use beyond the boundaries may have a significant impact on some species. Much of the surrounding land to the north and northwest is used for agriculture. Urban development of these areas, as is projected in the Florida 2060 report, may significantly reduce habitat for many species. As many of the area's species are dependent upon fire-maintained wetland habitat, any change that impedes the ability to conduct prescribed fire would be detrimental to the persistence of species such as snail kites, limpkins, and wading birds.

Species that require large home ranges or are dependent on dispersal for maintaining a population are particularly affected by adjacent land management or development. As many of the focal species occur on neighboring public and private lands, staff should maintain cooperative interaction with the SFWMD and the other municipal conservation lands in the area, as well as the Seminole Tribe of Florida and the Miccosukee Tribe of Indians of Florida. Fostering a positive relationship with neighboring landowners may increase the willingness of the landowner to become a partner in conservation-based land management. Such partnerships are critical to the long-term persistence of species, such as snail kites and wading birds.

## 13.9 FWC Apiary Policy

# Apiary Policy

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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  
Florida Fish and Wildlife Conservation Commission | ECWMA Management Plan

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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](http://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](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](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:**

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**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

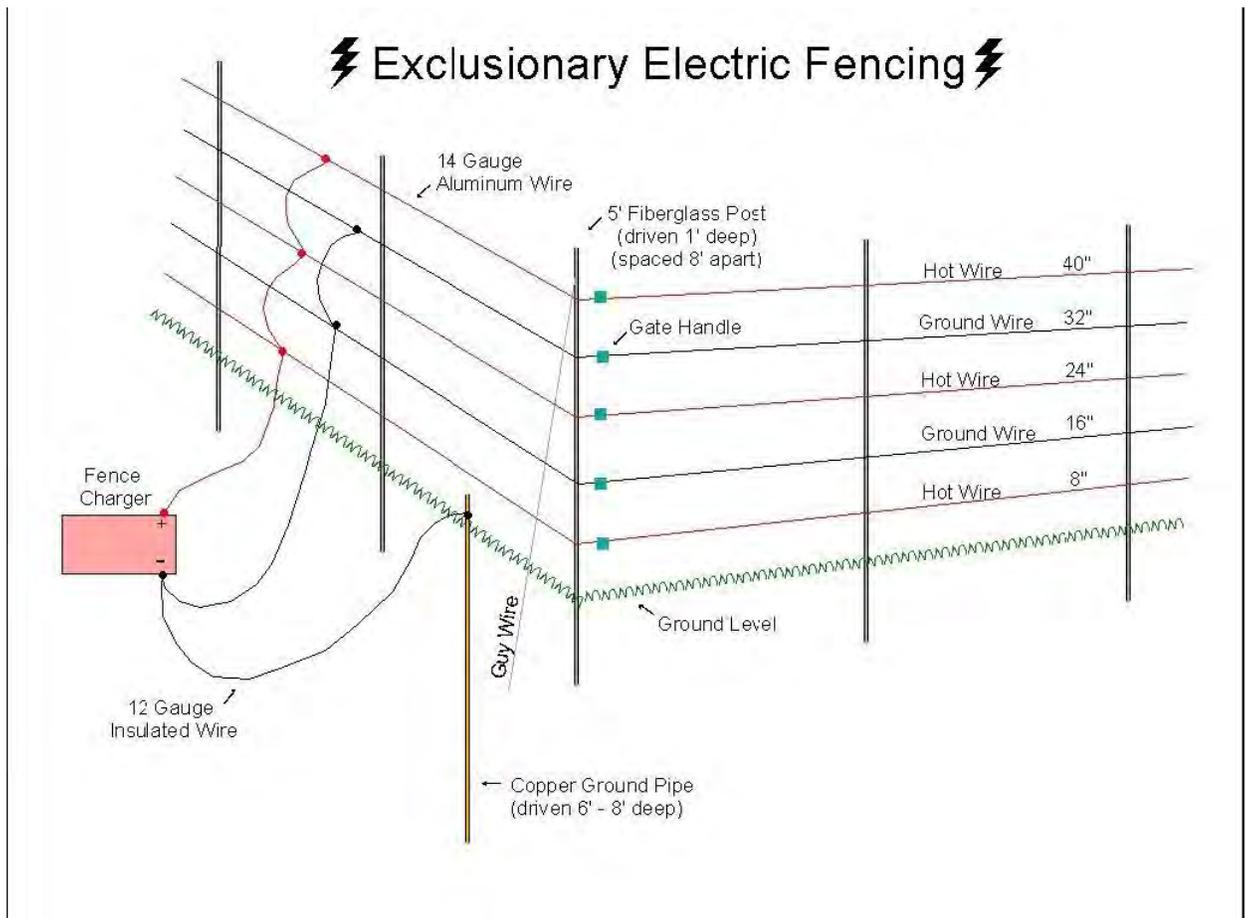
should be placed 3 to 5 feet away from the structure (rather than on it) so that the bear encounters the fence before reaching the attractant.

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.

Florida Fish and Wildlife Conservation Commission | ECWMA Management Plan

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 Archeological and Historical Resources**

### **13.10.1 Management Procedures Guidelines – Management of Archeological 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. 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](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

### 13.10.2 Cultural Resources of the EWMA

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#### Cultural Resources of the EWMA

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Site ID	Site Name	Site Type
BD00027	State Road 25	Prehistoric mound(s)
BD00042	Red Bug	Artifact scatter-low density
BD00045	Hullys Hump	Artifact scatter-low density
BD00049	Cottonmouth	Prehistoric midden(s)
BD01442	Emfinger (Bcso 2-12)	Prehistoric midden(s)
BD02356	Sawgrass Overpass Midden	Prehistoric midden(s)
BD02357	Fpl/Ewma 2b Midden	Habitation (prehistoric)
DA00050	Little Doctor Camp	Prehistoric midden(s)
DA00052	John Pools Camp	Prehistoric midden(s)
DA01043	Beal Smith	Prehistoric midden(s)
DA01044	Radio	Prehistoric midden(s)
DA01045	Hog	Prehistoric midden(s)
DA01046	Sunken Hammock	Prehistoric midden(s)
DA01067	Leather Fern	Prehistoric midden(s)
DA01640	Cabbage Palm Island	Prehistoric midden(s)
DA01641	Ficus Tree	Inundated land site
DA02142	Olive Jar	No field investigation
DA02144	Little George Island	No field investigation
DA02145	West Ross Hammock	No field investigation
DA02146	Indian Well	No field investigation
DA02147	No Name	No field investigation
DA02149	No Name	No field investigation
DA02150	No Name	No field investigation
DA02151	No Name	No field investigation
DA02152	No Name	No field investigation
DA02153	No Name	No field investigation
DA02154	No Name	No field investigation
DA02155	No Name	No field investigation
DA02156	No Name	No field investigation
DA02157	No Name	No field investigation
DA02158	No Name	No field investigation
DA02159	No Name	No field investigation
DA02160	No Name	No field investigation
DA02161	No Name	No field investigation
DA02162	No Name	No field investigation
DA02163	No Name	No field investigation
DA02164	No Name	No field investigation
DA02165	No Name	No field investigation
DA02166	No Name	No field investigation
DA02167	No Name	No field investigation
DA02168	No Name	No field investigation
DA02169	No Name	Prehistoric midden(s)
DA02170	Sam Willie's Camp	No field investigation
DA02171	No Name	No field investigation

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**Cultural Resources of the EWMA**

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<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>
DA02172	No Name	No field investigation
DA02173	No Name	No field investigation
DA02174	No Name	No field investigation
DA02175	No Name	No field investigation
DA02176	John Buck Seminole Village	Prehistoric midden(s)
DA02200	No Name	No field investigation
DA02201	No Name	No field investigation
DA02202	No Name	No field investigation
DA02203	No Name	No field investigation
DA02204	No Name	No field investigation
DA02206	No Name	No field investigation
DA02207	No Name	No field investigation
DA02208	No Name	No field investigation
DA02209	No Name	No field investigation
DA02210	No Name	No field investigation
DA02211	No Name	No field investigation
DA02212	No Name	No field investigation
DA02213	No Name	No field investigation
DA02214	No Name	No field investigation
DA02215	No Name	No field investigation
DA02216	No Name	No field investigation
DA02217	No Name	No field investigation
DA02218	No Name	No field investigation
DA02219	No Name	Prehistoric midden(s)
DA02220	No Name	No field investigation
DA02221	No Name	Prehistoric midden(s)
DA02222	No Name	Prehistoric midden(s)
DA02223	No Name	Prehistoric midden(s)
DA02224	No Name	Prehistoric midden(s)
DA02225	No Name	No field investigation
DA02226	No Name	No field investigation
DA02227	No Name	No field investigation
DA02228	No Name	No field investigation
DA02229	No Name	No field investigation
DA02230	No Name	No field investigation
DA02231	Stanley Franks Camp	No field investigation
DA02232	Small Tommie's Seminole Village	No field investigation
DA02233	No Name	No field investigation
DA02234	Jimmie Tiger's Farm	No field investigation
DA02235	Miccosukee Tribe Island	No field investigation
DA02236	Tommy Tiger's Camp	No field investigation
DA02237	Pete Osceola's Farm	No field investigation
DA02238	No Name	No field investigation
DA02239	No Name	No field investigation
DA02240	Jimmy Tommie's Camp	No field investigation
DA02241	No Name	No field investigation
DA02242	No Name	No field investigation
DA02243	No Name	No field investigation

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**Cultural Resources of the EWMA**

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<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>
DA02244	No Name	No field investigation
DA02245	No Name	No field investigation
DA02246	Smallpox Tommie's Camp	No field investigation
DA02247	Big Hammock	No field investigation
DA02248	No Name	No field investigation
DA02249	Old Burying Ground	No field investigation
DA02250	No Name	No field investigation
DA02251	Smallpox Tommie's Old Place	No field investigation
DA02252	No Name	No field investigation
DA02253	No Name	No field investigation
DA02254	No Name	No field investigation
DA02255	No Name	No field investigation
DA02256	No Name	No field investigation
DA02258	Jessie Willie's Camp	No field investigation
DA02259	Jack Clay Hammock	No field investigation
DA02260	No Name	No field investigation
DA02261	No Name	No field investigation
DA06523	Casaurina Head	Campsite (prehistoric)
DA06524	Dead Deer Island	Habitation (prehistoric)

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**13.10.3 Cultural Resources of the RWMA**

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**Cultural Resources of the RWMA**

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<b>Site ID</b>	<b>Site Name</b>	<b>Site Type</b>
PB232	Wall's Head	Prehistoric midden(s)
PB9527	Holly Hump	Prehistoric midden(s)
PB9528	Bird Nest	Prehistoric midden(s)

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## **13.11 Operation Plan Fiscal Year 2014-2015**

## 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
<u>Other</u>		
	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
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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
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
- 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

Fiscal year 2014 Projects: 7293, 7294, 7296

Activity Title	Man Days	Salary	FuelCost	Other	Total	Units
100 Administration	110.00	\$23,274.90	\$2,007.50	\$63,690.00	\$88,972.40	0
103 Meetings	145.00	\$30,680.55	\$2,646.25	\$6,500.00	\$39,826.80	0
104 Budget/purchasing/accounting	85.00	\$17,985.15	\$1,551.25	\$0.00	\$19,536.40	0
128 New Vehicle and Equipment Purchases	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
150 Personnel management	30.00	\$6,347.70	\$547.50	\$0.00	\$6,895.20	0
185 GIS	20.00	\$4,231.80	\$365.00	\$0.00	\$4,596.80	0
200 Resource Management	230.00	\$48,665.70	\$4,197.50	\$119,000.00	\$171,863.20	0
201 Cultural resource management	7.00	\$1,481.13	\$127.75	\$0.00	\$1,608.88	0
203 Tree and shrub planting	65.00	\$13,753.35	\$1,186.25	\$125,500.00	\$140,439.60	0
204 Resource planning	15.00	\$3,173.85	\$273.75	\$0.00	\$3,447.60	0

Activity Title	Man Days	Salary	FuelCost	Other	Total	Units
206 Prescribed burning - growing season	65.00	\$13,753.35	\$1,186.25	\$5,500.00	\$20,439.60	4500
207 Prescribed burning - dormant season	105.00	\$22,216.95	\$1,916.25	\$6,500.00	\$30,633.20	6500
208 Firebreaks	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
212 Exotic plant control (chemical)	135.00	\$28,564.65	\$2,463.75	\$459,500.00	\$490,528.40	2770
215 Hydrology Management	2.00	\$423.18	\$36.50	\$0.00	\$459.68	0
218 Water level management	50.00	\$10,579.50	\$912.50	\$0.00	\$11,492.00	0
221 Animal surveys	81.00	\$17,138.79	\$1,478.25	\$71,075.00	\$89,692.04	0
235 Vegetation and plant surveys	25.00	\$5,289.75	\$456.25	\$51,000.00	\$56,746.00	0
285 Nest structures	13.00	\$2,750.67	\$237.25	\$500.00	\$3,487.92	30
286 Population control	8.00	\$1,692.72	\$146.00	\$2,500.00	\$4,338.72	0
290 Native vegetation management (chemical)	5.00	\$1,057.95	\$91.25	\$0.00	\$1,149.20	600
294 Program coordination and implementation	40.00	\$8,463.60	\$730.00	\$0.00	\$9,193.60	0
295 Biological data collection, analysis, and reporting	68.00	\$14,388.12	\$1,241.00	\$6,000.00	\$21,629.12	0
311 Boundary signs	25.00	\$5,289.75	\$456.25	\$10,500.00	\$16,246.00	0
320 Outreach and education	5.00	\$1,057.95	\$91.25	\$0.00	\$1,149.20	0
341 Public use administration (hunting)	15.00	\$3,173.85	\$273.75	\$475.00	\$3,922.60	0
342 Public use administration (non-hunting)	25.00	\$5,289.75	\$456.25	\$450.00	\$6,196.00	0
350 Customer service support	50.00	\$10,579.50	\$912.50	\$0.00	\$11,492.00	0
920 FEM -- buildings/structures	2.00	\$423.18	\$36.50	\$2,000.00	\$2,459.68	0
921 FEM -- utilities	2.00	\$423.18	\$36.50	\$4,000.00	\$4,459.68	0
922 FEM -- custodial functions	75.00	\$15,869.25	\$1,368.75	\$35,000.00	\$52,238.00	0
923 FEM -- vehicles/equipment	140.00	\$29,622.60	\$2,555.00	\$33,700.00	\$65,877.60	0
925 FEM -- boating access	7.00	\$1,481.13	\$127.75	\$0.00	\$1,608.88	0
926 FEM -- roads/bridges	5.00	\$1,057.95	\$91.25	\$68,000.00	\$69,149.20	0
928 FEM -- fences	0.00	\$0.00	\$0.00	\$0.00	\$0.00	0
<b>All totals</b>	<b>1,655.00</b>	<b>\$350,181.44</b>	<b>\$30,203.75</b>	<b>\$1,071,390.00</b>	<b>\$1,451,775.19</b>	<b>14400</b>

## 13.12 Arthropod Control Plan



CHARLES H. BRONSON  
COMMISSIONER

Florida Department of Agriculture and Consumer Services  
Division of Agricultural Environmental Services

**ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS**

Chapters 388.4111, F.S. and 5E-13.042(4)(b), F.A.C.  
Telephone: (850) 922-7011

**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.**

Name of Designated Land:

Everglades and Francis S. Taylor, Holey Land, and Rotenberger Wildlife Management Areas

Is Control Work Necessary:

Yes  No

Location:

western Palm Beach County, western Broward County, and northwestern Miami-Dade County (see attached maps)

Land Management Agency:

Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary?

Yes  No

If "Yes", please explain:

Which Surveillance Techniques Are Proposed?

Please Check All That Apply:

- |  |                                      |  |
|--|--------------------------------------|--|
| <input type="checkbox"/> Landing Rate Counts | <input type="checkbox"/> Light Traps | <input type="checkbox"/> Sentinel Chickens |
| <input type="checkbox"/> Citizen Complaints  | <input type="checkbox"/> Larval Dips | <input type="checkbox"/> Other             |

If "Other", please explain:

Arthropod Species for Which Control is Proposed:  
None

Proposed Larval Control:  
None

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 larvacide:

Chemical or Common name:

Ground  Aerial

Rate of application:

Method of application:

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.

Proposed Notification Procedure for Control Activities:

Records:

Are records being kept in accordance with Chapter 388, F.S.:

Yes  No

Records Location: Miami-Dade: 8901 NW 58<sup>th</sup> Street, Miami, FL 33178

How long are records maintained:  
7 years

Vegetation Modification: None

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?

Proposed Land Modifications: None

Is any land modification, i.e., rotary ditching, proposed:  
None

Include proposed operational schedules for water fluctuations:  
None

List any periodic restrictions, as applicable, for example peak fish spawning times.  
None

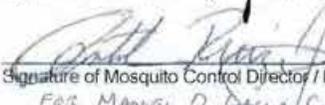
Proposed Modification of Aquatic Vegetation:

Land Manager Comments:

Arthropod Control Agency Comments:

Miami-Dade County does not conduct arthropod control in these wildlife management areas.

 7/6/13  
Signature of Lands Manager or Representative Date

 7/6/13  
Signature of Mosquito Control Director / Manager Date  
FOR MANUEL D. GARCIA, CHIEF - REAL BIRDS,  
LAND MANAGEMENT AND  
MOSQUITO CONTROL DIVISION



CHARLES H. BRONSON  
COMMISSIONER

Florida Department of Agriculture and Consumer Services  
Division of Agricultural Environmental Services

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Telephone: (850) 922-7011

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Name of Designated Land:  
Everglades and Francis S. Taylor, Holey Land, and Rotenberger Wildlife Management Areas

Is Control Work Necessary:  Yes  No

Location:  
western Palm Beach County, western Broward County, and northwestern Miami-Dade County (see attached maps)

Land Management Agency:  
Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary?  Yes  No  
If "Yes", please explain:

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:

Arthropod Species for Which Control is Proposed:  
None

Proposed Larval Control:  
None

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 larvacide:

Chemical or Common name:

Ground

Aerial

Rate of application:

Method of application:

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.

Proposed Notification Procedure for Control Activities:

The State Health Officer has the authority under F.S. Chapter 388 to declare a threat to the public health exists and must immediately notify the Commissioner of the Dept. of Agriculture to declare this threat. The State Health Officer must also notify the agency heads of the Dept. of Environmental Protection and the Fish and Wildlife Conservation Commission within 24 hrs of the declaration.

Records:

Are records being kept in accordance with Chapter 388, F.S.:

Yes  No

Records Location: Palm Beach: 9011 W. Lantana Rd, Lake Worth, FL 33467

How long are records maintained:  
10 years

Vegetation Modification: None

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?

Proposed Land Modifications: None

Is any land modification, i.e., rotary ditching, proposed:  
None

Include proposed operational schedules for water fluctuations:  
None

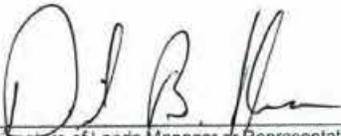
List any periodic restrictions, as applicable, for example peak fish spawning times:  
None

Proposed Modification of Aquatic Vegetation:

Land Manager Comments:

Arthropod Control Agency Comments:

Palm Beach County Mosquito Control does not conduct mosquito control activities either on or over any environmentally sensitive and biologically highly productive public lands owned by the state or federal government

  
Signature of Lands Manager or Representative      Date 7/8/13

  
Signature of Mosquito Control Director / Manager      Date 6/25/13

DACS-13868 07/08



CHARLES H. BRONSON  
COMMISSIONER

Florida Department of Agriculture and Consumer Services  
Division of Agricultural Environmental Services

**ARTHROPOD MANAGEMENT PLAN - PUBLIC LANDS**

Chapters 388.4111, F.S. and 5E-13.042(4)(b), F.A.C.  
Telephone: (850) 922-7011

**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.**

Name of Designated Land:  
Everglades and Francis S. Taylor, Holey Land, and Rotenberger Wildlife Management Areas

Is Control Work Necessary:             Yes     No

Location:  
western Palm Beach County, western Broward County, and northwestern Miami-Dade County (see attached maps)

Land Management Agency:  
Florida Fish and Wildlife Conservation Commission

Are Arthropod Surveillance Activities Necessary?             Yes     No  
If "Yes", please explain:

Which Surveillance Techniques Are Proposed?  
Please Check All That Apply:

- |  |                                      |  |
|--|--------------------------------------|--|
| <input type="checkbox"/> Landing Rate Counts | <input type="checkbox"/> Light Traps | <input type="checkbox"/> Sentinel Chickens |
| <input type="checkbox"/> Citizen Complaints  | <input type="checkbox"/> Larval Dips | <input type="checkbox"/> Other             |

If "Other", please explain:

Arthropod Species for Which Control is Proposed:  
None

Proposed Larval Control:  
None

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:

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.

Proposed Notification Procedure for Control Activities:

Records:

Are records being kept in accordance with Chapter 388, F.S.:

Yes  No

Records Location: Broward: 1201 W. Airport Road, Pembroke Pines, FL 33023

How long are records maintained:  
3-7 years

Vegetation Modification: None

What trimming or altering of vegetation to conduct surveillance or treatment is proposed?

Proposed Land Modifications: None

Is any land modification, i.e., rotary ditching, proposed:  
None

Include proposed operational schedules for water fluctuations:  
None

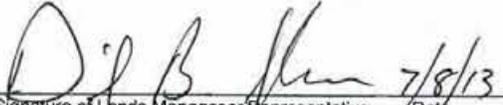
List any periodic restrictions, as applicable, for example peak fish spawning times.  
None

Proposed Modification of Aquatic Vegetation:

Land Manager Comments:

Arthropod Control Agency Comments:

Broward County Mosquito Control does not conduct any arthropod control in these wildlife or Conservation area's.  
With the exception of Everglades Holiday Park and Sawgrass Recreation Park to the Public area's and parking lots with ground adulticiding only when requested.

  
Signature of Lands Manager or Representative      7/8/13      Date

  
Signature of Mosquito Control Director / Manager      6/26/13      Date

### **13.13 Broward, Miami-Dade, and Palm Beach County Letters of Compliance with Local Government Comprehensive Plan**

THIS PAGE LEFT BLANK PENDING COUNTY COMPLIANCE LETTERS